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**The influence of Artificial Intelligence on the competencies required by a
Chartered Accountant in South Africa**

by

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**Submitted in partial fulfilment of the requirement for the degree of
Masters of Accountancy**

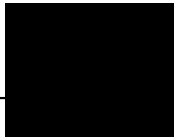
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Name: Sameerah Essa

DEDICATIONS

To my daughters, Hafsah Kadwa and Maryam Kadwa

ABSTRACT

The rapid advancement of artificial intelligence (AI) is transforming the accounting profession globally and reshaping the competencies required of chartered accountants in South Africa (CA(SA)s). This study investigates how AI influences the technical, professional, and personal competencies of CA(SA)s and evaluates the extent to which the South African Institute of Chartered Accountants (SAICA) prepares current and future professionals for an AI-enabled environment. Guided by two research questions, (1) identifying the skills required for the accounting professional of the future, and (2) assessing how SAICA's competency framework incorporates these skills, the study adopts a qualitative research design grounded in thematic analysis. Secondary data is collected from three sources representing the professional ecosystem: SAICA's CA2025 (rebranded as CA of the Future) and Foresight Project publications, Big 4 accounting firm reports, and the integrated reports of the Top 20 JSE-listed companies. To address the research gap from previous studies on AI, the data sources, namely the SAICA Foresight Project, publications and reports from the Big Four accounting firms and integrated and sustainability reports from all top 20 JSE-listed companies, are utilised in this study and are evaluated in order to determine the influence of AI, specifically with a focus on the competencies as required by a CA(SA).

Findings reveal six dominant themes shaping the evolving competency profile of CA(SA)s: digital and data competency, strategic and analytical thinking, ethical and governance competence, continuous learning and adaptability, human–AI collaboration, and corporate-level AI expectations. Evidence from the Big 4 shows that AI has automated transactional and assurance functions, shifting accountants' roles toward data analytics, AI model validation, algorithmic governance, ethical oversight, and strategic advisory work. Corporate analysis indicates that JSE-listed companies increasingly rely on AI for forecasting, fraud analytics, risk modelling, operational optimisation, and sustainability reporting, thereby demanding accountants with strong data-driven decision-making abilities and digital assurance capabilities. Across sectors, a consistent gap emerges between employer expectations and the current readiness of accounting professionals.

Analysis of SAICA's CA of the Future framework shows that, while digital acumen, ethical judgment, and adaptability are embedded conceptually, AI-specific competencies, such as model

risk management, AI assurance, algorithmic transparency, and data governance, are not explicitly articulated. This creates challenges for consistent implementation across training programmes, especially within small and medium-sized firms for which technological exposure remains limited. The study identifies a clear need for enhanced CPD pathways, AI-focused training interventions, interdisciplinary collaboration, and explicit integration of AI governance within SAICA's competency framework.

Overall, the study concludes that AI is redefining the CA(SA) into a hybrid, augmented professional who integrates technological literacy with strategic judgment and ethical governance. While SAICA provides a strong foundation for digital readiness, significant gaps remain between the competencies required in practice and those currently developed through professional training. Strengthening AI-related competencies is essential to ensuring that CA(SA)s remain relevant, competitive, and capable of providing high-value contributions in an increasingly AI-enabled accounting landscape.

Keywords: Artificial Intelligence (AI), Chartered Accountant (South Africa) (CA(SA)), Digital and Data Analytics Competencies, Ethical Governance, Human-AI Collaboration, Professional competency frameworks, Professional Judgement, SAICA CA of the Future

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CHAPTER 1

INTRODUCTION

1.1 Background

The accounting industry is undergoing a major transformation, driven by rapid advancements in Artificial Intelligence (AI) and automation (MANCOSA, 2025). While traditional accounting relied on manual data entry, mundane task completion and calculations performed using simplistic accounting software, AI-powered tools are now streamlining financial processes, enhancing accuracy, and enabling accountants to focus on strategic decision-making (MANCOSA, 2025). Recent studies confirm that AI is reshaping professional expectations globally, requiring accountants to develop enhanced digital, analytical, and decision-making capabilities to remain effective in modern business environments.

Artificial intelligence (AI) is rapidly reshaping the chartered accountant profession globally, with increasing adoption across industry, management accounting, taxation, auditing, and economics. As AI-driven systems automate and augment tasks previously performed manually, the roles and responsibilities of chartered accountants are undergoing substantial transformation.

While some professionals have embraced these technological advances, others remain resistant, particularly where traditional skill sets are perceived to be losing relevance. In the South African context, evidence indicates that even qualified chartered accountants are experiencing heightened pressure to maintain technological competence, with many expressing concern about their preparedness for the digital transformation affecting the profession (Brands, Mayer & Oosthuizen, 2024). Against this backdrop, the future relevance of the chartered accountant (South Africa) (CA(SA)) designation increasingly depends on the ability of practitioners to continuously upskill and adapt to an AI-enabled professional environment. Resistance to these changes may erode the value of the designation in the labor market, highlighting the urgency for skills development aligned with emerging technologies.

Given the limited empirical research examining the impact of AI on accounting competencies within the South African context, particularly in relation to the competency framework prescribed by the South African Institute of Chartered Accountants (SAICA), the study evaluates the CA(SA) of the future and the competencies required in a technologically driven economy (South African Institute of Chartered Accountants, n.d). Through a review of literature by fellow researchers, this study focuses closely on the chartered accountant profession. The CA2025 (rebranded as CA of the Future) rollout by SAICA, the CA(SA) of the future, the defined competencies, and the Foresight Project by SAICA is also utilised in the assessment of whether the CA(SA) program adequately addresses the competencies required for the future.

Amongst the challenges faced by the CA(SA) is the risk of skills not evolving to better suit the CA(SA) of the future role. This risk is accelerated due to companies and accounting firms investing in AI for the future. Therefore, the competency frameworks, which govern the skills of a CA(SA), require regular updates to address the risks that the profession faces.

The study will contribute to the findings of recent studies that explore AI in the context of the accounting profession. However, it will be the first AI focused competency evaluation which utilises the Big 4, Top 20 JSE listed companies and the SAICA Foresight project to draw evidence for the purpose of determining the influence of AI on the competencies required by a CA(SA).

1.2 Problem statement

The accelerating integration of artificial intelligence (AI) into the accounting profession is reshaping the roles, responsibilities, and required competencies of CA(SA)s. As automation replaces many routine processes, CA(SA)s ought to shift their focus from transactional work toward strategic analysis, ethical judgment, and technology-enabled decision-making. This evolution places pressure on existing competency frameworks, including those developed by the South African Institute of Chartered Accountants (SAICA), which are newly required to incorporate digital acumen, data governance, computational thinking, and AI-related ethical considerations.

If these competencies do not evolve alongside AI, CA(SA)s may face reduced professional relevance in areas where AI tools outperform traditional manual processes. Studies suggest that

CA(SA)s cannot fully leverage AI without complementary human skills such as judgment, interpretation, and digital literacy, reinforcing the need for updated competency frameworks.

Although SAICA has revised elements of its competency framework, such as through the CA of the Future initiatives, there is still limited evidence of how effectively current and aspiring CA(SA)s might be acquiring these AI-related competencies. Recent South African research indicates that many CAs feel insufficiently prepared to apply digital tools and AI-driven technologies in practice, despite being aware of their growing importance (Brands et al., 2024).

JSE-listed companies and the Big Four accounting firms are rapidly increasing their investment in AI to enhance accuracy, efficiency, and competitiveness. As these employers adopt more sophisticated technologies, the demand for AI-enabled professionals becomes more pronounced.

SAICA first revamped its competency framework in 2021, and further updates were made to this Competency Framework as approved by the CA Professional Development Committee (CAPDC) in October 2023. Changes are made sparingly, where some changes simply reflect clarification. Furthermore, these latest changes in 2023 were not considered to be significant by the CAPDC, who approved the revised Competency Framework (CA 2025 to CA of the Future, SAICA, 2025). Enforcing updates to the training programme proves to be a slow process. As a result, this is CAs(SA) entering the labour market with insufficient AI-enabling competencies and lacking the skills to blend seamlessly into AI-augmented workspaces.

However, despite SAICA's revisions to its competency framework and the growing integration of AI across JSE-listed companies and Big Four firms, it remains unclear as to whether current and aspiring CA(SA)s are adequately equipped with the AI-related skills now demanded in practice. Limited research exists on how well SAICA's training, education, and professional development processes align with the rapid technological shift reshaping the profession. This gap is particularly urgent, as the pace of AI adoption accelerates, raising concerns about future readiness and employability. There is insufficient empirical evidence on whether SAICA's competency framework adequately equips CA(SA)s for AI-augmented professional practice.

1.3 Objectives of the study

This study aims to evaluate the influence of artificial intelligence on the chartered accounting designation and profession. It also aims to identify the competencies required by the CA (SA) of the future given the implementation of artificial intelligence in industry and how this will influence the program offered by SAICA.

The main objectives of the study are to

1. Identify AI-related competencies and skills required for a CA(SA) to remain employable in an AI-enabled environment.
2. Identify gaps and flaws in AI implementation in the Top 20 JSE listed companies and the Big Four Accounting firms
3. Evaluate the extent to which SAICA's current and proposed programmes (The Foresight Project) address these gaps through its competency framework.

1.4 Research questions

As seen from the objectives above, the following research questions are posed:

1. What are the skills and competencies required for the CA(SA) of the future due?
2. What are the gaps and flaws in the implementation of AI in industry (JSE Top 20) and in the Big Four accounting firms, specifically where AI implementation gaps are identified?
3. How do SAICA programs address and incorporate these required skills in their competencies now and in the future?

1.5 Significance

This study addresses a critical and timely issue facing the accounting profession, particularly for CA(SA)s registered with SAICA. One of the implications is that, as AI capabilities expand, a growing proportion of routine and rules-based accounting tasks are increasingly automated, shifting the professional value of CA(SA)s toward higher-order analytical, interpretive, and advisory roles.

At the same time, studies show that many accounting professionals do not yet feel adequately prepared to operate effectively in environments where AI is embedded into everyday processes (Brands et al.,2024). This creates a potential competency gap between the skills SAICA currently

emphasises and the skills required in technologically advanced workplaces. Understanding whether CA(SA)s are equipped for this shift has direct implications for the sustainability of the profession and the credibility of SAICA's qualification pathway.

The study is therefore valuable to aspiring, current, and future CA(SA)s where it identifies the competencies that support relevance and employability in AI-enabled environments. SAICA will also benefit through insights into whether its CA of the Future and related competency frameworks sufficiently address emerging technological requirements, and whether further enhancement is needed to prepare graduates for AI-augmented professional contexts. In addition, employers, including JSE-listed companies and Big Four firms stand to gain a clearer understanding of how to bridge capability gaps between human expertise and AI systems, thereby optimising both human and technological resources in accounting functions (Kokina & Davenport, 2017, 2023).

1.6 Delimitations

The study utilises information in the annual reports of the Top 20 JSE listed companies for the years 2023 till 2025 (as available), and information publicly published in relation to the investment into AI by the Big Four accounting firms. The main reason for the utilisation of the sources of data is that these companies will possess the necessary funds, pre-existing accounting systems and finance teams consisting of skilled individuals, most of which are CA(SA)s and therefore can appropriately implement AI. Furthermore, the study's focus is on chartered accountants only in South Africa, therefore information on the SAICA competencies and Foresight Project from the SAICA website are utilised.

Exclusions of the study are non-JSE listed companies, SMEs and other professional designations within the field of accounting, economics and finance. Furthermore, the ability to generalise themes and outcomes from the study may be generalised to the extent that a company is listed, or an equivalent designation to CA(SA) worldwide.

1.7 Limitations

The study places reliance on secondary data that is publicly available. However, there are restrictions in terms of access to internal company data of the Top 20 JSE-listed companies. Furthermore, data relating to internal procedures or discussions by SAICA and the Big Four accounting firms relating to AI is also restricted for the use of the study.

Chapter 1 introduced the study by outlining the growing influence of artificial intelligence on the accounting profession and the resulting implications for the competencies required of Chartered Accountants (SA). It defined the research problem, objectives, and questions, highlighting concerns regarding the preparedness of current competency frameworks to address technological disruption. The chapter also justified the study's focus on SAICA, the Big Four firms, and the Top 20 JSE-listed companies, establishing the significance of examining AI-driven competency shifts within the South African context. To contextualise these issues conceptually, the following chapter reviews relevant literature on AI, professional competencies, and accounting transformation.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

The study evaluates the influence of artificial intelligence on the CA (SA) professional by way of achieving the objectives as outlined in section 1.3 and answers the research questions per section 1.4 which are:

1. What are the skills required for the CA(SA) of the future due to the implementation of AI in industry and in the Big Four accounting firms?
2. How do SAICA programmes address and incorporate these required skills in their competencies now and in the future?
3. What implementation gaps in AI adoption (JSE Top 20; Big Four) most strongly drive the need for new CA(SA) competencies?

The study focuses on similar studies performed by other researchers in relation to the influence of artificial intelligence on the accounting profession in industry more broadly, as well as in the Big Four accounting firms in particular. Through a comprehensive literature review and through the examination of SAICA initiatives for a CA (SA) of the future, the study bridges the gap between AI and competencies of a future CA (SA). In doing so, the study concludes whether the CA (SA) of the future is appropriately upskilled to compete in an AI-driven professional space.

The rapid acceleration of artificial intelligence (AI), machine learning, and automation technologies since 2018 has reshaped the global accounting profession, altering the nature of work, the competencies required of professionals, and the expectations of governing bodies. Within South Africa, this transformation intersects with a unique socio-economic environment characterised by skills gaps, digital inequalities, and uneven access to technological infrastructure. As a result, the integration of AI into accounting practice has highlighted both opportunities and challenges for chartered accountants, particularly those registered as CA(SA)s under the South African Institute of Chartered Accountants (SAICA).

Recent literature emphasises that, while AI can enhance efficiency and reduce human error, it simultaneously demands heightened professional skepticism, data literacy, ethical competence, and strategic advisory capabilities. These emerging competencies extend beyond traditional accounting skills, reflecting the shift toward hybrid roles, where chartered accountants collaborate with intelligent systems, rather than solely executing tasks manually (Brands et al., 2024; Barac, Plant & Olivier, 2021). In this context, the purpose of this literature review is to examine research published since 2018 relating to AI in accounting, digital transformation in finance, adoption of ChatGPT and related generative AI models, and the evolution of professional competencies, with specific emphasis on the South African environment.

This study also uses the Technology–Organisation–Environment (TOE) framework (Tornatzky & Fleischer, 1990) and Human Capital Theory (Becker, 1964), which together provide an analytical lens for examining the competencies required of Chartered Accountants (SA) in an artificial intelligence (AI)-enabled environment. The TOE framework supports the first research question by explaining how AI adoption within organisational settings, specifically the Big Four accounting firms and Top 20 JSE-listed companies, shapes the skills and competencies required of professionals. It further informs the second research question by highlighting the role of institutional and environmental factors, such as SAICA’s competency framework and broader regulatory and technological pressures, in influencing the integration of these competencies into professional training and development pathways.

Human Capital Theory (Becker, (1964), complements this theoretical perspective by emphasising that evolving technological demands necessitate continuous investment in knowledge, skills, and professional adaptability to maintain employability and professional relevance. Together, these frameworks enable a structured evaluation of how AI implementation gaps and institutional responses influence the competency profile of the future CA(SA) within the South African accounting ecosystem and through this literature review.

To meet the research objectives, the chapter synthesises local and international studies that discuss how AI influences the competencies required of chartered accountants, how professional bodies and firms respond to these changes, and how corporate environments such as the Top 20 JSE-listed companies use AI in financial reporting and governance. The review also compares divergent viewpoints within the literature, highlighting areas of consensus, debate, and emerging uncertainty.

By examining these perspectives, the chapter seeks to establish a clear foundation for evaluating whether the competencies embedded in SAICA's CA of the Future framework align with current and future industry needs, and whether CA(SA)s are adequately prepared to remain relevant within an AI-driven business landscape.

2.2 Literature review

The influence of artificial intelligence (AI) on the accounting profession has become a significant area of academic and professional discourse, particularly in relation to the evolving competencies required of chartered accountants. Traditionally, the profession has been underpinned by core technical knowledge in financial reporting, auditing, taxation, and management accounting, supported by professional values such as ethical conduct, integrity, and analytical reasoning (IFAC, 2019). These competencies have historically enabled accountants to perform essential functions such as preparing and auditing financial statements, ensuring compliance with regulatory frameworks, and providing reliable financial information for decision-making. However, the accelerating adoption of AI technologies, which range from robotic process automation (RPA) and natural language processing (NLP) to advanced machine learning algorithms, is reshaping the profession's functional landscape (Kokina & Davenport, 2017; Moll & Yigitbasioglu, 2019).

AI-driven systems are increasingly capable of performing repetitive, structured, and rule-based accounting tasks with greater efficiency and accuracy than humans. For example, processes such as transaction recording, reconciliations, and compliance testing can now be automated, thereby reducing the demand for manual processing skills (Dai & Vasarhelyi, 2017). This shift has profound implications for the CA (SA) of the future and their professional competencies. Rather than being valued primarily for routine processing, CA (SA)s are held to a high standard, and thus expected to excel in higher-order skills such as interpreting AI outputs, exercising judgment in complex and ambiguous contexts, and providing strategic insights to support decision-making (Richins, Stapleton, Stratopoulos, & Wong, 2017). In other words, the competencies required are no longer confined to technical proficiency but extend to digital literacy, data analytics, critical thinking, and adaptability.

Professional bodies and standard setters have begun to formally recognize these shifts. The South African Institute of Chartered Accountants (SAICA, 2021), for instance, highlights digital acumen and lifelong learning as critical competencies in its revised competency framework. Similarly, the

International Federation of Accountants (IFAC, 2022) stresses that emerging technologies, including AI, demand not only technical knowledge, but also a mindset of continuous learning, ethical awareness, and the ability to apply professional judgment in increasingly technology-mediated environments. These perspectives underscore that AI is not replacing the accountant, but rather, redefining the role into what some scholars have described as the “augmented accountant”, that is, a professional who partners with AI systems in order to enhance efficiency and generate deeper insight (Appelbaum, Kogan, Vasarhelyi, & Yan, 2020).

The literature also points to the dual nature of AI’s impact on professional competencies. On the one hand, AI relieves accountants from repetitive tasks, allowing them to focus on higher-value activities such as advisory services, risk assessment, and strategic decision-making (Sutton, Holt, & Arnold, 2016). On the other hand, it creates new competency demands that many accounting curricula and professional development programs are only beginning to address. These include proficiency in digital technologies, understanding of AI capabilities and limitations, and the ability to critically assess algorithmic decision-making processes (Moll & Yigitbasioglu, 2019). Furthermore, as AI raises ethical and governance challenges—such as bias in algorithms, data privacy, and accountability for AI-assisted decisions—professional skepticism and ethical reasoning become ever more essential (Issa, Sun, & Vasarhelyi, 2016). It is here that the CA (SA) adapted skillset will prove to be invaluable in the AI-augmented workspace.

This reconfiguration of competencies aligns with broader shifts in the future of work, where adaptability, collaboration, and interdisciplinary knowledge are increasingly valued. Chartered accountants are expected to integrate financial expertise with technological literacy, while also demonstrating the interpersonal and communication skills necessary to interpret AI-generated outputs for diverse stakeholders (IAESB, 2019). Thus, AI adoption is not merely a technological challenge, but a catalyst for redefining the professional identity of a CA (SA) in the 21st century and in the future.

Given these dynamics, the role of AI in shaping the competencies of chartered accountants has become a critical area of scholarly inquiry. This literature review examines the current state of knowledge regarding the intersection of AI and professional competencies. It explores how AI is transforming the nature of technical and professional skills required, how professional bodies and education providers are responding to these shifts, and the implications for the future value

proposition of a CA (SA). In doing so, this review aims to provide a comprehensive understanding of how AI influences the profession's competency framework and the broader implications for accounting education, regulation, and practice.

The post-2018 literature identifies AI to be a significant disruptive force shaping modern accounting practice. Authors such as Li and Zheng (2018), Appelbaum et al. (2020), and Stancu and Dutescu (2021) emphasise that AI technologies, including natural language processing (NLP), robotic process automation (RPA), predictive analytics, and machine learning—now automate routine accounting functions that historically required manual input. Examples include transaction processing, invoice matching, reconciliations, audit sampling, anomaly detection, and fraud identification. Automation of these tasks enables accountants to redirect their focus toward higher-order analytical and advisory responsibilities.

