

**Managing the Digital Transformation Change:
A Case for the Chartered Accountant
in South Africa**

by

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Declaration:

I, **Mandy Joy Nienaber CA(SA)** declare that this Innovation Project submitted for the **Master of Business Administration** degree to The Independent Institute of Education is my own, unaided work and has not been previously submitted to another University or Higher Education Institution for degree purposes. Any assistance that I have received has been duly acknowledged in the report.

Except where reference is made in the text, this report contains no material published elsewhere or extracted in whole or part from a thesis or report presented by me for another qualification. No other person's work has been used without due acknowledgment in the main text of the report.

Signed: _____

Date: **30 November 2022**

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ABSTRACT

The South African Institute of Chartered Accountants (SAICA) is South Africa's pre-eminent accountancy body and widely recognised as one of the world's leading accounting institutes. These professionals hold positions as leaders in their spheres of business operation. The accelerating advancement of digital technologies is rapidly changing the way businesses operate. This requires Chartered Accountants to transform digitally at a corresponding pace, adopt new methods of doing business, circumnavigate advancing disruptive technologies, prepare for undefined evolving roles, and enhance value creation strategies.

This study contains the findings of an examination on the research problem of inadequate speed of adoption of rapidly changing technologies to maintain the relevance of the Chartered Accountant profession in South Africa. The main objective is to develop a change management model that will accelerate digital transformation in the profession.

An on-line quantitative survey questionnaire was distributed to all 49 113 Chartered Accountants registered with The South African Institute of Chartered Accountants (SAICA). The survey was distributed via email directly by SAICA to its member database. Employing a sample of 218 Chartered Accountants (SA), quantitative data was obtained and analysed on the impact of digital transformation on the profession, the readiness of the profession, the skills and competencies required and the barriers to adoption. The sample size of 218 CAs is relatively large enough to mitigate against data variability.

The findings suggested that disruptive technological advances had significantly impacted the industries and roles of Chartered Accountants. Accountants and auditors had featured in the top five job roles of decreasing demand, highlighting required evolving roles. Only one-third of respondents agreed that the profession locally had adapted quickly enough and a notable 86% of respondents required improved competencies and skills. Disruptive technologies were new to many in the profession, and while most had a basic understanding, very few considered themselves technically proficient or well-experienced.

Accountants required new or strengthened essential skills in data management, coding and an understanding of databases and cloud computing. The top three emerging skills were analytical thinking and innovation, critical thinking, and analysis and complex problem-solving. The top three barriers to adoption of innovative technologies by CAs(SA) were an insufficient understanding of opportunities, skills gaps in the local labour market and skills gaps in leadership.

Transformation in people, processes and infrastructure is required to enhance value and efficiency. This includes governance, policies and procedures, talent management, employee engagement and information security. Some of the suggested practical change management mechanisms are:

- the Honours Degree and the Board Examination curriculum to include a required module on Digital Transformation covering proficiency in artificial intelligence, big data, coding, IT ethics, IT governance and cybersecurity.
- SAICA to offer formal SAICA Business School Online accreditation programmes on proficiency in analytical thinking and innovation; critical thinking; and analysis and complex problem-solving;
- SAICA's CPD policies and procedures to include requirements for CAs(SA) to attend at least some of the extensive online CA of the Futures seminars and conferences already offered by SAICA;

Findings based on a series of robustness or sensitivity analyses suggest that the empirical results are generally reported to be robust. Based on the study, the slow adoption of digital transformation may be attributed to an insufficient understanding of opportunities, skills gaps in the local labour market and skills gaps in leadership.

Empirical results indicate conclusively the inadequate speed of adoption of rapidly changing technologies to maintain the relevance of the Chartered Accountant profession in South Africa. The study appropriately suggests a change management model to accelerate the speed of adoption by CAs(SA) of disruptive technologies and how to manage the change.

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LIST OF ABBREVIATIONS

4IR	Fourth Industrial Revolution
AI	Artificial Intelligence
AR	Augmented Reality
CA2025	SAICA's CA2025 competency framework
CA(SA)	Chartered Accountant (South Africa)
CAs(SA)	Chartered Accountants (South Africa)
CEO	Chief Executive Officer
COVID-19	Coronavirus disease 2019
CPA	Certified Public Accountant
ICAEW	Institute of Chartered Accountants in England and Wales
IFAC	International Federation of Accountants
IoT	Internet of Things
IT	Information Technology
MD	Managing Director
PHEIC	Public Health Emergency of International Concern
POPI	Protection of Personal Information
QR Code	Quick Response Code
RPA	Robotic Process Automation
SAICA	South African Institute of Chartered Accountants
VR	Virtual Reality
WHO	World Health Organisation
XR	Extended Reality

GLOSSARY

4th Industrial Revolution	Rapid technological advances in disruptive technologies such as artificial intelligence, robotics, the Internet of Things (IoT), genetic engineering, quantum computing, and more (World Economic Forum, 2022).
Artificial Intelligence	The ability of a computer or a robot controlled by a computer to do tasks that are usually done by humans because they require human intelligence and discernment (Bernard Marr & Co., 2022).
Big Data	Data sets that are large and complex and may be analysed computationally to reveal patterns, trends, and associations (Oxford English Dictionary, 2022).
Blockchain Technology	A digital system for recording transactions and related data in multiple places at the same time, with technology designed to make it impossible to access the system or forge the stored data without permission, making it secure and unalterable (Investopedia.com, 2022).
Change management	A collective term for all approaches to prepare, support, and help individuals, teams, and organizations in making organizational change - a systematic approach to dealing with the transition or transformation of an organization's goals, processes or technologies (Gibson, Ivancevich, Donnelly and Konopaske, 2012).

Coronavirus disease 2019	A contagious disease (COVID-19) caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). It is an ongoing global pandemic, first identified in China in December 2019, and spreading worldwide with over six million confirmed deaths by May 2022 (The World Health Organisation, 2020).
Data Analytics	The science of analyzing raw data to make conclusions about that information (Bernard Marr & Co., 2022).
Digital Transformation	A new formation of organisations that adopt pervasive changes through the power of technology (Meraghni, Bekkouche and Demdoun, 2021).
Disruptive Technologies	An innovation that significantly alters the way that consumers, industries, or businesses operate (Investopedia.com, 2022).
Extended Reality	A term referring to all real-and-virtual combined environments and human-machine interactions generated by computer technology and wearable devices (Bernard Marr & Co., 2022).
Internet of Things	The interconnection via the internet of computing devices embedded in everyday objects, enabling them to send and receive data (Oxford English Dictionary, 2022).
Quick Response Code	A type of two-dimensional barcode that is a machine-readable optical label that can contain information about the item to which it is attached (Investopedia.com, 2022).

CHAPTER 1: SUMMARY

1.1 Introduction

The rapid advent of various technologies such as artificial intelligence, big data, robotics, and cloud computing is rapidly changing the way businesses operate. These technologies require the digital transformation of governments and businesses at a commensurate pace. In fact, technological developments, globalisation, and competitive forces are driving the accounting profession to change constantly (Khanom, 2020).

Exogenous factors such as the COVID-19 pandemic, have intensified the urgency for digital transformation. Mudassir (2020) argues that the pandemic will trigger the next era of innovation and change the trajectory of governments, economies, and businesses for years to come. According to Khanom (2020), the dynamic nature of digital technologies is making the accounting profession the most affected sector in ways that were never anticipated.

1.2 Background and conceptualisation

According to The South African Institute of Chartered Accountants (SAICA) (2021), the fourth industrial revolution (4IR) and digital transformation have altered the nature of the global business environment. Therefore, this requires Chartered Accountants (CAs) to navigate and adapt to the digital era to continue to provide responsible leadership.

The profession has evolved significantly over recent years, but the world is changing at breakneck velocity (Accountancy SA, 2021). CAs are having to embrace new ways of business, navigate emerging disruptive technologies, prepare for evolving roles that are not yet fully defined, and enhance value creation strategies in this volatile and complex era (SAICA, 2021).

Governments, industries, and companies are challenged by stakeholders to show relevance by adding new value with innovative solutions, demanding agile and high-impact results (Albaidhani, 2019). Kokina, Gilleran, Blanchette and Stoddard (2021) assert that disruptive technologies are advancing at a frenzied pace, and that the digital workforce has arrived. They estimate that by the end of 2022, 85 percent of large organisations will have deployed some form of Robotic Process Automation (RPA), with software robots using structured workflows to emulate human actions and execute complex business processes. Artificial Intelligence (AI) can already search for information online, interact with voice assistants and write computer code by itself (Bernard Marr & Co., 2022).

The COVID-19 pandemic was an unprecedented challenge (Yost, 2020). The rapid spread of the virus severely impacted economies globally, resulting in a world-wide economic slowdown, volatile and weakening global stock markets, and central bank fiscal interventions (SNG Grant Thornton, 2020). South African lockdown restrictions shifted the entire economy to remote and flexible working overnight with no preparation or training, forcing an accelerated adoption of digital transformation for almost all forms of commerce, collaboration, and schooling.

1.3 Context of the study

The study focuses on the Chartered Accountant (SA) cohort in South Africa. South Africa is considered a suitable country to do this study because SAICA is not only considered the foremost accountancy body in the country, but also collectively acknowledged as one of the world's leading accounting institutes (SAICA, 2022). South Africa possesses a sound financial and corporate regulatory structure, dominated by a few large, listed firms. Notably, of all Johannesburg Stock Exchange (JSE)-listed companies, 24% of directors are CAs(SA) and the designation is the most prevalent qualification in business (Accountancy SA, 2020). In addition, 74% of Financial Directors and 21% of MDs are CAs(SA), and almost two-thirds of the companies run by CAs(SA) are in the Top 200 on the JSE (SAICA, 2022). Therefore, these professionals hold positions of power and influence, which makes studying digital transformation using CAs a unit of analysis, a fertile research.

1.4 Research problem

The World Economic Forum (WEF) (2020) estimates that by 2025, 85 million job roles may be displaced by the division of labour between humans and technology, while 97 million new roles may emerge that are more adapted. The key affected job roles are set out below:

<i>Table 1 presents the top 5 job roles in increasing and decreasing demand across industries. Column 1 is the ranking, and Column 2 presents the roles, of increasing demand. Column 3 is the ranking, and Column 4 presents the roles of decreasing demand.</i>			
Rank	Increasing demand	Rank	Decreasing demand
1	Data analysts and scientists	1	Data entry clerks
2	AI and machine learning	2	Administrative and executive
3	Big data specialists	3	Accounting, bookkeeping and
4	Digital marketing and strategy	4	Accountants and auditors
5	Process automation	5	Assembly and factory workers

Table 1: Top 5 job roles in increasing and decreasing demand across industries (WEF, 2020)

According to the above table, the demand for data analysts and scientists is increasing, which highlights evolving roles required of CAs going forward. The table also highlights the decreasing relevance of some of the traditional roles of a CA. CAs will remain indispensable, but it is crucial for CAs worldwide to stay relevant in a complex technology-driven world (Accountancy SA, 2021).

According to the Association of International Certified Professional Accountants (2019), most finance teams and professionals are not evolving their skills fast enough to account for the impact of artificial intelligence, block chain, cybersecurity, robotic process automation and other new technologies. A survey of over 700 senior finance leaders reports that only 10 percent of finance teams have sufficient technical skills to support their organisation's digital journey (Kokina *et al.*, 2019). This asserts that the profession has not fully embraced technology / digital transformation.

Companies promise transformative customer experiences, yet functions such as finance increasingly fall behind. Furthermore, the typical finance worker will be more comfortable staying put, than applying data science, predictive algorithms, RPA and blockchain technologies to transform the world around them (Padmos & Englund, 2019). This research seeks to understand the why and recommend what to do and how to manage the change to speed up the adoption of digital technology.

To this end, it is important to understand the changing nature of the Chartered Accountant profession in the digital era, with the changing role accounting professionals will play in the exponentially accelerating technological advancements, and the skills and competencies CAs (SA) will need to support this global digital transformation.

Therefore, the research problem statement is:

***Inadequate speed of adoption of rapidly changing technologies
to maintain the relevance of the profession.***

1.5 Research objective

In attempting to address the preceding research problem statement, the main objective of this study is to develop a change management model that will accelerate digital transformation in the CA profession. Specifically, the sub-objectives of the research are as follows:

- to examine the impact of digital transformation, and how the digital era is affecting the accounting profession
- to examine the impediments of digital transformation on the accounting profession
- to examine the state of readiness of the profession to digital transformation
- to examine the requisite skills and competencies
- to develop a change management mechanism to speed up the adoption of digital technology.

1.6 Contribution of the study

The data and findings are expected to provide valuable new insights (particularly post-COVID) on the impact of the digital era on the profession, and the variables impacting the speed of adoption. It aims to gather current, relevant data from CAs, and their insights and perspectives, to be used to develop a change management model that will accelerate digital transformation in the CA profession. The research aspires to influence these professionals to pay particular attention to and apply the recommended change management model to enhance enabling competencies as they continue to provide responsible leadership, serve their stakeholders, and contribute value to society.

1.7 Research questions

To address the above research objectives, the study seeks to answer the following research questions:

- what is the impact of the digital era on the accounting profession?
- what are the impediments of digital transformation on the profession?
- what is the state of readiness of the profession to digital transformation?
- what are the requisite skills and competencies?
- what change management mechanism can be utilised to accelerate the adoption of digital technology?

1.8 Preliminary literature review

1.8.1 Existing theoretical frameworks for this study

The existing theoretical frameworks are digital transformation, the impact on the accounting profession and change management. This study is premised on understanding the impact of digital transformation in general and specifically on the profession as well as developing a change management model to accelerate digital transformation in the CA profession.

The impact of digital transformation

Digital transformation is a new formation of organisations that adopt pervasive changes through the power of technology (Meraghni, Bekkouche and Demdoun, 2021). This requires rapid pervasive change and renewal processes. CAs are not adapting quickly enough, and Berikol and Killi (2021) argue that the impact of technological advances is significant. They argue that digitalisation, AI and the 4IR will transform the world as we know it.

Vial (2019) argues both benefits and challenges associated with digital transformation at multiple levels: as technology affords more information, computing, communication, and connectivity, this offers tremendous potential for innovation and performance in organisations and extends beyond the boundaries of the firm to affect individuals, industries, and society. At the same time, it renders firms' ability to sustain their competitive advantage more fragile than ever as they control fewer elements of their operating environment.

Meraghni *et al.* (2021) agree that the business environment has seen rapid developments due to an increasing degree of complexity, markets openness, and competition intensification, necessitating firms to pay close attention to capitalise on the benefits offered by technologies to identify strengths, seize opportunities, address weaknesses, and avoid threats.

Vial (2019) proposes the below framework of digital transformation, across eight building blocks. According to the below figure, digital transformation for CAs is a process where digital technologies create disruptions which trigger strategic responses from CAs and their organisations, that seek to alter value creation paths, while managing the structural changes and organisational barriers that affect both positive and negative outcomes of this process:

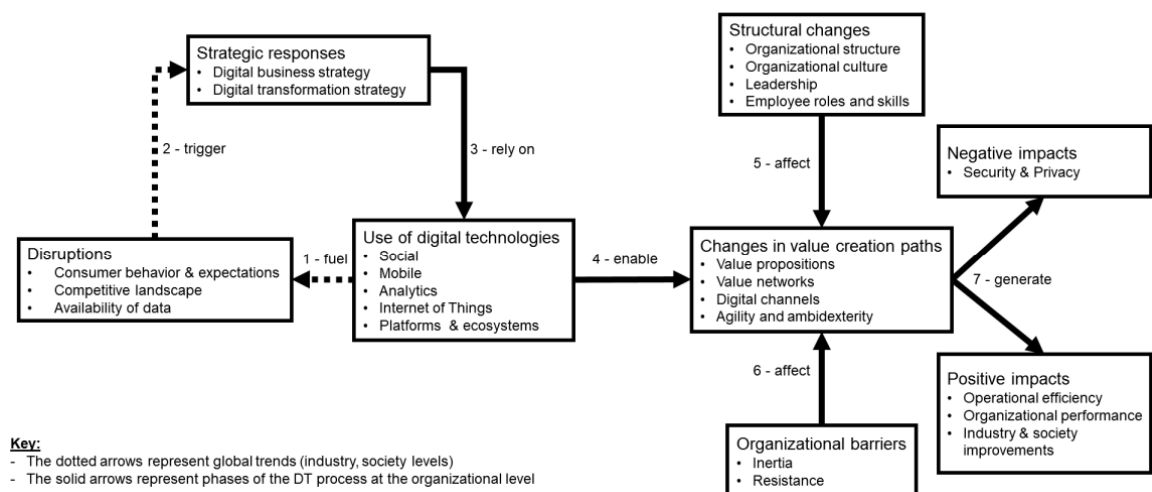


Figure 1: Building blocks of the digital transformation process (Vial, 2019)

How the digital era is affecting the accounting profession

CA2025 (2022) argue that the world we now live and work in is ambiguous and uncertain, with exponential and continuous change. Therefore, as technology advances and becomes more pervasive, it is imperative that accountants remain relevant in their roles. Meraghni *et al.* (2021) caution that members of the accounting profession should not be indifferent – it is a necessity for the profession to develop, transform, constantly renew, and improve in parallel with advancing digital technologies (Metallo *et al.*, 2021).

Kokina *et al.* (2021) assert that accountants must adapt to the changes and engage in digital upskilling. They suggest that accountants play five important roles in identifying, explaining, training, sustaining, and analysing their firm's automation initiatives. Therefore, to prepare for these roles, accountants need to acquire or strengthen essential technical skills for each role – including data management, coding and an understanding of databases and cloud computing.

Lavinia-Mihael (2019) adds that AI and Machine Learning (ML) technologies are replacing repetitive daily tasks, leaving accountants more time to focus on data consulting and analysis. Rather than spending hours on customary tasks, accountants of the future will be able to use and analyse AI data to provide effective business solutions for customers. The WEF (2020) further identified the following top five emerging skills in the professional services profession:

<i>Table 2 presents the top 5 emerging skills in the professional services sector. Column 1 presents the ranking. Column 2 presents the emerging skills identified as being in high demand within their organisation, ordered by frequency.</i>	
Rank	Emerging Skills: Skills identified as being in high demand within their organisation, ordered by frequency
1	Analytical thinking and innovation
2	Complex problem-solving
3	Critical thinking and analysis
4	Creativity, originality, and initiative
5	Active learning and learning strategies

**Table 2: Top 5 emerging skills in the professional services sector
(WEF, 2020)**

According to the preceding table, analytical thinking and innovation is a frequent high demand skill for CAs, as is complex problem-solving and critical thinking. According to Chartered Accountants Worldwide Network USA (CAW) (2022), all accounting bodies globally face the same challenges and must enhance and improve education paths. It asserts that the core competencies of CAs are expected to remain, with augmented/enhanced specific specialisations. Based on this, the new US CPA exams in 2024 focus more on IT systems, controls and automated tools for big data and data analytics, and exams in Great Britain now include data analytics, robotics and blockchain technology.

Accountancy SA (2021) profiled the Senior Executive: Professional Development at SAICA, responsible for all aspects of the CA qualification process. Having worked on a competency roadmap project called CA2025 for four years, it was argued that change is certain, the transformation will be significant and SAICA's key strategic responses include:

- CA2025 – a competency framework for entry level CAs (SA) to demonstrate.
- CA Pathways to Relevance – career path guide of professional competencies, and
- The Continuing Professional Development Policy - to identify how members should develop their professional competence post qualification.

Change management

Gibson, Ivancevich, Donnelly, and Konopaske (2012) assert that global business leaders need interpersonal skills, motivation, and flexibility to successfully manage and adapt to change. They propose the following seven-step model for the management of organisational change to enhance and maximise change management and enhance speed of adoption:

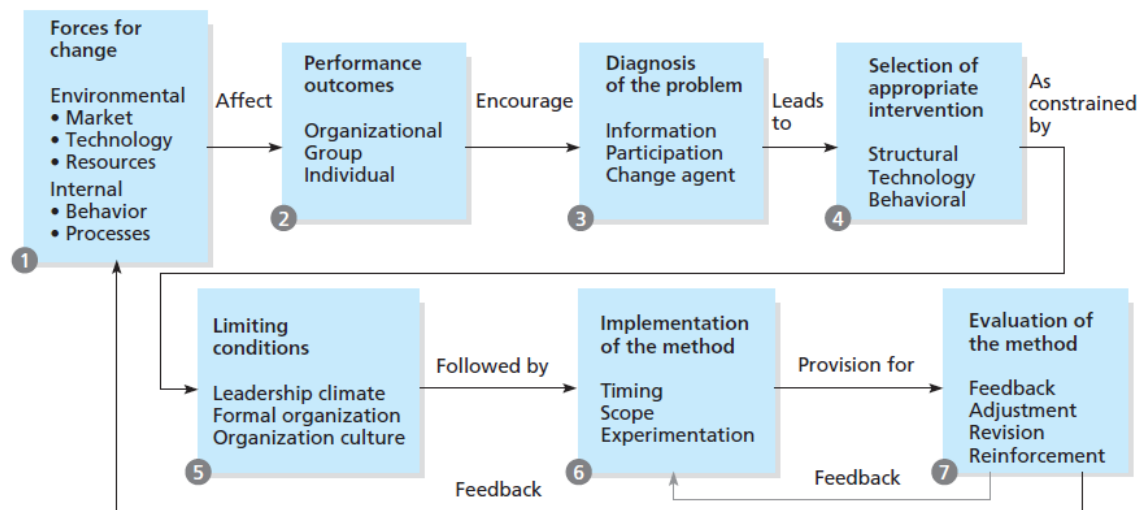


Figure 2: Seven-step model for the management of organisational change (Gibson *et al.*, 2021)

According to the above figure, forces for change continually arise from changes in input, output, technological, and scientific environments. Diagnosis requires information gathering to determine root causes for inadequate speed of adoption, change required, outcomes expected, and measurement tools. Measurable outcomes include efficiency, adaptiveness, and speed of adoption.

The evaluation procedure is the final stage - end results should be operationally defined, and measurements should be taken (before and after) - enabling management to account for resources and provide feedback and corrections for the implementation phase (Gibson *et al.*, 2021). This means that enhancing efficiency, productivity, and value of CAs requires transformation in people, processes, and infrastructure. This includes talent management, employee engagement, enhanced general policies and procedures, robust governance, and information security (Maurer, 2020).

Meraghni *et al.* (2021) found a weak degree of awareness amongst accounting professionals of the importance of digital transformation and a low effort to develop accounting information systems in line with the requirements of digital transformation, all due to the presence of several high-impact challenges.

The WEF (2020) acknowledges that a lack of interest among leadership is a factor but motivates in the table below that several greater barriers to adoption of new technologies exist, including a shortage of investment capital, skills gaps among leadership and staff, an insufficient understanding of opportunities and a lack of flexibility of regulatory frameworks. This means that CAs in the professional services sectors (over 12 000 or 25% according to SAICA, 2022) face a shortage of investment capital in more than half of the companies they manage, and skills gaps in the labour market in just under half, which are key barriers to adoption of new technologies.

<i>Table 3 presents the barriers to adoption of new technologies in the professional services sector. Column 1 presents the barrier to adoption. Column 2 presents the share of companies surveyed.</i>	
Barrier	Share of companies surveyed
Shortage of investment capital	51.0%
Skills gaps in the local labour market	41.2%
Insufficient understanding of opportunities	39.2%
Skills gaps among organisation's leadership	35.3%
Lack of flexibility of the regulatory framework	35.3%
Inability to attract specialised talent	35.3%
Lack of interest among leadership	27.5%
Lack of flexibility in hiring and firing	17.6%
Other	7.8%

Table 3: Barriers to adoption of new technologies in the professional services sector (WEF, 2020)

1.8.2 The conceptual framework for this study

The theoretical frameworks above outline some of the root causes and independent variables negatively impacting on the speed of adoption of new technologies by the profession (the dependent variable).

The conceptual framework for this study will be to combine the various theoretical frameworks on how the digital era and digital transformation is affecting the accounting profession, the impediments of digital transformation on the accounting profession, the state of readiness of the profession to digital transformation, the requisite skills, and competencies, and change management theory.

Common themes in the literature support the view that factors impacting on the speed of adoption of new technologies by the profession include a shortage of capital, inadequate skills and competencies, insufficient understanding of the opportunities, lack of flexibility, resistance to change and ineffective change management mechanisms.

Certain exogenous variables also play a part, such as the impact of the COVID-19 lockdown restrictions which accelerated digital transformation. A further hypothesis is that the generational gap in CAs may influence the responses, flexibility, willingness, readiness, openness to change and speed of adoption of new technologies.

The Chartered Accountants Institute in Ireland has over 30 000 registered members, with 61% of these being younger than 44yrs of age (CAW, 2022). In Table 4, SAICA (2022) outlines the following statistic for the age profile of its registered CAs in South Africa:

<i>Table 4 presents the age profile of SAICA-registered CAs as at 28 February 2022. Column 1 presents the age profile. Column 2 presents the percentage of Chartered Accountants in this age profile.</i>	
Age profile	Chartered Accountants
Under 30	7.8%
30 – 39	38.2%
40 – 49	27.1%
50 – 59	13.7%
60+	13.2%

**Table 4: Age profile of SAICA-registered CAs as at 28 February 2022
(SAICA, 2022)**

According to the above table, 73% of CAs in South Africa are younger than 49yrs of age. This means that the data findings may indicate a correlation between speed of adoption by CAs, and their age profile.

By careful exploration of the existing theoretical frameworks and adapted conceptual frameworks, the research paper aims to develop and recommend a change management mechanism / model to speed up the adoption of digital technology by CAs.

1.9 Research design and methodology

1.9.1 Philosophical paradigm, approach, and reasoning

Accountants must adapt to the challenge of rapid technological advancements in a tactical way, by staying current with new technologies, optimising, and adapting current accounting tools, being open to change, and maximising the opportunities presented to them (Khanom, 2020). According to Lavina-Mihael (2019), the impact of these changes on the accounting profession needs to be understood, and the profession must reimagine itself to continue contributing value to society. Therefore, after exploration of relevant articles concerning this paradigm shift in accounting, literature asks for further and deeper investigation and a better understanding.

The positivism philosophical paradigm has been selected for this research due to the highly regulated, structured nature of the Chartered Accountant profession, which is governed globally by strict codes of conduct, and accounting and auditing standards. Further, key principles of the profession are objectivity, rational reasoning, and independence (SAICA, 2022), which further supports this selection. A deduction approach and reasoning has been selected and Meraghni *et al.* (2021) also used deductive reasoning, based on many previous studies, to research the impact of digital transformation on accounting information systems.

1.9.2 Research design

The research design is the general planning strategy for solving the research problem and provides the overall structure for the procedures followed, the data collected, and the data analyses (Leedy & Ormrod, 2015). The study seeks to solicit insights from respondents, such as, the impediments of transformation on their role and the accounting profession, their state of readiness, and that of the profession, the requisite skills and competencies and recommended change management mechanisms. Therefore the study is well suited to a quantitative research design. A quantitative design is an appropriate measurement tool to objectively reveal absolute, undeniable cause-and-effect relationships within the physical world and human experience.

1.9.3 Data collection method

For this research, a quantitative data collection method has been selected. Leedy and Ormrod (2015) suggest that quantitative researchers study and collect data focused specifically on key identified variables only.

The data collection method is via a quantitative questionnaire distributed to all 49 113 SAICA-registered CAs. This will enable the collection of data focused only on the specific variables in the research questions. The study involves a large population and sample size, and the quantitative data collected is expected to be representative to enable findings to be extrapolated.

1.9.4 Data collection instrument and research technique

As motivated above, an online questionnaire has been selected as the chosen data collection instrument for this research. Therefore, due to the large size of the population (all 49 113 potential respondents), a survey is considered the most efficient, dependable, and feasible research design. Meraghni *et al.* (2021) also researched the impact of digital transformation on accounting information systems through a questionnaire distributed in 2021, by applying it to a sample of 237 individuals active in about 120 firms operating in the Algerian environment.

A quantitative research technique for data compilation and analysis is considered the most appropriate for this research, as it involves logical and deductive reasoning, beginning with certain hypotheses and theories (Leedy & Ormrod, 2015). The survey tool provides useful built-in data compilation and analyses tools, trends and graphs, and customised data analysis will be added.

1.9.5 Target group and sampling methods

The target group and total population is all 49 113 CAs in South Africa, registered with SAICA, the details of which are housed on the SAICA member database (SAICA, 2022). For this research, it is motivated that 100% of the population is earmarked as the total number of potential respondents from which information could be gathered or sourced. Standard statistical sample methodologies is considered (i.e., a statistical selection of specific individuals in the population to receive the questionnaire), however, in line with technological advancements and advancing audit methodology, 100% of the population can receive the questionnaire with relative ease (similar effort to statistical selection). The survey therefore was distributed to all 49 113 of the population, and all had an opportunity to respond.

The respondents to the survey comprise the sample, which should be representative of the population (Leedy & Ormrod, 2015). The sample size for this study culminated in 218 respondents. Similar to the study of Meraghni *et al.* (2021) who also researched the impact of digital transformation on accounting information systems through a questionnaire distributed in 2021 with a sample size of 237, a sample size of 218 is adequate for this study.

Krejcie and Morgan (1970) derived a widely used table for determining representative sample sizes for research activities, which supports a sample size of 382 respondents for a population of 49 113 and a standard error of 0.05. The Raosoft, Inc. (2004) sample size calculator further supports a sample size of 382 for a population of 49 113, at a 5% margin of error, a 95% confidence level and 50% response distribution. The sample size of respondents has therefore been set at 382 respondents.

1.10 Chapters

Research reports for most quantitative studies are similar in their organisational format (Leedy & Ormrod, 2015). Below are the envisaged chapter titles and a brief description of the focus of each chapter:

- *Chapter 1: Introduction* (statement of the problem, purpose of the study, research questions and hypotheses, limitations of the study, definitions, and terms)
- *Chapter 2: Literature Review* (review of the literature, questioning research and self-generated questioning theories and models)
- *Chapter 3: Research Methodology* (synopsis of the study, subjects, materials and procedures, examinations, maintaining confidentiality and criteria for coding data)
- *Chapter 4: Results* (descriptive statistics, discussion, interpretation of results and summary)
- *Chapter 5: Conclusion* (review of the findings and research objectives, limitations, implications, future research, summary, and conclusions)

1.11 Ethical considerations

1.11.1 Considerations

Ethics in the accounting profession is strictly governed by the SAICA Code of Ethics. All registered CAs must adhere to the Code, without exception. Research ethics equally follows a set standard ethics code of conduct grounded on the Belmont Report, which must be adhered to without exception, and includes respect for persons, beneficence, and justice. Research ethics also includes accountability in the conduct of research and good stewardship of research on behalf of others. Human Research Ethics Requirements also apply as well as those of the Human Sciences Research Council.

Participation on the survey questionnaire will be entirely voluntary, and responses will remain anonymous and confidential. In addition, sufficient disclosure of the survey objectives will facilitate informed consent to participate by survey respondents, and SAICAs institutional consent to distribute the survey questionnaire will be obtained in advance. Rossouw and Van Vuuren (2006) argue three components to ethics, which could be related to this research paper as follows:

- What is the good? This research aims to add to current literature to enhance the relevance and value of the profession and its contribution to society. It aims to identify further opportunities in accounting practices and continuing professional education of CAs and to make informed recommendations.
- What is the self? An interest in enhancing the value of my own CA(SA) profession in this changing environment, to remain integral and relevant, and contribute to society.
- What are the other? CAs, the profession, SAICA, business and society at large.

1.11.2 Sensitive and vulnerable groups

The target sample does not fall within the sensitive or vulnerable groups, as it comprises only CAs (SA) registered with SAICA.

1.11.3 Level of risk

The level of risk can be justified, as the problem statement is researchable and worthwhile, and much foundational academic literature exists to guide this research paper. In addition, SAICA as a respected, established professional body has the capacity to credibly support existing academic research, and has an existing network of registered CAs.

However, while the risk is considered low, there is a risk that this new research may not be feasible, due to potential non-approval by SAICA to distribute the questionnaire, thereby limiting access to the required Chartered Accountant (SA) target group. Furthermore, response rates amongst the 49 113 CAs could be low (particularly if surveys take longer than 5-7 mins to respond to and are not structured and controlled).

In addition, in terms of WhatsApp privacy rules, SAICA members are required to give consent to be added to the group, and formally register for each group. The risk exists that the active contacts on each WhatsApp group may be few, as a result. To mitigate, these statistics will be requested from SAICA in advance to make an informed decision.

Finally, as my personal contact details will be disclosed on the questionnaire, there is a risk that individual CAs (SA) may contact me directly with queries on certain questions. Responses to these individual queries would impact the integrity of the data without the same information being equally disseminated to all respondents.

To mitigate, a standard response will be that to preserve integrity, the researcher is not able to assist or respond on queries, but that the consolidated report of responses will be available to all members once the research is concluded.

Alternatively, in the event of confirmed ambiguity in a question, I may decide (with justification) to disregard the question in the final data analysis.

Consideration has also been given to potential own reputational / brand risk from the research, as it will be distributed to senior executives across the country, including current and former clients, colleagues, and firms. Many of the respondents are CEOs and founders of listed blue-chip public companies, some of whom are personally known, and reputational risk does exist. To mitigate this, particular attention needs to be given to ensure a survey that is professionally presented, pitched at the correct level, well-thought out, impactful, concise and value-adding.

In short, if a high or moderate risk exists, based on measurements of impact and likelihood, the research should be discontinued. Only a low-risk rating will justify the research. Considering the benefits of the research, the risks above and how they are going to be managed, the ethics risk is considered to be low.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

In the main, the study seeks to develop a change management model that will accelerate digital transformation in the Chartered Accountant profession. To this end, the review of the literature is premised on change management and digital transformation as it relates to Chartered Accountants in South Africa. This chapter discusses the existing theoretical literature on digital transformation, the evolving accounting profession and change management. Specifically, it attempts to offer a review of the existing theoretical literature that seeks to link change management to digital transformation in the profession. Section 2.2 presents the principal underlying theories on which the study is based.

2.2 Existing theoretical frameworks for this study

Theories underlying digital transformation and change management have been drawn from a variety of disciplines. As a result, past studies have adopted several theoretical perspectives. These include the digital transformation process, the future of work, the evolving accounting profession and change management theories.

In this study, and as in many others that are reviewed in this chapter, digital transformation and change management are approached from the perspective of the Chartered Accountant profession, using a quantitative research methodology. Central to digital transformation reforms pursued in the profession in South Africa is an attempt to improve the change management models and processes currently adopted by Chartered Accountants. In fact, much of the prior research on digital transformation and change management that has been carried out is based on the building blocks of the digital transformation process (Vial, 2019), and the seven-step model for the management of organisational change (Gibson *et al.*, 2021). These two theories are therefore adopted as the principal underlying theories.

2.2.1 The impact of digital transformation

The rapid advent of various technologies such as artificial intelligence, internet of things, smart technology, robotics, cloud computing, amongst others, is rapidly changing the way businesses operate. These technologies would require governments, businesses, and workplaces to transform digitally at a commensurate pace. In fact, technological developments, globalisation, and increasing competition are forcing professions, including accounting, to change constantly (Khanom, 2020).

Digital transformation is the new formation of organisations that adopt pervasive changes through the power of technology (Meraghni *et al.*, 2021) and requires rapid change and renewal processes. Governments, industries, and companies are challenged by stakeholders to show relevance by adding new value with innovative solutions, demanding agile, high-impact results (Albaidhani, 2019).

Vial (2019) proposes the below framework of digital transformation, across eight building blocks. According to the below figure, digital transformation for CAs is a process where digital technologies create disruptions which trigger strategic responses from CAs and their organisations, that seek to alter value creation paths, while managing the structural changes and organisational barriers that affect both positive and negative outcomes of this process:

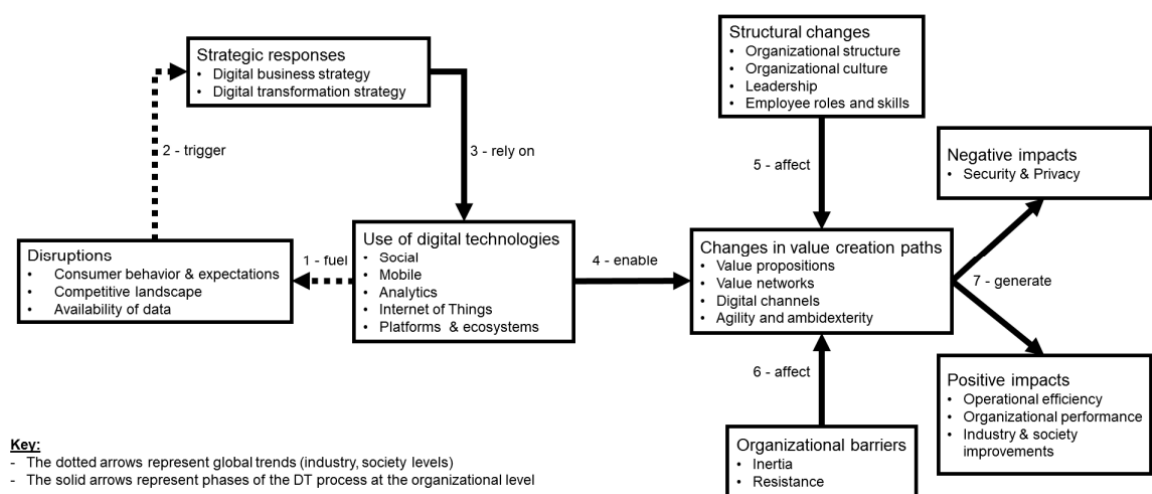


Figure 1: Building blocks of the digital transformation process (Vial, 2019)

Kokina *et al.* (2021) support that disruptive technologies are advancing at a frenzied pace, and that the digital workforce has arrived. They estimate that by the end of 2022, 85 percent of large organisations will have deployed some form of Robotic Process Automation (RPA), with software robots using structured workflows to emulate human actions and execute complex business processes. AI can already search for information online, interact with voice assistants and write computer code by itself (Bernard Marr & Co., 2022). Berikol and Killi (2021) agree that the impact of technological advances is significant. They argue that digitalisation, AI and the 4IR will transform the world as we know it.

The COVID-19 pandemic was an unprecedented challenge (Yost, 2020). The rapid spread of the virus severely impacted economies globally, resulting in a world-wide economic slowdown, volatile and weakening global stock markets, as well as fiscal interventions by central banks (SNG Grant Thornton, 2020). The lockdown restrictions in South Africa shifted the entire economy to remote and flexible working overnight with no preparation or training, forcing an accelerated adoption of digital transformation for almost all forms of commerce, collaboration, schooling, and retail.

The urgency for digital transformation has therefore been heightened by this exogenous factor and some of these shifts will continue, creating a long-term digital disruption that may impact businesses for decades to come (Mudassir, 2020). Furthermore, the pandemic will trigger the next era of innovation and change the trajectory of governments, economies, and businesses.

Meraghni *et al.* (2021) agree that the business environment has seen rapid developments due to an increasing degree of complexity, markets openness, and competition intensification, necessitating firms to pay close attention to capitalise on the benefits offered by technologies to identify strengths, seize opportunities, address weaknesses, and avoid threats.

Mudassir (2020) studied over 50 start-up enterprises that gained scale around the times of global crises and noted that a recession usually brings about an acceleration in business model change, driving down costs to serve and prices. On the other hand, pandemics tend to enable entirely new categories of businesses. It also becomes quite clear that both pandemics and recessions are accelerants to fast-tracking existing innovative ideas.

Vial (2019) argues both benefits and challenges associated with digital transformation at multiple levels: as technology affords more information, computing, communication, and connectivity, this offers positive potential for innovation and performance in organisations and extends beyond the boundaries of the firm to affect individuals, industries, and society. It can however render vulnerable the firm's ability to sustain competitive advantage as it controls fewer elements of its environment.

2.2.2 How the digital era is affecting the accounting profession

Khanom (2020) asserts that the dynamic nature of digital technologies is making the accounting profession the most affected sector in ways that were never anticipated. According to SAICA (2021), the fourth industrial revolution (4IR) and digital transformation have altered the nature of the global business environment. Therefore, this requires Chartered Accountants (CAs) to navigate and adapt to the digital era to continue to provide responsible leadership.

The profession has evolved significantly over recent years, but the world is changing at increasing velocity (Accountancy SA, 2021). CAs are having to embrace new ways of business, navigate emerging disruptive technologies, prepare for evolving roles that are not yet fully defined, and enhance value creation strategies in this volatile and complex era (SAICA, 2021).

The WEF (2020) estimate that by 2025, 85 million job roles may be displaced by the division of labour between humans and technology, while 97 million new roles may emerge that are more adapted. The key affected job roles are set out below:

<i>Table 1 presents the top 5 job roles in increasing and decreasing demand across industries. Column 1 is the ranking, and Column 2 presents the roles, of increasing demand. Column 3 is the ranking, and Column 4 presents the roles, of decreasing demand.</i>			
Rank	Increasing demand	Rank	Decreasing demand
1	Data analysts and scientists	1	Data entry clerks
2	AI and machine learning	2	Administrative and executive
3	Big data specialists	3	Accounting, bookkeeping and
4	Digital marketing and strategy	4	Accountants and auditors
5	Process automation	5	Assembly and factory workers

Table 1: Top 5 job roles in increasing and decreasing demand across industries (WEF, 2020)

The preceding table asserts that the demand for data analysts and scientists is increasing, which highlights evolving roles required of CAs going forward. The table also highlights the decreasing relevance of some of the traditional roles of a CA. CAs will remain indispensable, but it is crucial for CAs worldwide to stay relevant in a complex technology-driven world (Accountancy SA, 2021).

According to the Association of International Certified Professional Accountants (2019), most finance teams and professionals are not evolving their skills fast enough to account for the impact of artificial intelligence, block chain, cybersecurity, robotic process automation and other new technologies. Furthermore, a survey of over 700 senior finance leaders reports that only 10 percent of finance teams have sufficient technical skills to support their organisation's digital journey (Kokina *et al.*, 2019). This asserts that the profession has not fully embraced technology / digital transformation.

Companies promise transformative customer experiences, yet functions such as finance increasingly fall behind. Furthermore, the typical finance worker will be more comfortable staying put, than applying data science, predictive algorithms, RPA and blockchain technologies to transform the world around them (Padmos & Englund, 2019). This is supported by Kokina *et al.* (2021) who argue that the challenge is to explore how the digital era is changing the work of accountants; identify the role of accountants during digital transformation; and categorize the skills and competencies that accountants must develop to remain relevant.

The COVID-19 pandemic itself drove significant exponential digital transformation in the profession, leading to pervasive technological advances, digitally connected members and all professional examinations and ongoing education moving fully online (CAW, 2022). As a result, new Irish professional accountant examinations now include the topics of data analytics, emerging technologies, and artificial intelligence (robotics, blockchain technology), with a suite of new training programmes and free tools now provided to members (including interactive data visualization software such as Tableau).

Lavinia-Mihael (2019) asserts that AI and Machine Learning (ML) technologies are replacing repetitive daily tasks, leaving accountants more time to focus on data consulting and analysis. Rather than spending hours on customary tasks, accountants of the future will be able to use and analyse AI data to provide effective business solutions for customers. The WEF (2020) further identified the following top five emerging skills in the professional services profession:

<i>Table 2 presents the top 5 emerging skills in the professional services sector. Column 1 presents the ranking. Column 2 presents the emerging skills identified as being in high demand within their organisation, ordered by frequency.</i>	
Rank	Emerging Skills: Skills identified as being in high demand within their organisation, ordered by frequency
1	Analytical thinking and innovation
2	Complex problem-solving
3	Critical thinking and analysis
4	Creativity, originality, and initiative
5	Active learning and learning strategies

**Table 2: Top 5 emerging skills in the professional services sector
(WEF, 2020)**

According to the preceding table, analytical thinking and innovation is a frequent high demand skill for CAs, as is complex problem-solving and critical thinking. According to CAW (2022), all accounting bodies globally face the same challenges and must enhance and improve education paths. It asserts that the core competencies of CAs are expected to remain, with augmented/enhanced specific specialisations. Based on this, the new US CPA exams in 2024 focus more on IT systems, controls and automated tools for big data and data analytics, and exams in Great Britain now include data analytics, robotics and blockchain technology.