AI-driven tools improve the speed, reliability, and depth of financial processes. Studies show that organisations adopting AI experience significant reductions in processing time and error rates (Celestin & Vanitha, 2020; IFAC, 2022). Celestin and Vanitha (2020), for example, quantify that AI improves efficiency by up to 25% in financial reporting and auditing environments, though they note that enhanced accuracy does not eliminate the role of human oversight. This aligns with research from Appelbaum et al. (2020), who emphasise that AI enhances managerial accounting by providing real-time analytics that improve decision-making.

Although AI excels at repetitive and structured tasks, studies consistently argue that it cannot replace human attributes such as ethical judgment, complex reasoning, emotional intelligence, and contextual understanding (Barac et al., 2021; Brands et al., 2024). Li and Zheng (2018) meanwhile highlight that AI still lacks interpretive judgment, particularly in ambiguous cases in which professional skepticism and regulatory interpretation may be required.

Within South Africa, these themes intersect with the nation's economic realities. Research indicates that JSE-listed companies are increasingly adopting AI for financial reporting, risk management, and internal controls. However, adoption is uneven, with larger corporates advancing rapidly, while small and medium-sized audit practices lag, due to resource constraints. Barac et al. (2021) note that this uneven adoption not only widens skills disparities among accountants, but also increases pressure on SAICA to revise competency frameworks that do not adequately prepare graduates for AI-enabled workplaces.

The literature shows divergence in emphasis:

- Optimists (Li & Zheng, 2018; IFAC, 2022) argue that AI allows accountants to become more strategic and value-adding.
- Skeptics (Stancu & Dutescu, 2021) highlight the risks associated with algorithmic bias, loss of transparency, and governance failures.
- Pragmatists (Barac et al., 2021; Brands et al., 2024) acknowledges the transformative potential of AI but argue South Africa’s readiness remains limited, particularly outside large corporates and the Big Four.

This divergence illustrates the ongoing debate around how AI ought to shape the professional identity and competencies of accountants.

2.3 ChatGPT, generative AI and their impact on accounting practice

Since the launch of ChatGPT in late 2022, generative AI has rapidly permeated professional and academic discourse. Unlike earlier forms of AI focused on automation, generative AI performs text generation, reasoning support, summarisation, code writing, contract analysis, and complex problem-solving. These capabilities signal a new frontier for accounting and auditing, where large language models (LLMs) can assist with technical research, audit documentation, report drafting, and interpretation of accounting standards.

Emerging studies (2023–2025) demonstrate the many uses of generative AI in accounting such as drafting audit working papers and analytical procedures, assisting with IFRS research and summarisation, supporting internal audit risk assessments, drafting tax memos and interpreting SARS documentation, identifying inconsistencies in financial statements, and simulating fraud scenarios for auditor training, to name but a few. Although generative AI tools such as ChatGPT improve efficiency, scholars caution that accountants ought to verify outputs, as LLMs can “hallucinate” incorrect information. This reinforces the importance of professional judgment, ethical reasoning, and critical thinking.

The professional workforce is under pressure to implement AI to enhance their daily tasks and utilise AI as a collaborative tool, rather than a competitor. Furthermore, it is observed that the modern accounting professional derives value from solving problems far more complex than what can be outsourced to AI, without fear that their skillset may be replaceable. “The accounting

industry needs to understand that AI technologies offer tools to improve the activities performed not to steal jobs even if it reduces the data entry jobs. The repetitive tasks are successfully replicated by machines, but the decisions making part will still be the job of the accounting professional” (Stancu & Dutescu, 2021, p. 8).

Stancu and Dutescu note that the new generation of accountants needs to have “strong accounting knowledge, to be proficient in accounting technologies, to developed high communication skills and to be able to understand and effectively present the data to the management team and clients. These skills and knowledge need to be achieved from their studies” (Stancu & Dutescu, 2021, p. 8). The CA(SA) programme requires an aspiring individual to undergo three years of undergraduate study in accounting, a one-year postgraduate and then three-year training contract for practical experience.

The completion of a training contract ought to take place at a registered accounting firm under the governing body, SAICA. For this reason, the study’s focus is solely on the competencies required by SAICA. The SAICA Foresight Project (Botha & Roux, 2023) addresses the implementation of AI and the influence on a CA(SA), another focus area of the study.

The scope of the Foresight Project (Botha & Roux, 2023) is said to “cover a range of alternative scenarios to explore the future role of accountants in South Africa towards 2035. The scenarios should also assist SAICA and its stakeholders to identify the scope and nature of the attributes and competencies that accountants require to become and stay relevant in the years that lie ahead. The scenarios should also identify opportunities and how they can be leveraged in a practical fashion.” (Botha & Roux, 2023, p.1)

Due to the CA (SA) qualification being signed off through an accounting firm, the study derives insight from the globe’s Big Four accounting firms and their significant investments in AI with the aim of performing at the highest levels of quality and efficiency for their clients. Greenman notes that “Already, there is software that has automated many accounting, tax, bookkeeping, and auditing processes. If machines are assuming a greater role, where do the professionals strike a balance? What does the future of the accounting profession look like with the growth of artificial intelligence?” (2017, p. 1). Hasan meanwhile notes that “Major breakthroughs the big four accounting firms have had in the recent years in the application of AI” have been observed (2022, p. 18). The study refers to the research undertaken by Hasan to identify areas where there are gaps

between the AI implementation at the Big Four accounting firms and what the CA (SA) at these firms' tasks are now shifting towards.

It is a “wide[ly held] belief that whilst AI has significant influence on many areas of the economy, fears of unemployment were exaggerated. Instead, AI shifts work and not replaces it” (Barac, Plant, & Olivier, 2021, p. 11). This is a view reiterated in the study performed by Hasan where he noted that “no matter how much disruption to the profession AI causes in the future, it is quite unlikely that the need for human professionals will abolish (2022, p. 23). Given that AI is required to be operated or rather, instructed by a human being, it is a question as to what skills are required to remain relevant as CA(SA)s and how SAICA competencies might adequately equip the CA(SA)s of the future?

Todorova notes that “Because AI is impacting and will further impact the role of accountant, there is a call for accounting educators to change their mindset and develop the required skills and competences related to the smart technologies and their augmented business applications. There is a lot of work ahead to review the accounting curricula and prepare graduates for successful career” (2018, p. 130). The focus of this study is specifically on graduates who take the route of furthering their qualification to become a CA(SA).

Artificial intelligence is part of the 4th Industrial Revolution (4IR), and researchers have studied the impact of the 4IR on many professions and one such study looks specifically at the impact on the CA (SA) as a profession. The study indicates that CA(SA)'s must “embrace continuous learning, improving critical thinking, analytical abilities, and IT skills to remain relevant. Generational dynamics come into play as younger CA(SA)'s, who are more tech-savvy, adapt more quickly to the digital revolution while older generations struggle to bridge the technological divide. Despite fears about job displacement, CA(SA)'s view the 4IR as an opportunity for professional advancement and growth” (Brands, Mayer, & Oosthuizen, 2024, p. 1).

Another viewpoint is that of industries which seek to remain competitive in the market. Companies invest and utilise technologies in their industry to enhance their operations and one such study found that technological advancements have molded society's demands in such ways that it tends to favour technology over traditional manual means. This is particularly true for businesses as they would prefer to use technology as it increases their chances of growth and survival (Mohammad, Hamad, Borgi, Thu, Sial, & Alhadidi, 2020).

Celestin and Vanitha (2020) investigate the growing influence of artificial intelligence (AI) on the accounting profession, focusing on whether AI is more likely to replace accountants or serve as a complementary tool. Drawing on qualitative analysis of industry reports and surveys, the study evaluates efficiency gains, human–AI comparative advantages, and implications for the future of accounting work.

First, the authors highlight the rapid expansion of AI adoption in accounting practices. Between 2015 and 2020, implementation rose from 15% to 50%, leading to reported task efficiency improvements of approximately 25% in 2020 alone (Celestin & Vanitha, 2020). Despite these gains, a paired-samples t-test ($p = 0.363$) demonstrated no statistically significant advantage of AI over humans in areas requiring strategic decision-making, ethical reasoning, or client-facing interactions. This suggests that, while AI outperforms humans in repetitive and data-intensive processes, accountants retain unique value in judgment-based roles.

Second, regression analysis indicated that the integration of AI lies not in eliminating jobs, but rather, in creating new opportunities. The study projects the emergence of approximately 8,857 AI-related accounting roles annually, reflecting a shift toward hybrid positions that blend technological proficiency with accounting expertise (Celestin & Vanitha, 2020). This aligns with the notion of an “augmented accountant,” where human professionals collaborate with AI to deliver higher-value services.

Finally, the authors emphasise three critical recommendations: (1) updating accounting education curricula to include digital skills and AI literacy; (2) promoting human–AI collaboration to maximize efficiency while safeguarding professional oversight; and (3) establishing ethical frameworks to ensure transparent and responsible AI application in financial reporting and auditing (Celestin & Vanitha, 2020).

Overall, the study concludes that AI is unlikely to fully replace accountants, but will instead redefine professional roles. Accountants who develop competencies in technology, critical thinking, and ethics are positioned to thrive in an AI-enabled future.

Li and Zheng (2018) examine the influence of AI on the accounting profession within the broader context of rapid technological development. Specifically, the study addresses concerns about

whether AI could lead to job losses among accountants and explores areas where AI can positively impact accounting information quality and fraud prevention. These areas include:

AI as an enhancer, not a replacement. The authors assert that while AI is transforming many aspects of life and work, including accounting, it does not spell widespread unemployment among accountants. They emphasise that critical decision-making remains a human endeavor, with machines unable to replicate nuanced judgment.

Combatting fraud and enhancing information quality. AI is positioned as a tool for improving the reliability of accounting information and reducing fraud. By leveraging intelligent systems, financial data can become more accurate and transparent.

Evolving competencies for accountants. As AI reshapes the accounting landscape, Li and Zheng highlight the need for professionals to develop broader abilities. They outline seven key competencies that modern accountants should cultivate to remain effective and “comprehensive”—though the summary does not specify these competencies.

Li and Zheng (2018) conclude that AI ought to be viewed as a complement to human accounting professionals rather than a replacement. The future requires accountants to adapt, enhance their skill sets, and embrace AI to bolster information quality and mitigate fraud risks.

The intersection of artificial intelligence (AI) and accounting has attracted significant scholarly attention in recent years, as researchers assess whether technological advancement represents a threat to the profession or an opportunity for transformation. Two notable contributions to this discourse—Li and Zheng (2018) and Celestin and Vanitha (2020)—offer complementary perspectives on the extent to which AI reshapes professional competencies, employment prospects, and the overall value proposition of accountants.

Li and Zheng (2018) approach the issue primarily from a developmental perspective, examining AI’s role in improving the reliability of accounting information and combating fraud. They argue that, while AI is transforming many aspects of accounting practice, it ought not to be perceived as a substitute for human professionals. Instead, they stress the continuing importance of human judgment in decision-making, a quality that AI cannot replicate. Central to their analysis is the notion that AI acts as an enhancer of accounting information quality, ensuring transparency and reducing fraud risks. To adapt to these changes, they propose that accountants ought to cultivate a

broader set of competencies, positioning themselves as “comprehensive” professionals equipped with both technical expertise and the ability to work alongside AI.

By contrast, Celestin and Vanitha (2020) situate their analysis within a more empirical framework, employing statistical methods to assess the comparative efficiency of AI and human accountants. Their findings reveal that AI adoption in accounting grew substantially between 2015 and 2020, with efficiency improvements of around 25% in 2020. However, their paired-samples t-test results ($p = 0.363$) indicated no statistically significant performance advantage of AI over humans in tasks requiring strategic decision-making, ethical reasoning, or interpersonal skills. This supports Li and Zheng’s (2018) contention that AI is limited in replacing human-centered competencies, particularly in judgment-intensive areas. Moreover, Celestin and Vanitha (2020) highlight that AI integration does not reduce employment opportunities, but rather, fosters the creation of new hybrid roles. Their regression analysis predicts an annual increase of nearly 8,857 AI-related accounting roles, demonstrating that technological disruption is more likely to augment the profession than to displace it.

A key point of convergence between the two studies is their rejection of the “replacement” narrative often associated with AI in professional domains. Both emphasise that accountants retain distinct advantages in areas involving ethical judgment, contextual interpretation, and client engagement. At the same time, both sets of authors underscore the need for significant changes in professional competencies. Li and Zheng (2018) stress a shift toward comprehensive, multidisciplinary capabilities, while Celestin and Vanitha (2020) recommend reforms in accounting education to incorporate AI literacy and promote human–AI collaboration. These perspectives align with broader calls by professional bodies such as SAICA for a redefinition of competencies in response to technological disruption.

Despite these similarities, the two studies differ in their methodological focus and emphasis. Li and Zheng (2018) take a conceptual stance, emphasising fraud prevention and information quality, while Celestin and Vanitha (2020) adopt a more data-driven approach, quantifying AI adoption and forecasting labor market implications. Together, they present a comprehensive picture, namely that: AI improves efficiency and reliability in accounting processes but cannot substitute for human-centered skills; simultaneously, its diffusion generates new professional opportunities, provided accountants adapt their competencies accordingly.

In summary, both articles highlight that AI's impact on accounting is best understood not as a threat, but as a transformative force. The profession's continued relevance depends on accountants' ability to adapt through developing technological literacy, ethical reasoning, and strategic advisory capabilities. This aligns with the emerging conceptualisation of the "augmented accountant" as a professional who collaborates with AI systems to deliver deeper insights, safeguard information integrity, and enhances organisational value.

The rapid digital transformation of the global economy has profoundly altered the nature of professional work. Among the most disruptive technologies is AI, which has emerged as a transformative force across industries, reshaping how knowledge work is performed and evaluated. Within the accounting profession, AI's potential to automate repetitive processes, enhance decision-making, and improve data analysis has stimulated both optimism and concern (Kokina & Davenport, 2017; Sutton et al., 2016). For chartered accountants (CAs), the integration of AI represents not only a technological shift, but also a redefinition of professional competencies.

In South Africa, the accounting profession plays a critical role in governance, corporate accountability, and economic development. Chartered accountants, as members of the South African Institute of Chartered Accountants (SAICA), are expected to uphold public trust while adapting to the evolving requirements of the Fourth Industrial Revolution (4IR). Recognising these shifts, SAICA introduced the CA of the Future competency framework, which emphasises digital acumen, adaptability, and ethical decision-making alongside traditional technical competencies (SAICA, 2021). The question is no longer whether AI will influence accounting, but rather, how it will reshape the competencies required for professional success and sustainability in South Africa's unique socio-economic context.

Globally, scholars highlight that AI redefines the value proposition of accountants. Automation is increasingly capable of handling transactional and routine tasks such as data entry, reconciliation, and compliance reporting (Hasan, 2022; Stancheva-Todorova, 2018). As a result, the competencies most valued in the profession are shifting toward higher-order skills—critical thinking, systems understanding, technological literacy, and ethical reasoning (IFAC, 2019; Issa et al., 2016). At the same time, empirical evidence suggests that AI adoption is uneven across regions and sectors, influenced by firm size, resources, and organisational culture (Omar, Hasbolah, & Ulfah, 2017). For South Africa, with its mix of globalised corporations and resource-constrained small and

medium-sized firms, this uneven diffusion introduces challenges in aligning competencies across the profession.

Two contrasting yet complementary perspectives frame the debate. Li and Zheng (2018) contend that AI enhances transparency, fraud prevention, and efficiency, but cannot replace accountants' judgment-intensive roles. They emphasise that future-ready accountants must integrate technological expertise with ethical and analytical skills. Celestin and Vanitha (2020), in turn, provide evidence that AI adoption improves efficiency by approximately 25%, but has not demonstrated superior performance over humans in areas requiring professional judgment. Importantly, they predict the creation of new hybrid roles where accountants collaborate with AI systems. Together, these perspectives underscore that AI does not render accountants obsolete, but transforms the skills and competencies needed for their relevance.

In South Africa, research reflects both awareness of these changes and gaps in readiness. Barac, Plant, and Olivier (2021) argue that the profession must cultivate resilience and adaptability to remain "fit for purpose" in the 4IR era. Similarly, Brands, Mayer, and Oosthuizen (2024) show that, while South African CAs recognise the disruptive potential of technologies such as AI, many feel inadequately prepared to harness these tools effectively. These findings point to the need for robust professional development initiatives that bridge the gap between awareness and competency.

The literature further suggests that the transformation of competencies is not purely technical, but also ethical and relational. As AI takes over mechanical tasks, human accountants will be increasingly valued for professional judgment, leadership, and the ability to interpret machine-generated outputs in context (Greenman, 2017; Moll & Yigitbasioglu, 2019). Ethical reasoning is also paramount, given that reliance on AI introduces new governance dilemmas, including accountability for algorithmic decisions and risks of bias (Stancu & Dutescu, 2021). For South Africa, where governance failures and audit scandals have undermined public trust, strengthening ethical competencies in the AI era is particularly urgent.

This literature review critically examines the way in which AI influences the competencies required by chartered accountants, with specific focus on South Africa. It synthesises global perspectives, analyses competency frameworks, evaluates empirical studies, and situates findings within the South African context. The review highlights the reconfiguration of competencies from

traditional technical expertise toward hybrid skill sets that integrate digital acumen, ethical judgment, and strategic thinking. In doing so, it identifies the gaps, challenges, and opportunities facing the South African accounting profession in preparing future-ready chartered accountants.

2.4 Historical evolution of technology in accounting

The accounting profession has long been shaped by technological innovation. From the introduction of spreadsheets to the rise of enterprise resource planning (ERP) systems, each technological wave has redefined workflows and skill requirements (Appelbaum et al., 2020). AI represents the latest and most transformative development, combining machine learning, natural language processing, and predictive analytics to automate tasks once thought to require human intelligence (Kokina & Davenport, 2017). Unlike earlier tools, AI introduces adaptive capabilities, enabling systems to learn from data and improving performance over time.

Historically, the adoption of technology in accounting has followed a trajectory of displacement and upskilling. While earlier waves raised concerns about job losses, they ultimately redefined roles, emphasising interpretation and decision-making over mechanical computation (Richins et al., 2017). AI continues this trajectory, but at a more disruptive scale, raising questions about the way in which accountants might adapt their core competencies so as to remain relevant.

Current literature identifies multiple applications of AI in accounting and auditing. These include:

- Automation of routine tasks: Data entry, transaction classification, reconciliations, and compliance reporting are increasingly automated, reducing manual workloads (Hasan, 2022; Stancheva-Todorova, 2018).
- Fraud detection and risk assessment: AI systems analyse large datasets to detect anomalies and patterns associated with fraud or errors, enhancing audit quality (Issa et al., 2016; Li & Zheng, 2018).
- Predictive analytics: AI supports forecasting and decision-making by identifying trends in financial and non-financial data (Appelbaum et al., 2020).
- Natural language processing: Tools such as robotic process automation (RPA) and NLP-based systems assist in analysing contracts, reports, and disclosures (Moll & Yigitbasioglu, 2019).

These applications suggest a paradigm shift: accountants must develop competencies not only in interpreting financial data but also in understanding, managing, and integrating AI systems into practice.

2.5 Impact on Big Four firms

All Big Four firms have rolled out proprietary AI-driven audit technologies:

- KPMG Clara, which uses AI for anomaly detection
- PwC's Halo, integrating automation in audit sampling
- Deloitte Omnia, an AI-supported audit delivery system
- EY Canvas and EY Helix, using machine learning for analytics

Since 2023, all four firms have begun integrating generative AI modules, some built on GPT-4 and similar models to improve audit documentation, analysis, and workflow management. For example, PwC's adoption of ChatGPT Enterprise in 2023 is cited as one of the earliest widespread uses of generative AI in professional services.

The rise of ChatGPT and generative AI emphasises digital literacy, data governance, ethical judgment, critical evaluation of machine-generated insights, written communication enhanced by AI collaboration and an understanding of risks related to confidentiality and cybersecurity. These competencies align with SAICA's CA of the Future framework but require deeper integration within training and practical experience.

2.6 Digital transformation in finance and its impact on competencies

Digital transformation in finance includes cloud migration, RPA, blockchain, advanced analytics, and AI-enabled ERP systems. These technologies redefine financial reporting processes, internal control environments, and risk management structures.

Recent literature identifies several trends:

- Automation of Financial Close Processes - Modern ERP systems use AI to automate reconciliations, journal entries, and variance analysis (Appelbaum et al., 2020).
- Rise of Predictive Analytics - Predictive algorithms enhance budgeting, forecasting, and scenario modelling, transforming traditional management accounting roles.

- AI-Enhanced Governance - Machine learning tools support internal auditors by identifying anomalies and strengthening internal controls.
- Cybersecurity Competencies - Digital transformation introduces new risks requiring accountants to understand data privacy, cyber resilience, and digital governance frameworks.

The integrated reports of Top 20 JSE-listed companies reveal growing investment in AI, data analytics, and automation, particularly in sectors such as banking, telecommunications, and retail. These investments create roles that require hybrid finance–technology competencies.