The enabling competencies developed by SAICA (2021) form an essential part of professional development for CAs, to embrace ongoing change and disruption, influencing the ways CAs members work and the tools they use, and allowing CAs to function as competent professional accountants, managers, or leaders in a digital environment. Accountancy SA (2021) profiled SAICA's four-year competency roadmap project called CA2025, and highlights SAICA's key strategic responses:

- CA2025 – a competency framework for entry level CAs (SA) to demonstrate.
- CA Pathways to Relevance – career path guide of professional competencies, and
- The Continuing Professional Development Policy - to identify how members should develop their professional competence post qualification.

SAICA (2021) argues that as technology advances and becomes integral to the role of a CA, and as stakeholder needs evolve and become increasingly complex, both opportunities and challenges are being created for current and future CAs. Accountants must adapt to the challenge of rapid technological advancements in a tactical way, by staying current with innovative technologies, optimising, and adapting current accounting tools, being open to change, and maximising the opportunities presented to them (Khanom, 2020).

Meraghni *et al.* (2021) caution that members of the accounting profession should not be indifferent – it is a necessity for the profession to develop, transform, constantly renew, and improve in parallel with developments in the digital age. Kokina *et al.* (2021) assert that accountants must adapt to the changes and engage in digital upskilling. They suggest that accountants play five important roles in identifying, explaining, training, sustaining, and analysing their firm's automation initiatives. Therefore, to prepare for these roles, accountants need to acquire or strengthen essential technical skills for each role – including data management, coding and an understanding of databases and cloud computing.

CA2025 (2022) argue that the current world is ambiguous, uncertain, and driven by exponential and continuous change. Therefore, as technology advances and becomes more pervasive, it is imperative that accountants remain relevant in their roles. The impact of these changes on the accounting profession needs to be understood, and the profession must reimagine itself to continue contributing value to society (Lavinia-Mihael, C., 2019).

In addition to these and other academic sources, extensive research and literature has been noted from reputable global organizations and professional bodies, which complement the academic literature. These include existing theoretical frameworks from The World Bank, the Harvard Business Review, Big 4 Audit Firms and professional accounting institutions, and global business institutions (among others).

2.2.3 Change management

Change management is a collective term for all approaches to prepare, support, and help individuals, teams, and organizations in making organizational change - a systematic approach to dealing with the transition or transformation of an organization's goals, processes, or technologies. The following seven-step model is proposed by Gibson *et al.*, (2012) for the management of organisational change to enhance and maximise change management and enhance speed of adoption:

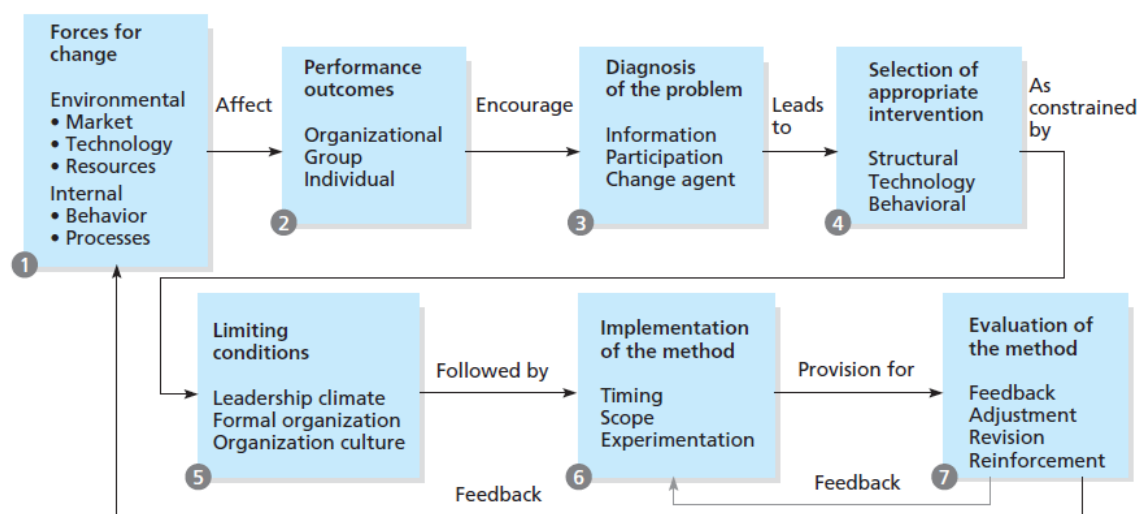


Figure 2: Seven-step model for the management of organisational change (Gibson *et al.*, 2021)

According to the above figure, forces for change continually arise from changes in input, output, technological, and scientific environments. Diagnosis requires information gathering to determine root causes for inadequate speed of adoption, change required, outcomes expected, and measurement tools. Measurable outcomes include efficiency, adaptiveness, and speed of adoption. The evaluation procedure is the final stage - end results should be operationally defined, and measurements should be taken (before and after) - enabling management to account for resources and provide feedback and corrections for the implementation phase (Gibson *et al.*, 2021). This means that enhancing efficiency, productivity, and value of CAs requires transformation in people, processes, and infrastructure.

This includes talent management, employee engagement, enhanced general policies and procedures, robust governance, and information security (Maurer, 2020). Leading a flexible work team requires an extra layer of communication, coordination, planning and effort – providing regular updates, setting expectations, clarifying communications protocol, and spending less time on infrastructure and more on culture and climate (Yost, 2020).

Gibson *et al.*, (2012) concur that global business leaders need interpersonal skills, motivation, and flexibility to successfully manage and adapt to change. This is further supported by Yost (2020) who suggest that to assist their teams in managing disruption and change, leaders can focus on clarifying priorities, empathizing with the challenges of constant change, allowing flexibility and autonomy to determine when and how to achieve goals based on their jobs and personal responsibilities, communicating, recalibrating and encouraging continuous improvement.

Kokina *et al.* (2021) employed a multiple case study methodology and collected interview data from eight organizations undergoing Robotic Process Automation (RPA) implementations for their accounting and finance tasks. The analysis revealed that accountants play important roles as Identifiers, Explainers, Trainers, Sustainers, and Analyzers of their organizations' automation initiatives, and to prepare to undertake these five roles, accountants will need to acquire new technical skills. The paper concludes with a mapping of the skills needed for each role that the accountant is expected to play in RPA implementations.

Conversely, Lavinia-Mihael, C. (2019) chose to interview the CEOs of small IT companies who have good knowledge of AI. The research methodology applied found support in the qualitative research method to respond to this inquiry. Additionally, future directions about how AI through IT is implemented in accounting as an important key in the future revolution of finance were revealed.

There is a weak degree of awareness amongst accounting professionals of the importance of digital transformation and a low effort to develop accounting information systems in line with the requirements of digital transformation, all due to the presence of several high-impact challenges (Meraghni *et al.*, 2021).

The WEF (2020) acknowledges that a lack of interest among leadership is a factor, but sets out in Table 3 below, several greater barriers to adoption of new technologies, including a shortage of investment capital, skills gaps among leadership and staff, an insufficient understanding of opportunities and a lack of flexibility of regulatory frameworks. This means that CAs in the professional services sectors (over 12 000 or 25% of all CAs) (SAICA, 2022) face a shortage of investment capital in more than half of the companies they manage, and skills gaps in the labour market in just under half, which are key barriers to adoption of new technologies.

<i>Table 3 presents the barriers to adoption of new technologies in the professional services sector. Column 1 presents the barrier to adoption. Column 2 presents the share of companies surveyed.</i>	
Barrier	Share of companies surveyed
Shortage of investment capital	51.0%
Skills gaps in the local labour market	41.2%
Insufficient understanding of opportunities	39.2%
Skills gaps among organisation's leadership	35.3%
Lack of flexibility of the regulatory framework	35.3%
Inability to attract specialised talent	35.3%
Lack of interest among leadership	27.5%
Lack of flexibility in hiring and firing	17.6%
Other	7.8%

Table 3: Barriers to adoption of new technologies in the professional services sector (WEF, 2020)

Creativity and innovation are essential skills for the 21st century. The development of humanity has been increasingly dependent on innovation and discovery (Nakano & Wechsler, 2018). It is the expression of human potential, and fundamental for societal growth.

2.3 The conceptual framework for this study

The conceptual framework for this study will be to combine the various theoretical frameworks on how the digital era and digital transformation is affecting the accounting profession, the impediments of digital transformation on the accounting profession, the state of readiness of the profession to digital transformation, the requisite skills, and competencies, and change management theory.

By careful exploration of the existing theoretical frameworks and adapted conceptual frameworks, the research paper aims to achieve a further and deeper understanding of the role of the CA(SA) in a post-COVID digital era, achieve a better understanding of how innovative technology can contribute towards solving accounting and business issues, and recommend future suggested strategies to enhance the SAICA response.

Common themes in the literature support the view that factors impacting on the speed of adoption of new technologies by the profession include a shortage of capital, inadequate skills and competencies, insufficient understanding of the opportunities, lack of flexibility, resistance to change and ineffective change management mechanisms.

Certain recent exogenous variables also play a part, such as the impact of the COVID-19 lockdown restrictions which accelerated digital transformation. It is important to understand the changing nature of the Chartered Accountant profession in the digital era, with the changing role accounting professionals will play in the exponentially accelerating technological advancements, and the skills and competencies CAs (SA) will need to support this global digital transformation.

One hypothesis is that the generational gap in CAs may influence the responses, flexibility, willingness, readiness, openness to change and speed of adoption of new technologies. The Chartered Accountants Institute in Ireland has over 30 000 registered members, with 61% of these being younger than 44yrs of age (CAW, 2022).

In Table 4 below, SAICA (2022) outlines the statistic for the age profile of its registered CAs in South Africa, which indicates that 73% of CAs in South Africa are younger than 49yrs of age. This means that the data findings may indicate a correlation between speed of adoption by CAs, and their age profile.

<i>Table 4 presents the age profile of SAICA-registered CAs as at 28 February 2022. Column 1 presents the age profile. Column 2 presents the percentage of Chartered Accountants in this age profile.</i>	
Age profile	Chartered Accountants
Under 30	7.8%
30 – 39	38.2%
40 – 49	27.1%
50 – 59	13.7%
60+	13.2%

**Table 4: Age profile of SAICA-registered CAs as at 28 February 2022
(SAICA, 2022)**

Metallo *et al.* (2021) highlight a surprising and counterintuitive finding that a significantly higher online learning adoption rate was noted for senior executives with more than ten years of work experience. Root causes may include that senior executives have time constraints for investment in formal training, prefer short efficient sessions, or perceive experiential learning as a more valuable experience than attending time-consuming in-class training. In all these scenarios, relevant implications emerge for the design of learning programs.

After exploration of relevant articles concerning this paradigm shift in accounting, literature asks for further and deeper investigation and a better understanding of how technology can contribute towards solving accounting and business issues (Lavinia-Mihael, C., 2019). The study aims to develop and recommend a change management mechanism / model to speed up the adoption of digital technology by CAs. It aspires to influence these professionals to pay particular attention to and apply the recommended enhanced enabling competencies as they continue to provide responsible leadership, serve their stakeholders, and contribute value to society.

2.4 Chapter summary

This chapter attempted to describe the theoretical motivation for the study. Following earlier studies and suggestions, as well as given the complex nature of digital transformation and change management, the study adopts a multiple-theoretical perspective. These theories include the building blocks of the digital transformation process (Vial, 2019), the future of jobs (WEF, 2020) and the seven-step model for the management of organizational change (Gibson *et al.*, 2021). The chapter also examined the theoretical link between change management and digital transformation. From the empirical evidence, some hypotheses for this study were developed.

CHAPTER 3: METHODOLOGY

3.1 Introduction

This chapter discusses the research design. It seeks to achieve three interrelated objectives. First, it attempts to provide a comprehensive description of the data and research methodology used in this study. The significance is that scientific work should be replicable, and this can be achieved if the researcher provides a clear, specific laid down procedure on how the study is carried out (Hussey and Hussey, 1997). The second objective of the chapter is to explain the rationale for the various data and methodological choices made at every stage of the study. Finally, it aims to provide an assessment of the robustness of the data.

The remainder of this chapter is organised as follows: section 3.2 describes the philosophical paradigm, approach, and reasoning; section 3.3 presents the research design; section 3.4 examines the data collection method; section 3.5 describes the data collection instrument and research technique, and section 3.6 presents the target group and sampling methods. Section 3.7 describes the sample selection and section 3.8 examines a number of robustness or sensitivity tests.

3.2 Philosophical paradigm, approach, and reasoning

Accountants must adapt to the challenge of rapid technological advancements in a tactical way, by staying current with new technologies, optimising, and adapting current accounting tools, being open to change, and maximising the opportunities presented to them (Khanom, 2020). According to Lavina-Mihael (2019), the impact of these changes on the accounting profession needs to be understood, and the profession must reimagine itself to continue contributing value to society.

Therefore, after exploration of relevant literature concerning this paradigm shift in accounting, literature asks for further and deeper investigation and a better understanding. To this end, the purpose of this methodology section is to justify the research design and method best suited for this study.

Different philosophical orientations point researchers in different directions in their searches to understand the physical, social, and psychological worlds. Much research in the natural sciences discipline has been driven by a positivism philosophical paradigm: positivists believe that, with appropriate measurement tools, scientists can objectively reveal absolute, undeniable cause-and-effect relationships within the physical world and human experience (Leedy & Ormrod, 2015).

The positivism philosophical paradigm has been selected for this research due to the highly regulated, structured nature of the Chartered Accountant profession, which is governed globally by strict codes of conduct, and accounting and auditing standards. Further, key principles of the profession are objectivity, rational reasoning, and independence (SAICA, 2022), which further supports this selection. Taking a cue from the study of Meraghni *et al.* (2021), which explored the impact of digital transformation on accounting information systems, a deduction approach and reasoning has been selected for this current study.

3.3 Research design

The research design is the general planning strategy for solving the research problem and provides the overall structure for the procedures followed, the data collected, and the data analyses (Leedy & Ormrod, 2015). The design therefore depends on the research objectives / questions, and aims to gather the insights, opinions, and perceptions of the unit of analysis.

The main objective of this study is to develop a change management model that will accelerate digital transformation in the CA profession. Specifically, the sub-objectives of the research are as follows:

- to examine the impact of digital transformation, and how the digital era is affecting the accounting profession
- to examine the impediments of digital transformation on the accounting profession
- to examine the state of readiness of the profession to digital transformation
- to examine the requisite skills and competencies

The research questions stem from these research objectives. Considering the research problem and formulated research objectives in this study, a quantitative survey research design has been adopted. Leedy and Ormrod (2015) suggest that quantitative survey research is a proven method to yield quantitative information that can be summarised through statistical analyses. Furthermore, it assists in identifying variables that could be used to evaluate hypotheses and highlights relationships between independent and dependent variables.

It is an appropriate measurement tool to objectively reveal absolute, undeniable cause-and-effect relationships within the physical world and human experience (Leedy & Ormrod, 2015). Finally, the findings can be statistically justified as representative of the CA population, to extrapolate the results across the population.

This research topic is well-suited to a quantitative survey, with closed-ended questions and numerical data to facilitate clear statistics, support relationships between dependent and independent variables, and allow objective interpretation of findings. It gathers insights from respondents on all the research questions, including the impediments of transformation on their role and the accounting profession, their state of readiness, and that of the profession, the requisite skills and competencies and recommended change management mechanisms. Therefore, the questionnaire does not include open-ended questions or free text questions (which are more aligned to a qualitative survey).

A further key consideration is due to the large size of the population (all 49 113 respondents), a quantitative survey is considered the most efficient, dependable, and feasible research design. SAICA (2022) states that these professionals hold positions as CEOs, MDs, board directors, business owners, chief financial officers, auditors, and leaders in their spheres of business operation. The executive level of the respondents requires speed in answering the survey to minimise work disruption as far as possible (and to increase the response rate), which is difficult to achieve with a qualitative survey.

3.4 Data collection method

For this research, a quantitative data collection method has been selected. Leedy and Ormrod (2015) suggest that quantitative researchers study and collect data focused specifically on key identified variables only. They therefore identify and develop standardised methods of measuring each variable, with key focus on the validity and reliability of the measurement tools.

Furthermore, data is frequently collected from large samples, presumed to be representative of a particular population so that findings can be extrapolated across the population. The data collection method is via a quantitative questionnaire distributed to all 49 113 SAICA-registered CAs. This enables the collection of data focused only on the specific variables in the research questions. The study involves a large population and the quantitative data collected is expected to be representative to enable findings to be extrapolated.

Ethical clearance from IIE MSA was obtained on 26 September 2022 and the Ethical Clearance Certificate is attached for record (see Appendix 1). SAICA's institutional permission was obtained to conduct the research and have the questionnaire distributed to members directly by SAICA, for confidentiality and anonymity of respondents. The survey tool used was the KwikSurvey tool (which SAICA also currently use), for which a one-year licence was procured to conduct the research.

The mode of distribution of the survey was via email, and SAICA distributed an email cover letter to all CAs(SA) directly, introducing the survey and including the survey link and QR code (see Appendix 1). The questionnaire was completed on a voluntary anonymous basis, compatible with any device. The research survey explicitly states that SAICA is not a collaborator to the research, and these research findings and report clarify same.

It is expected that no identifying personal information has been received from the survey responses. The KwikSurveys research instrument is General Data Protection Regulation (GDPR) compliant, and data is housed in an ISO 27001 certified datacentre. SAICA have also received the KwikSurveys system-generated PDF report recording the final survey questionnaire.

As indicated in the Gatekeeper Letter, the original research design was to have the survey questionnaire distributed by both email and WhatsApp directly by SAICA to its members. The survey was planned to open from 19 September 2022 and close on 7 October 2022. SAICA distributed the emailer to all 49 113 CAs(SA) on 4 October 2022 indicating a closing date of 15 October 2022.

A total of 174 responses were received within 24 hours of SAICA distributing the emailer, comprising 80% of the final sample of 218 responses, whereafter the response rate slowed down. Two reminders to members were originally planned for the 26 September 2022 and 3 October 2022 to maximise the response rate, however SAICA advised and confirmed its internal policy that no reminders are sent to members for surveys.

Therefore, to maximise the response rate, the following further methods were adopted, demonstrating that every effort was made to maximise the response rate:

1. The closing date was extended to 31 October 2022;
2. The survey questionnaire was posted on the LinkedIn social media website owned by LinkedIn Corporation © 2022 on 13 October 2022. The full post and its analytics have been retained for record (see Appendix 6);
3. The CEOs/Audit Partners of the Big Four Audit Firms, as well as CEOs / Senior Executives / CAs(SA) of targeted firms were contacted, requesting that they prompt the CAs(SA) in their teams and firms to submit the survey; and
4. The KwikSurveys tool remained open for one further week, and the survey was formally closed on Monday 7 November 2022.

3.5 Data collection instrument and research technique

As motivated in Section 3.3, an online questionnaire was selected as the chosen data collection instrument for this research. Therefore, due to the large size of the population (all 49 113 potential respondents), a quantitative survey was considered the most efficient, dependable, and feasible research design. Meraghni *et al.* (2021) also researched the impact of digital transformation on accounting information systems through a questionnaire distributed in 2021, by applying it to a sample of 237 individuals active in about 120 firms operating in the Algerian environment.

A quantitative research technique for data compilation and analysis is considered the most appropriate for this research, as it involves logical and deductive reasoning, beginning with certain hypotheses and theories (Leedy & Ormrod, 2015). The survey tool provides useful built-in data compilation and analysis tools, trends and graphs, and customised data analysis has been added.

The questionnaire provides rich data, and key analyses include the correlation between seniority of position, years of experience, industry, and age of respondents to the speed of adoption; the correlation between size of firm, geographic location of firm, and industry of firm to speed of adoption; the impact of COVID on digitisation (Mudassir, 2020); and the correlation between industry, firm size, and firm age/maturity to barriers to adoption.

Descriptive statistics have been employed to describe what the data displays, its mean or midpoint, the broadness of its spread, and the correlation between variables (Leedy & Ormrod, 2015).

3.6 Target group and sampling methods

The target group and total population is all 49 113 CAs in South Africa, registered with SAICA, the details of which are housed on the SAICA member database (SAICA, 2022). For this research, 100% of the population was earmarked as the total number of potential respondents from which information could be gathered or sourced. Standard statistical sample methodologies were considered (i.e., a statistical selection of specific individuals in the population to receive the questionnaire), however, in line with technological advancements and advancing audit methodology, it was argued that 100% of the population could receive the questionnaire with relative ease (less effort than statistical selection).

In addition, the questionnaire is quantitative, and the survey tool incorporates system-built aggregated data analysis tools for responses. The survey has therefore been distributed to all 49 113 of the total population, and all have had an opportunity to respond. The respondents to the survey comprise the sample, which should be representative of the population (Leedy & Ormrod, 2015).

Memon, Ting, Hwa, Ramayah, Chuah and Cham (2020) assert that determining an appropriate sample size is critical in drawing realistic conclusions from research findings. Although there are several widely adopted rules of thumb to calculate sample size, several factors influence sample size decisions, and guidelines can be used to facilitate consideration of sample size determination in studies (Memon *et al.*, 2020). However, such rules or guidelines should be understood in their specific contexts and under the conditions in which they were prescribed.

Krejcie and Morgan (1970) derived a widely used table for determining representative sample sizes for research activities, which supports a sample size of 382 respondents for a population of 49 113 and a standard error of 0.05. The Raosoft, Inc. (2004) sample size calculator further supports a sample size of 382 for a population of 49 113, at a 5% margin of error, a 95% confidence level and 50% response distribution.

However, key factors influencing sample size decisions include the research approach, analytical method, number of variables or model complexity, time and resources, completion rate, research supervisor, sample size used for similar studies, and data analysis programme (Memon *et al.*, 2020). Hair, Black, Babin and Anderson (2018) demonstrate that simple regression analysis, a powerful analytical tool designed to explore all types of relationships between dependent and independent variables, needs at least 50 samples and generally 100 samples for most research situations.

The size of an adequate sample also depends on how homogeneous or heterogeneous the population is—how alike or different its members are with respect to the characteristics of research interest. If the population is markedly homogeneous, a smaller sample is required than if the population is heterogeneous (Leedy & Ormrod, 2015). This supports a smaller sample size for the homogenous population in this study (all 49 113 SAICA-registered Chartered Accountants in South Africa).

Furthermore, as this research adopts a simple model with few variables, a smaller dataset is required (Memon *et al.*, 2020). Likewise, a single group is being researched (49 113 registered CAs(SA)) which allows for a smaller sample size than for multiple groups. Memon *et al.* (2020) further motivate that research at the organisation level using top management respondents such as CEOs and CFOs may have a smaller sample size than research at the individual level such as employees or clients (Metallo *et al.*, 2021).

Leedy and Ormrod (2015) highlight the importance of the degree of precision with which the researcher wants to draw conclusions or make predictions about the population under study. Mooi, Sarstedt and Mooi-Reci (2018) argue that the gains in precision decrease as the sample size increases, and a sample size can be too large in the context of significance testing. Furthermore, the required sample size has little relation to the population size, and a sample of 100 from a population with 100,000 can be almost as accurate as selecting 100 from a population of 1,000. According to Hair *et al.* (2018), large samples can also make statistical significance overly sensitive (Loon, Stewart & Nachmias, 2020).

In summary, the target group for this research paper is all 49 113 SAICA-registered members who are CAs, as per the February 2022 SAICA Registered-Member Statistics (SAICA, 2022). The population comprises all 49 113 of these professionals, and all have received the questionnaire to respond. A total of 224 responses were received, of which 218 were included in the final sample, and this is supported by the literature above as representative of the population.

3.7 Sample selection

The sample CAs(SA) used to examine the speed of adoption of innovative technologies comprised the respondents to the survey. As at 28 February 2022, a total of 49 113 SAICA-registered CAs(SA) were recorded on the SAICA member database. The official quantum and statistics of all SAICA-registered CAs(SA) were obtained directly from the SAICA Registered Member Statistics Report as at 28 February 2022, obtained directly from the official SAICA website, which is available at: <https://www.saica.org.za/> (SAICA, 2022).

All 49 113 SAICA-registered Chartered Accountants (SA) have been considered. The population is considered to be markedly homogeneous—its members are largely alike with respect to the characteristics of this research interest. As the population is markedly homogeneous, a smaller sample is required than if the population is heterogeneous (Leedy & Ormrod, 2015).

This research adopts a simple model with few variables, and a smaller dataset is required (Memon *et al.*, 2020). Likewise, a single group is being researched (all 49 113 registered CAs(SA)) which allows for a smaller sample size than for multiple groups. Furthermore, as this research is at the organisation level using top management respondents (e.g., CEOs, CFOs, HR managers, etc.), a smaller sample size is required than research at the individual level (e.g., employees, clients, etc.) (Memon *et al.*, 2020).

To be included in the final sample, the following requirements had to be met: the respondents must be SAICA-registered Chartered Accountants (SA) and have completed and submitted the survey questionnaire. Adherence to this requirement is important because the research target is SAICA-registered Chartered Accountants only, and only data from finally submitted surveys is included in the results. Survey responses completed, but not formally submitted via the submission button at the end of the survey, are not included in the results.

The jurisdiction of this study focuses on the Chartered Accountant (SA) cohort in South Africa. South Africa is considered a suitable country to do this study because SAICA is not only considered the foremost accountancy body in the country, but also collectively acknowledged as one of the world's leading accounting institutes (SAICA, 2022). South Africa possesses a sound financial and corporate regulatory structure, dominated by a few large, listed firms.

all JSE-listed companies, 24% of directors are CAs(SA) and the designation is the most prevalent qualification in business (Accountancy SA, 2020). In addition, 74% of Financial Directors and 21% of MDs are CAs(SA), and two-thirds of CA(SA)-run companies are in the Top 200 on the JSE (SAICA, 2022). These professionals hold positions as leaders in their fields, and the Chartered Accountant profession is considered a suitable cohort for this study.

Figure 3 below confirms the total number of respondents to the survey, and the results of opening Question 1 to the survey. A total of 235 respondents completed the questionnaire. Question 1 of the survey required respondents to confirm whether they were SAICA-registered Chartered Accountant (SA). Of the 235 respondents, 218 confirmed that they were SAICA-registered Chartered Accounts (SA), eight respondents did not provide a response to this question and nine respondents confirmed that they were not SAICA-registered Chartered Accountants (SA).

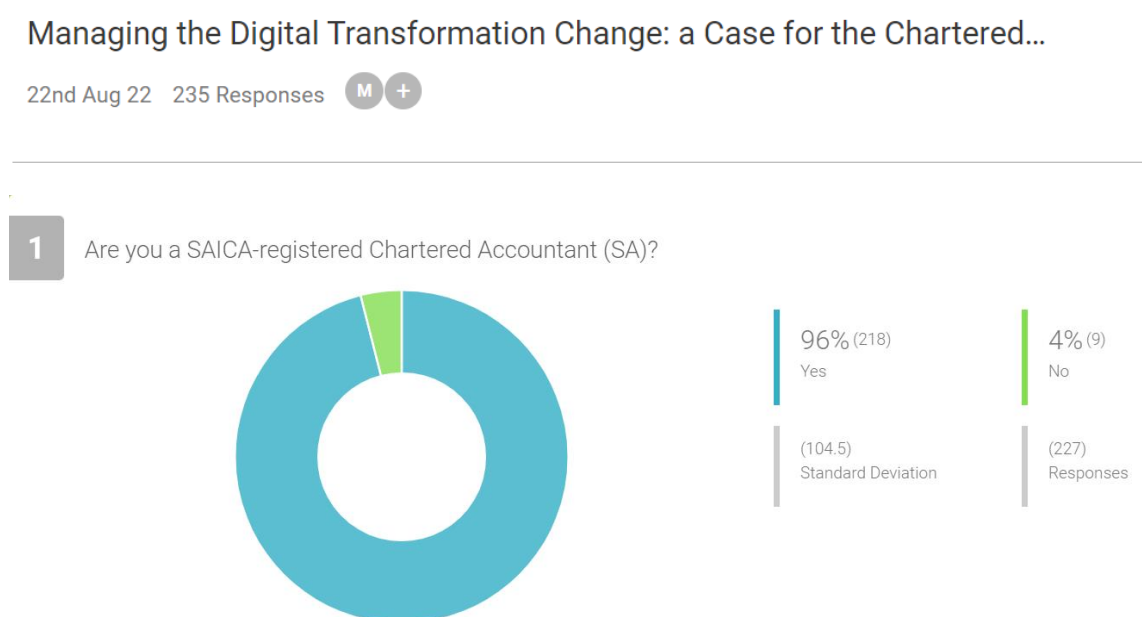


Figure 3: Total number of survey respondents (KwikSurveys, 2022)

Table 5 below presents a summary of the sample selection procedure. From the total of 235 respondents, only the 218 who confirmed that they were SAICA-registered Chartered Accountants (SA) were included in the final sample. The eight respondents that did not provide a response to this question and the nine respondents who confirmed that they were not SAICA-registered Chartered Accountants (SA), were excluded from the final sample.

Table 5 below presents a summary of the sample selection procedure. Column 1 presents the research target and responses to question 1 of the survey. Column 2 presents the total population and total respondents. Column 3 presents the percentage (%) of the population.		
Panel A: Research target	Total population	Percentage (%) of population
SAICA-registered Chartered Accountants (SA)	49 113	100.00%
Total responses available to be sampled	235	0.48%
Panel B: Responses to question 1: are you a SAICA-registered Chartered Accountant (SA)?	Total respondents	Percentage (%) of population
Total responses available to be sampled	235	0.48%
Less: No response to question 1	8	0.02%
Less: Answered 'No' to question 1	9	0.02%
Answered 'Yes' to question 1 i.e., total final sampled responses	218	0.44%

Table 5: Summary of the sample selection procedure

3.8 Robustness or sensitivity tests

This section describes the robustness of sensitivity tests employed, in confirming that the final sample is representative of the total population. This was assessed by comparing the age profile in the total population to the age profile in the final sample. In addition, the SAICA constituency (current role) in the total population has been compared to that of the final sample.

In Table 4 below, SAICA (2022) outlines the statistic for the age profile of its registered CAs in South Africa, which indicates that 73% of CAs in South Africa are younger than 49yrs of age.

<i>Table 4 presents the age profile of SAICA-registered CAs as at 28 February 2022. Column 1 presents the age profile. Column 2 presents the percentage of Chartered Accountants in this age profile.</i>	
Age profile	Chartered Accountants
Under 30	7.8%
30 – 39	38.2%
40 – 49	27.1%
50 – 59	13.7%
60+	13.2%

**Table 4: Age profile of SAICA-registered CAs as at 28 February 2022
(SAICA, 2022)**

In table 6 overpage, the age profile of the total population is compared to the age profile of the final sample. The analysis confirms a strong correlation between the age profile of both the population and final sample across each age group. In addition, 73% of all CAs in South Africa are younger than 49yrs of age, and this compares well to 66% of the final sample being younger than 49yrs of age.

The final sample is therefore considered to be representative of the total population, in particular, age profile This is important as it expected that that the generational gap in CAs may influence the responses, flexibility, willingness, readiness, openness to change and speed of adoption of new technologies.

Table 6 below presents the age profile of the total population and final sample. Column 1 presents the age profile by category. Columns 2 and 3 present the total population numbers and percentage (%) of population. Column 4 presents the final sample numbers and percentage (%) of final sample.

Age profile	Total population	Percentage (%) of population	Final sample	Percentage (%) of final sample
Under 30	3 831	7.8%	21	9.6%
30 – 39	18 761	38.2%	71	32.6%
40 – 49	13 310	27.1%	51	23.3%
50 – 59	6 728	13.7%	32	14.7%
60+	6 483	13.2%	42	19.3%
Did not say	-	-	1	0.5%
Total	49 113	100.0%	218	100.0%

Table 6: Age profile of total population and final sample

In table 7 overpage, the description of current role for each CA(SA) (also known as the SAICA constituency) for the total population is compared to the SAICA constituency of the final sample. The analysis confirms a strong correlation between the SAICA constituency of both the population and final sample across each current role category. While proportionately more managing directors, and proportionately less CAs employed in large public practice firms responded, the results overall compare well to the population, and the final sample is therefore considered to be representative of the total population.

Table 7 below presents the SAICA constituencies of the total population and final sample. Column 1 presents the SAICA constituency (current role) by category. Columns 2 and 3 present the total population numbers and percentage (%) of population. Columns 4 and 5 present the final sample numbers and percentage (%) of final sample. The categories highlighted in blue below represent the bulk of the population and sample respectively.

SAICA constituency (current role)	Total population	Percentage (%) of population	Final sample	Percentage (%) of final sample
CGD General management – director	2 614	5.3%	25	11.5%
CAF Financial accountant	6 626	13.5%	24	11.0%
CSO Senior financial manager – other	4 788	9.7%	19	8.7%
OTH Other	4 068	8.3%	14	6.4%
PSR Sole practitioner	1 880	3.8%	14	6.4%
CGO General management – other	2 760	5.6%	10	4.6%
CSD Senior financial manager – director	2 558	5.2%	10	4.6%
CFS Financial support staff	881	1.8%	9	4.1%
EDU Education	923	1.9%	9	4.1%
PSP Partner in public practice – small	1 224	2.5%	9	4.1%
ORT Retired	1 405	2.9%	8	3.7%
PES Employed in public practice – small	838	1.7%	8	3.7%
PLP Partner in public practice - large	617	1.3%	8	3.7%
PEL Employed in public practice - large	6 869	14.0%	7	3.2%
GBU Public corporation - auditing	536	1.1%	5	2.3%
Other	10 526	21.4%	21	9.6%
Did not say	-	-	18	8.3%
Total	49 113	100.0%	218	100.0%

Table 7: SAICA constituencies of total population and final sample

Finally, consideration was given to internal controls to ensure integrity of the data, and key mitigating controls implemented included the following:

1. The KwikSurveys research instrument was confirmed as General Data Protection Regulation (GDPR) compliant, and the data was housed in an ISO 27001 certified datacentre. The GDPR sets new rules for the protection and processing of the personal data and requires all organisations interacting with that data to be compliant. KwikSurveys confirmed strict procedures for the management and security of the data with the aim to exceed the expectations of the GDPR.
2. Survey results were filtered to include only the 218 respondents positively confirming that they are SAICA-registered Chartered Accountants (SA):

FILTERS

Matches all filters

Survey question - "Managing the Digital Transformation Change: a Case for the Chartered Accountant in South Africa." - "Are you a SAICA-registered Chartered Accountant (SA)?" - "Yes"

This is a page item which details the filters and comparisons applied to the report, it has been added automatically for your reference in print / PDF.

You can remove the item by deleting it. This message will not appear in print / PDF

Figure 4: Survey filters (KwikSurveys, 2022)

3. Automated controls were implemented in the KwikSurvey Tool to limit responses to one response per individual respondent. This was achieved by blocking duplicate responses from the same IP address via the use of cookies; and
4. The KwikSurvey on-line survey tool was formally closed on Monday 7 November 2022, and the raw data was downloaded together with the KwikSurveys system-generated PDF report recording the final survey questionnaire and survey results (see Appendix 6).

3.9 Chapter summary

The chapter focused on the data, data sources and research design. It sought to achieve four main closely related objectives. First, it attempted to describe the data and research methodology. In this regard, the data, the sources, the sample selection procedure, and the main research methodology used in this study were described comprehensively. Three main categories of data are used in this study: digital transformation, the evolving role of CAs and change management variables.

CHAPTER 4: RESULTS

4.1 Introduction

In the previous chapter, the research design and methodology were discussed. In this chapter, the concise and objective findings of the research are presented. The chapter summarises the collated results of the survey, with details provided in the appendices. This chapter also discusses and interprets the research findings to delve into the meaning and relevance of the results. It provides interpretation of the findings and cites relevant sources to put the results in context. Section 4.2 of this chapter presents descriptive statistics on the results of the investigations, tools used, and research conducted. Section 4.3 presents the interpretation and discussion of the results.

4.2 Descriptive statistics

In presenting the quantitative findings, the results have been structured around the research questions. All results that are relevant to the research questions are reported, including any that did not fit with expectations. For each question, the relevant results are summarised, including descriptive statistics, together with a brief objective statement on how the result relates to the question. No subjective interpretations or speculation is made, and interpretation of the results follows in Section 4.3. The KwikSurveys tool provides an automated report of the results of respondents (see Appendix 6). The report can also be obtained directly from the KwikSurveys link <https://kwiksurveys.com/r/9foJSq5s> or the QR code below:



Figure 5: Survey QR Code (KwikSurveys, 2022)

4.2.1 The context of the Chartered Accountant in South Africa

To provide context on the research questions and the characteristics of the population, and therefore on the context of the Chartered Accountant in South Africa, the research findings on general information of the respondents is presented below.

4.2.1.1 General information

Figure 6 below presents the profession of the respondents and confirms that all 218 respondents in the final sample are SAICA-registered Chartered Accountants (SA). On the 219 respondents answering in the affirmative are included in the final sample. All research findings in this study therefore exclude respondents that did not answer the specific question and respondents that indicated that they are not SAICA-registered Chartered Accountants (SA).

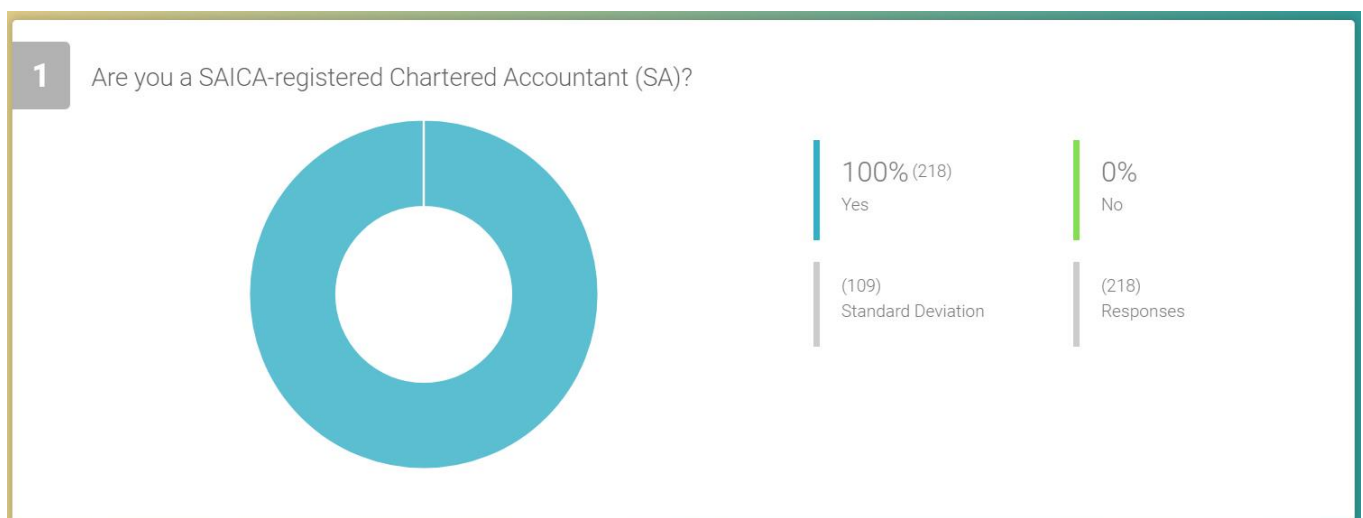


Figure 6: Profession of respondents in final sample (KwikSurveys, 2022)

Figure 7 overpage presents the year of qualification as a Chartered Accountant (SA). It reveals that 61% of CAs(SA) qualified more than 12 years ago, and 11% are newly qualified, having qualified less than 2 years ago. Furthermore, 56% of CAs(SA) qualified between 2010 – 2020, while 19% qualified before 1990, with these two cohorts representing the bulk of the population.

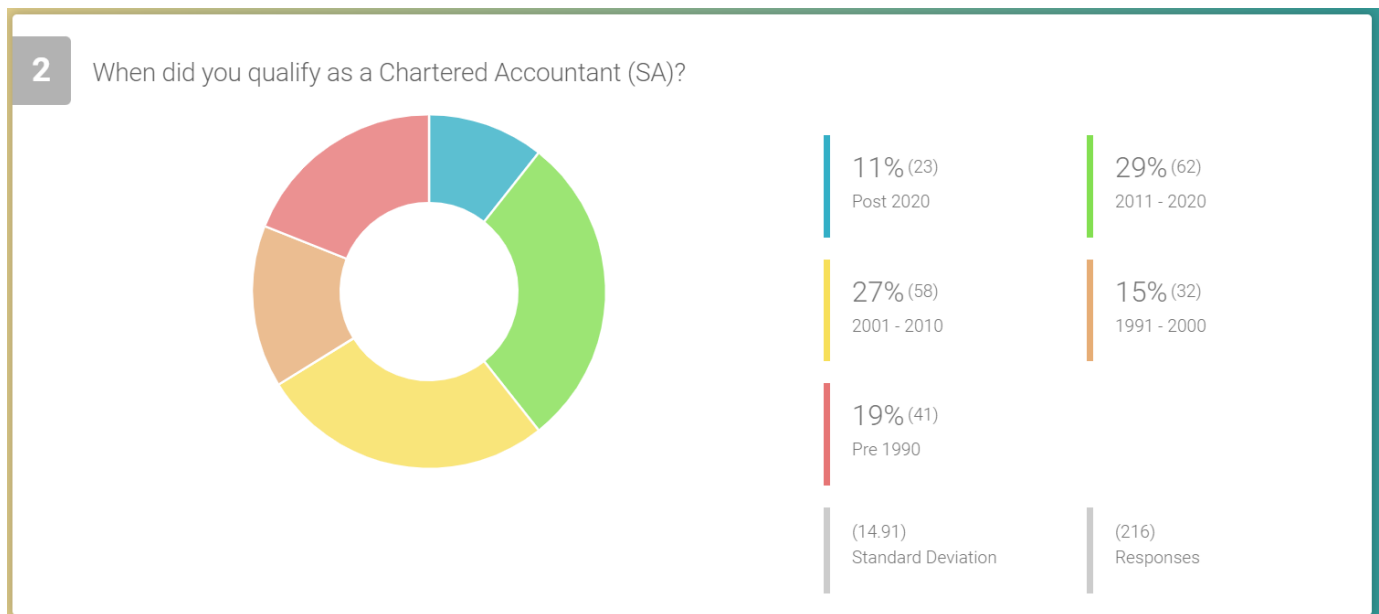


Figure 7: Year of qualification as a Chartered Accountant (SA) (KwikSurveys, 2022)

Figure 8 below presents the years of post-qualification experience as a CA(SA). It reveals that 65% of CAs(SA) have at least 10 years of post-qualification experience. Interestingly, a sizeable 20% of CAs(SA) have 5 or less years' experience, and as supported in Figure 6 above, more than half of these have less than 2 years of experience.