However, South African firms face distinct challenges such as legacy IT systems, skills shortages, budget constraints in non-multinational firms, and the need for transformation-aligned training pathways. As a result, many South African CAs (SA) report feeling underprepared to work effectively in digital-first environments (Brands et al., 2024).

2.7 Evolution of competencies required in an AI-Driven accounting environment

Since 2018, the accounting profession has experienced a significant shift in the competencies required to function effectively in AI-enhanced environments. Traditional competencies—such as financial reporting accuracy, auditing rigor, tax knowledge, and regulatory analysis—are no longer sufficient on their own. The literature shows a clear shift toward hybrid competencies that combine technical accounting knowledge with technological fluency, data literacy, ethical reasoning, adaptability, and the ability to manage and interpret machine-generated insights.

2.7.1 Digital and technological literacy

Digital literacy has become the foundational competency for accountants working alongside AI. Li and Zheng (2018) emphasise that accountants must understand not only how AI systems operate, but also their limitations, data dependencies, and implications for financial accuracy. Technological literacy now goes beyond basic software proficiency; it includes competencies in:

- machine learning principles
- robotic process automation
- cloud accounting ecosystems
- data analytics and visualisation
- AI governance and audit algorithms

Appelbaum et al. (2020) note that accountants must be able to interpret outputs from AI systems, assess their reliability, and integrate them into financial workflows. In South Africa, digital literacy remains uneven, with larger firms and the Big Four investing heavily in AI infrastructure while many smaller audit firms lack access to advanced tools (Barac et al., 2021). This disparity contributes to competency gaps within the profession.

2.7.2 Critical thinking and analytical reasoning

AI's ability to automate low-value transactional tasks pushes accountants toward roles requiring judgment, interpretation, and contextual understanding. Scholars such as Richins et al. (2017) and Moll and Yigitbasioglu (2019) argue that critical thinking proves to be increasingly important because accountants must challenge AI outputs, identify anomalies missed by machine learning models, and make decisions under uncertainty.

The South African corporate environment reinforces this demand. JSE-listed companies operating in complex regulatory and socio-economic landscapes require accountants who can integrate AI-generated insights with sector-specific risks, transformation imperatives, and governance expectations.

2.7.3 Ethical judgment and data governance

Ethical competence emerges as a dominant theme in the post-2018 literature. AI systems raise concerns regarding:

- algorithmic bias
- opaque decision-making
- data privacy
- cybersecurity
- accountability gaps

Stancu and Dutescu (2021) argue that ethical reasoning ought to expand to include AI-specific issues such as reliability of automated evidence, fairness in automated financial decisions, and transparency in internal control environments. In South Africa, where governance failures and public mistrust have intensified the scrutiny of auditors, these competencies become even more critical. SAICA (2021) has incorporated ethics as a pillar in the CA of the Future framework, emphasising the need to ensure ethical use of AI in financial reporting and auditing.

2.7.4 Advisory and strategic competencies

As automation increases efficiency, accountants are expected to shift towards advisory roles that influence strategy, governance, and organisational decision-making. Celestin and Vanitha (2020) highlight that AI frees accountants from repetitive tasks, enabling them to contribute to long-term value creation. IFAC (2022) similarly recognises the importance of strategic advisory skills, including scenario modelling, integrated thinking, and financial storytelling.

In South Africa, this mirrors the corporate shift toward integrated reporting and ESG-aligned strategies. Accountants are being positioned as strategic partners, rather than purely compliance-focused professionals.

2.7.5 Communication and interpersonal skills

AI tools, particularly generative AI like ChatGPT, reshape communication processes. Accountants must be able to explain AI-generated insights to non-experts, translate complex data into business implications, communicate risks and limitations of automated processes and collaborate across multidisciplinary teams. Brands et al. (2024) find that South African accountants recognise the

importance of soft skills in navigating technology-driven workplace transformations. This aligns with global findings that highlight emotional intelligence and communication as differentiators in an increasingly automated profession.

2.8 The SAICA CA of the Future Competency Framework and Its Alignment with AI

Trends

Competency frameworks serve as structured guides for the skills, knowledge, and behaviours expected of accounting professionals. They are particularly important in ensuring that chartered accountants (CAs) remain relevant as the profession evolves in response to technological disruption, including AI (IAESB, 2019; IFAC, 2019). Traditional frameworks emphasised technical expertise—financial reporting, auditing, taxation, and compliance—but contemporary frameworks increasingly incorporate soft skills, ethical judgment, and technological literacy (Moll & Yigitbasioglu, 2019; Stancu & Dutescu, 2021).

Globally, frameworks such as the International Education Standards (IES) by IAESB (2019) and IFAC's Future-Fit Accountants (2019) articulate competencies required for the modern accountant. These include not only traditional technical skills, but also professional values, strategic thinking, leadership, and technological literacy. Competency frameworks thus serve as both a benchmark for professional development and a roadmap for aligning education with the evolving expectations of employers, regulators, and society.

AI adoption has introduced a paradigm shift in the competency expectations for accountants. Tasks once considered core, namely transaction processing, reconciliations, and data verification, are becoming ever-increasingly automated (Celestin & Vanitha, 2020; Kokina & Davenport, 2017). Consequently, accountants ought to develop higher-order competencies, including:

- Digital and technological literacy: Understanding AI, data analytics, RPA, and blockchain technologies to interpret outputs and assess reliability (Li & Zheng, 2018; Appelbaum et al., 2020).
- Critical thinking and problem-solving: Analysing AI-generated data and translating it into actionable business insights (Moll & Yigitbasioglu, 2019; Richins et al., 2017).
- Ethical judgment and governance: Ensuring transparency, accountability, and compliance in AI-supported processes (Stancheva-Todorova, 2018; Stancu & Dutescu, 2021).

- Strategic advisory capabilities: Shifting from technical execution to providing guidance on organisational strategy, risk management, and decision-making (Celestin & Vanitha, 2020; Greenman, 2017).
- Communication and interpersonal skills: Explaining complex AI-driven insights to stakeholders and clients in an understandable manner (Barac et al., 2021; Brands et al., 2024).

This evolution reflects the notion of the “augmented accountant,” who integrates technological tools with professional judgment in order to provide higher-value services. AI is not expected to replace accountants, but to reshape their competencies, emphasising interpretation, ethical reasoning, and strategic contribution (Li & Zheng, 2018).

International frameworks have increasingly recognised the role of AI and digital skills in accounting. For instance, IFAC’s Future-Ready Accountants (2022) emphasises digital fluency, analytical thinking, and ethical decision-making as essential for accountants operating in an AI-enabled environment. Similarly, Appelbaum et al. (2020) highlight that exposure to business analytics and enterprise systems enhances managerial accounting capabilities, while Kokina and Davenport (2017) stress that understanding automation allows accountants to manage, interpret, and govern AI processes effectively.

These frameworks suggest a dual focus, where accountants ought to retain strong foundational knowledge, while integrating competencies that enable them to work alongside intelligent systems. Importantly, digital literacy is no longer optional, but in fact central to professional identity. Competency development thus requires structured education, ongoing professional development, and exposure to AI-driven tools in practice settings.

2.9 SAICA and the CA of the Future Competency Framework

SAICA has proactively addressed AI-related competency requirements through the CA of the Future framework, which delineates the knowledge, skills, and behaviours expected of future-ready chartered accountants (SAICA, 2021). The framework emphasises three broad domains:

Technical competencies: Beyond traditional expertise in financial reporting, taxation, and auditing, the framework incorporates digital literacy, data analytics, and familiarity with AI-based tools.

Accountants are expected to interpret machine-generated outputs critically and integrate insights into organisational decision-making.

Professional competencies: The framework emphasises ethical judgment, governance, strategic thinking, and advisory skills. Given that AI introduces new forms of risk—algorithmic bias, errors, and lack of transparency—ethical reasoning becomes a core critical competency.

Personal competencies: Leadership, adaptability, resilience, and lifelong learning are central to ensuring that accountants can navigate technological disruptions and changing organisational contexts (Barac et al., 2021; Brands et al., 2024).

By integrating these domains, the CA of the Future framework positions South African CAs to operate effectively in an AI-enhanced accounting environment. It also aligns with global trends in accounting education, including IFAC’s Future-Ready Accountants framework.

The CA of the Future framework explicitly incorporates digital literacy, data analytics, and AI awareness as foundational competencies, reflecting the increasing role of technology in accounting processes. (SAICA, 2021) By emphasising a balance between traditional expertise and AI-related capabilities, SAICA aims to ensure that South African CAs remain globally competitive, while addressing local market realities.

Despite the existence of formal frameworks, research indicates gaps between required and current competencies. Brands et al. (2024) report that South African CAs recognise the importance of AI, but often lack confidence in applying digital tools effectively. Kwarbai (2021) similarly highlights that many accounting professionals are underprepared for AI-driven environments, reflecting gaps in education and ongoing professional development.

Training programmes and curricula must therefore adapt to bridge these gaps. Stancu and Dutescu (2021) argue that competency development ought to be continuous and multidimensional, incorporating technical proficiency, analytical capabilities, and ethical judgment. Additionally, smaller firms face certain challenges in providing access to AI tools and training, highlighting a resource-based inequality in competency development (Omar et al., 2017).

The literature collectively demonstrates that AI is reshaping the competencies required of accountants at both global and South African levels. Frameworks such as IFAC’s Future-Ready

Accountants and SAICA's CA of the Future articulate the need for a blend of technical, professional, and personal competencies. South African CAs must, therefore, cultivate hybrid skill sets that integrate traditional expertise with AI-related capabilities, enabling them to operate effectively in complex and technologically enabled professional environments.

The adoption of AI within the South African accounting profession reflects both global trends and local contextual factors. South Africa exhibits a dual economy, with highly sophisticated corporate environments alongside resource-constrained small and medium-sized enterprises (SMEs). This duality affects the diffusion of AI technologies and, consequently, the competencies demanded of chartered accountants (CAs) (Omar et al., 2017).

Empirical studies suggest that while large South African firms have adopted AI-driven tools for auditing, fraud detection, and analytics, smaller firms lag due to cost, infrastructure, and skills limitations (Kwarbai, 2021). For example, automated data processing and predictive analytics are increasingly common in multinational firms, enhancing the efficiency and accuracy of financial reporting. In contrast, SMEs often rely on traditional processes, limiting exposure to AI systems and restricting the development of related competencies among accountants employed in these contexts.

The uneven adoption of AI highlights a central challenge, namely that competency development is closely tied to technology exposure. Accountants in high-adoption firms are more likely to acquire skills in data analytics, machine learning, and AI governance, while those in low-adoption environments risk lagging in the digital skills required for the modern profession (Barac et al., 2021; Omar et al., 2017).

SAICA's CA of the Future competency framework, finalised in 2021, incorporates many of the competencies identified in international literature. It outlines four key areas, namely:

- Technical Competence
- Professional Values and Attitudes
- Enabling Competencies
- Digital Acumen

2.9.1 Strengths of CA of the Future in Addressing AI Demands

SAICA's framework aligns strongly with literature themes in several areas:

- Digital Acumen: Recognises digital literacy, data analytics, and technology governance as essential competencies.
- Professional Judgment and Ethics: Reflects global concerns around AI ethics and accountability.
- Adaptability and Lifelong Learning: Acknowledges the need for continuous upskilling due to rapid technological changes.
- Strategic Insight: Aligns with trends toward advisory-driven accounting roles.

Barac et al. (2021) argue that CA of the Future represents a forward-looking shift in professional training, positioning South African accountants to compete in global digital workplaces.

2.9.2 Gaps and limitations identified in the broader literature

Despite its strengths, several gaps remain:

- Implementation Lag: Brands et al. (2024) highlight that, although SAICA's competency framework is comprehensive, universities and training offices differ in their capacity to implement AI-related competencies.
- Technological Infrastructure and Access: Smaller audit firms and training offices lack access to AI tools, leading to uneven readiness among trainees.
- Practical Exposure: The broader literature emphasises the need for experiential learning with AI tools, which remains limited in many South African workplaces.
- Generative AI Considerations: The framework predates the emergence of ChatGPT (2022) and does not explicitly address LLM-specific competencies such as prompt engineering, AI auditing, or generative AI risk assessment.

Thus, while CA of the Future is theoretically aligned with global standards, practical implementation challenges remain.

2.9.3 Comparison with international competency models

A comparison reveals both convergence and divergence with global models

Table 1 Comparison with International Competency Models

Framework	Strengths	Limitations
SAICA CA of the Future	Emphasis on ethics, digital acumen, lifelong learning	Limited generative AI coverage; implementation disparities
IFAC Future-Ready Accountant (2022)	Strong focus on analytics and AI governance	Less contextualised for developing markets
CPA Canada Competency Map (2021)	Detailed guidance on data analytics and digital integration	Less emphasis on socio-economic constraints
ACCA Professional Skills Framework (2020)	Strong integration of soft skills and strategic capabilities	Less depth on AI ethics

This comparison reinforces the need for SAICA to continuously update competencies to match global advancements.

2.10 Applications of AI in auditing and assurance (Big Four focus)

The Big Four accounting firms remain global leaders in AI adoption within audit and assurance. Post-2018 literature demonstrates a major shift from experimental pilots to integrated, enterprise-level AI audit systems.

2.10.1 KPMG – Clara platform

KPMG Clara integrates machine learning and advanced analytics to:

- identify unusual transactions;
- automate documentation;
- analyse full populations of data; and
- support risk assessments.

Recent enhancements include embedding generative AI modules to summarise audit evidence and automate narrative components of audit files.

2.10.2 PwC – Halo and ChatGPT enterprise integration

PwC's Halo suite improves audit evidence collection, while the firm's 2023 announcement of adopting ChatGPT Enterprise marks a milestone in generative AI adoption. Generative AI is now used to:

- draft audit memos;
- prepare IFRS research summaries;
- streamline internal consultation workflows; and
- perform code checks during IT audits.

2.10.3 Deloitte – Omnia AI ecosystem

Deloitte Omnia embeds AI in the full audit lifecycle. It supports:

- predictive anomaly detection;
- automated audit planning;
- extraction and analysis of financial documents; and
- risk evaluation through machine learning.

Deloitte has also deployed GPT-based internal tools to support audit documentation.

2.10.4 EY – Canvas and Helix

EY's Helix analytics platform uses AI to:

- detect anomalies across entire datasets'
- interrogate journal entries; and
- perform fraud risk analytics.

Canvas integrates these capabilities with workflow management and collaboration tools, increasingly enhanced by generative AI.

2.10.5 Divergent perspectives in audit AI literature

The literature presents both aligned and diverging views:

Convergence

- AI enhances audit quality and reduces human error (Li & Zheng, 2018);
- AI improves fraud detection through anomaly analysis (Issa et al., 2016); and
- Human auditors remain essential for judgment-based decisions.

Table 2: Divergence in perspectives

Theme	Optimistic View	Critical View
AI reliability	Machine learning improves accuracy and reduces sampling risk (Appelbaum et al., 2020).	AI can misclassify patterns and yield biased outputs (Stancu & Dutescu, 2021).
Workforce impact	Auditors transition to strategic roles (IFAC, 2022).	Entry-level roles may shrink, limiting training opportunities.
Ethical risks	AI augments professional skepticism.	Lack of transparency (black box AI) impairs audit judgment.

These contrasting views highlight the complexity of integrating AI into assurance practices.

2.11 Impact of AI adoption on South African accounting practice

South Africa's accounting environment presents a unique blend of opportunities and constraints.

2.11.1 AI Adoption among JSE-listed companies

Integrated reports reveal significant investments in AI-driven financial analytics, automated internal controls, digital transformation strategies, cybersecurity systems and predictive analytics for cash flow and risk modelling. Banks and telecommunications firms lead adoption, while resources, energy, and logistics sectors follow more gradually.

2.11.2 Barriers to adoption

Studies highlight several challenges:

- Economic constraints: Limited budgets restrict investment in advanced technologies.
- IT infrastructure gaps: Legacy systems complicate integration.
- Skills shortages: Data analysts, AI engineers, and hybrid finance-tech professionals are in short supply.
- Regulatory uncertainty: Limited guidance exists for AI in audit and financial reporting.

2.10.2 Professional competency gaps

While frameworks outline desired competencies, research indicates significant gaps in actual preparedness among South African accountants. Brands, Mayer, and Oosthuizen (2024) found that although CAs acknowledge the disruptive potential of AI, many feel underprepared to integrate AI tools into their professional practice. Similarly, Kwarbai (2021) observes that exposure to AI technologies during professional training proves inconsistent, resulting in a disparity between awareness of AI and the ability to apply it effectively.

These gaps have practical consequences, where accountants lacking digital literacy and AI awareness may struggle to interpret machine-generated outputs, advise clients accurately, or fulfill governance responsibilities effectively. In turn, this can affect organisational decision-making, audit quality, and regulatory compliance, highlighting the critical importance of aligning professional training with emerging technological demands (Stancu & Dutescu, 2021).

- Brands et al. (2024) show that:
- younger CAs feel more digitally prepared;
- mid-career professionals feel overwhelmed; and
- trainees struggle due to lack of access to AI tools.

This contributes to uneven competency development across the profession.

2.11.3 AI-driven competencies in the South African accounting profession

Based on the literature, the competencies most impacted by AI adoption in South Africa include:

- Data and technological literacy: Proficiency in AI tools, data analytics, and business intelligence systems is increasingly essential (Li & Zheng, 2018; Appelbaum et al., 2020).
- Critical and strategic thinking: Accountants must analyse AI outputs, identify patterns, and provide actionable insights for strategic decision-making (Celestin & Vanitha, 2020; Moll & Yigitbasioglu, 2019).
- Ethical reasoning and governance: Ethical considerations are paramount in AI-enabled environments, where accountability for automated processes must be maintained (Stancheva-Todorova, 2018; Stancu & Dutescu, 2021).
- Communication and advisory skills: As accountants transition from technical execution to advisory roles, the ability to convey complex AI-generated insights to clients and stakeholders becomes critical (Barac et al., 2021; Brands et al., 2024).
- Adaptability and lifelong learning: Rapid technological change necessitates continuous skill upgrading, reinforcing the importance of professional development initiatives (IFAC, 2022; SAICA, 2021).

These competencies reflect a hybrid professional profile, where traditional accounting expertise is complemented by technological, ethical, and strategic capabilities.

The literature emphasises the pivotal role of education in equipping South African accountants for AI-enhanced roles. Professional training programmes, universities, and CPD (continuing professional development) initiatives must integrate AI literacy, data analytics, and ethical reasoning into curricula (Kwarbai, 2021; Stancu & Dutescu, 2021).

Barac et al. (2021) argue that curricula ought to move beyond technical training to include experiential learning with AI tools, problem-solving exercises, and interdisciplinary collaboration. This aligns with IFAC (2019, 2022) recommendations that accountants develop competencies enabling them to interpret, govern, and leverage intelligent systems.

The South African context also requires addressing resource disparities. Smaller firms often lack access to AI technologies, limiting experiential learning opportunities. This suggests the need for

centralised training initiatives, partnerships with technology providers, and national-level policy support to ensure equitable competency development across the profession (Omar et al., 2017).

2.11.4 Challenges in aligning competencies with AI

Despite progress, several challenges remain in aligning competencies with AI adoption:

- Uneven technology adoption: firms differ in their capacity to implement due to lack of funds or lack of interest into investment in AI, leading to competency disparities among accountants.
- Rapidly evolving technologies: the pace of AI innovation requires accountants to engage in continuous learning to remain relevant (IFAC, 2022).
- Ethical and regulatory gaps: AI introduces novel governance challenges, including algorithmic bias, accountability, and privacy concerns, necessitating advanced ethical competencies (Stancheva-Todorova, 2018).
- Integration with traditional skills: balancing AI-related competencies with foundational accounting knowledge remains a challenge for education and professional development providers (Kwarbai, 2021).

Addressing these challenges requires a coordinated effort between professional bodies, educators, and employers to design interventions that ensure CAs can thrive in AI-enabled environments.

The South African literature demonstrates that AI significantly influences the competencies required of chartered accountants. While traditional technical skills remain foundational, the profession increasingly values hybrid competencies that integrate technological literacy, strategic thinking, ethical judgment, and communication skills. Professional bodies such as SAICA, through the CA of the Future framework, are instrumental in guiding this transition.

Empirical studies suggest that, while awareness of AI's impact is high, preparedness remains uneven, particularly in SMEs and among mid-career professionals. Addressing these gaps requires proactive educational initiatives, structured professional development, and access to AI-enabled tools across firms of all sizes. By developing hybrid competencies, South African CAs can maintain relevance, safeguard public trust, and provide high-value advisory services in an AI-driven environment.