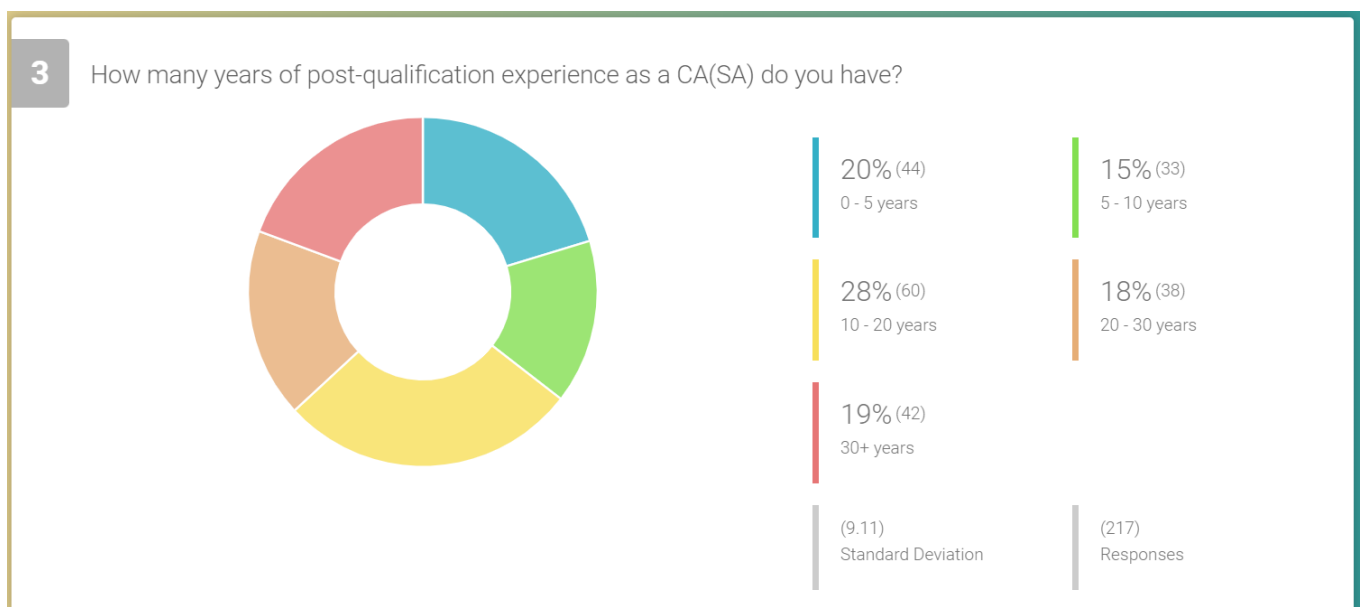


Figure 8: Years of post-qualification experience as a CA (SA) (KwikSurveys, 2022)

Figure 9 presents the firm type at which articles of clerkship were completed. Articles generally comprise three years of practical training audit experience in an audit firm, which is a prerequisite to qualifying as a CA(SA). The findings indicate that 80% of CAs(SA) completed their articles in large to medium audit / accounting firms and more than half in large audit / accounting firms.

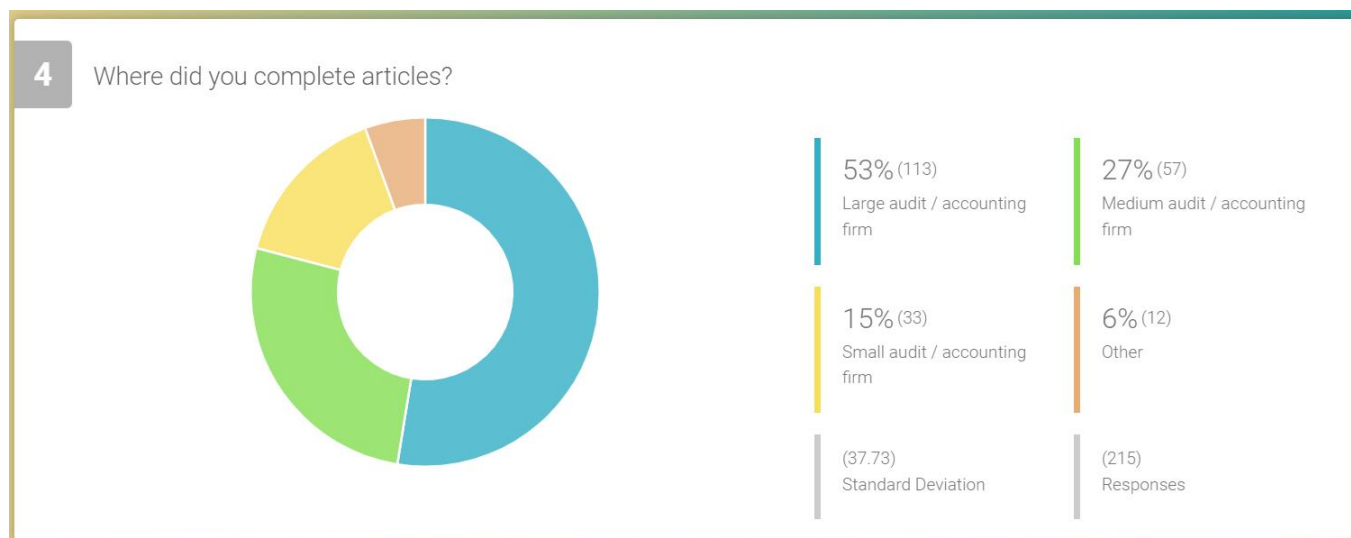


Figure 9: Firm type at which articles were completed (KwikSurveys, 2022)

Figure 10 below presents the age profile of the respondents and reveals that 67% are 49 years or younger. This compares well with the Table 6 in Chapter 3 that confirms that 73% of all 49 113 CAs(SA) are 49 years or younger (SAICA, 2022). Interestingly, 10% of the respondents are under the age of 30 years, which compares well with the 7.8% of the total population (SAICA, 2022).

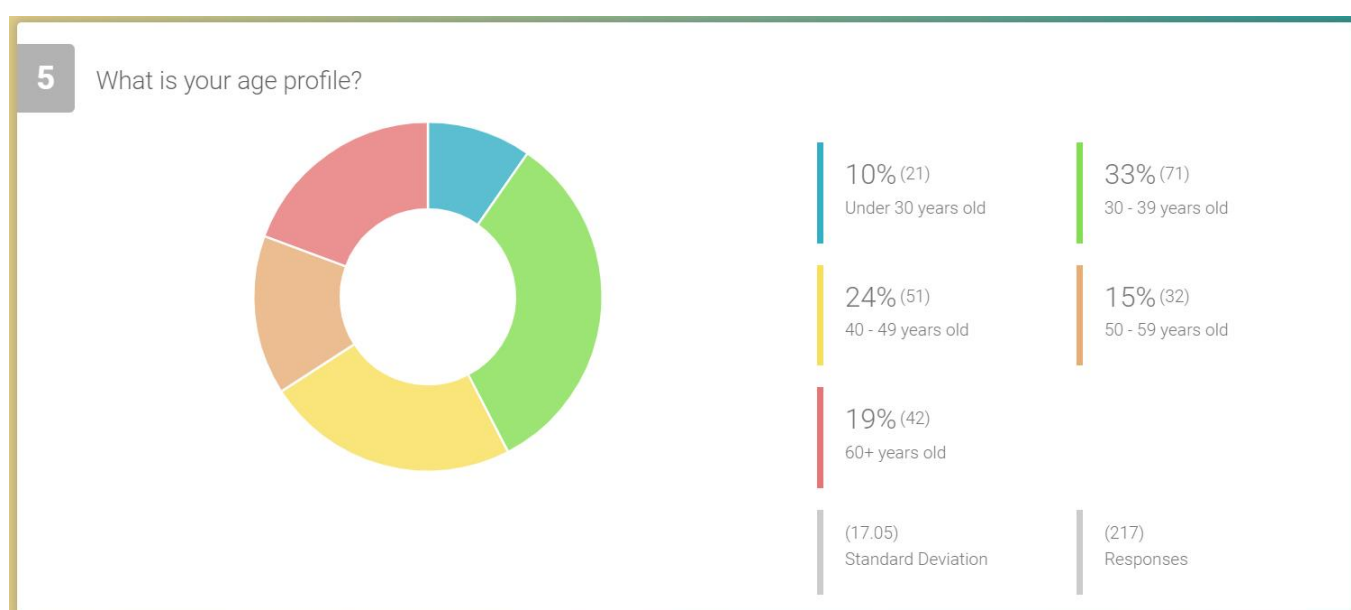


Figure 10: Age profile (KwikSurveys, 2022)

Figure 11 below presents the generational gap of the respondents. It reveals that almost half (49%) of CAs(SA) are Millennials (born between 1981 – 2000). Furthermore, 79% of all CAs(SA) are born between 1965 – 2000, being either Millennials or Generation X (born between 1965 – 1980).

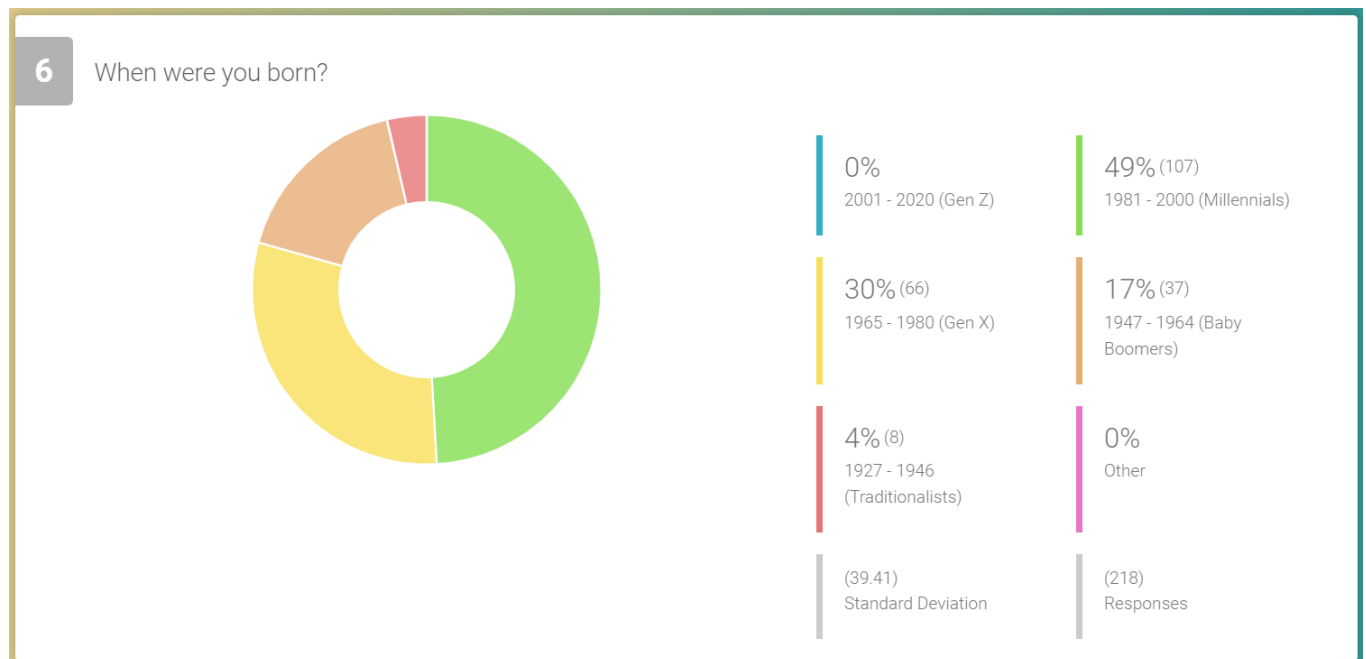


Figure 11: Generational gap (KwikSurveys, 2022)

4.2.1.2 Current role

Figure 12 below presents the type of organisation the respondents currently work in and indicate that 67% of CAs(SA) work in companies or audit / accounting firms. Specifically, 35% are employed in public / private companies, otherwise known as working in commerce, and a further 32% are employed in audit / accounting firms, otherwise known as working in practice. Interestingly, 13% have their own businesses / self-employment / freelance.

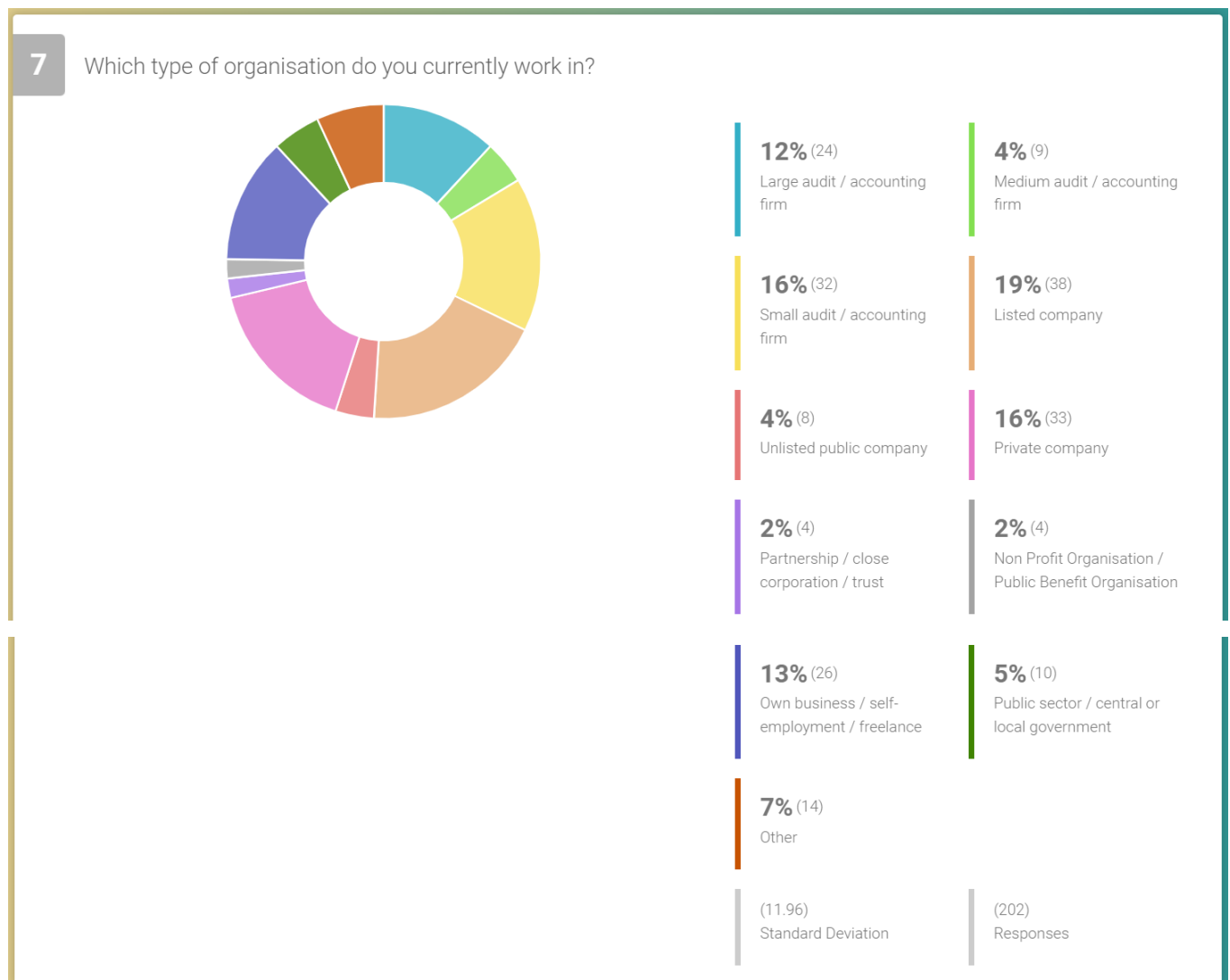


Figure 12: Type of organisation currently worked in (KwikSurveys, 2022)

Figure 13 below presents the closest description of the respondent's current role, otherwise known as the SAICA constituency. CAs(SA) are employed in a wide range of roles, as supported by SAICA (2022) in Table 7 in Chapter 3. The results indicate that 61% are managing / financial directors, senior management, or financial accounting / support staff. Interestingly 4% of respondents are employed in an educational role.

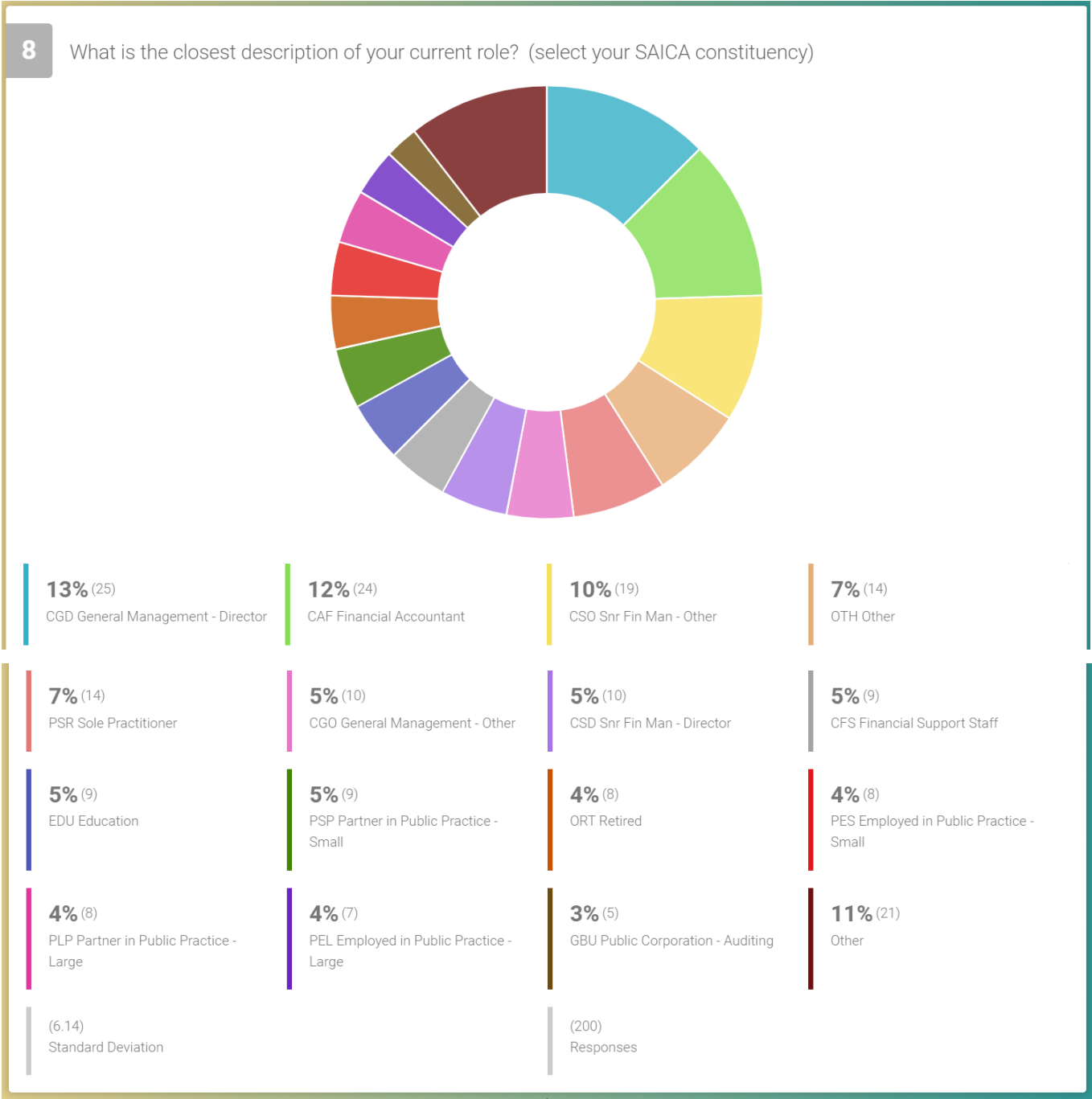


Figure 13: SAICA constituency (KwikSurveys, 2022)

Figure 14 presents the number of employees in the organisation and indicates that more than half of CAs(SA) (59%) work in organisations with less than 500 employees, and 66% of CAs(SA) work in organisations with less than 1 000 employees. Interestingly, 2% of respondents work in organisations employing more than 100 000 employees.

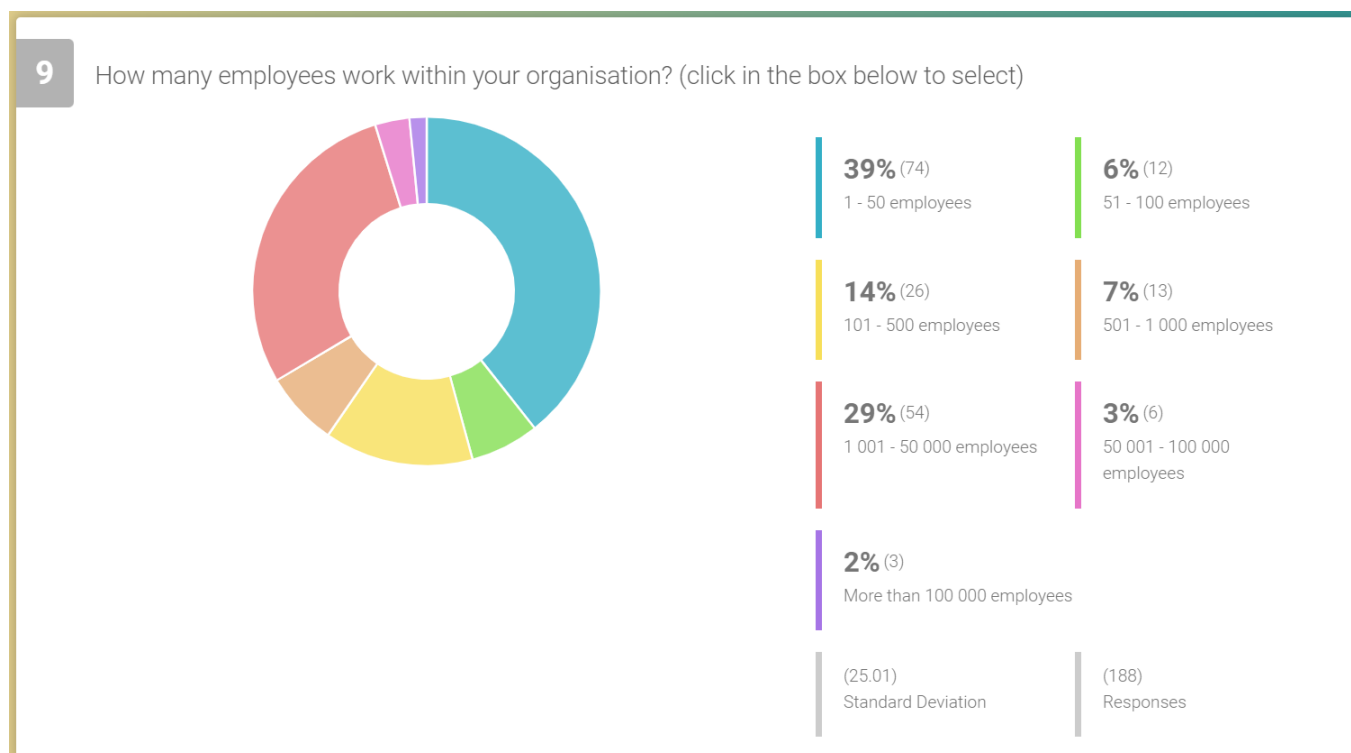
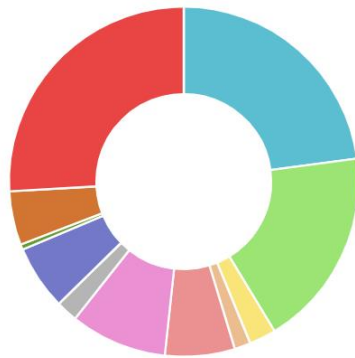


Figure 14: Number of employees in the organisation (KwikSurveys, 2022)

10

Which industry do you currently work in?

**23%** (46)

Accounting & Tax

18% (37)

Auditing / Assurance

2% (5)

Automotive

1% (3)

Banking

6% (13)

Consulting

9% (18)

Financial services

0%

FMCG

2% (4)

Hospitality

6% (12)

Information technology

0% (1)

Legal

5% (10)

Manufacturing

26% (52)

Other

(17.35)

Standard Deviation

(201)

Responses

Figure 15: Industry currently worked in (KwikSurveys, 2022)

Figure 15 above presents the industry the respondents currently work in and indicates that 62% of CAs(SA) work in the accounting, auditing, financial services, consulting, and IT industries. Almost half of CAs(SA) (47%) work in accounting, auditing, and consulting.

4.2.2 The impact of the digital era in general and on the accounting profession

11

Please respond to the following statements, indicating whether you agree or disagree:



	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Standard Deviation	Responses	Weighted Average
Disruptive new technological advancements have significantly impacted my industry	2 (1%)	18 (9%)	33 (17%)	88 (45%)	53 (27%)	29.81	194	3.89 / 5
Disruptive new technological advancements have significantly impacted my role	3 (2%)	21 (11%)	63 (32%)	79 (41%)	29 (15%)	27.91	195	3.56 / 5
The pace of advancement in technology is rapidly accelerating	1 (1%)	4 (2%)	17 (9%)	105 (54%)	68 (35%)	40.87	195	4.21 / 5
Disruptive innovative technologies bring new opportunities to my industry / my role	1 (1%)	2 (1%)	24 (12%)	99 (51%)	67 (35%)	38.53	193	4.19 / 5
Disruptive innovative technologies bring new threats to my industry / my role	5 (3%)	37 (19%)	42 (22%)	75 (38%)	36 (18%)	22.24	195	3.51 / 5
The COVID-19 pandemic has triggered the next wave of innovation	4 (2%)	8 (4%)	25 (13%)	90 (46%)	67 (35%)	33.96	194	4.07 / 5
I am confident that my profession will continue to remain relevant	2 (1%)	8 (4%)	16 (8%)	91 (47%)	77 (40%)	37.43	194	4.2 / 5
My role as a CA(SA) will be of increasing demand in the future	3 (2%)	13 (7%)	43 (22%)	81 (42%)	55 (28%)	28.31	195	3.88 / 5
								3.94 / 5

Figure 16: The impact of the digital era (KwikSurveys, 2022)

Figure 16 presents the respondents feedback on the impact of the digital era on the profession. 72% agree that this significantly impacted their industries and 56% that this has significantly impacted their roles. 89% agree that the pace of advancement in technology is accelerating, and 86% agree that this brings new opportunities and threats. Confidence was expressed by 87% of respondents that the profession will continue to remain relevant, and 70% agreed that their roles as a CA(SA) will be of increasing demand in the future.

4.2.3 The state of readiness of CAs(SA) and the profession to digital transformation

Figure 17 below presents opinions on respondents' state of readiness to digital transformation, and that of the profession. 51% agree that the profession globally is adapting quickly enough. Only 35% agree that the profession locally is adapting quickly enough, though notably 39% are neutral on the subject, and 26% disagree. Only half (54%) agree that they themselves are adapting quickly enough. 76% agree that if they continue to do the same things in the same way, they may not adapt quickly enough to remain relevant, and 86% that they need to improve their own skills and competencies.

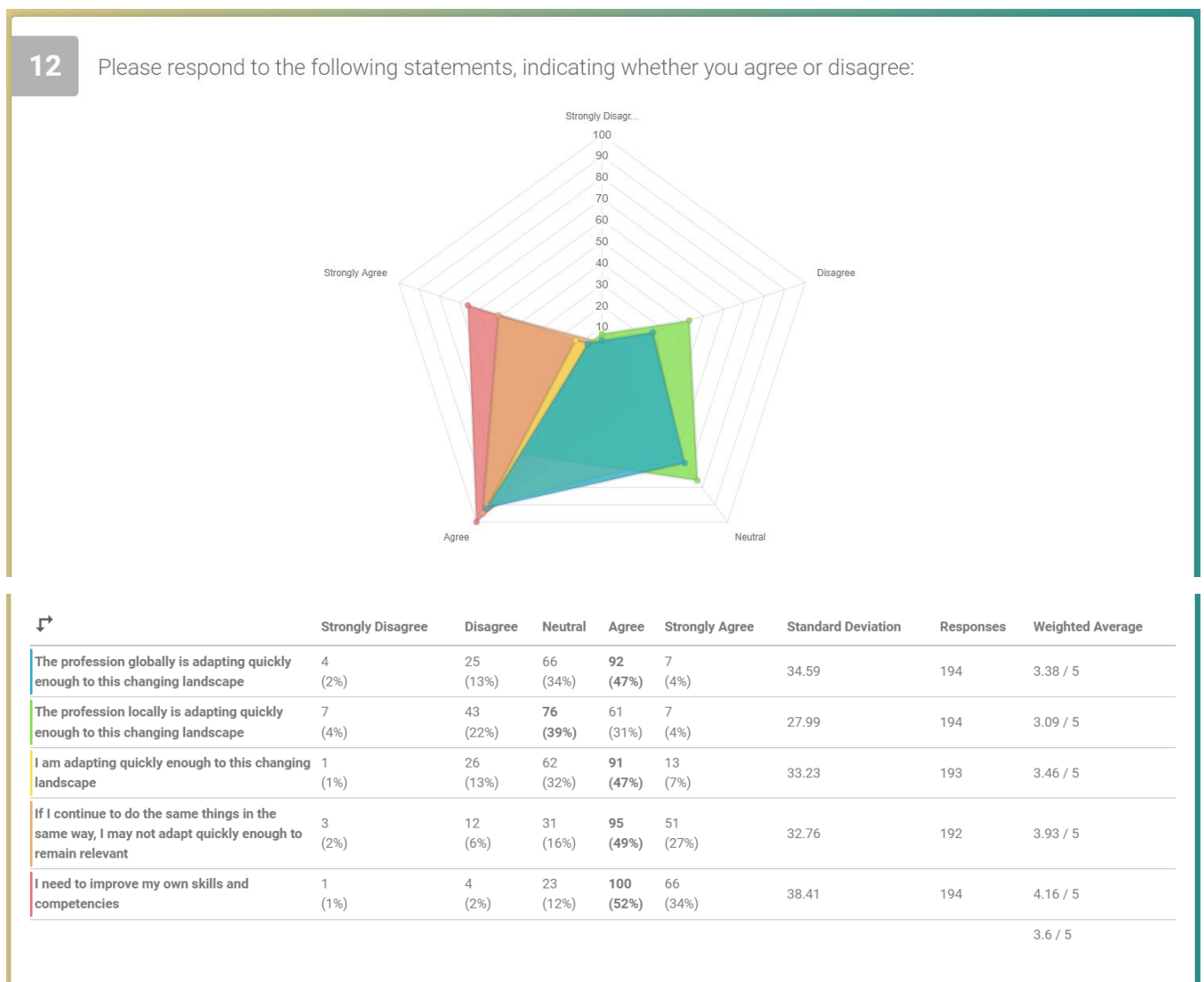


Figure 17: The state of readiness of CAs(SA) and the profession to digital transformation (KwikSurveys, 2022)

4.2.4 Degree of technical competence and experience with innovative technologies

Figure 18 presents the disruptive technologies anticipated to be relevant to the discipline in the future. More than 61% of respondents anticipate that artificial intelligence, cloud computing, big data and robotic process automation will be relevant. Half include block chain technology and The Internet of Things. Of interest, 66% consider cryptocurrencies not relevant, which did not fit expectation.

13 What disruptive technologies do you anticipate to be relevant to the discipline in the future? (select all that apply)

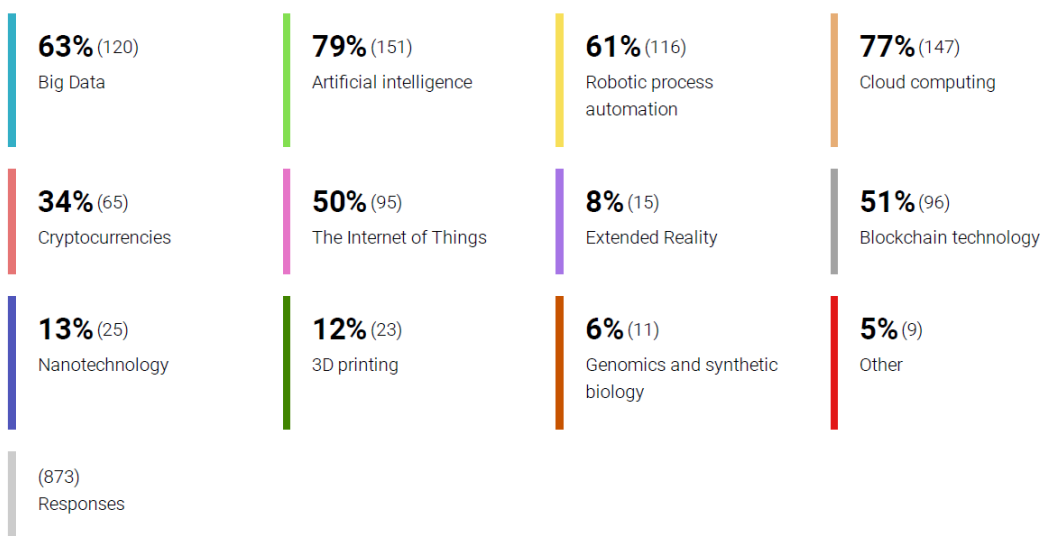
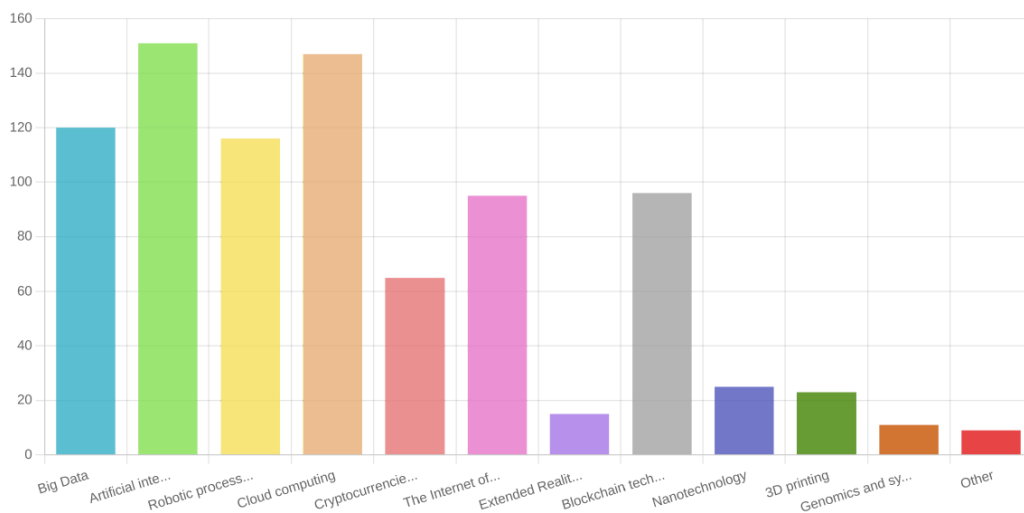
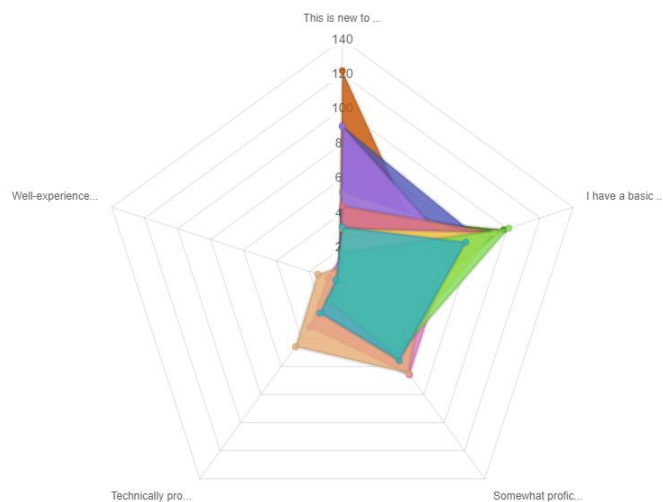


Figure 18: Disruptive technologies anticipated to be relevant to the discipline in the future (KwikSurveys, 2022)

Figure 19 below presents the respondents opinions of their degree of technical competency and experience regarding these disruptive innovative technologies. The spider diagram highlights that these technologies are new to many in the profession. Some have a basic understanding of some of the technologies, and almost none are technically proficient or well-experienced.

14

Please rate your degree of technical competency and experience regarding the following disruptive innovative technologies:



	This is new to me	I have a basic understanding	Somewhat proficient	Technically proficient	Well-experienced	Standard Deviation	Responses	Weighted Average
Big Data	32 (17%)	75 (40%)	56 (30%)	22 (12%)	4 (2%)	25.06	189	2.42 / 5
Artificial intelligence	17 (9%)	101 (54%)	53 (28%)	13 (7%)	3 (2%)	36.01	187	2.38 / 5
Robotic process automation	31 (16%)	92 (49%)	50 (26%)	13 (7%)	3 (2%)	31.49	189	2.29 / 5
Cloud computing	9 (5%)	53 (28%)	65 (35%)	46 (24%)	15 (8%)	21.85	188	3.03 / 5
Cryptocurrencies	44 (23%)	93 (49%)	36 (19%)	14 (7%)	2 (1%)	31.42	189	2.14 / 5
The Internet of Things	16 (8%)	66 (35%)	66 (35%)	32 (17%)	9 (5%)	24.2	189	2.75 / 5
Extended Reality	90 (48%)	66 (35%)	24 (13%)	5 (3%)	2 (1%)	34.83	187	1.73 / 5
Blockchain technology	52 (28%)	85 (45%)	37 (20%)	12 (6%)	2 (1%)	29.59	188	2.08 / 5
Nanotechnology	90 (48%)	83 (44%)	11 (6%)	5 (3%)	0 (0%)	39.98	189	1.63 / 5
3D printing	40 (21%)	98 (52%)	33 (17%)	15 (8%)	3 (2%)	32.81	189	2.17 / 5
Genomics and synthetic biology	122 (65%)	51 (27%)	12 (6%)	2 (1%)	2 (1%)	45.81	189	1.47 / 5
								2.19 / 5

Figure 19: Degree of technical competency and experience in disruptive innovative technologies (KwikSurveys, 2022)

It was also noted that the responses varied for each type of technology. The average response rates indicated that, as expected, genomics and synthetic biology was new to respondents, while they were somewhat proficient in cloud computing, and had a basic understanding of the rest. Most CAs(SA) did not consider themselves proficient in artificial intelligence, robotic process automation, cryptocurrencies, extended reality, blockchain technology, nanotechnology, 3D printing and genomics/synthetic biology.

These results provide insights into the research question of the state of readiness of the profession to digital transformation, and the degree of technical competency and experience of CAs(SA) to disruptive innovative technologies.

4.2.5 The impediments of digital transformation on the accounting profession

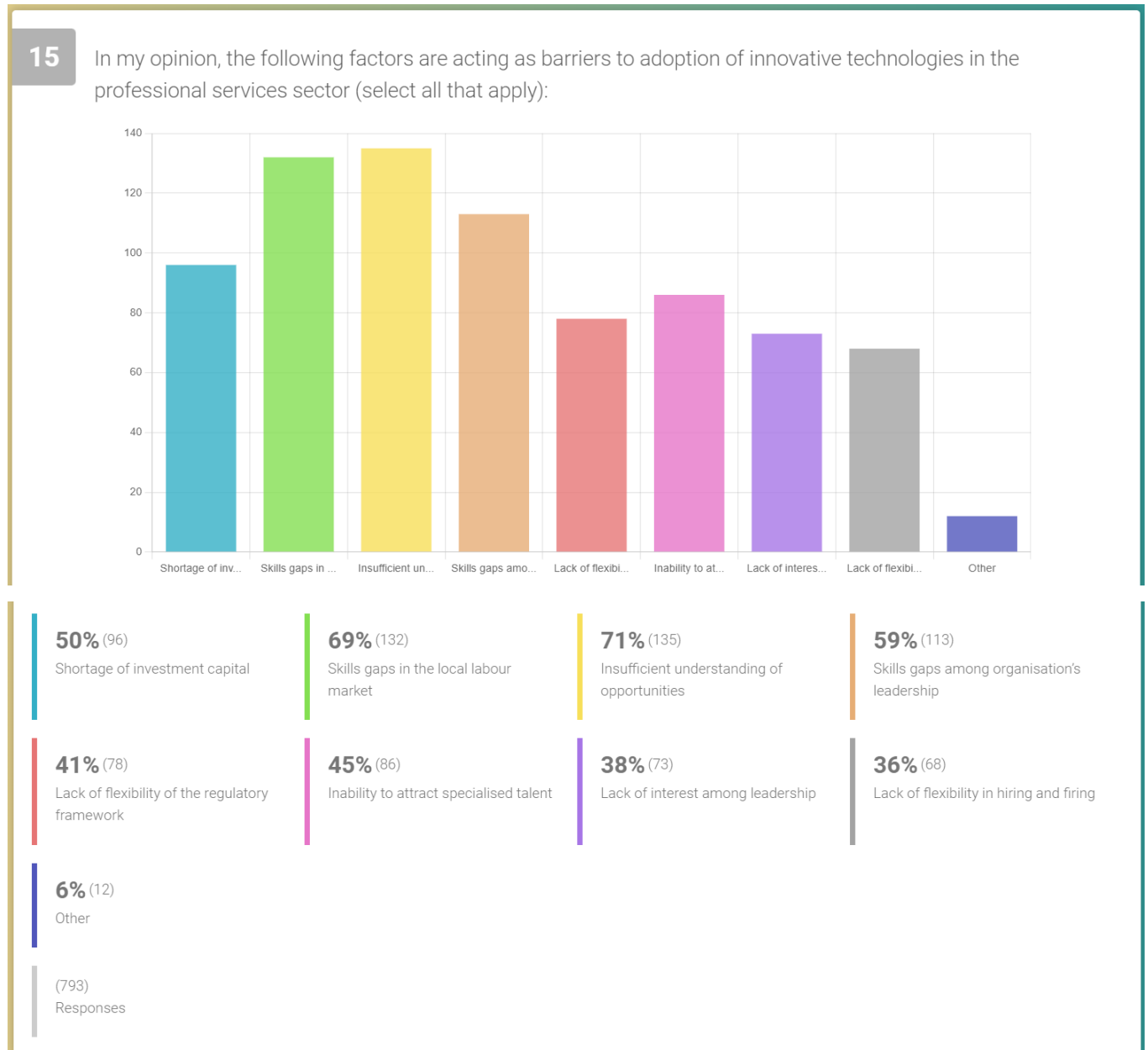


Figure 20: Barriers to adoption of innovative technologies in the professional services sector (KwikSurveys, 2022)

Figure 20 presents the barriers to the adoption of innovative technologies in the professional services sector. The top three barriers were insufficient understanding of opportunities, skills gaps in the local labour market and skills gaps among the organisation's leadership. Half of respondents also noted shortage of investment capital, and an inability to attract specialized talent.

Figure 21 below presents the opinions of respondents on the top emerging skills required in the professional services sector. The findings reveal that the top three skills were analytical thinking and innovation, critical thinking and analysis and complex problem-solving.

In addition, more than half of respondents considered creativity / originality / initiative, and active learning / learning strategies to be important. Interestingly, only 4% of respondents considered other skills to be emerging skills in the professional services sector.