The CA of the Future journey, as outlined on the SAICA website, is titled “Pathways to Relevance”. SAICA has indicated their response to the ever-changing world by undertaking a number of strategic initiatives including the CA of the Future programme, which focuses on the development of a competency framework; the CA Pathways to Relevance (CAPtR) programme, which serves as guidance for how competencies that should be displayed; and finally, the CPD Policy, which recognises the different ways in which members further develop their professional competence post qualification.

While artificial intelligence (AI) offers transformative potential for the accounting profession, it also introduces significant challenges and tensions that influence the competencies required of chartered accountants (CAs). These challenges arise from technological, ethical, educational, and organisational dimensions. For South African CAs, these tensions are compounded by the dual economy, uneven adoption of AI, and resource constraints across firms of varying sizes (Omar et al., 2017; Barac et al., 2021).

Understanding these challenges is critical, as they define the skill gaps, professional risks, and strategic imperatives necessary for accountants to remain relevant in an AI-enhanced environment.

A central tension in the literature concerns whether AI will displace human accountants or augment their roles. Early fears of automation-driven job losses have largely been mitigated by empirical evidence showing that AI primarily automates repetitive tasks, while creating opportunities for higher-value work (Celestin & Vanitha, 2020; Li & Zheng, 2018).

Celestin and Vanitha (2020) report that AI adoption increases efficiency by approximately 25%, but does not outperform human judgment in strategic or interpretative tasks. Similarly, Li and Zheng (2018) emphasise that accountants are indispensable in roles requiring ethical judgment, interpretation of AI outputs, and advisory services. These findings support the notion of role augmentation, where AI complements human expertise, rather than replaces it.

Nonetheless, the tension remains real. Transactional accountants may face displacement or reallocation, necessitating upskilling in digital literacy, analytics, and advisory competencies (Kokina & Davenport, 2017; Stancheva-Todorova, 2018). For South African firms, especially SMEs with limited resources, this transition is particularly challenging, where employees may lack

access to AI tools and training, leading to uneven skill development and potential workforce vulnerability (Omar et al., 2017).

2.11.5 Ethical and governance challenges

AI introduces novel ethical and governance dilemmas that require specialised competencies. Algorithmic decision-making can generate biased outcomes, opaque processes, and accountability gaps (Stancu & Dutescu, 2021; Moll & Yigitbasioglu, 2019). For accountants, this necessitates competencies in:

- Evaluating AI outputs for fairness and accuracy;
- Ensuring compliance with professional and regulatory standards; and
- Advising organisations on ethical deployment of AI in financial reporting and decision-making.

In the South African context, where governance failures and audit irregularities have historically eroded public trust, these ethical competencies are especially critical (SAICA, 2021). Accountants must not only understand AI technologies, but also anticipate and mitigate risks associated with algorithmic bias and unintended consequences (Stancheva-Todorova, 2018).

2.11.6 Adoption barriers and Uneven Competency Development

Despite recognition of AI's benefits, adoption remains uneven across South African accounting practices. Large multinational firms are more likely to integrate AI for auditing, analytics, and advisory services, providing their accountants with exposure to AI-enabled processes and competencies (Barac et al., 2021). Conversely, smaller firms often face:

- Resource constraints limiting access to AI systems;
- Insufficient training opportunities for digital and analytical skills; and
- Resistance to change due to cultural or operational inertia.

These disparities result in competency gaps across the profession. Accountants in smaller firms may lag in data analytics, AI literacy, and strategic advisory skills, reducing their competitiveness and limiting career mobility (Kwarbai, 2021; Omar et al., 2017).

2.11.7 Educational and training gaps

The literature highlights a tension between the competencies prescribed in frameworks and those developed in practice. While SAICA's CA of the Future framework (2021) and IFAC guidelines (2019, 2022) emphasise digital literacy, strategic thinking, ethical reasoning and educational programmes often struggle to integrate these skills fully.

Barac et al. (2021) and Stancu and Dutescu (2021) note that curricula may remain heavily focused on technical accounting skills, with limited exposure to AI, data analytics, and technological governance. Furthermore, professional development programmes are often ad hoc or unevenly accessible, leaving mid-career accountants underprepared for AI integration. This misalignment generates stress, uncertainty, and professional tension, particularly for accountants expected to transition from technical execution to advisory and strategic roles.

2.11.8 Integration of AI competencies with traditional skills

Another challenge lies in harmonising AI-related competencies with traditional accounting skills. Competencies such as financial reporting, auditing, and tax compliance remain foundational, but must now be applied in conjunction with:

- Data-driven decision-making;
- AI system oversight; and
- Technology-enabled assurance processes.

This hybrid competency model requires accountants to maintain core technical expertise, while simultaneously mastering new AI-related skills (Celestin & Vanitha, 2020; Li & Zheng, 2018; Greenman, 2017). Balancing these dual demands remains a persistent source of tension for both professionals and educators.

2.11.9 Professional identity and role re-definition

AI also challenges the professional identity of accountants. Traditionally viewed as number-crunchers and compliance specialists, accountants are now expected to assume advisory, strategic, and ethical oversight roles (Brands et al., 2024). This redefinition of roles creates tension within the profession as expectations expand, and competency requirements shift.

Celestin and Vanitha (2020) describe this as the emergence of “augmented accountants”, who collaborate with AI systems to deliver insights, assurance, and strategic guidance. Li and Zheng (2018) similarly emphasise that the integration of technological and ethical competencies is redefining the professional profile, highlighting the importance of continuous learning and adaptability.

The literature indicates that AI creates both opportunities and challenges for the competencies required by chartered accountants. While AI augments human capabilities and enhances efficiency, it also introduces tensions in role definition, ethical governance, competency development, and professional identity. In South Africa, these tensions are amplified by uneven adoption, resource constraints, and gaps in education and training.

Addressing these challenges requires a multidimensional approach:

- Bridging competency gaps through structured professional development and exposure to AI tools.
- Embedding ethical reasoning in both educational curricula and workplace practice.
- Facilitating equitable AI adoption across firms of all sizes to ensure broad-based competency development.
- Reinforcing hybrid skillsets that integrate traditional accounting expertise with digital literacy, critical thinking, and strategic advisory capabilities.

Ultimately, the challenges and tensions highlighted in the literature reinforce the need for a holistic redefinition of competencies by which to ensure that South African chartered accountants remain relevant, effective, and ethically accountable in an AI-enabled profession.

2.11.10 Integrating global and South African perspectives

The literature reviewed underscores a global consensus, namely that artificial intelligence (AI) is fundamentally transforming the competencies required of accountants. On a global scale, AI automates transactional tasks, enhances audit efficiency, and facilitates predictive and prescriptive analytics (Appelbaum et al., 2020; Kokina & Davenport, 2017). Accountants are increasingly required to integrate technological literacy, critical thinking, ethical judgment, and strategic advisory capabilities into their professional repertoire (Issa et al., 2016; Richins et al., 2017).

South African studies echo this global trend, while highlighting contextual nuances. Barac, Plant, and Olivier (2021) emphasise the need for adaptability and resilience among chartered accountants (CAs) in response to Fourth Industrial Revolution (4IR) technologies. Brands, Mayer, and Oosthuizen (2024) demonstrate that, while South African CAs are aware of AI's potential, many lack sufficient preparedness to utilise AI tools effectively. SAICA's CA of the Future framework (2021) responds to these gaps by integrating digital literacy, ethical reasoning, strategic thinking, and lifelong learning into competency requirements, providing a structured pathway for developing future-ready accountants.

The synthesis of these findings suggests that AI does not diminish the value of accountants; rather, it redefines their roles. Celestin and Vanitha (2020) argue that AI augments accountants' capabilities, allowing them to focus on interpretation, advisory services, and strategic oversight. Similarly, Li and Zheng (2018) highlight the necessity of hybrid competencies that combine traditional accounting expertise with AI-driven analytical and ethical skills. This redefinition of roles underscores the importance of continuous professional development in maintaining competency relevance.

Drawing from the reviewed literature, a hybrid competency model emerges, comprising three interrelated dimensions which are technical, professional, and personal competencies.

Technical Competencies: These include foundational accounting knowledge, such as financial reporting, auditing, and taxation, which remain essential for regulatory compliance and professional credibility (Kwarbai, 2021; Stancu & Dutescu, 2021). AI integration requires additional skills in data analytics, AI tool interpretation, and technology governance (Appelbaum et al., 2020; Li & Zheng, 2018).

Professional Competencies: Professional skills encompass ethical reasoning, governance, advisory, and strategic decision-making. AI amplifies the need for ethical vigilance, given potential algorithmic biases, and transparency issues (Moll & Yigitbasioglu, 2019; Stancheva-Todorova, 2018). Accountants must also leverage AI insights to inform strategic organisational decisions, reflecting a shift from technical execution to value creation (Celestin & Vanitha, 2020; Greenman, 2017).

Personal Competencies: Personal competencies include adaptability, resilience, continuous learning, and communication skills. AI-driven changes in the accounting profession require accountants to remain agile, embrace lifelong learning, and effectively communicate complex insights to stakeholders (Barac et al., 2021; Brands et al., 2024).

This model emphasises integration rather than replacement, reflecting the augmented role of accountants in an AI-enhanced environment. By balancing technical, professional, and personal competencies, accountants can navigate technological disruption while maintaining ethical and strategic responsibilities.

2.11.11 Conceptual framework

Based on the hybrid competency model, a conceptual framework can be proposed to illustrate the influence of AI on chartered accountant competencies in South Africa. The framework conceptualises the relationship between AI adoption, competency development, and professional effectiveness, as follows:

AI Adoption: Exposure to AI tools, data analytics systems, and automation technologies within accounting practice.

Competency Development: Enhancement of hybrid skills encompassing technical, professional, and personal competencies.

Professional Effectiveness: Improved decision-making, strategic advisory capacity, ethical governance, and value creation for clients and organisations.

Mediating Factors: Firm size, access to technology, professional development programmes, and regulatory frameworks (Omar et al., 2017; SAICA, 2021).

The framework suggests that AI adoption directly influences competency development by necessitating hybrid skills. Mediating factors such as resource availability, training, and organisational support determine the extent to which accountants can acquire and apply these competencies effectively. Professional effectiveness, in turn, is the outcome of successfully integrating traditional accounting knowledge with AI-enabled capabilities.

2.11.12 Implications for professional development and education

The hybrid competency framework has several implications for South African accountants, educators, and professional bodies:

Curriculum Alignment: Accounting curricula must integrate AI literacy, data analytics, and technology governance alongside traditional accounting knowledge (IFAC, 2022; Stancu & Dutescu, 2021).

Continuous Professional Development (CPD): Lifelong learning initiatives should provide exposure to emerging AI tools, ethical decision-making, and strategic advisory practices (Barac et al., 2021; Brands et al., 2024).

Equitable Access: Resource disparities between large firms and SMEs require policies that enable equitable access to AI tools and training to reduce competency gaps (Omar et al., 2017).

Ethical Emphasis: AI integration necessitates formalised training in ethics and governance to ensure accountability in automated processes (Moll & Yigitbasioglu, 2019; Stancheva-Todorova, 2018).

By adopting a structured approach to competency development, South African accountants can leverage AI to enhance professional effectiveness while maintaining public trust and ethical standards.

The synthesis of global and South African literature highlights that AI reshapes the professional landscape without rendering accountants obsolete. Instead, it necessitates the development of hybrid competencies integrating technical expertise, professional judgment, and personal adaptability. SAICA's CA of the Future framework exemplifies the alignment of professional expectations with AI-driven realities, emphasising digital literacy, ethical governance, and lifelong learning.

In conclusion, the conceptual framework positions AI as both a catalyst for competency evolution and a mediator of professional effectiveness. By understanding the interplay between AI adoption, competency development, and mediating factors, South African chartered accountants can strategically navigate technological disruption, while enhancing their advisory, governance, and analytical roles (Barac et al., 2021; Celestin & Vanitha, 2020; Li & Zheng, 2018).

Although there are many studies exploring the effect of AI on the accounting profession, there remain many gaps for exploration with regards to AI implementation in industry, particularly in listed companies. The question arises as to the limitations of AI which is where the competencies acquired by a CA (SA) will become key. The study delves deeper into what skills and competencies are required in these companies. It was also suggested through the limitations of another study by Kwarbai that further exploration ought to be carried out in areas other than accounting profession with assurance and consultancy firms, and ought to focus on other types of companies in other sectors listed on the Nigerian Stock Exchange (Kwarbai, 2021). In this study, companies listed on the JSE are evaluated.

Another study performed in Malaysia for listed companies found that, whilst listed companies are pressured to implement AI due to its benefits, there are also several onerous challenges faced by these companies which “range from the horrible to incredible, and it might be impossible to be avoided. Thus, companies need to monitor the incoming changes and adopt the best strategy for companies’ sustainability. Among the challenges discussed in this study are behavioral and legal concerns in response to AI to name a few” (Omar et al., 2017, p. 7).

There are numerous studies performed with similar objectives to the study to be performed in line with the specific objectives outlined here. This study draws from studies already performed to achieve the research objectives and answer the proposed research questions. AI is still fairly new for most companies and accounting firms, its efficacies are a novel consideration. The study addresses the research lacuna regarding the use of AI at listed companies on the JSE and Big Four accounting firms, considering the competencies set out by SAICA.

2.12 Global literature on AI-induced transformation in accounting roles

The global literature since 2018 consistently illustrates that AI is reshaping accounting roles more fundamentally than any prior technological wave. While earlier automation targeted transactional activities, the rise of machine learning, natural language processing, and generative AI has expanded automation to analytical, interpretive, and cognitive tasks. As a result, the profession is experiencing a reconfiguration of responsibilities, workflows, and value creation.

2.12.1 Automation of routine and intermediate tasks

Scholars such as Appelbaum et al. (2020) and Kokina and Davenport (2017) note that AI excels at repetitive tasks, such as matching, reconciliation, classification, and document processing, but post-2018 literature extends this argument to consider that AI systems now perform intermediate-level tasks that traditionally required human cognition.

These include:

- preliminary audit risk assessments;
- variance analysis;
- journal entry anomaly detection;
- financial statement consistency checks; and
- drafting technical accounting explanations.

With the advent of generative AI, these capabilities have expanded further. Research from 2023–2025 indicates that large language models (LLMs) can summarise financial data, interpret accounting standards, and produce narrative sections of annual reports. This raises questions about how much of a financial professional’s role can be automated.

2.12.2 The rise of hybrid human–AI roles

Researchers such as that by Marcella and Rowlands (2023) argue that accountants are no longer expected to function as independent processors of financial information. Instead, roles have transformed into hybrid arrangements, where professionals rely on AI to handle data-heavy tasks, while they focus on interpreting insights, exercising judgment, and communicating implications. The hybrid role model is increasingly prominent across Big Four firms, multinational corporations, and digitally advanced organisations.

In South Africa, this shift is evident in sectors such as banking (e.g., Standard Bank, Nedbank), telecommunications (e.g., MTN, Vodacom), and retail (e.g., Shoprite), where AI-supported finance operations require accountants to collaborate with data scientists, system engineers, and digital transformation teams. This interdisciplinary environment reinforces the need for competencies such as communication, agility, and systems thinking.

2.12.3 Changing training and career pathways

International literature identifies major disruptions in the traditional “entry-level apprenticeship model”, where trainees historically learned through manual testing, vouching, casting, and reconciliation work. AI now automates many of these tasks, reducing learning opportunities for junior accountants.

This concern is highlighted by West and Allen (2021), who argue that AI threatens the developmental pipeline for future auditors. Conversely, others such as IFAC (2022) suggest that the shift presents an opportunity to redesign training models to be more aligned with analytical work and strategic thinking.

South African literature echoes these concerns. Brands et al. (2024) note that trainees in large firms benefit from AI exposure, but those in mid-tier firms risk falling behind, due to limited access to advanced tools. This disparity may eventually create unequal career prospects within the profession.

2.13 Implications of generative AI (ChatGPT) on accounting tasks

The emergence of ChatGPT and other generative AI tools since 2022 represents a significant disruption to knowledge-intensive tasks. Unlike earlier AI models, LLMs demonstrate competencies in reasoning, summarisation, drafting, and contextual interpretation. These capabilities have specific implications for accounting workflows.

2.13.1 Enhancement of technical research

ChatGPT can summarise IFRS standards, interpret technical accounting treatments, and synthesise complex regulatory documents. This substantially accelerates research tasks, especially in areas such as:

- IFRS 9 credit loss modelling
- IFRS 15 revenue recognition
- IFRS 16 lease classification
- IAS 12 deferred tax calculations
- ISA 315 risk assessment

While ChatGPT does not replace the need for technical judgment, it reduces time spent gathering and structuring information. However, scholars such as Dwivedi et al. (2023) warn that LLMs may generate plausible but incorrect interpretations, making verification essential.

2.13.2 Drafting and documentation

Generative AI improves efficiency in drafting audit working papers, internal audit findings, management reports, technical memos, accounting policies and tax opinions. PwC (2023) reports that teams have reduced documentation time by 30–40% using ChatGPT Enterprise, while Deloitte (2024) indicates that generative AI reduces review-cycle bottlenecks by producing first drafts of workpapers with consistent structure.

For South African auditors, where the IRBA mandates thorough documentation, ChatGPT offers potential efficiency gains, but also introduces risks relating to confidentiality, cybersecurity, and content accuracy.

2.13.3 Advisory and decision support

LLMs assist with scenario modelling, risk identification, and financial planning by generating explanations, insights, and business case analyses. These capabilities support CFO advisory work, ESG reporting and strategic planning. This shifts the accountant’s role from performer of analysis to interpreter and evaluator of AI-generated insights.

2.13.4 Ethical and control risks

Generative AI introduces new categories of risk:

- reliance on incorrect information;
- untraceable sources (“black-box reasoning”);
- potential bias in generated narratives;
- data privacy breaches; and
- inappropriate disclosure of client information.

Stancu and Dutescu (2021) highlight that ethical considerations ought to expand to account for algorithmic bias and AI hallucinations, while South African scholars emphasise risks related to POPIA compliance.

2.13.5 Digital transformation and its organisational implications

Digital transformation in finance extends beyond AI adoption; it involves restructuring business processes, systems, culture, and governance to leverage technology for value creation. Literature since 2018 reveals that digital transformation reshapes not only the roles of accountants, but also organisational expectations and financial reporting structures.

2.13.6 Transformation of finance operating models

Scholars such as Moll and Yigitbasioglu (2019) and Appelbaum et al. (2020) describe a shift from traditional finance functions, towards digitally integrated finance ecosystems. These include cloud-based ERP platforms, robotic process automation, data lakes and enterprise analytics, AI-driven internal controls and continuous auditing. These systems generate real-time financial insights, reducing reliance on periodic reporting. CFOs increasingly expect their teams to deliver predictive and forward-looking analytics, requiring stronger analytical and digital skills.

In South Africa, major corporates, such as Absa and Vodacom, have adopted digital finance transformation frameworks involving cloud migration and AI-enabled financial operations. This has accelerated demand for CAs who can manage digital workflows.

2.13.7. Impact on internal controls and risk management

AI-enhanced systems improve internal control effectiveness by identifying anomalies, monitoring transactions, and evaluating risk continuously. Continuous auditing practices have grown in global firms and are gradually gaining traction in South Africa, especially within banking and insurance sectors.

However, the literature identifies challenges when it comes to the overreliance on automated tools and diminished auditor understanding of underlying processes. This also results in increased cybersecurity risks, and the need for AI governance frameworks. South African corporates, particularly in regulated industries, are beginning to adopt AI governance structures that align with King IV principles of technology and information governance.

With regards to the cultural and management implications, digital transformation requires changes in organisational culture and employee mindset which in turn spells changes for leadership strategies and team structures within an organisation. Wesselbaum (2022) argues that AI

implementation fails when employees do not trust the tools or do not feel adequately supported. This is especially relevant in the South African context, where job insecurity and skills shortages create fear around automation. Firms must therefore provide clear communication and training to ensure that AI complements, rather than threatens, employees' roles.

2.14 Divergent views on AI's impact on the accounting profession

The post-2018 literature reveals significant divergence in academic and practitioner views regarding the strategic implications of AI. These differences stem from varying levels of technological optimism, ethical concerns, and perceptions of labor-market disruption.

2.14.1 Optimistic view: AI as a strategic enabler

Optimists argue that AI represents a long-term opportunity for accountants. Scholars such as Li and Zheng (2018) and Appelbaum et al. (2020) highlight the following benefits:

- improved audit quality;
- enhanced fraud detection;
- real-time analytics for decision support;
- reduced manual errors; and
- increased efficiency.

These authors argue that AI elevates the profession by freeing accountants to engage in higher-value activities such as advisory work, strategic planning, and complex analysis.

2.14.2 Critical view: Risks, erosion of skills, and ethical concerns

Critics express concern that AI:

- reduces the need for junior staff, weakening talent pipelines;
- introduces algorithmic bias in financial decisions;
- erodes foundational accounting skills;
- over-automates professional judgment; and
- increases cyber and data-privacy risks.

Stancu and Dutescu (2021) emphasise that AI's lack of transparency undermines the audit process, while West and Allen (2021) warn that the erosion of entry-level work threatens long-term professional development.

South African researchers express additional concerns about the digital divide and inequitable access to AI tooling across firms. Researchers are also concerned about the low readiness for digital transformation and inconsistent university preparedness for aspiring CA(SA)s.

2.14.3 Pragmatic view: Balanced integration

There is a third view—held by organisations such as IFAC (2022) and South African scholars such as Barac et al. (2021)—that represents a pragmatic stance. This perspective acknowledges AI's transformative potential, but stresses the importance of human oversight, ethical frameworks and regulatory adaptation. This perspective is particularly relevant to South Africa, where uneven technological readiness requires careful and balanced integration strategies.

2.15 AI Skills, training, and the future of accounting education

Since 2018, literature on accounting education emphasises that curricula ought to evolve to include digital competencies. Universities are under pressure to teach data analytics and machine learning fundamentals as well as information governance and AI ethics.

2.15.1 Curriculum redesign pressures

International bodies such as AACSB (2020) and IFAC (2022) emphasise the integration of digital competencies and experiential learning. Accounting programmes across Europe, North America, and Asia have begun embedding analytics and AI coursework.

In South Africa, however, the transition is slower. Brands et al. (2024) observe significant differences among universities:

- Some institutions integrate analytics and data management into accounting curricula;
- Others still rely heavily on traditional content; and
- Differences in resource availability create inequities in graduate readiness.

2.15.2 Training office responsibilities

Training offices play a critical role in bridging the competency gap, where Big Four firms provide trainees with access to analytics platforms, AI audit tools, and digital training modules, while mid-tier firms face resource constraints. This creates diverging experiences across trainees, affecting confidence, perceived preparedness, exposure to modern workflows and long-term career opportunities.

2.15.3 Lifelong learning and CPD imperatives

Post-qualification CPD (continuing professional development) now requires accountants to continuously update technological skills. SAICA encourages members to stay current, but literature indicates that:

- many mid-career professionals struggle due to workload pressures;
- older CAs express anxiety about digital demands; and
- younger CAs adapt quickly due to greater digital familiarity.

This generational divide is recognised in literature from around the globe, where younger accountants consistently exhibit stronger digital confidence (IFAC, 2022; PwC, 2023).

2.16 Regulation, governance and ethical considerations for AI in accounting

As AI becomes increasingly embedded within financial reporting and auditing, regulatory and ethical considerations have grown in prominence. Since 2018, global literature emphasises the need for robust AI governance structures to ensure transparency, accountability, and professional integrity. In South Africa, the need for governance is intensified by the country's socio-economic environment, historical governance failures, and public mistrust of corporate reporting.

2.16.1 Global regulatory developments

Internationally, regulatory bodies and standard-setting institutions have begun issuing guidance on AI usage:

- International Federation of Accountants (IFAC) (2022) emphasises the importance of AI governance, data ethics, and robust assurance over AI-generated information.
- The European Commission’s AI Act (2023) proposes classifications of AI risk levels, with high-risk AI systems in finance requiring transparency, auditability and documentation.
- AICPA issued guidance on the impact of AI on assurance engagements, stressing professional skepticism and assessment of AI-generated evidence.

These developments reflect a global consensus that AI must be governed by ethical frameworks that protect stakeholders and ensure accountability.

2.16.2 South African regulatory context

South Africa does not yet have AI-specific legislation, but existing regulatory frameworks shape AI adoption:

- POPIA (Protection of Personal Information Act) governs privacy, data consent, and responsible data processing.
- King IV Report on Corporate Governance includes principles relating to technology governance, requiring boards to ensure responsible use of technology.
- The IRBA (Independent Regulatory Board for Auditors) emphasises audit documentation, professional skepticism, and sufficiency of evidence—principles challenged by AI-generated outputs.

Financial reporting frameworks (IFRS) remain technologically neutral but require transparent and accurate disclosures, regardless of whether AI produced the underlying data.

These frameworks indirectly govern AI usage by requiring oversight, transparency, and ethical judgment, although scholars argue that South Africa will need explicit AI guidance as adoption grows.

2.16.3 Expectations of audit committees and boards

Audit committees require accountants who can explain AI-driven analytics and assure the reliability of automated controls, evaluate cyber and technology risks and ensure compliance with governance codes. The King IV principles require boards to exercise oversight over technology and information governance, placing direct responsibility on CAs for understanding technological risks. This raises expectations significantly, particularly in South Africa's risk-exposed environment, where public confidence in the accounting profession has declined globally due to the prevalence of high-profile financial scandals. AI introduces both opportunities and risks:

Opportunities: Improved fraud detection and more effective internal controls.

Risks: If AI systems fail or introduce new errors, public trust may erode further.

2.16.4 New risks introduced by AI

The introduction of AI creates new categories of risks:

- Model Risk - Incorrect assumptions or data flaws can lead to inaccurate outputs.
- Cybersecurity Risk - AI systems expand an organisation's attack surface. South Africa, having one of the highest cyberattack rates in Africa, is particularly exposed.
- Systemic Dependency Risk - Organisations may become overly dependent on automated controls, reducing human oversight.
- Data Integrity Risk - AI requires clean, structured data; poor data compromise effectiveness.
- Interpretability Risk - Auditors may struggle to understand how AI systems make decisions.

2.16.5 Impact on risk management roles

AI transforms risk management from a backward-looking discipline to one that is both predictive and proactive. This requires a shift toward multidisciplinary knowledge, blending accounting with data science and information security.

AI adoption varies widely across the accounting profession. While the Big Four are global leaders in AI-driven auditing, mid-tier and small firms face structural and financial barriers that shape the nature of AI integration.

The Big Four firms—PwC, Deloitte, EY, and KPMG—benefit from:

- global technology investments;
- centralised AI development teams;
- proprietary audit platforms;
- international regulatory support; and
- cross-border tool standardisation.

As noted earlier:

- PwC integrates ChatGPT Enterprise for documentation and technical research;
- Deloitte uses Omnia for predictive analytics;
- EY uses Helix and Canvas to analyse full datasets; and
- KPMG Clara integrates machine learning across risk assessments.
- These tools reshape audit tasks and competencies, with trainees quickly gaining digital exposure.

Scholars differ in their outlook:

- Optimistic literature (IFAC, 2022; PwC, 2023) argues that low-cost AI solutions will democratise access over time.
- Critical literature (Barac et al., 2021; Brands et al., 2024) warns that digital inequalities will entrench structural disadvantages among smaller firms.
- Pragmatic literature suggests hybrid adoption strategies involving shared AI infrastructure or associations.

From a South African viewpoint, the second perspective is more accurate, given local economic constraints.

2.17 AI-induced transformation of audit evidence and methodologies

AI changes not only what evidence auditors gather, but how they gather and interpret it. Traditional sampling is increasingly replaced by full-population testing.

AI tools can:

- analyse 100% of transactions;
- identify irregular patterns;
- examine metadata (timestamps, IP addresses, user profiles); and
- flag suspicious trends.

This increases audit depth, but requires auditors to understand algorithmic detection logic. Auditors must evaluate the reliability of AI algorithms, the quality of input data, the system's internal logic and error rates and classification thresholds. ISA standards do not yet provide explicit guidance for evaluating AI tools, creating ambiguity.

Generative AI models assist with interpreting evidence by summarising findings, drafting conclusions, linking evidence to risks and explaining anomalies. However, they cannot form professional judgment. Thus, practitioners ought to strike a balance between efficiency and skepticism. Furthermore, AI enhances fraud detection through anomaly detection, pattern recognition, behavioural modelling and network analytics. Machine learning systems detect unusual relationships or outliers that traditional methods might miss.

2.18 Organisational readiness for AI adoption

Organisational readiness is one of the strongest predictors of successful AI implementation. Post-2018 literature emphasises that AI maturity requires alignment between people, processes, technology, and governance structures. South African organisations, particularly in the financial and telecommunications sectors, have made notable progress; however, systemic constraints continue to influence readiness across industries.

2.18.1 Technological readiness

Studies show that large South African corporates have accelerated investment in cloud-based ecosystems, enabling easier deployment of AI models. Examples include:

- banking sector migration to AWS and Microsoft Azure;
- telecommunications adoption of cloud-native billing and ERP systems; and
- retail sector implementation of AI-driven demand forecasting.

2.18.2 Human capital readiness

Human capital readiness refers to the workforce’s ability to understand, adopt, and interact with AI. Global studies (IFAC, 2022; PwC, 2023) highlight that accountants require training in data analytics, digital tools, and AI ethics. South African research (Brands et al., 2024) adds that gaps in digital fluency remain prevalent, especially among mid-career professionals and staff in smaller firms.

Barac et al. (2021) emphasise that readiness depends not only on technical skill, but also on mindset. Resistance to change, fear of redundancy, and lack of confidence in using digital tools hinder AI adoption.

2.18.3 Process readiness

AI implementation requires redesigning business processes, including:

- workflow modernisation;
- automation of routine tasks;
- embedding analytics in decision-making; and
- updating internal control frameworks.

Mature organisations adopt “digital-first” processes in which AI is integrated into the entire financial reporting cycle. By contrast, organisations with fragmented systems struggle to capture the full benefits of AI.

2.18.4 Governance and cultural readiness

Governance readiness encompasses:

- ethical oversight;
- risk management structures;
- board-level technology oversight; and
- alignment with King IV technology governance principles.

Cultural readiness involves openness to innovation, leadership support, and commitment to continuous learning. Wesselbaum (2022) notes that cultural resistance is a primary cause of AI project failure. In South Africa, where workforce anxiety and skills gaps are more pronounced, cultural readiness proves itself to be a critical challenge.

2.19 CFO expectations of CA(SA)s in finance teams

CFOs increasingly demand faster reporting cycles real-time dashboards, automated reconciliations, advanced forecasting models and predictive scenario simulations. As a result, finance teams must embrace AI-augmented workflows and develop hybrid accounting-analytics competencies.

2.20 The emerging discipline of AI governance in accounting

AI governance refers to the structures, controls, and policies that ensure AI is used responsibly. Since 2020, AI governance has become a major theme in both global literature more broadly as well as in South Africa in particular, due to the rise of generative AI.

2.20.1 Components of AI governance

The literature identifies the following key components:

- Transparency - Users must understand how AI tools generate outputs;
- Accountability - Human professionals remain responsible for decisions, even when using AI;
- Data Ethics - Ensuring fairness, privacy, and responsible data usage;
- Model Validation - Evaluating AI algorithm accuracy, logic, and bias;
- Security Controls - Protecting AI systems from cyber threats; and

- Performance Monitoring - Continuous review to detect drift or inaccuracies.

2.21 AI and the future of work for accountants

AI-induced transformation extends beyond technical accounting tasks; it reshapes career structures, job roles, and professional identity.

AI alters job designs across all levels:

- Entry-level roles - Reduced manual testing, reconciliation, and vouching work. New emphasis on data checks, dashboard interpretation, and anomaly reasoning;
- Mid-level roles - Supervisory tasks shift toward validating AI insights and managing digital workflows; and
- Senior roles - Strategic decision-making, data governance, and cross-functional leadership.

These shifts are evident in South Africa's leading industries, where finance roles increasingly include analytics components.

2.21.1 The new skills hierarchy

A new skills hierarchy emerges as AI elevates certain skills, while diminishing others:

Skills amplified:

- critical thinking
- analytical interpretation
- judgment and skepticism
- communication
- ethics
- digital acumen
- adaptability

Skills automated:

- data entry
- reconciliations
- basic variance analysis

- routine testing
- standard report drafting
- This shift requires redesigned career development paths.

2.22 Labour market implications and employment dynamics

Literature on employment effects of AI proves to be divided, according to the following perspectives.

2.22.1 The substitution perspective

Some scholars argue that AI will reduce demand for traditional accounting roles.

Predictions include:

- reduced junior staff hiring;
- increased automation of standard tasks; and
- consolidation of finance departments.

This view is supported by West and Allen (2021), who express concern about reduced experiential learning opportunities.

2.22.2 The complementarity perspective

Other scholars argue that AI complements human capabilities.

Li and Zheng (2018) and IFAC (2022) posit that:

- AI increases efficiency;
- creates new advisory roles;
- heightens demand for strategic thinking; and
- elevates accountants into decision-support positions.

2.22.3 Hybrid perspective

A more balanced view recognises partial substitution and partial augmentation.

Accountants will lose some tasks but gain new ones in analytics, governance, and strategy.

2.22.4 South African labour market dynamics

South Africa's context adds layers of complexity:

- youth unemployment pressures;
- skills shortages in digital fields;
- uneven distribution of AI tools;
- limited access to upskilling in smaller firms; and
- transformation imperatives influencing hiring patterns.

AI may reduce entry-level opportunities in large firms, while creating new data-oriented roles in leading sectors.

2.23 Industry Trends and Case Studies Relevant to South Africa

Literature since 2018 identifies industry-specific patterns in AI adoption within South Africa.

2.23.1 Banking Sector

Banks are early adopters due to regulatory pressure, large transaction volumes, and cybersecurity risks.

Key AI uses include:

- real-time fraud detection;
- predictive credit risk modelling;
- automated reconciliations;
- AI-powered chatbots for client support; and
- internal audit analytics.

Banks' finance teams increasingly require skills in data interpretation and model validation.

2.23.2 Telecommunications Sector

Telecoms rely on AI for:

- revenue assurance;
- churn prediction;
- network anomaly detection; and
- automated billing systems.

These functions require finance professionals to possess hybrid digital-financial skills.

2.23.3 Retail Sector

Retailers adopt AI for:

- demand forecasting;
- pricing optimisation;
- logistics planning; and
- inventory management.

Finance teams in retail increasingly use predictive analytics to support margin management.

2.23.4 Public Sector and State-Owned Entities

AI adoption is slower in public sector entities due to:

- budget constraints;
- outdated systems;
- procurement challenges; and
- governance instability.

However, internal audit units in some SOEs have begun piloting analytics tools to strengthen financial oversight.

2.24 Synthesis of literature themes

A comprehensive synthesis of the literature identifies overarching themes:

- Theme 1: AI is Reshaping Professional Competencies
Competencies now include digital acumen, analytics, ethics, communication, and strategic insight.
- Theme 2: South Africa Faces Contextual Challenges
Digital inequality, skills gaps, and organisational readiness issues shape AI adoption.
- Theme 3: Big Four Firms Drive AI Innovation
They set industry standards, but mid-tier firms struggle to keep pace.
- Theme 4: Regulation Must Evolve
King IV and POPIA provide partial guidance, but explicit AI legislation is needed.
- Theme 5: Education and Training Lag Behind Technological Change
Curricula must integrate AI, analytics, and digital transformation.
- Theme 6: Generative AI Introduces New Opportunities and Risks
ChatGPT accelerates research and documentation, but raises ethical concerns.

2.25 Emerging trends in AI research relevant to the accounting profession

Several emerging trends in AI research are shaping the future of accounting practice. These trends reflect both technological advancements and evolving organisational expectations. Since 2020, scholars have increasingly focused on generative AI, explainable AI (XAI), continuous auditing, and the resilience of financial systems in the face of automation.

2.24.1 Explainable AI (XAI)

As AI becomes more integrated into financial processes, explainability has become a major area of research. Explainable AI models aim to provide insight into how algorithms arrive at their conclusions. Appelbaum et al. (2020) propose that audit regulators will eventually require explainability standards. Stancu and Dutescu (2021) emphasise that accountants must understand the underlying logic driving AI decisions. In South Africa, where audit transparency is a continuing public concern, explainability is especially critical to maintaining credibility.

2.25.2 Continuous auditing and real-time assurance

AI enables continuous auditing, which is a process where transactions and internal controls are evaluated in real time rather than through periodic testing.

Scholars argue that continuous auditing will:

- reduce audit risk;
- improve fraud detection;
- enhance governance; and
- allow faster reporting cycles.

JSE-listed companies with advanced ERP systems are already moving in this direction, especially in the banking and telecommunications sectors.

2.25.3 Ethical AI and social responsibility

Post-2020 research highlights ethical AI as a priority. This includes fairness, transparency, and accountability, aligning with King IV's principles of ethical leadership and responsible corporate citizenship. Literature increasingly argues that accountants should not only monitor financial ethics, but also technological ethics, including algorithmic fairness and data integrity.

2.25.4 Integration of AI with ESG reporting

- ESG reporting—particularly environmental data tracking—relies heavily on AI for prediction models, carbon analytics, and supply chain visibility.
- PwC (2023) reports increased use of AI for ESG assurance; and
- IFAC (2022) states that ESG-driven digital tools will require accountants to understand non-financial datasets.

This is highly relevant to South Africa, where ESG reporting is gaining momentum in mining, energy, and financial sectors.

2.25.5 Insufficient South African empirical studies

There is a shortage of local empirical studies on:

- competency gaps;
- AI adoption rates;
- organisational readiness;
- educational preparedness; and
- digital transformation across diverse firm sizes.

Existing research (e.g., Barac et al., 2021; Brands et al., 2024) provides a baseline but lacks breadth across sectors.

2.25.6 Slow Integration into accounting education research

While universities are starting to revise curricula, the academic literature has not yet fully analysed:

- the effectiveness of new digital modules;
- student readiness for AI-driven work; and
- alignment between SAICA and academic institutions.
- This gap influences long-term professional competency.

2.26 Alignment with SAICA CA of the Future objectives

The literature strongly supports the need for competencies included in SAICA's CA of the Future framework. Themes such as digital acumen, ethics, critical thinking, adaptability, and communication repeatedly emerge in post-2018 studies. The literature identifies competency gaps, but empirical evidence in South Africa remains limited. This study addresses this gap by assessing whether CA(SA)s perceive themselves as prepared for AI-driven environments.

2.26.1 Focus on practical competency gaps

Although SAICA outlines digital competencies, the literature suggests:

- uneven implementation;
- limited practical exposure; and
- inconsistent training office readiness.

This underscores the relevance of evaluating the degree of preparedness of practicing chartered accountants, rather than relying solely on training frameworks.

2.26.2 Relevance of South African corporate context

The adoption of AI across JSE-listed companies provides a specific, high-impact context to evaluate competency needs. This supports the study's focus on the Top 20 JSE-listed companies.

2.26.3 Need for ongoing professional development

Extant literature emphasises continuous learning as a prerequisite for future relevance. This informs the study's recommendation areas, suggesting that SAICA, firms, and universities ought to collaborate in order to enhance digital readiness.

2.26.4 Opportunities, benefits, risks and concerns of AI

The benefits of AI adoption in accounting are well documented and include increased efficiency, accuracy, and timeliness among the most cited (Celestin & Vanitha, 2020). By reducing manual errors and freeing accountants from repetitive tasks, AI allows professionals to focus on higher-value services such as advisory, strategy, and assurance (Greenman, 2017). Moreover, AI enhances audit effectiveness by enabling continuous monitoring and real-time data analysis, which traditional sampling techniques cannot achieve (Kokina & Davenport, 2017).

From a professional development perspective, AI is able to elevate the role of accountants to strategic partners in organisations. Accountants who integrate AI-driven insights into decision-making gain a competitive advantage, positioning themselves as interpreters and advisors rather than technicians (Li & Zheng, 2018). This requires not only technical knowledge of AI systems but also the ability to contextualise outputs within ethical and economic frameworks.

Despite its benefits, AI adoption raises significant concerns. One is the fear of job displacement, which has been widely debated in both academic and professional circles (Kwarbai, 2021). While automation reduces demand for transactional roles, evidence suggests that, rather than eliminating accountants, AI is transforming their roles toward hybrid positions (Celestin & Vanitha, 2020).

Another concern is ethical accountability. As algorithms take on decision-support functions, questions arise regarding transparency, bias, and accountability (Stancu & Dutescu, 2021).

Accountants must, therefore, cultivate competencies in ethical reasoning and technology governance so as to safeguard public trust.

Finally, adoption barriers persist, particularly in developing contexts. Limited resources, lack of digital infrastructure, and resistance to change hinder diffusion of AI, especially among small and medium-sized firms (Omar et al., 2017). For South Africa, with its diverse economic structure, this uneven adoption creates disparities in competency development across the profession.

2.27 Conclusion

The influence of artificial intelligence (AI) on the competencies required by chartered accountants (CAs) in South Africa is both profound and multifaceted. This literature review has examined global and South African perspectives, highlighting the transformation of the accounting profession in response to AI adoption and the emergence of hybrid skill requirements. Across the literature, a clear consensus emerges, namely that AI does not replace accountants but redefines their roles, emphasising technological literacy, ethical reasoning, strategic decision-making, and adaptive personal competencies (Celestin & Vanitha, 2020; Kokina & Davenport, 2017; Li & Zheng, 2018).