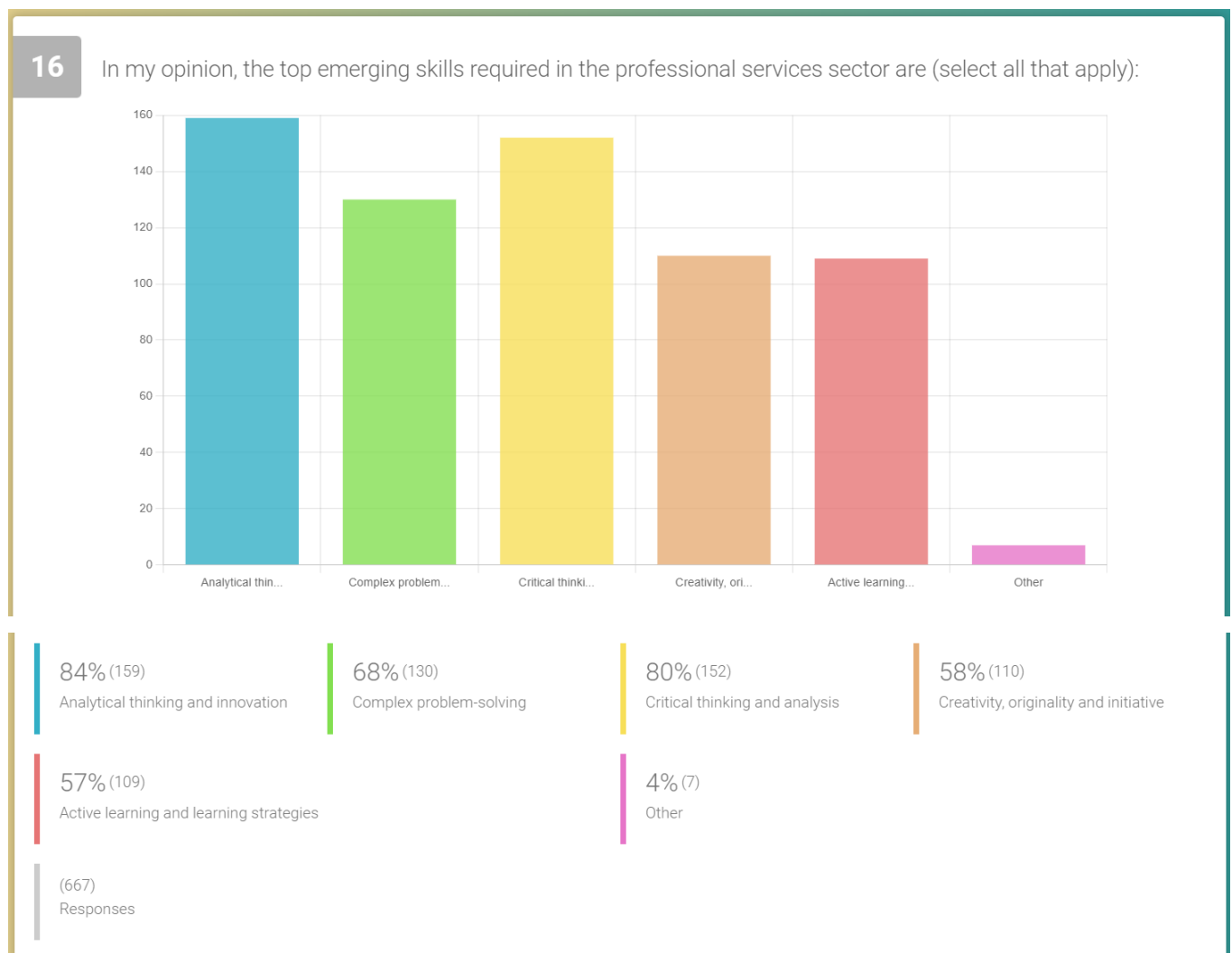


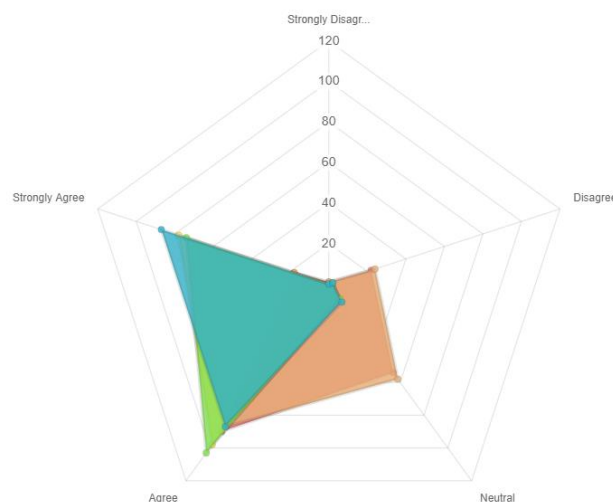
Figure 21: Top emerging skills required in the professional services sector (KwikSurveys, 2022)

4.2.6 The change management mechanisms to be used to accelerate the adoption of digital technologies

Figure 22 presents responses on change management mechanisms that can be used to accelerate the adoption of digital technologies. 94% agree that global business leaders need interpersonal skills, motivation, flexibility and changes in people, processes and infrastructure. 93% include talent management, employee management, robust governance and information security. 56% agree that there is a strong degree of awareness amongst accounting professionals of the importance of transformation, and 59% that there has been high effort to develop accounting systems in line with the requirements of digital transformation.

17

Please respond to the following statements, indicating whether you agree or disagree:



	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Standard Deviation	Responses	Weighted Average
Global business leaders need interpersonal skills, motivation and flexibility to successfully manage and adapt to change.	0 (0%)	2 (1%)	11 (6%)	87 (47%)	87 (47%)	40.67	187	4.39 / 5
Transformation requires changes in people, processes and infrastructure.	0 (0%)	2 (1%)	9 (5%)	103 (55%)	74 (39%)	42.66	188	4.32 / 5
Transformation requires talent management, employee engagement, robust governance and information security.	0 (0%)	2 (1%)	10 (5%)	98 (52%)	78 (41%)	41.77	188	4.34 / 5
There is a strong degree of awareness amongst accounting professionals of the importance of digital transformation.	1 (1%)	24 (13%)	58 (31%)	87 (46%)	18 (10%)	30.87	188	3.52 / 5
There has been high effort to develop accounting information systems in line with the requirements of digital transformation.	1 (1%)	22 (12%)	54 (29%)	90 (49%)	18 (10%)	31.56	185	3.55 / 5
								4.02 / 5

Figure 22: Change management mechanisms to accelerate speed of adoption (KwikSurveys, 2022)

4.3 Interpretation of results

4.3.1 The context of the Chartered Accountant in South Africa

The jurisdiction of this study focuses on the Chartered Accountant (SA) cohort in South Africa. South Africa is considered a suitable country to do this study because SAICA is not only considered the foremost accountancy body in the country, but also collectively acknowledged as one of the world's leading accounting institutes (SAICA, 2022).

South Africa possesses a sound financial and corporate regulatory structure, dominated by a few large, listed firms. Of all JSE-listed companies, 24% of directors are CAs(SA) and the designation is the most prevalent qualification in business (Accountancy SA, 2020). In addition, 74% of Financial Directors and 21% of MDs are CAs(SA), and two-thirds of CA(SA)-run companies are in the Top 200 on the JSE (SAICA, 2022).

These professionals hold positions as leaders in their fields. The current role of a CA(SA) provides an indication of the career progression of these professionals, and their level of seniority. This is relevant as an indicator of the extent to which the respondents influence decisions and business strategy in the organisations in which they work and is relevant across all the research questions. The research findings indicate that most Chartered Accountants qualified more than 12 years ago and have at least 10 years of post-qualification experience.

In Table 7 in Chapter 3, the SAICA constituency for the total population is compared to the SAICA constituency of the final sample. The analysis confirms a strong correlation between the SAICA constituency of both the population and final sample across each current role category. While proportionately more managing directors, and proportionately less CAs employed in large public practice firms responded, the results overall compare well to the population, and the final sample is further supported as representative of the total population.

Most completed their articles in large to medium audit / accounting firms and most are 49 years old or younger. Most CAs(SA) work in companies or audit / accounting firms, and most are managing / financial directors, senior management, or financial accounting / support staff. More than half work in organisations with less than 500 employees, and most work in the accounting, auditing, financial services, consulting, and IT industries.

Of interest, almost half the respondents (49%) are Millennials. This generation is born between 1981 – 2000, making them 22 – 41 years old. This is well-supported by the strong correlation between the age profile of both the population and final sample across each age group as presented in Table 6 below, with SAICA (2022) reporting that 46% of all 49 113 CAs(SA) are Millennials.

<i>Table 6 below presents the age profile of the total population and final sample. Column 1 presents the age profile by category. Columns 2 and 3 present the total population numbers and percentage (%) of population. Column 4 presents the final sample numbers and percentage (%) of final sample.</i>				
Age profile	Total population	Percentage (%) of population	Final sample	Percentage (%) of final sample
Under 30	3 831	7.8%	21	9.6%
30 – 39	18 761	38.2%	71	32.6%
40 – 49	13 310	27.1%	51	23.3%
50 – 59	6 728	13.7%	32	14.7%
60+	6 483	13.2%	42	19.3%
Did not say	-	-	1	0.5%
Total	49 113	100.0%	218	100.0%

Table 6: Age profile of total population and final sample

Consideration was given as to whether these Millennials may have a faster speed of adoption to disruptive technologies than those in older age groups. Further analysis was done on the research data, which confirmed that 107 of the final sample were Millennials (49%) with most of these being between the ages of 30 – 39 years. Surprisingly, across all research questions, no identifiable difference was evidenced between the responses of Millennials and the total sample.

The data was then analysed for Traditionalists, being those born between 1927 – 1946, making them more than 75 years old. Figure 23 below presents the responses of Traditionalists on the research question of the impact of the digital era on their roles and profession.

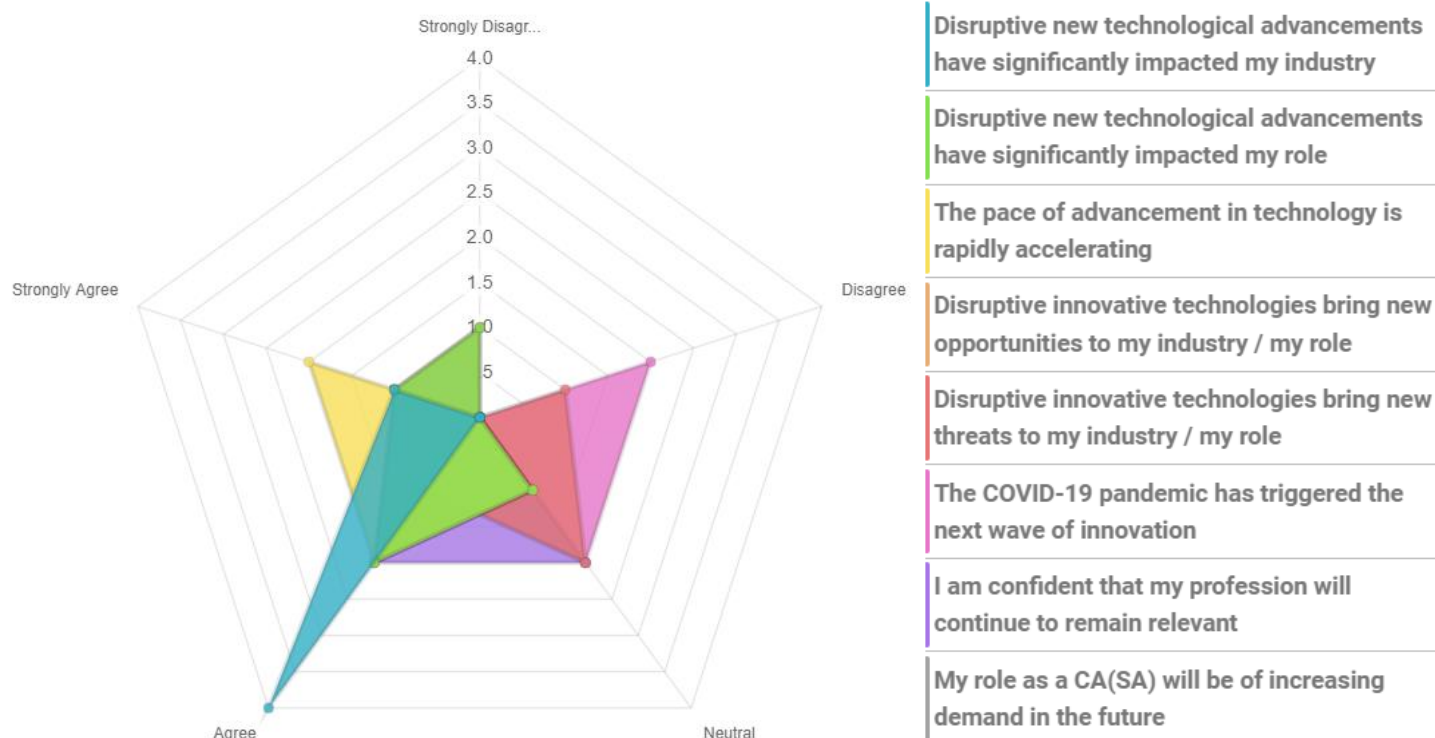


Figure 23: Responses of traditionalists on the impact of the digital era (KwikSurveys, 2022)

Noted outlier results are included, with key outliers highlighted in red. Interestingly, key findings reveal that Traditionalist CAs(SA) do not consider the COVID-19 pandemic to have triggered the next wave of innovation, and they do not consider their roles to be of increasing demand in the future. They are comfortable with doing the same things in the same way and do not feel they need to improve their skills.

The results did not meet expectation, possibly because it appears that limited research on digital transformation has been done on this cohort. However, there may be an alternative explanation to the findings: as this cohort are likely retired and no longer full practising CAs(SA), it can be understood that there would be less of an impact on their roles. Therefore, less upskilling may be required.

Table 8 below compares certain responses of Traditionalists to the total sample. The results were interesting, but as only 4% of respondents are Traditionalists, the findings were not considered to be sufficiently impactful for meaningful conclusions to be drawn.

Table 8 below compared the noted outlier responses of Traditionalists compared to the total final sample. Column 1 documents the statement. Column 2 presents the percentage (%) of the final sample that agree with the statement. Column 3 presents the percentage (%) of the Traditionalists that agree with the statement.

Noted outlier results when comparing responses of Traditionalists to responses of the total final sample	Percentage (%) of total final sample that agree	Percentage (%) of Traditionalists that agree
Disruptive new technological advancements have significantly impacted my industry	72%	100%
Disruptive innovative technologies bring new opportunities to my industry / role	86%	60%
Disruptive innovative technologies bring new opportunities to my industry / role	56%	40%
The COVID-19 pandemic has triggered the next wave of innovation	81%	20%
I am confident that my profession will continue to remain relevant	87%	60%
My role as a CA(SA) will be of increasing demand in the future	70%	40%
The profession locally is adapting quickly enough to this changing landscape	35%	20%
If I continue to do the same things in the same way, I may not adapt quickly enough to remain relevant	76%	40%
I need to improve my own skills and competencies	86%	40%

Table 8: Comparison of traditionalist responses to total final sample

The research findings in this section appear comprehensive, largely met expectation, and are consistent with previous studies. The data is supported as representative of the total population, enabling findings to be extrapolated across all CAs(SA). The results generally support existing theory with the exception that there appears to be limited research on the digital transformation adoption of different age groups / generations.

These results provide the context for the research findings below and are relevant across all the research questions. This is important because the context of this study is the Chartered Accountant in South Africa.

Results that do not meet expectation are that almost half (49%) of CAs(SA) were Millennials and there are no identifiable differences across all research questions for Millennials compared to the total final sample. The expectation had been that Millennials may have a faster speed of adoption to disruptive technologies than those in older age groups.

Furthermore, the responses of Traditionalists did not meet expectation. However, Meraghni et al. (2021) did find a weak degree of awareness amongst accounting professionals of the importance of digital transformation and a low effort to develop accounting information systems in line with the requirements of digital transformation, all due to the presence of several high-impact challenges.

These results matter because Gibson *et al.* (2021) argue that forces for change continually arise from changes in input, output, technological, and scientific environments. Diagnosis then requires information gathering to determine root causes for inadequate speed of adoption, change required, outcomes expected, and measurement tools. This means that enhancing efficiency, productivity, and value of CAs has practical implications and required transformation in people, processes, and infrastructure. This includes talent management, employee engagement, enhanced general policies and procedures, robust governance, and information security (Maurer, 2020).

4.3.2 The impact of the digital era in general and on the accounting profession

The previous chapter reveals that disruptive new technological advances have significantly impacted the industries and roles of Chartered Accountants (SA). The pace of advancement in technology is accelerating and this brings both opportunities and threats to the industries / roles of CAs(SA). The profession is expected to continue to remain relevant but only one-third of respondents agree that the profession locally is adapting quickly enough. In addition, the COVID-19 pandemic has triggered the next wave of innovation.

These findings are well-supported by Khanom (2020) who argues that the rapid advent of various technologies such as artificial intelligence (AI), internet of things, smart technology, robotics, cloud computing, amongst others, is rapidly changing the way businesses operate. These technologies would require governments, businesses, and workplaces to transform digitally at a commensurate pace. In fact, technological developments, globalisation, and increasing competition are forcing professions, including accounting, to change constantly.

The findings further indicate that while the role of CAs(SA) is expected to be of increasing demand in the future, CAs(SA) need to improve their own skills, and if they continue to do the same things the same way they may not adapt quickly enough to remain relevant. Disruptive technologies are new to many in the profession, and while most have a basic understanding, very few consider themselves technically proficient or well-experienced.

According to SAICA (2021), this requires Chartered Accountants (CAs) to navigate and adapt to the digital era to continue to provide responsible leadership. The profession has evolved significantly over recent years, but the world is changing at breakneck velocity (Accountancy SA, 2021). CAs are having to embrace new ways of business, navigate emerging disruptive technologies, prepare for evolving roles that are not yet fully defined, and enhance value creation strategies in this volatile and complex era (SAICA, 2021).

The urgency for digital transformation has recently been heightened by exogenous factors, such as the COVID-19 pandemic. Mudassir (2020) asserts that the pandemic will trigger the next era of innovation and change the trajectory of governments, economies, and businesses for years to come.

The results provide key relevant and current insights into the impact of the digital era in general and on the accounting profession. The findings meet expectation, and the above explanations are considered to be an accurate and appropriate analysis that is well-supported by existing literature, consistent with previous studies and support existing theory. SAICA (2021) support that the fourth industrial revolution (4IR) and digital transformation have altered the nature of the global business environment. Khanom (2020) agree that the dynamic nature of digital technologies is making the accounting profession the most affected sector in ways that were never anticipated.

These findings are considered important because CAs(SA) hold positions as leaders in their spheres of business operation and SAICA is widely recognised as one of the world's leading accounting institutes and South Africa's pre-eminent accountancy body (SAICA, 2022). The CA(SA) is the most predominant business qualification. In addition, 74% of Financial Directors and 21% of MDs are CAs(SA), and almost two-thirds of the companies run by CAs(SA) are in the Top 200 on the JSE (SAICA, 2022).

The research methodology does support that the results are representative of the total populations, therefore supporting generalisation, and do not indicate any potential variables not considered. However, there are some limitations: the results in this section do not yet focus on what needs to be done, and this forms part of the next sections.

4.3.3 The state of readiness of CAs(SA) and the profession to digital transformation

The previous section reveals that the profession globally and locally, and in fact CAs(SA) themselves, are not adapting quickly enough. If CAs(SA) continue to do the same things in the same way, they may not be adapting quickly enough to remain relevant. These findings are well-supported by existing literature. Furthermore, 86% of the respondents agree that they need to improve their own skills and competencies. By 2025, it is estimated that 85 million job roles may be displaced by the division of labour between humans and technology, while 97 million new roles may emerge that are more adapted (The World Economic Forum (WEF), 2020). This is supported by Metallo et al. (2021) who assert that almost half of the roles currently fulfilled by humans in the world can be automated, which means that the required abilities and skills for both firms and their employees will change constantly.

WEF (2020) assert that certain job roles will be significantly impacted, and the top five job roles in increasing and decreasing demand across industries are set out in Table 1 in Chapter 2. According to the table, the demand for data analysts and scientists is increasing, which highlights evolving roles required of CAs going forward. The table also highlights the decreasing relevance of some of the traditional roles of a CA. CAs will remain indispensable, but it is crucial for CAs worldwide to stay relevant in a complex technology-driven world (Accountancy SA, 2021).

According to the Association of International Certified Professional Accountants (2019), most finance teams and professionals are not evolving their skills fast enough to account for the impact of artificial intelligence, block chain, cybersecurity, robotic process automation and other new technologies. A survey of over 700 senior finance leaders reports that only 10 percent of finance teams have sufficient technical skills to support their organisation's digital journey (Kokina et al., 2019). This asserts that the profession has not fully embraced technology / digital transformation.

The results provide key relevant and current insights into the state of readiness of CAs(SA) and the accounting profession. The findings meet expectation, and the above explanations are considered to be an accurate and appropriate analysis that is well-supported by existing literature. This is consistent with previous studies and supports existing theory. Companies promise transformative customer experiences, yet functions such as finance increasingly fall behind. Furthermore, the typical finance worker will be more comfortable staying put, than applying data science, predictive algorithms, RPA and blockchain technologies to transform the world around them (Padmos & Englund, 2019).

These findings are considered important because CA2025 (2022) argue that the world we now live and work in is ambiguous and uncertain, with exponential and continuous change. Therefore, as technology advances and becomes more pervasive, it is imperative that accountants remain relevant in their roles. Meraghni et al. (2021) caution that members of the accounting profession should not be indifferent – it is a necessity for the profession to develop, transform, constantly renew, and improve in parallel with developments in the digital age.

The research methodology supports that the results are representative of the total populations, therefore supporting generalisation, and do not indicate any potential variables not considered. However, there are some limitations: when taken in isolation the results in this section do not yet focus on what needs to be done, and this forms part of the next sections.

4.3.4 Degree of technical competence and experience with innovative technologies

The findings in the previous section reveal, in order of relevance, that artificial intelligence, cloud computing, big data and robotic process automation will be relevant to the discipline in the future. To a lesser extent, block chain technology and The Internet of Things are also considered to be relevant. These technologies are new to many, and some have a basic understanding, but almost none of the respondents consider themselves technically proficient or well-experienced.