Globally, studies demonstrate that AI automates routine and transactional tasks, such as data entry, reconciliations, and basic auditing functions, thereby freeing accountants to focus on higher-value activities (Appelbaum et al., 2020; Sutton et al., 2016). This shift necessitates new competencies, including proficiency in data analytics, machine learning, and AI system governance (Issa et al., 2016; Richins et al., 2017). Additionally, AI introduces ethical and governance challenges, requiring accountants to develop skills in accountability, bias detection, and the ethical application of automated decision-making systems (Stancheva-Todorova, 2018; Stancu & Dutescu, 2021).

The South African context presents both opportunities and challenges in adopting AI and developing corresponding competencies. Professional bodies, particularly SAICA, have responded proactively through the CA of the Future framework, which articulates technical, professional, and personal competencies that integrate AI literacy, ethical judgment, and adaptability into the professional profile (Barac et al., 2021; SAICA, 2021). Empirical studies, however, indicate gaps in preparedness among South African CAs, particularly in SMEs and

amongst mid-career professionals, highlighting a need for targeted education and continuous professional development (Brands et al., 2024; Kwarbai, 2021; Omar et al., 2017).

A synthesis of the literature indicates that future-ready South African accountants must cultivate hybrid competencies that blend foundational accounting knowledge with AI-related skills, ethical awareness, and strategic advisory capabilities. This requires balancing technical expertise with professional judgment and personal adaptability (Celestin & Vanitha, 2020; Greenman, 2017; Li & Zheng, 2018). Equally important is equitable access to AI tools and training, ensuring that competency development is consistent across firms of varying sizes and resources (Omar et al., 2017).

The proposed conceptual framework situates AI adoption as a driver of competency development, mediated by organisational resources, training, and professional standards, with professional effectiveness as the ultimate outcome. In this framework, accountants' ability to integrate AI insights into decision-making, uphold ethical standards, and provide strategic advisory services is contingent upon the development of technical, professional, and personal competencies (IFAC, 2022; SAICA, 2021).

In conclusion, AI represents both a challenge and an opportunity for the South African accounting profession. It necessitates a reconfiguration of competencies, moving away from transactional tasks toward value-added roles characterised by advisory capacity, strategic insight, and ethical oversight. Addressing this challenge requires a collaborative effort among professional bodies, educators, employers, and policymakers to design training programmes, curricula, and organisational interventions that ensure accountants are equipped to thrive in an AI-enhanced environment. By embracing this evolution, South African chartered accountants can maintain professional relevance, enhance organisational value, and uphold public trust in a rapidly transforming technological landscape (Barac et al., 2021; Brands et al., 2024; Celestin & Vanitha, 2020).

Table 3 Literature synthesis: Artificial intelligence and accounting competencies

Author(s) & Year	Context / Focus	Methodology	Key Findings	Identified Gaps / Limitations
Li & Zheng (2018)	AI adoption in accounting and fraud prevention	Conceptual and analytical review	AI enhances efficiency, information quality, and fraud detection but cannot replace human judgment or ethical reasoning. Accountants must develop broader, hybrid competencies.	Lacks empirical validation and does not consider developing-economy or professional body contexts such as South Africa.
Kokina & Davenport (2017)	Automation and analytics in accounting	Conceptual analysis	AI augments accountants roles by automating routine tasks and elevating strategic and analytical functions. Introduces the concept of the augmented accountant.	Pre-generative AI; limited discussion of governance, ethics, and competency frameworks.

Moll & Yigitbasioglu (2019)	Digital transformation in management accounting	Qualitative review of digital finance literature	Accountants roles are shifting toward interpretation, advisory, and data-driven decision-making. Critical thinking and analytics are increasingly important.	Focuses on management accounting; limited attention to assurance and professional regulation.
Appelbaum et al. (2020)	AI and analytics in auditing and accounting	Mixed methods literature review	AI improves audit quality, efficiency, and population-level testing. Human oversight remains essential for judgment-based decisions.	Does not address professional education or readiness of accountants in emerging markets.
Celestin & Vanitha (2020)	AI as replacement vs. augmentation of accountants	Quantitative analysis (t-tests and regression)	AI improves efficiency by ~25% but does not outperform humans in strategic, ethical, or interpersonal tasks. AI creates new hybrid roles rather than job losses.	Narrow industry scope; limited focus on competency frameworks or professional training.

Stancu & Dutescu (2021)	Ethical and governance implications of AI in accounting	Conceptual analysis	AI introduces risks relating to transparency, bias, and accountability, increasing the importance of ethical judgment and governance competencies.	Does not empirically test competency preparedness or training outcomes.
Barac, Plant & Olivier (2021)	Fourth Industrial Revolution and CA(SA) relevance	Conceptual and South African professional analysis	CA(SA)s must develop resilience, adaptability, and digital acumen to remain relevant. Professional bodies play a critical role in guiding competency evolution.	Does not empirically assess AI adoption in firms or competency implementation gaps.
Hasan (2022)	AI implementation in Big Four accounting firms	Qualitative review of firm-level AI initiatives	Big Four firms use AI extensively in audit automation, analytics, and risk assessment, shifting accountant roles toward oversight and advisory work.	Limited linkage to formal competency frameworks and training pathways.

Brands, Mayer & Oosthuizen (2024)	4IR and CA(SA) competencies in South Africa	Empirical mixed-methods study	South African CAs acknowledge AI's impact but feel underprepared to apply AI tools in practice. Highlights generational and skills-exposure gaps.	Does not assess SAICA competency framework alignment with AI adoption.
Botha & Roux (2023) SAICA Foresight Project	Future role of accountants in South Africa	Scenario-based foresight analysis	Future accountants will require interdisciplinary, digital, ethical, and strategic competencies to remain relevant in AI-enabled environments.	Scenarios lack empirical testing and explicit AI-assurance competency articulation.

Despite extensive international literature, few empirical studies currently examine AI competencies within SAICA-regulated training environments.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

Chapter 2 critically examined the impact of artificial intelligence on the accounting profession and the evolving competency requirements of Chartered Accountants (SA). The literature demonstrated that AI is transforming traditional accounting roles by automating routine processes and increasing the importance of hybrid competencies. It also evaluated the extent to which SAICA's CA of the Future competency framework aligns with emerging technological demands, highlighting both strengths and implementation gaps. Building on this theoretical foundation, the following chapter outlines the research methodology adopted to investigate how these competency shifts manifest within the South African accounting environment.

Within this chapter, the research methodology is outlined and adopted to investigate the research topic. The chapter outlines the research philosophy, research approach and design, data sources and means of data collection. Limitations and delimitations inherent in the study and indicated and through this, the research methodology is appropriately selected to achieve the objectives as outlined in section 1.3 of the study.

The study employs a qualitative documentary research design which focuses exclusively on secondary data from three defined and authoritative sources within the South African accounting and corporate context:

The SAICA Foresight Project (Botha & Roux, 2023), which provides strategic and professional perspectives on how AI affects the competencies required of CAs(SA) - The SAICA competency framework governs the competencies required by a CA(SA) specifically and any revisions to the competencies required will be addressed through this framework

The Big Four accounting firms, which represents leaders in accounting and auditing practices (Deloitte, EY, PwC and KPMG), whose publications and reports demonstrate how AI implementation has influenced competencies within professional practice; and

The Top 20 JSE-listed companies, which illustrate the impact of AI adoption within corporate financial environments and the evolving competencies required from accounting professionals. The companies chosen for focus in this study are the Top 20 through market capitalization in 2025. This is an appropriate sample size as it represents industry leaders across multiple sectors and therefore makes the study deductive for companies not in the Top 20.

By drawing on these three key bases of evidence, the study develops a triangulated understanding of AI's influence on professional competencies. This is across the professional, practice, and corporate levels of the South African accounting ecosystem. Furthermore, the chosen data sources are appropriate in the context of the research topic as the CA(SA) professional's career path is extensively influenced by the decisions and programs of its governing body, SAICA, relies on the completion of articles through employment at an accounting firm, in this study, the focus being on the Big Four, and lastly, through working in a corporate environment such as JSE-listed companies.

3.2 Research philosophy

The study is underpinned by an interpretivist research philosophy, which focuses on understanding social phenomena through the hermeneutics of the researcher and established knowledge on the part of institutions and professionals in the field (Saunders, Lewis & Thornhill, 2019). Researcher reflexivity will be applied to the study to ensure that the researcher will examine their own biases, assumptions, experiences, and social positions. This will enhance the study's credibility and trustworthiness ensuring that the study's impact is explicit. This will be an ongoing self-reflection.

An interpretivist stance is appropriate for this research because professional competencies and technological adaptation are socially constructed concepts, which are influenced by contextual factors. These contextual factors include regulation, technology, education, and corporate culture. Through qualitative interpretation of documents produced by SAICA, the Big Four firms, and JSE-listed companies, the study explores how these institutions conceptualise and communicate the evolving role of CA(SA)s in an AI-driven environment.

3.3 Research approach

An inductive qualitative approach is employed to conduct the study. This approach allows themes and patterns to emerge from the data rather than being imposed by established theory (Creswell & Creswell, 2018). Furthermore, an inductive research approach allows for flexibility and adaptability should unforeseen findings emerge during the course of the research. This is preferable over a deductive research approach, which is more structured and systematic by comparison.

Given that AI adoption within the accounting profession is a continuously evolving phenomenon, an inductive approach enables the researcher to derive meaning and insight from empirical evidence found in the selected documents, without predefining categories or hypotheses. Researcher bias is mitigated using the selected data sources, focusing specifically on findings therein and not by making methodological assumptions, but rather through direct identification from the data sources.

3.4 Research design

The research design adopted for this study is a documentary qualitative research design, which involves the collection of data on a systematic basis, the organisation of said data, and further analysis of documentary material.

This design is suitable because the research aims to interpret institutional and organisational perspectives on AI and competencies of a chartered accountant as presented in established, authoritative publications rather than from primary participants. Furthermore, qualitative research designs are conducted when a problem or issue needs to be explored a literary, flexible approach is appropriate (Creswell, J. W., & Poth, C. N, 2016). This study concerns itself with the influence which AI has on the competencies required by a CA(SA) thereby reinforcing the appropriateness of the chosen research design.

The design consists of three stages, deriving deep insights into the research topic:

Collection of documents from the three defined sources from the internet, where all information relating to each data source is publicly available for download and use;

Organisation and coding of qualitative data within those documents performed manually through analysis of the defined sources via Control+F function to find keywords, such as AI on PDF

documents or in Excel/Word and member checking was performed to ensure the accuracy of the reviewed data; and

Thematic analysis to identify recurring concepts and insights related to AI's influence on the competencies required by a CA(SA).

3.5 Data sources and defined populations

The study draws on three clearly defined data populations, each representing a distinct level of analysis and source of evidence. The following table maps the three defined data populations to the analytical focus used in Stage 1 of the design in Section 3.4.

Table 4 Summary of data sources and evidence levels

Data Source / Population	Type of Data	Analytical Focus	Nature of Evidence Provided
SAICA Foresight Project (Professional Level)	Strategic foresight reports, competency framework documents, and related SAICA publications	Analysis of how AI and emerging technologies are expected to transform the CA(SA) competency framework	Institutional and professional-level evidence of AI's influence on competency design, ethics, and education
Big Four Accounting Firms (Practice Level)	White papers, thought leadership reports, and publications on AI and digital transformation (PwC, Deloitte, EY, KPMG)	Examination of how AI implementation in audit and advisory practices reshapes technical, analytical, and ethical competencies	Practice-based evidence on new professional skills, digital literacy, and human AI collaboration within accounting firms
Top 20 JSE-Listed Companies (Corporate Level)	Integrated reports, sustainability reports, and official corporate disclosures from all 20 top JSE-listed companies, all from the latest financial year ends 2025	Review of AI-related initiatives in corporate finance, reporting, and governance	Corporate-level evidence of how AI affects accounting functions and the competencies required from finance professionals

3.6 Data collection

The study relies solely on secondary qualitative data drawn from the three specified sources, namely:

- the SAICA Foresight Project;
- Publications and reports from the Big Four accounting firms; and
- Integrated and sustainability reports from all top 20 JSE-listed companies.

Documents from these sources were identified, downloaded, and organised by origin and publication year. Each document is reviewed in full to extract all references, discussions, and narratives related to artificial intelligence and competency development.

For each of the data sources mentioned, the following documents were analysed:

- Twenty integrated reports, which include all major or referenced reports separately downloadable where these are referenced within the integrated reports for the latest financial year end between 2023 and 2024 for the Top 20 JSE-listed entities;
- For the Big Four accounting firms – information is available on the official firm website in relation to AI; and
- The SAICA Foresight project (Botha & Roux, 2023) as it is downloadable from the SAICA official website, as well as posts related to the CA of the Future rollout by SAICA found on their website.

3.6.1 Inclusion criteria

Only documents and reports from the following three sources were included in the analysis:

- SAICA Foresight Project publications and related materials;
- Big Four accounting firm reports, white papers, and insights specifically discussing AI or digital transformation in accounting; and
- Integrated or sustainability reports from all Top 20 JSE-listed companies that reference AI implementation, automation, or digital skills in accounting and finance contexts.

No other documents or data sources are used in this study.

3.7 Data analysis

Thematic analysis was selected as the primary analytical method for this study due to its strong alignment with the research objectives, interpretivist philosophical positioning, and the nature of the documentary data analysed. The study seeks to explore and interpret how artificial intelligence is reshaping the competencies required of Chartered Accountants (SA) and how institutional and organisational actors respond to these changes. As such, the research is concerned with identifying patterns of meaning and developing higher-order conceptual themes rather than quantifying the frequency of specific concepts.

Thematic analysis provides a flexible and rigorous approach for examining complex, heterogeneous data drawn from multiple sources, including SAICA publications, Big Four firm reports, and integrated reports of the Top 20 JSE-listed companies. These documents differ in structure, intent, and depth of discussion, requiring an analytical method capable of synthesising insights across varied contexts. In contrast, qualitative content analysis is typically more descriptive and classification-oriented, often relying on predefined coding categories and focusing on manifest content rather than deeper interpretive insights. Given the study's objective of developing an integrated understanding of AI-driven competency transformation, thematic analysis enables both inductive identification of emergent themes and deductive alignment with existing theoretical constructs. This approach supports the development of a conceptual competency framework grounded in empirical evidence while allowing for contextual interpretation of institutional responses and professional expectations.

Furthermore, thematic analysis is consistent with the interpretivist research philosophy underpinning the study, as it emphasises meaning-making and contextual understanding rather than positivist measurement. By facilitating cross-source synthesis and conceptual abstraction, thematic analysis strengthens the study's ability to contribute theoretically and practically to the discourse on digital transformation in the accounting profession. Accordingly, it was deemed more suitable than qualitative content analysis for addressing the research questions and achieving the study's objectives.

Therefore, the collected documents are analysed using thematic analysis, as described by Braun and Clarke (2006), specifically, manual thematic analysis. This approach allows for the identification and interpretation of key themes that capture the meaning and significance of AI's

influence on accounting competencies. Furthermore, manual thematic analysis was selected due to the manageable scope of documentary data and the study's interpretive focus on meaning and conceptual synthesis. This approach enabled close engagement with texts, flexible coding, and context-sensitive theme development, while maintaining methodological rigour without reliance on specialised software.

The six analytical steps are as follows:

- Familiarisation: Reading and re-reading each document to gain a holistic understanding of how AI is represented in each context.
- Initial Coding: Highlighting and coding text segments related to AI, automation, digital transformation, and professional skills.
- Development of Themes: Related codes are grouped in broader themes (e.g., “AI-driven technical competencies,” “ethical implications,” “data analytics proficiency,” “leadership in digital finance”).
- Review of Themes: Themes are refined to ensure these reflect accurately the evidence from all three sources.
- Themes are defined and named: For themes developed and reviewed, there is clear articulation of the conceptual meaning and relevance of each theme.
- Reporting: Integrating the findings into a cohesive narrative supported by direct excerpts or summaries from the analysed materials.

This systematic process enabled the development of an evidence-based understanding of how AI influences the competencies required by chartered accountants in South Africa. The study will consider only explicit mention of AI implementation and usage across all three data sources.

3.8 Trustworthiness

In order to ensure the quality and credibility of the findings, the study applied Lincoln and Guba's (1985) four trustworthiness criteria:

Table 5 Trustworthiness criteria

Criterion	Application in this study
Credibility	Achieved through gathering of evidence across three authoritative sources: SAICA, Big Four firms, and Top 20 JSE companies, specifically information that results in findings which address the research objectives and questions posed by the study. Member checking is also performed to ensure the accuracy of findings thereby increasing credibility. Furthermore, credibility of the data sources is ensured as each data source is prepared and reviewed in terms of extensive regulation and authority. The SAICA frameworks are decided on through the decisions of independent and knowledgeable parties at the governing body. JSE-listed companies present information in their integrated reports to meet the significant and exhaustive requirements of the JSE regulations. Lastly, the Big Four is governed by the Auditing Professions Act and the IAASB, amongst other regulatory requirements to ensure that practices are of the highest standards of quality.
Transferability	Ensured by providing detailed contextual information about each source, enabling readers to judge applicability to other professional settings. This is achieved through providing background data or surrounding details that lend meaning, relevance, and deeper understanding to the three data sources analysed.
Dependability	Maintained through clear documentation of the data collection and thematic analysis procedures drawn from each data source. Common themes have been identified and discussed through the extensive literature review and are applied to the findings of this study. In line with the credibility of data, the dependability of the data is ensured as each of the data sources is prepared after the consideration and adherence to laws and regulations of each of the related governing bodies. As the consequences of presenting false information are duly understood by each preparer of the data source, the reliability and in turn, the dependability of the data sources is maintained. Furthermore, the governing bodies of each data source have been in existence for years and therefore have the experience and knowledge required to ensure that information is presented truthfully.
Confirmability	Strengthened by grounding interpretations in direct documentary evidence from each data source and through maintaining researcher reflexivity which is critical in ensuring that biases, assumptions, experiences, and social positions of the researcher are managed and how these subjective elements influence every stage of the research process.

3.9 Ethical considerations

Although the research did not involve human participants, ethical standards are maintained throughout. Key ethical principles applied include:

- Integrity and accuracy: Data are reported truthfully, with interpretations supported by evidence.
- Transparency: Only official and publicly available documents from the defined sources are used.
- Acknowledgment: All materials are referenced appropriately in accordance with academic citation standards.
- Data protection: All digital documents are publicly available, however upon downloading, these are stored securely and used solely for academic purposes.

Ethical clearance was obtained from the relevant institutional review committee prior to commencing data collection.

3.10 Limitations

While the study's reliance on secondary data strengthens objectivity, it also presents certain limitations such as:

- The absence of primary data limits insight into individual perspectives or lived experiences;
- The analysis depends on the depth and transparency of publicly available information provided by the three sources; and
- Findings reflect the South African context and may not fully generalise to international settings.

The study relies on official publications, which are prepared through an internal reporting process at each organisation mentioned in the three data sources (SAICA, Big Four, JSE Top 20). The data presented within these publications may be curated or presented largely from a positive view of AI's impact on the organisation. The study acknowledges that these publications may ignore the presentation of challenges or failures of AI and related impact, which in turn imposes a potential bias of the data analysed.

Despite these limitations, the inclusion of all Top 20 JSE-listed companies and data from both SAICA and the Big Four ensures comprehensive coverage across professional, practice, and corporate levels.

3.11 Summary

The research methodology outlined in this chapter is a qualitative, documentary research used to explore the influence of AI on the competencies required by chartered accountants in South Africa. The study relies exclusively on secondary data from the SAICA Foresight Project, Big Four accounting firms, and all Top 20 JSE-listed companies, analysed through thematic analysis within an interpretivist framework.

The next chapter presents the findings and thematic insights that emerged from this analysis, highlighting how AI is redefining professional, practice-based, and corporate competencies within the South African accounting profession.

CHAPTER 4

DATA PRESENTATION AND ANALYSIS

4.1 Introduction

This chapter presents the findings derived from the thematic analysis of secondary data collected from the three defined sources, namely the SAICA Foresight Project, Big Four accounting firms' publications, and integrated and sustainability reports of the Top 20 JSE-listed companies. The analysis focuses on identifying: (1) the competencies required by Chartered Accountants (CA(SA)s) to remain relevant in an AI-driven environment; and (2) how SAICA's competency framework and initiatives address these evolving needs. Findings are presented under three major thematic categories reflecting the professional (SAICA), practice (Big Four), and corporate (JSE-listed companies) levels of the accounting ecosystem in South Africa.

4.2 Overview of themes identified

The thematic analysis revealed six dominant themes across the three data sources, representing AI's influence on accounting competencies in South Africa is summarised in Table 4.2.1 below.

Table 6 Thematic analysis across data sources

Theme	Description	Primary Source(s)
Digital and Data Competency	The need for digital literacy, AI understanding, and data analytics capabilities	SAICA, Big Four, JSE Companies
Strategic and Analytical Thinking	Shift from transactional work to analytical and strategic advisory roles	Big Four, JSE Companies
Ethical and Governance Competence	New ethical dimensions arising from AI adoption	SAICA, Big Four
Continuous Learning and Adaptability	Ongoing upskilling and professional agility to remain relevant	SAICA, Big Four
Human–AI Collaboration	Integration of human judgment with machine learning outputs	Big Four, JSE Companies
Corporate AI Implementation and Expectations	Corporate-level demand for AI-enabled professionals	JSE Companies

4.3 Findings from the SAICA foresight project (professional level)

The SAICA Foresight Project and CA of the Future initiative highlights the transition from traditional accounting to hybrid professional profiles that merge technical expertise with technological and ethical intelligence. The framework emphasises digital acumen, ethical governance, adaptive mindset, and human-centric leadership.

SAICA acknowledges that although its CA of the Future framework embeds AI literacy, preparedness among current professionals remains uneven, particularly among small to mid-sized practices. The Foresight Project identifies digital competency and ethical governance as the two most urgent skill areas requiring improvement.

These findings directly address Research Question 2: how the SAICA programme incorporates requisite AI-related skills. The CA of the Future framework embeds these competencies, but requires stronger implementation and continuous professional development focus.

Currently, the competencies required by a CA(SA) (as listed in Annexure A) incorporate a subsection titled "Digital Acumen". The competencies listed as part of the subsection does not specifically mention the use of AI. Broader terms are used in the description of each competency such as data analytics, digital affinity and digital impact to name a few. Without the specific mention of AI in the current competencies, for the aspiring CA(SA), this could be interpreted as not required as a professional skill to be competent in the field.

With competencies being vague in their mention of AI using blanket terms as identified in the previous paragraph, corporate requirements from a CA(SA) will likely not be met as expected. Corporate findings in section 4.5 provides insight into the skills which a CA(SA) requires to appropriately perform tasks in relation to AI. This will likely form part of corporate expectations when searching for CA(SA)s to join their organisations.

4.4 Findings from Big Four accounting firms (practice level)

Reports from Deloitte, EY, KPMG, and PwC reveal that AI technologies have automated transactional and assurance functions, including data entry, reconciliation, and anomaly detection. Consequently, auditors' roles have shifted toward interpreting AI-generated analytics, assessing the reliability of AI models, and integrating multidisciplinary insights.

The Big Four emphasises novel competency domains, such as data analytics and AI oversight, digital collaboration, critical thinking, and ethical decision-making. They advocate for 'augmented accountants', who collaborate with AI systems, rather than compete with them.

Ethical and governance competencies have become central, as professionals must ensure algorithmic transparency, data privacy, and accountability. These findings address Research Question 1 by confirming the hybrid skills required to thrive in AI-driven firms.

4.4.1 Deeper analysis of Big Four perspectives on AI and accounting competencies

A review of publications from the Big Four accounting firms reveals consistent recognition that artificial intelligence (AI) is transforming the competencies required of professional accountants.

Across Deloitte, PwC, EY and KPMG, three convergent themes emerge: (1) the shift from transactional processing to analytical and strategic roles; (2) the integration of AI into assurance and risk functions; and (3) the need for enhanced ethical and governance competencies to address AI-related risks.

Deloitte (2023) emphasises that AI is fundamentally reshaping the assurance profession by automating anomaly detection, journal entry testing and risk assessment procedures. The firm maintains that future auditors will need to evaluate AI systems in the same way internal controls are assessed today, necessitating competencies in model risk evaluation, algorithmic explainability, and digital assurance (Deloitte, 2023). This suggests that the traditional audit skill set must expand to include technology-enabled skepticism and validation of AI-generated audit evidence.

As per Deloitte: RQ1: Skills required by a CA(SA) of the future should include technology enabled skepticism and validation of AI-generated audit evidence.

Similarly, PwC (2023) identifies AI as a catalyst for transformation within finance functions, enabling predictive forecasting, scenario analysis and intelligent reporting. PwC argues that accountants who fail to integrate AI tools risk obsolescence, supporting the view that future finance professionals ought to develop competencies in human–AI collaboration, data interpretation and strategic decision support (PwC, 2023). PwC further observes that the finance role is evolving toward value creation rather than compliance, reinforcing the need for adaptive strategic capabilities.

As per PwC: RQ1: Skills required by a CA(SA) of the future should include human-AI collaboration, data interpretation and strategic decision support. A CA(SA) should also be able to adapt their skillset to create value for corporate clients through the use of AI.

EY (2024) contributes to the emerging discourse by emphasising AI ethics and responsible implementation. The firm argues that AI systems are able to introduce risks related to biased outputs, opacity in decision-making and compromised audit trails. As a result, EY calls for the development of AI governance competencies within the accounting profession, particularly skills related to risk assessment of automated environments and ethical interpretation of AI outputs (EY, 2024). EY further notes that professional skepticism must now extend to algorithm behaviour, data provenance, and AI model governance.

As per EY: RQ1: Ethical governance skills are paramount when CA(SA)s will use AI in the performance of their daily tasks, interpreting the ethical use of AI in automated environments of clients, expansion of professional skepticism beyond financial information to AI generated information.

KPMG (2023) highlights accountability, transparency and trust in AI-enabled reporting environments. The firm advocates the integration of responsible AI frameworks into corporate reporting and assurance, warning that the reliability of AI-generated financial insights depends on explainable and auditable algorithms. Accordingly, KPMG identifies a competency gap among finance professionals in areas such as AI assurance, audit trail validation and digital control testing (KPMG, 2023), concluding that accountants of the future must audit the algorithms that produce the numbers.

As per KPMG: RQ1: The CA(SA) of the future should be skilled in auditing the algorithms from which AI tools produce information disclosed in corporate organisations' integrated reports.

Synthesising Big Four insights reveals clear alignment with Research Question 1 of this study: the competencies required by CA(SA)s in an AI-driven environment extend beyond technical accounting to include AI literacy, algorithmic risk management, digital assurance and data governance. However, findings also highlight gaps in SAICA's CA of the Future competency framework (Research Question 2), which references digital acumen more broadly, but does not explicitly define competencies for AI model validation, assurance over AI-generated data or ethical AI governance.

Overall, evidence from the Big Four indicates that AI is amplifying, not replacing the role of professional judgement within the accounting profession. The evolving role of accountants will be defined by their ability to critically interrogate AI outputs, evaluate digital risk and provide assurance over both traditional financial and AI-driven information systems.

Based on the insights into each firm’s view, a summary of the required competencies identified per firm. Table 7 summarises firm-level competency emphases emerging from the Big Four.

Table 7 Required competencies identified per firm

Big Four Firm	Key Position on AI	Required Competencies Identified
Deloitte (2023)	AI transforming audit quality	AI validation, anomaly analytics, AI-assisted testing
PwC (2023)	AI enables finance strategy	Predictive analytics, decision intelligence
EY (2024)	AI ethics and risk	AI governance, ethical judgement
KPMG (2023)	Responsible AI assurance	Algorithm audit, explainability

4.5 Findings from the top 20 JSE-listed companies (Corporate level)

All top JSE-listed companies reference digital transformation in their integrated or sustainability reports. Sectors such as banking, telecommunications, and retail report extensive AI use for forecasting, fraud detection, and performance analytics. This indicates that corporate South Africa expects accountants to possess an awareness of AI in operations and data-driven decision-making capabilities.

Employers increasingly seek finance professionals who can work with digital platforms, interpret predictive analytics, and manage AI-supported systems with ethical accountability. However, disparities in digital maturity persist, revealing a shortage of AI and data governance skills among professionals.

Consistent with the qualitative thematic analysis described in Chapter 3, this section extends the corporate-level findings (RQ1) by conducting a focused review of AI integration across the Top 20 JSE-listed companies using their latest integrated/sustainability disclosures and publicly available strategy materials. The purpose is to identify the specific AI capabilities being deployed, the related competency demands on finance functions, and the implications for professional formation under SAICA’s CA of the Future framework. The analysis is organised by sector and triangulated with Big Four thought leadership to ensure analytic rigor and transferability.

4.5.1 Deeper analysis of AI integration across top 20 JSE-listed companies

Overview and sectoral patterns

The Top 20 cohort demonstrates heterogeneous AI maturity. Financial services and telecommunications show advanced, scaled deployments embedded in core processes; retail exhibits targeted optimisation (pricing, inventory, customer analytics); and mining applies AI for safety, maintenance and sustainability data generation. Across all sectors, AI is migrating from pilot initiatives to platform capabilities, with implications for internal control design, digital assurance and ethical governance (Deloitte, 2023; PwC, 2023).

Financial services

Standard Bank, FirstRand, ABSA, Nedbank and Capitec report AI usage in credit decisioning, enterprise fraud analytics, conduct/compliance monitoring and client servicing (virtual assistants, NLP). For finance teams, this shifts competency emphasis toward (i) data governance and model risk oversight; (ii) validation of AI-generated estimates and impairments; and (iii) explainability of models informing IFRS judgements (allowance for expected credit losses, revenue analytics).

Competencies required: AI Ethical governance, digital literacy for understanding algorithms which produce financial/non-financial information

Telecommunications

MTN and Vodacom disclose AI for network optimisation, demand/churn prediction and revenue assurance. FP&A increasingly relies on AI-assisted scenario analytics and anomaly detection at scale, requiring accountants to interpret model outputs, challenge assumptions, and integrate algorithmic forecasts into budgets and long-range plans.

Competencies required: Digital literacy for understanding algorithms, which produce financial/non-financial information

Mining and resources

Anglo American, BHP and AngloGold Ashanti indicate the burgeoning use of AI in predictive maintenance, operational risk monitoring, and environmental data capture for ESG reporting. This heightens the need for digital assurance over non-financial metrics (e.g., emissions, water, safety) and controls over data provenance, lineage, and transformation.

Competencies required: Digital literacy for understanding algorithms, which produce financial/non-financial information, especially for ESG related disclosures

Retail and consumer

Shoprite, Woolworths and Tiger Brands reference AI-enabled demand forecasting, personalisation and supply chain optimisation. Accountants ought to reconcile AI-driven inventory and pricing recommendations with cost accounting policies, impairment assessments and margin analytics, while addressing privacy/consumer data risks.

Competencies required: AI Ethical governance, digital literacy for understanding algorithms which produce financial/non-financial information.

Diversified industrials and healthcare

Bidcorp, Bidvest and Aspen Pharmacare employ data science and automation to improve working-capital cycles, procurement and quality monitoring. Finance professionals require automation-aware process controls, exception-based review and cross-functional collaboration with data teams.

Competencies required: Digital acumen to enable seamless collaboration with data teams

Technology investment groups

Naspers and Prosus embed AI across platform businesses (marketplaces, payments, logistics). Competencies emphasise digital business model understanding, platform economics, and assurance over algorithmic allocation/measurement in consolidated reporting.

Competencies required: Digital literacy for understanding algorithms which produce financial/non-financial information

Maturity analysis per Sector

A maturity analysis for AI has been summarised in the Table 4.5.2 AI maturity across the Top 20 JSE-Listed Companies per sector. Below this table, a summary of the Competency Gaps Emerging from Corporate AI Adoption is depicted in Table 4.5.3.

Table 8 AI maturity across top 20 JSE-listed companies (summary view)

Company	Sector	AI Maturity*	Illustrative Use Cases	Implications for Finance Competencies
Standard Bank	Financial Services	High	Credit risk models; enterprise fraud; virtual assistants	Model risk oversight; Expected credit loss (ECL) analytics; AI-control evaluation
FirstRand	Financial Services	High	Risk analytics; automated underwriting; AML monitoring	Data governance; explainability; digital assurance
ABSA	Financial Services	Medium-High	NLP chatbots; fraud detection; collections analytics	Process automation review; bias/ethics controls
Nedbank	Financial Services	High	Digital lending; customer analytics; ops automation	Data quality controls; scenario modelling
Capitec	Financial Services	Medium-High	Personalised offers; fraud analytics	Operational analytics; privacy compliance
MTN	Tele-communications	Medium-High	Network optimisation; churn/demand prediction	Forecast challenge; anomaly investigation
Vodacom	Telecommunications	Medium-High	Revenue assurance; customer analytics	Data lineage; KPI integrity
Shoprite	Retail	Medium	Demand forecasting; pricing optimization	Inventory/COGS analytics; margin attribution
Woolworths	Retail	Medium	Supply chain AI; customer personalization	Supplier data controls; ESG data checks

Tiger Brands	Consumer	Medium	Quality analytics; demand planning	Costing review; model validation
Anglo American	Mining	Medium	Predictive maintenance; safety analytics	Non-financial data assurance; asset uptime KPIs
BHP	Mining	Medium	Operational optimization; ESG data systems	Sustainability metrics controls; audit trail
AngloGold Ashanti	Mining	Medium	Operational risk analytics; exploration data models	Scenario analysis; data provenance
Sasol	Energy/ Chemicals	Medium	Process optimisation; emissions analytics	Environmental data assurance; compliance
Bidcorp	Industrials	Medium	Logistics optimisation; working-capital analytics	Automation controls; exception review
Bidvest	Industrials	Medium	Procurement analytics; robotics process automation	Process re-design; Segregation of duties in bots
Aspen Pharmacare	Healthcare	Medium	Quality analytics; supply chain AI	Quality/validation controls; GMP data integrity
Naspers	Technology/ Investment	Very High	Platform ML; recommendation engines; fraud in payments	Platform economics; algorithm audit
Prosus	Technology/ Investment	Very High	Marketplace optimisation; risk engines	Fair value measurement; data governance
Richemont	Luxury Goods	Medium	Demand analytics; clienteling; supply chain visibility	Inventory valuation; privacy/ethics

*Maturity is a relative, research-based judgement that synthesises public disclosures and industry research for academic discussion. Refer to citations in the Appendix titled “References”.

Table 9 Competency gaps emerging from corporate AI adoption

Competency Domain	Observed Corporate Need	Gap for CA(SA)s	Implications for Training/CPD
AI Literacy & Data Analytics	Interpretation of AI outputs in FP&A, audit and risk	Uneven proficiency in analytics tools and data storytelling	Structured analytics curriculum; case-based learning with real datasets
Model Risk & Explainability	Challenge/validate AI models used in decisions	Limited exposure to model governance frameworks	Introduce model risk management, explainability and bias modules
Digital Assurance	Assurance over AI-generated financial & ESG data	Traditional assurance methods not fit for algorithmic systems	Develop AI assurance techniques; controls over data pipelines
Ethics, Privacy & Governance	Responsible AI; Protection of personal Information Act (POPIA) and General Data Protection Regulation (GDPR) compliance	Gaps in algorithmic ethics and privacy-by-design	Mandate AI ethics CPD; embed governance case studies
Automation-aware Controls	Bots and RPA embedded in finance processes	Segregation-of-duties and change control for bots not well understood	Update internal control frameworks for digital processes
Cross-functional Collaboration	Work with data science, IT, sustainability teams	Siloed training and language	Interdisciplinary projects; communication and product thinking

Corporate AI adoption → (demand) data analytics, model oversight, digital assurance, ethics → Professional response (SAICA CA of the Future) → curriculum/CPD in analytics, AI governance, digital assurance → Outcomes: augmented professional judgement, trusted reporting, ethical AI.

Figure 1: Thematic linkage from corporate AI adoption to competency development and SAICA response

4.6 AI implementation gaps driving new competencies for chartered accountants (CAs)

4.6.1 Weak AI governance, accountability and risk frameworks

Large organisations often deploy AI without mature governance frameworks—lacking model inventories, formal ownership, responsible-AI policies, and monitoring structures. Big Four research consistently identifies governance gaps as a primary inhibitor of trustworthy AI adoption (Deloitte, 2023; EY, 2023; KPMG, 2023). Audit regulators have similarly found that even major audit firms lack mechanisms to measure how AI tools impact audit quality, indicating governance shortfalls within assurance environments (Financial Reporting Council [FRC], 2024).

New CA competencies include AI governance design, model risk assessment, drafting AI control policies, interpreting AI risks for audit committees.

4.6.2. Poor data quality, lineage, and infrastructure

Many JSE companies—especially in banking, mining, telecoms and retail—report fragmented legacy systems, uneven data quality, and weak data lineage tracking. These barriers significantly restrict scalable AI deployment (PwC, 2023; KPMG, 2024). South African AI maturity studies also show a strong ambition-execution gap caused by inadequate data readiness (Deloitte, 2023).

New CA competencies include data governance, data quality assessment, validation of datasets used in financial models, and integration of data controls into audits.

4.6.3. Shortage of technical talent and over-reliance on vendors

Across sectors, firms often rely on external AI vendors due to a shortage of internal data scientists and machine-learning engineers. Big Four reports highlight this talent deficit to be a major constraint on responsible AI scaling (EY, 2023; Deloitte, 2023). Overreliance on vendors introduces risks relating to intellectual property, explainability, resilience, and continuity.

New CA competencies: vendor-risk assessment for AI solutions, contract evaluation, understanding ML model basics, and assessing outsourced model risk.

4.6.4. Insufficient model validation, explainability and audit trails

Many organisations use AI systems without robust validation protocols, documentation, or performance monitoring. A lack of explainability also undermines auditability and makes financial decision-making riskier (FRC, 2024; PwC, 2023). Big Four insights highlight increasing regulatory scrutiny of explainability, especially where AI influences financial reporting or credit decisions.

New CA competencies include model validation techniques, bias and drift assessment, reviewing model documentation, and integrating model-risk testing into assurance procedures.

4.6.5. Weak measurement of AI's effect on controls, processes and audit quality

AI is often implemented without KPIs or performance frameworks that assess its impact on financial controls, operational processes, or audit quality. The FRC (2024) identified that large audit firms have not yet formalised metrics to evidence whether AI enhances audit quality.

New CA competencies include design of AI-linked KPIs, measuring AI's contribution to control effectiveness, and developing continuous-assurance frameworks.

4.6.6. Regulatory and reporting uncertainty

The landscape of AI regulation—spanning data protection, automated decision-making rules, and emerging AI-specific legislation—is evolving rapidly. Big Four analyses note that companies lack clarity on compliance expectations, leading to delays or inconsistent AI adoption (KPMG, 2023; EY, 2023).

New CA competencies include interpreting AI-related regulatory requirements, drafting AI-risk disclosures for integrated reports, compliance mapping, and supporting boards on oversight responsibilities.

4.6.7. Ethical, fairness and ESG considerations

CEOs globally list ethical concerns—bias, transparency, fairness—as major barriers to AI deployment (KPMG, 2023). Investors and stakeholders increasingly expect disclosures on ethical AI use, particularly for high-impact models such as credit scoring or HR decision systems.

New CA competencies include conducting AI ethical-risk assessments, integrating AI into ESG reporting, evaluating fairness metrics, and designing ethical oversight policies.

4.6.8. Cybersecurity, privacy and third-party data risks

AI systems increase exposure to cyber threats, model theft, data poisoning, and privacy breaches. JSE-listed companies in financial services and telecoms highlight cybersecurity as a critical obstacle to scaling AI (PwC, 2023; Deloitte, 2023).

New CA competencies include understanding AI-related cyber risks, linking cybersecurity controls to financial reporting risks, evaluating POPIA compliance, and reviewing AI security controls during assurance engagements.

4.6.9. Change management and cultural adoption gaps

A frequent reason for failed AI scaling is insufficient organisational change management—employees lack training, roles shift, and responsibilities become unclear. The Big Four emphasise culture, leadership buy-in, and workforce upskilling as decisive factors for AI value realisation (EY, 2023; Deloitte, 2023).

New CA competencies include leading transformation, designing upskilling programmes for finance teams, process redesign, and communicating AI impacts to stakeholders.

4.6.10. Fragmented use cases and lack of enterprise scaling

Many organisations run isolated AI pilots that never mature into enterprise-level systems due to poor integration, unclear prioritisation, or insufficient investment. Big Four surveys demonstrate that although experimentation is high, scaling remains limited (PwC, 2023; KPMG, 2023).

New CA competencies: AI investment appraisal, financial modelling of AI ROI, prioritisation of use cases based on materiality, and post-implementation evaluation.

4.7 Integrated competency map for future CAs

Across these gaps, the strongest emerging competencies are:

- AI and data literacy (understanding ML basics, data structures, validation principles)
- AI governance and model risk management
- Data governance and data-quality control
- Model validation and assurance techniques
- Regulatory interpretation of AI-related laws and disclosures
- Ethical, fairness, and ESG-related assessments
- Cyber and privacy risk comprehension
- Vendor and contract oversight
- Change-management and transformation leadership
- Continuous assurance and AI-driven control monitoring

These competencies align precisely with the implementation gaps observed across both JSE top-20 companies and the Big Four’s global and South African AI insights.

4.8 Cross-source synthesis

Triangulation of findings from all three data sources reveals that, while SAICA provides a strategic framework for digital readiness, Big Four firms demonstrate its practical application, and JSE-listed companies reinforce demand for these competencies. Across all sources, AI literacy, data analytics, ethical reasoning, and adaptability emerge as core competencies shaping the CA(SA) of the future.

CHAPTER 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary of findings

The findings of the study indicate that AI has redefined accounting competencies, emphasizing strategic thinking, analytics, and ethical governance. The three data sources from which the study has drawn find that SAICA's CA of the Future framework provides a foundation but requires consistent implementation across the profession, the Big Four firms lead in embedding AI competencies and shaping future professional standards and JSE companies' expectations highlight the urgency for AI-enabled accountants.

The comparison between the literature review in Chapter 2 and the research findings presented in Chapter 5 reveals a strong alignment between theoretical expectations and theoretical realities regarding the influence of artificial intelligence (AI) on the competencies required of chartered accountants in South Africa. Chapter 2 establishes a conceptual foundation by arguing that AI is reshaping the accounting profession through the automation of routine tasks and the simultaneous elevation of higher-order competencies such as digital literacy, strategic thinking, ethical governance, and adaptability. The literature further positions the future accountant as an "augmented professional," whose value lies in integrating technological tools with professional judgement and decision-making capabilities. In contrast, Chapter 5 provides confirmation of these theoretical perspectives by demonstrating that organisations across the professional, practice, and corporate spheres increasingly demand hybrid competency profiles combining technical accounting expertise with AI literacy, data analytics, and governance oversight.

While the literature conceptualises competency evolution as a forward-looking paradigm shift, the findings indicate that this transformation is already operationalised within leading firms and large corporates, particularly the Big Four and Top 20 JSE-listed companies, thereby reinforcing the urgency for professional training pathways to adapt accordingly. Both chapters converge on the conclusion that SAICA's CA of the Future competency framework offers a strategic foundation for responding to technological disruption; however, the findings of this research extend the

literature by highlighting persistent implementation challenges, including uneven access to AI technologies, limited experiential learning opportunities, and ambiguity in articulating AI-specific competencies. This suggests that the gap between conceptual alignment and practical execution remains a defining feature of the profession's transition toward digital maturity. Furthermore, the six dominant competency themes identified in the findings which are digital and data literacy, strategic and analytical thinking, ethical governance competence, adaptability, human–AI collaboration, and corporate AI expectations, mirror the thematic synthesis developed in the literature review, thereby demonstrating theoretical–empirical coherence. At the same time, Chapter 5 refines the literature's discussion by emphasising emerging competencies such as AI assurance, model risk management, and algorithmic transparency, which reflect the operational realities of AI-enabled financial environments.

Overall, the comparative analysis illustrates that while the literature anticipates the transformative impact of AI on professional identity and competency frameworks, the research findings contextualise these insights within the South African accounting ecosystem, highlighting both progress achieved and systemic challenges that must be addressed to ensure the continued relevance and global competitiveness of the CA(SA) designation.

The findings from the literature review and within this research converge to address the research objectives of the study as indicated in Table 10:

Table 10 Alignment between research objectives and key findings

Research Objective	Key Results / Empirical Findings (Chapter 4)	Evidence Source	Implication for CA(SA) Competencies
1. Identify AI-related competencies required for a CA(SA) to remain employable in an AI-enabled environment	Six dominant competency themes emerged: (1) digital and data literacy; (2) strategic and analytical thinking; (3) ethical and governance competence; (4) continuous learning and adaptability; (5) human-AI collaboration; and (6) corporate-level AI expectations.	Thematic analysis of Big Four reports, SAICA publications, and JSE Top 20 integrated reports	CA(SA)s require hybrid competencies combining accounting expertise with AI literacy, judgment, and strategic insight rather than transactional skills alone.
2. Identify gaps and flaws in AI implementation in the Top 20 JSE-listed companies and the Big Four accounting firms	AI is widely adopted for analytics, forecasting, fraud detection, audit automation, and reporting; however, gaps exist in AI governance, model oversight, ethical assurance, and human capability readiness. Implementation maturity varies significantly across organisations.	JSE Top 20 integrated reports; Big Four AI strategy disclosures	CA(SA)s are increasingly expected to oversee AI outputs, manage AI risks, and provide assurance over AI-enabled processes competencies not traditionally emphasised in training.
3. Evaluate the extent to which SAICA's competency framework addresses these AI-related gaps	SAICA's CA of the Future framework conceptually incorporates digital acumen, ethics, and adaptability but lacks explicit articulation of AI-specific competencies such as AI assurance, algorithmic transparency, model risk management, and data governance.	SAICA CA of the Future Framework; Foresight Project documentation	Ambiguity in AI competency expectations leads to inconsistent implementation across training offices, particularly disadvantaging smaller firms and trainees with limited AI exposure.

The results from the table above indicate that the research objectives have been met and through the study.

Through meeting the research objectives as outlined in Table 10, the research questions were answered as follows:

- RQ1: Required skills include AI literacy, data analytics, ethical reasoning, and adaptability.
- RQ2: Implementation gaps are as listed in sections 4.6.1-4.6.10.
- RQ3: SAICA's CA of the Future programme embeds these skills, but implementation gaps remain.

These findings confirm that AI significantly influences the competencies required by CA(SA)s. The profession's continued relevance depends on hybrid skills integrating technological expertise, ethical governance, and strategic judgment. SAICA's foresight initiatives provide a strong framework, but collaboration among academia, professional bodies, and industry remains vital to ensure globally competitive, AI-empowered accountants in South Africa.

5.2 Theoretical contributions

The findings of this study contribute to accounting as a field of study, in the presence of AI, specifically in relation to the CA(SA) professional and competencies required. The study is an evaluation which utilises the Big Four, Top 20 JSE listed companies and the SAICA Foresight project to draw evidence for the purpose of determining the influence of AI on the competencies required by a CA(SA).

5.3 Policy recommendations

The recommendations below are categorized by their achievability in the short or long term and whether each is an immediate CPD action required or institutional reform.

Short term immediate CPD action recommends embedding AI governance, model risk management and digital assurance explicitly within CA of the Future learning outcomes, launching a tiered CPD pathway (Foundations → Practitioner → Expert) in data analytics, AI literacy, and AI assurance, issue technical guidance on assurance over AI-generated information (financial and

ESG), including data lineage controls and integrate AI ethics/algorithmic bias cases into Assessment of Professional Competence (APC) and training offices' practical experience requirements.

Long term institutional reform recommends creating a micro-credential: "CA(SA) – Digital Finance & AI Assurance," co-badged with industry partners, establishing an industry-academia consortium (SAICA–JSE–Big Four–universities) to maintain an annually updated AI competency map and supporting SMEs with low-cost training and templated digital-control frameworks to reduce adoption barriers.

5.4 Executive summary of recommendations

Corporate South Africa is operationalising AI at scale, particularly in finance-intensive sectors. The competency profile of CA(SA)s must therefore extend beyond technical accounting to include analytics, digital assurance, model risk and ethical governance. Implementing the above recommendations would align SAICA's professional formation with employer demand and strengthen trust in AI-enabled reporting.

5.5 Areas for future research

Future research can expand on findings from a larger number of JSE-listed companies, with a dive into industry sector specific influences of AI on the role of a CA(SA). The evolution of the SAICA programs in the future is an area where research may expand. Implementation of AI in mid-tier firms and future implementations by the Big Four can also be explored. In general, future research can explore each evaluated data source for changes to frameworks and AI requirements of a CA(SA).

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APPENDICES

Appendix A - Competencies Defined

The table below defines the competencies included in the CA of the Future Pathway to Relevance Post Qualification Competency Framework.

Professional Values and Attitudes

Competencies	Definition
Ethics	
Personal ethics	The ethical principles and values applied by an individual to decision-making, conduct and interaction between oneself and others.
Business ethics	The ethical principles and values applied by the organisation to decision-making, conduct and the relationship between the organisation, its stakeholders and society.
Professional ethics	The fundamental ethical principles and values applied by a professional CA to decision-making, conduct and the relationship between the professional, its stakeholders and society.
Lifelong Learning	
Adaptive Mind-set	The approach of rapidly assessing information, making adjustments and thriving in difficult situations.
Agility	The ability to rapidly adapt and find solutions to problems.
Inquisitiveness	The tendency to be curious, ask questions and do research to gain new insights and knowledge.
Self-development	Taking the initiative to develop one's own skills, knowledge, interpersonal relationships and work experience.
Citizenship	
Personal citizenship	The personal approach of valuing, being responsive and tolerant towards cultural diversity and individual differences and seeking opportunities to have a positive impact on one's local community and environment.
Business citizenship	The recognition of an organisation's social, cultural and environmental responsibilities to the community in which it seeks its license to operate and the economic and financial responsibilities to its shareholders or stakeholders.

Professional citizenship	The ability to demonstrate professional behaviour, have a positive impact on one's profession and a commitment to serve public interest.
Global citizenship	The ability to influence and work effectively with those from different cultures to grow international collaboration and prosperity.

Enabling and Future Competencies

Competencies	Definition
Business Acumen	
Business external environment	The ability to evaluate the outside factors that impact the operation of an organisation.
Business internal environment	The ability to evaluate the factors within an organisation that influence its decisions.
Planning and organising	The ability to organise, apply time management, file and plan work effectively according to strict deadlines.
Digital Acumen	
Computational thinking	Computational thinking is a set of problem-solving methods that involve expressing problems and their solutions in ways that a computer could also execute.
Cyber security	The knowledge and diligence required to protect computer systems and data from theft or damage.
Data analytics	The science of analysing raw data to draw conclusions from information upon which decisions can be made.
Database management	The organising, maintenance and storage of data using database management systems software.
Digital affinity	The orientation to use technology and digital media to optimise the performance of tasks and communication.
Digital familiarity	The knowledge and ability to use existing cognitive and non-cognitive computing systems.
Digital impact	The knowledge and ability to adapt to new technological developments.
Digital user skills	Use technology ethically as an enabler to optimise decision making and to promote business efficiencies and controls.
Interdigital relationships	The orientation to use social media for improve communication and social interactions.
Decision-Making Acumen	
Analytical thinking	The ability to identify patterns in information and to break complex problems into manageable parts that can be solved individually.

Critical thinking	The ability to critically assess information by making inferences, recognising assumptions, doing deduction, making interpretations, evaluating arguments and drawing conclusions.
Effective decision-making	The ability to logically weigh positives and negatives of options, consider alternatives, envisage outcomes and to determine which option is the best.
Entrepreneurial thinking	The ability to recognise opportunities in the marketplace and understand how and when to capitalise on them.
Innovative thinking	The curiosity, creativity and ingenuity to develop new ideas, strategies and plans to improve services, products or processes.
Integrated thinking	The ability to define all aspects of a problem, analyze relationships between the different aspects, balance tensions between opposing variables and outlining how decisions are reached.
Judgement	The ability to critically evaluate information to make logical conclusions and fair decisions.
Numerical reasoning	The ability to apply mathematical concepts and principles to solve theoretical or practical problems.
Problem-solving	The process assessing details of a problem, analysing options and designing the best solution.
Professional skepticism	An approach of questioning information, being alert to potential errors or fraud and critical evaluation of evidence.
Strategic thinking	The ability to envisage a desired future state and redirect plans to reach desired goals.
Sustainable mind-set	The actions and decisions to achieve goals, as well as the formulation of strategies and implementation of initiatives that ensures sustainability for the organisation, considering its people, its clients, its stakeholders and the broader environment.
Value creation mind-set	The actions and decisions to achieve goals, as well as the formulation of strategies and implementation of initiatives that creates value for the organisation, its people, its clients and its stakeholders.
Relational Acumen	
Communication skills	The ability to effectively exchange information in conversations or by using written or audio communication channels, driven by good linguistic skills.

Emotional display	The ability to maintain emotions and act appropriately at work.
Emotional regulation	The ability to manage stress in front of clients and co-workers.
Emotional resilience	The ability to remain focused on using rational thinking despite emotional stress over long periods of time.
Leadership skills	The ability to establish and share a clear vision, providing directions and motivation to help others follow plans, balancing conflicts of interests, being an example and remaining creative and decisive under pressure.
Managing others	The organisation and coordination of colleagues and their activities to achieve the goals of an organisation.
Relationship-building skills	The ability to establish and maintain positive interpersonal relationships characterised by sensitivity, support, respect and constructive resolution of differences or conflict.
Self-management	Managing and taking responsibility for one's own actions and emotions.
Teamwork / people skills	Ability to value the contributions of other team members, achieve shared goals and to capitalise on ways to optimise team strengths.

Technical Competencies

Assurance engagements	The expression of a conclusion designed to enhance the degree of confidence of the intended users other than the responsible party about the outcome of the evaluation or measurement of a subject matter against criteria.
Audits of historical financial statements	The process of enhancing the degree of confidence in financial statements by the expression of an opinion by the auditor on whether the financial statements are prepared, in all material aspects, in accordance with an applicable financial reporting framework.
Automation management	The oversight of the implementation and maintenance of automation technology and practices. Automation is the technology by which a process or procedure is performed with minimal human assistance.
Business processes implementation	The execution of a series of logically-related tasks to produce a desired set of results.
Business strategy	The planning, methods and coordination of effort involved in achieving a desired business objective.

Business system applications	The methodical procedures or processes built into applications that is used to deliver goods or services to clients.
Change management	Managing the ability to cope with, manage and flourish in a changing environment.
Design and innovate	The description of a concept followed by a process of translating the concept into goods or services that will add value to an organisation or clients.
External financial decision-making	The performance measures, descriptors and declarations that are in place for investors, creditors and other external users of financial information.
Financial management	The organising, monitoring, controlling and directing of how monetary resources of an organisation should be used and reported on.
Governance model	The framework of rules, procedures and contracts by which an organisation maintains transparency, accountability and fairness in its relationships with employees and stakeholders.
Internal financial decision-making	The performance measures, descriptors and declarations that are in place to guide decision-making by management and other internal users of financial information.
Investment decisions	The decisions related to how, when, where and how much capital will be invested in opportunities, based on the potential risk and reward.
Laws and regulations	Ability to apply knowledge about an industry to identify an organisation's compliance with legal and regulatory obligations.
Managing uncertainty	The coordination of decisions that must be made despite incomplete information, unknown factors or unpredicted events.
New developments and protocols knowledge	The understanding of what new digital developments and protocols entail, and the ability to investigate the use and impact of these new developments and protocols.
Operational decision-making	The ability to make effective short-term decisions in the absence of prescriptive long-term strategies.
Project implementation	The execution of plans, control mechanisms, monitoring and review of activities to successfully complete a project.
Providing advice	The ability to provide support, feedback and guidance to help individuals complete their tasks successfully.

Quality assurance	The ability to attend to detail and produce work that is accurate and of a high standard.
Reporting fundamentals	A framework according to which critical financial and audit information will be reported.
Resource mobilisation	The activation of the economic or productive activities required to achieve desired outcome.
Review, analyse and monitor	The re-examination of past information, systematic evaluation of data to establish cause and effect relationships, and the repeated measurement and control of parameters to assess whether a critical point is under control.
Risk and asset management	The process of identifying, analysing and assessing risk and deciding how to control, avoid, minimise or eliminate unacceptable risks and the administration of investable assets, aimed at achieving an optimum risk to reward ratio.
Stakeholder management	The process of maintaining constructive relationships with individuals, groups or organisations that has an interest or concern in your organisation.
Tax governance	The framework of rules and procedures by which an organisation maintains its tax compliance.
Tax planning	The process of minimising tax liability through the use of legal allowances, deductions and exemptions.

Appendix B – Turnitin Report Summary Page

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Appendix C – Ethical Clearance



19 August 2025
Miss Sameerah Essa (216062599)
Westville

Dear Miss Sameerah Essa,

Original application number: 00031950
Project title: The influence of Artificial Intelligence on the competencies required by a Chartered Accountant in South Africa

Exemption from Ethics Review

In response to your application received on 20 July 2025, your school has indicated that the protocol has been granted **EXEMPTION FROM ETHICS REVIEW**.

Any alteration/s to the exempted research protocol, e.g., Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through an amendment/modification prior to its implementation. The original exemption number must be cited.

For any changes that could result in potential risk, an ethics application including the proposed amendments must be submitted to the relevant UKZN Research Ethics Committee. The original exemption number must be cited.

In case you have further queries, please quote the above reference number.

PLEASE NOTE:

Research data should be securely stored in the discipline/department for a period of 5 years.

I take this opportunity of wishing you everything of the best with your study.

Yours sincerely,

Prof Claire Lauren Vermaak
Academic Leader Research

UKZN Research Ethics Office
Westville Campus, Govan Mbeki Building
Postal Address: Private Bag X54001, Durban 4000
Website: <http://research.ukzn.ac.za/Research-Ethics/>

Founding Campuses: Edgewood Howard College Medical School Pietermaritzburg Westville

INSPIRING GREATNESS

Appendix D – Supervisor's Permission to Submit for Examination

SUPERVISOR'S PERMISSION TO SUBMIT FOR EXAMINATION

Date: 24 January 2026

Student name: Sameerah Essa

Student no: 216062599

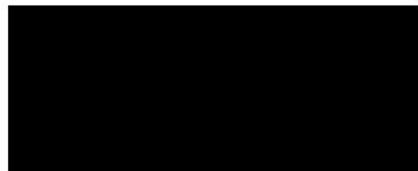
Dissertation Title: The influence of Artificial Intelligence on the competencies required by a Chartered Accountant in South Africa

As the candidate's supervisors, I agree to the submission of this dissertation for examination. Based on the Turnitin report and to the best of our knowledge, the dissertation is primarily the student's work, and he has acknowledged all the sources he has used.

The student has also satisfied the requirements of English language competency.

Name of Supervisor: Prof Mishelle Doorasamy

Signature

A solid black rectangular box used to redact the signature of the supervisor.

Appendix E – Certification from Language Editor

PRO EDIT PTY LTD
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EDITING CERTIFICATE

Date: 2026/1/21

This serves to confirm that the document entitled:

**The influence of Artificial Intelligence on the competencies required by a Chartered
Accountant in South Africa**

has been language edited on behalf of its author.

Genevieve Wood
Pro Edit Pty Ltd

Appendix F – Intention to Submit

COLLEGE OF LAW & MANAGEMENT STUDIES HIGHER DEGREES

IN ACCORDANCE WITH UNIVERSITY GENERAL RULES CR12, MR8b and DR8b THE STUDENT MUST SUBMIT THIS FORM TO THE SCHOOL HIGHER DEGREES OFFICE AT LEAST THREE MONTHS BEFORE SUBMISSION OF MASTER'S DISSERTATIONS, OR DOCTORAL THESES. IN THE EVENT OF THE STUDENT FAILING TO SUBMIT THE THESIS FOR EXAMINATION WITHIN 6 MONTHS OF THE INTENDED SUBMISSION DATE SPECIFIED, THE NOTICE WILL LAPSE AND A FURTHER NOTICE OF INTENTION WILL BE REQUIRED TO BE SUBMITTED.

CONFIRMATION OF INTENTION TO SUBMIT

NAME OF STUDENT: Sameerah Essa STUDENT NO: 216062599

DEGREE: Masters in Accounting (MACC)

SCHOOL: School of Law & Management Sciences

TITLE OF DISSERTATION/THESIS: The influence of artificial intelligence
on the competencies required by a Chartered Accountant in South Africa

DATE OF INTENT TO SUBMIT: 01 February 2026

CONTACT TEL NO: None

CELL NO: [REDACTED]

SECONDARY E-MAIL ADDRESS: [REDACTED] OR [REDACTED]

STUDENT SIGNATURE: [REDACTED]

NAME OF SUPERVISOR: Mishelle Doorasamy

UKZN STAFF NO: 53457 [REDACTED]

SUPERVISOR'S SIGNATURE: [REDACTED] ..DATE: 23/10/25

SUPERVISORS EMAIL: Doorasamvm@ukzn.ac.za CELL:

NAME OF CO-SUPERVISOR: Muhammed Abdool Haq Kajee

UKZN STAFF NO: [REDACTED]

CO-SUPERVISOR'S SIGNATURE: [REDACTED] ..DATE: 23/10/2025

*Although a student does not need a supervisor's permission to file this notice, students are strongly encouraged to only file this notice after consultation with their supervisors on (i) their readiness to submit, and in the case of a doctoral student, on (ii) the exclusion of examiners.