On average and as expected, genomics and synthetic biology are new to the respondents, while they are somewhat proficient in cloud computing and have a basis understanding of the rest. Most CAs(SA) do not consider themselves proficient in artificial intelligence, robotic process automation, cryptocurrencies, extended reality, blockchain technology, nanotechnology, 3D printing and genomics/synthetic biology.

These results provide insights into the research question of the state of readiness of the profession to digital transformation and the degree of technical competency and experience of CAs(SA) to disruptive innovative technologies. This is well-supported by literature. Governments, industries, and companies are challenged by stakeholders to show relevance by adding new value with innovative solutions, demanding agile, high-impact results (Albaidhani, 2019).

Kokina, Gilleran, Blanchette and Stoddard (2021) assert that disruptive technologies are advancing at a frenzied pace, and that the digital workforce has arrived. They estimate that by the end of 2022, 85 percent of large organisations will have deployed some form of Robotic Process Automation (RPA), with software robots using structured workflows to emulate human actions and execute complex business processes. AI can already search for information online, interact with voice assistants and write computer code by itself (Bernard Marr & Co., 2022).

Kokina *et al.* (2021) assert that accountants must adapt to the changes and engage in digital upskilling. They suggest that accountants play five important roles in identifying, explaining, training, sustaining, and analysing their firm's automation initiatives. Therefore, to prepare for these roles, accountants need to acquire or strengthen essential technical skills for each role – including data management, coding and an understanding of databases and cloud computing.

Interestingly, cryptocurrencies are not considered to be relevant, which is a surprising finding as 10% of the respondents are in the financial services / banking sector. It would have been expected that cryptocurrencies may replace current forms of currency and banking in the future. As the findings in the next section indicate, this may be due to an insufficient understanding of the opportunities of cryptocurrencies.

According to the Association of International Certified Professional Accountants (2019), most finance teams and professionals are not evolving their skills fast enough to account for the impact of artificial intelligence, block chain, cybersecurity, robotic process automation and other new technologies. A survey of over 700 senior finance leaders reports that only 10 percent of finance teams have sufficient technical skills to support their organisation's digital journey (Kokina *et al.*, 2019). This asserts that the profession has not fully embraced technology / digital transformation.

The results provide key relevant and current insights into the state of readiness of CAs(SA) and the accounting profession. The findings meet expectation, and the explanations are considered to be an accurate and appropriate analysis that is well-supported by existing literature. The results are consistent with previous studies and support existing theory.

Companies promise transformative customer experiences, yet functions such as finance increasingly fall behind. Furthermore, the typical finance worker will be more comfortable staying put, than applying data science, predictive algorithms, RPA and blockchain technologies to transform the world around them (Padmos & Englund, 2019).

These findings are considered important because CA2025 (2022) argue that the world we now live and work in is ambiguous and uncertain, with exponential and continuous change. Therefore, as technology advances and becomes more pervasive, it is imperative that accountants remain relevant in their roles. Meraghni et al. (2021) caution that members of the accounting profession should not be indifferent – it is a necessity for the profession to develop, transform, constantly renew, and improve in parallel with developments in the digital age.

The research methodology supports that the results are representative of the total populations, therefore supporting generalisation, and do not indicate any potential variables not considered. However, there are some limitations: when taken in isolation the results in this section do not yet focus on what needs to be done, and this forms part of the next sections.

4.3.5 The impediments of digital transformation on the accounting profession

The findings in the previous section indicate that the top three barriers to adoption of innovative technologies by CAs(SA) are an insufficient understanding of opportunities, skills gaps in the local labour market and skills gaps among the organisation's leadership. In addition, further significant barriers include a shortage of investment capital and an inability to attract specialised talent. Respondents did not consider barriers to include lack of interest among leadership or lack of flexibility in hiring and firing practices.

Interestingly, cryptocurrencies are not considered by CAs(SA) to be relevant to the discipline in the future, which is a surprising finding. As 10% of the respondents are in the financial services / banking sector, it can be argued that cryptocurrencies may replace current forms of currency and banking in the future. The findings indicate that this may be due to an insufficient understanding of the opportunities of cryptocurrencies.

These results provide insights into the research question of the impediments of digital transformation on the accounting profession and are well-supported by literature. In contrasting view, Meraghni *et al.* (2021) found a weak degree of awareness amongst accounting professionals of the importance of digital transformation and a low effort to develop accounting information systems in line with technological advancement.

The WEF (2020) acknowledges that a lack of interest among leadership is a factor but motivates in Table 3 in Chapter 2 that several greater barriers to adoption of new technologies exist, including a shortage of investment capital, skills gaps among leadership and staff, an insufficient understanding of opportunities and a lack of flexibility of regulatory frameworks. This means that CAs in the professional services sectors (over 12 000 or 25% according to SAICA, 2022) face a shortage of investment capital in more than half of the companies they manage, and skills gaps in the labour market in just under half, which are key barriers to adoption of new technologies.

Overall, the findings meet expectation, and the above explanations are considered to be an accurate and appropriate analysis that is well-supported by existing literature. The results are furthermore consistent with previous studies and support existing theory. The research methodology supports that the results are representative of the total populations, therefore supporting generalisation, and do not indicate any potential variables not considered. No specific limitations were noted.

4.3.6 The requisite skills and competencies to manage the digital transformation change

The findings indicate that the top three skills are analytical thinking and innovation, critical thinking, and analysis and complex problem-solving. In addition, further important skills are creativity/originality/initiative and active learning strategies. An unexpected finding was that the majority of CAs(SA) completed their articles in large to medium audit / accounting firms and most still work in the accounting, auditing, financial services, consulting, and IT industries, with almost half working in the fields of accounting, auditing, and consulting.

This is concerning, given that Table 1 in Chapter 2 indicate that these roles are high on the list of those in decreasing demand in the future (WEF, 2020). Lavinia-Mihael (2019) adds that AI and Machine Learning (ML) technologies are replacing repetitive daily tasks, leaving accountants more time to focus on data consulting and analysis. Rather than spending hours on customary tasks, accountants of the future will be able to use and analyse AI data to provide effective business solutions for customers.

This is further supported by Table 2 in Chapter 2 which identifies the top five emerging skills in the professional services profession being analytical thinking and innovation; complex problem-solving; critical thinking and analysis; creativity, originality and initiative; and active learning and learning strategies. According to the Table, analytical thinking and innovation is a frequent high demand skill for CAs, as is complex problem-solving and critical thinking.

According to Chartered Accountants Worldwide Network USA (CAW) (2022), all accounting bodies globally face the same challenges and must enhance and improve education paths. It asserts that the core competencies of CAs are expected to remain, with augmented/enhanced specific specialisations. Based on this, the new US CPA exams in 2024 focus more on IT systems, controls and automated tools for big data and data analytics, and exams in Great Britain now include data analytics, robotics and blockchain technology.

These findings provide insights into the requisite skills and competencies to manage digital transformation in the professional services sector. This sector is considered to be a suitable proxy for the research question, as Figure 8 in section 4.2.1.1 indicates that 80% of CAs(SA) completed their articles in large to medium audit / accounting firms. Furthermore, Figure 11 in section 4.2.1.2 indicates that almost one-third (32%) are still employed in audit / accounting firms, and Figure 14 indicates that 62% of CAs(SA) work in the accounting, auditing, financial services, consulting, and IT industries, with almost half of CAs(SA) (47%) working in accounting, auditing, and consulting.

Overall, the findings meet expectation, and the above explanations are considered to be an accurate and appropriate analysis that is well-supported by existing literature. The results are furthermore consistent with previous studies and support existing theory. The research methodology supports that the results are representative of the total populations, therefore supporting generalisation, and do not indicate any potential variables not considered. No specific limitations were noted.

4.3.7 The change management mechanisms to be used to accelerate the adoption of digital technologies

The findings in the section highlight that global business leaders need people skills, motivation, and flexibility to successfully manage and adapt to change. Transformation also requires talent management, employee management, robust governance, and information security. There is a strong awareness amongst accounting professionals of the importance of digital transformation and there appears to be high effort to develop accounting systems in line with the requirements of digital transformation. This is supported by Gibson *et al.* (2012) who agree that interpersonal skills, motivation, and flexibility are required by global business leaders. As introduced in Figure 2 in Chapter 2, Gibson *et al.* (2012) propose the following seven-step model for the management of organisational change to enhance and maximise change management and enhance speed of adoption:

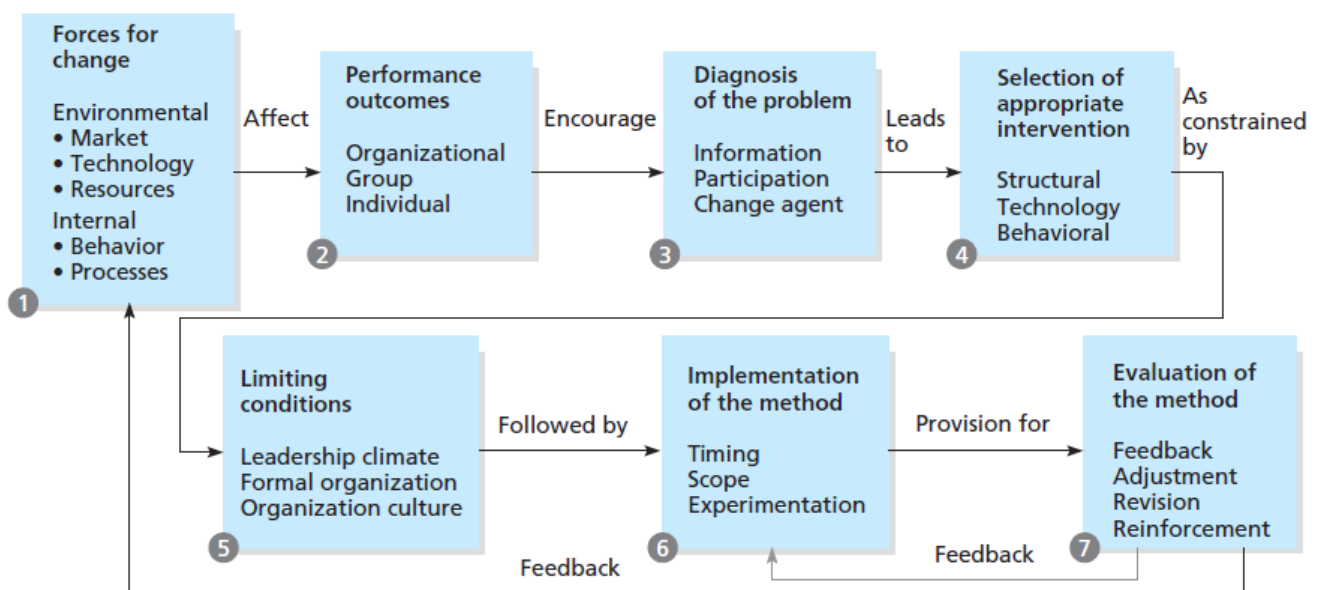


Figure 2: Seven-step model for the management of organisational change (Gibson *et al.*, 2021)

According to the above figure, forces for change continually arise from changes in input, output, technological, and scientific environments. Diagnosis requires information gathering to determine root causes for inadequate speed of adoption, change required, outcomes expected, and measurement tools. Measurable outcomes include efficiency, adaptiveness, and speed of adoption.

The evaluation procedure is the final stage - end results should be operationally defined, and measurements should be taken (before and after) - enabling management to account for resources and provide feedback and corrections for the implementation phase (Gibson *et al.*, 2021). This means that enhancing efficiency, productivity, and value of CAs requires transformation in people, processes, and infrastructure. This includes talent management, employee engagement, enhanced general policies and procedures, robust governance, and information security (Maurer, 2020).

Based on the findings above, the following three practical interventions are suggested:

- To address the current skills gap, it is suggested that this could be partially addressed at a tertiary and board examination level, with both the Honours Degree and the Board Examination curriculum including a required module on Digital Transformation. Suggested components of the curriculum could include:
 - Disruptive technologies: artificial intelligence, cloud computing, big data and robotic process automation, block chain technology and The Internet of Things
 - Data management: the management of data, coding, and an understanding of databases
 - Ethics: IT governance, ethics, and cybersecurity
- To address inadequate understanding of the risks / opportunities of digital transformation to the profession, it is suggested that SAICA's Continuing Education Programme (CPD) policies and procedures include requirements for CAs(SA) to attend at least some of the extensive CA of the Futures seminars, conferences and training programmes already offered by SAICA. This approach has already been followed for SAICA ethics training, which is mandatory for all CAs(SA) to attend. As CAs(SA) hold senior leadership positions in their fields and organisations, these professionals may not be dedicating sufficient time, attention and focus to this key strategic imperative.

- SAICA implement one annual online conference on Managing the Digital Transformation Change, that registered members attend as part of their annual membership renewal process. To achieve this, it is suggested that the conference be virtual, after-hours, limited to two hours only and recorded, acknowledging the leadership roles these members hold in their organisations. Suggested focus areas could include:
 - the impact of the digital era in general and on the profession.
 - the state of readiness of CAs(SA) and the profession to digital transformation.
 - the degree of technical competence and experience with innovative technologies.
 - the impediments of digital transformation on the accounting profession
 - the requisite skills and competencies to manage the digital transformation; and
 - the change management mechanisms to be used to accelerate the adoption of digital transformation.

Experimentation could include the introduction of the Digital Transformation module as an elective initially or adopting a reinforcement approach by rewarding participation at the CA of the Future or annual conference programme. Rewards could include annual subscription discounts, or a sample of attendees receiving executive coaching or sponsored consultation on digital transformation talent management, employee engagement, policies and procedures, governance, and information security. A further suggestion may be the introduction of SAICA Certificates in training programmes on AI, Big Data, and coding, among others.

The evaluation procedure could include repeating the research survey adopted in this study on an annual basis, to gauge trends and improvement. The competence of trainees could be assessed via the formal learning outcomes in the Honours degree and Board exam, and a general / enhanced member survey could be conducted to receive feedback on the success of the interventions.

These results provide insights into the research question of change management mechanisms that can be used to accelerate the adoption of digital technologies and are well-supported by literature. Overall, the findings meet expectation, and the above explanations are considered to be an accurate and appropriate analysis that is well-supported by existing literature.

The results are furthermore consistent with previous studies and support existing theory. The research methodology supports that the results are representative of the total populations, therefore supporting generalisation, and do not indicate any potential variables not considered. No specific limitations were noted.

4.4 Chapter summary

This chapter presents the concise and objective findings of the research. Descriptive statistics in this study provide insights into the impact of the digital era in general and on the accounting profession, the impediments to digital transformation, the state of readiness of the profession and the requisite skills and competencies. They further highlight change management mechanisms which can be used to accelerate the adoption of digital technology. This chapter discusses and interprets the research findings to delve into the meaning and relevance of the results. It provides own interpretations and cites relevant sources to put the results in context. It indicates whether the findings met expectations, and if not, why this might be. It further analyses whether there are any alternative explanations for the findings, discusses the implications, and determines whether the results are consistent with previous studies.

New technological advances have significantly impacted the industries and roles of Chartered Accountants (SA). This brings new opportunities and new threats. The profession is expected to continue to remain relevant and the roles of CAs(SA) are expected to be of increasing demand in the future. However, the profession locally and CAs(SA) themselves may not adapting quickly enough, and CAs(SA) need to improve their own skills and competencies. Disruptive technologies are new to many in the profession, and while most have a basic understanding, very few consider themselves technically proficient or well-experienced.

Barriers to adoption include an insufficient understanding of opportunities, skills gaps in the local labour market and skills gaps among the organisation's leadership. Required emerging skills include analytical and critical thinking skills and complex problem-solving. Global business leaders need people skills, motivation, and flexibility to successfully manage and adapt to change. Chapter 5 delves into the meaning and relevance of the results, providing interpretations and citing relevant sources to put the results in context. Finally, the chapter discusses whether the results support or challenge existing theory, and any practical implications and limitations. Chapter 5 below details the final conclusion of the study.

CHAPTER 5: CONCLUSION

5.1 Chapter summary

This chapter presents the final conclusion of the study and summarises the main findings and recommendations. It answers the main research question clearly and concisely by stating the overall conclusion of the research and reflects on the research to confirm the extent to which the research approach has been effective in answering the questions. It further considers whether any new questions or unexpected insights have arisen, and makes recommendations for practice in business or policy, or for future research.

It seeks to frame practical recommendations as suggestions, and how future studies can build on these conclusions. Finally, it emphasises the contribution to new knowledge and a clear expression of why the research matters.

5.2 The research problem and research objective

The findings of this study provide strong support for the research problem being inadequate speed of adoption of rapidly changing technologies to maintain the relevance of the CA(SA) profession. In attempting to address the research problem statement, the main objective of this study is to develop a change management model that will accelerate digital transformation in the CA profession. Specifically, the sub-objectives are:

- to examine the impact of digital transformation, and how the digital era is affecting the accounting profession
- to examine the impediments of digital transformation on the accounting profession
- to examine the state of readiness of the profession to digital transformation
- to examine the requisite skills and competencies
- to develop a change management mechanism to speed up digital technology adoption (Metallo *et al.*, 2021).

5.3 Summary of main findings and recommendations

SAICA is not only considered the foremost accountancy body in the country, but also collectively acknowledged as one of the world's leading accounting institutes (SAICA, 2022). South Africa possesses a sound financial and corporate regulatory structure, dominated by a few large, listed firms, and of all JSE-listed companies, 24% of directors are CAs(SA) and the designation is the most prevalent qualification in business (Accountancy SA, 2020). In addition, 74% of Financial Directors and 21% of MDs are CAs(SA), and almost two-thirds of the companies run by CAs(SA) are in the Top 200 on the JSE (SAICA, 2022).

Therefore, these professionals hold positions as leaders in their spheres of business operation. The next sections provides insight on the findings of sub-objectives, which support the preceding main objective, which then leads to change management model.

5.3.1 The impact of digital transformation, and how the digital era is affecting the accounting profession

The findings reveal that disruptive new technological advances have significantly impacted the industries and roles of Chartered Accountants (SA). The pace of advancement in technology is accelerating and this brings both opportunities and threats to the industries / roles of CAs(SA). The profession is expected to continue to remain relevant but only one-third of respondents agree that the profession locally is adapting quickly enough. COVID-19 has triggered the next wave of innovation (Loon *et al.*, 2020).

While the role of CAs(SA) is expected to be of increasing demand in the future, CAs(SA) need to improve their own skills, and if they continue to do the same things the same way they may not adapt quickly enough to remain relevant. Disruptive technologies are new to many in the profession, and while most have a basic understanding, very few consider themselves technically proficient or well-experienced.

This requires Chartered Accountants (CAs) to navigate and adapt to the digital era to continue to provide responsible leadership. The profession has evolved significantly over recent years, but the world is changing at breakneck velocity (Accountancy SA, 2021). CAs are having to embrace new ways of business, navigate emerging disruptive technologies, prepare for evolving roles that are not yet fully defined, and enhance value creation strategies in this volatile and complex era (SAICA, 2021). The urgency for digital transformation has recently been heightened by exogenous factors, such as the COVID-19 pandemic.

5.3.2 The impediments of digital transformation on the accounting profession

The findings indicate that the top three barriers to adoption of innovative technologies by CAs(SA) are an insufficient understanding of opportunities, skills gaps in the local labour market and skills gaps among the organisation's leadership. In addition, further significant barriers include a shortage of investment capital and an inability to attract specialised talent. CAs(SA) in the professional services sectors, being over 12 000 or 25% according to SAICA, face a shortage of investment capital in more than half of the companies they manage, and skills gaps in the labour market in just under half, which are key barriers to adoption of new technologies.

5.3.3 The state of readiness of the profession to digital transformation

A notable 86% of the respondents agree that they need to improve their own skills and competencies. It is estimated that by 2025, 85 million job roles may be displaced by the division of labour between humans and technology, while 97 million new roles may emerge that are more adapted. Accountants and auditors feature in the top five job roles of decreasing demand, together with accounting, bookkeeping and payroll clerks.

The demand for data analysts and scientists is increasing, which highlights evolving roles required of CAs going forward. The findings also highlight the decreasing relevance of some of the traditional roles of a CA. Most finance teams and professionals are not evolving their skills fast enough to account for the impact of artificial intelligence, block chain, cybersecurity, robotic process automation and other innovative technologies.

Literature supports that only an estimated 10% of finance teams have sufficient technical skills to support their organisation's digital journey. This asserts that the profession has not fully embraced technology / digital transformation. Existing literature further suggests that companies promise transformative customer experiences, yet functions such as finance increasingly fall behind. Furthermore, that the typical finance worker will be more comfortable staying put, than applying data science, predictive algorithms, RPA and blockchain technologies to transform the world around them.

In order of relevance, artificial intelligence, cloud computing, big data and robotic process automation are considered to be most relevant to the discipline in the future. To a lesser extent, block chain technology and The Internet of Things are also relevant. These technologies are new to many, and some have a basic understanding, but almost none of the respondents consider themselves technically proficient or well-experienced.

5.3.4 The requisite skills and competencies

Accountants must adapt to the changes and engage in digital upskilling. To prepare for these new roles, accountants need to acquire or strengthen essential technical skills – including data management, coding and an understanding of databases and cloud computing. The top three emerging skills are analytical thinking and innovation, critical thinking, and analysis and complex problem-solving. In addition, further important skills are creativity/originality/initiative and active learning strategies.

Existing literature asserts that AI and Machine Learning technologies are replacing repetitive daily tasks, leaving accountants more time to focus on data consulting and analysis. Rather than spending hours on customary tasks, accountants of the future will be able to use and analyse AI data to provide effective business solutions for customers.

Analytical thinking and innovation are a frequent high demand skill for CAs, as is complex problem-solving and critical thinking. All accounting bodies globally face the same challenges and must enhance and improve education paths. This asserts that the core competencies of CAs are expected to remain, with augmented/enhanced specific specialisations.

Global business leaders need people skills, motivation, and flexibility to successfully manage and adapt to change. Transformation also requires talent management, employee management, robust governance, and information security. There is a strong awareness amongst accounting professionals of the importance of digital transformation and there appears to be high effort to develop accounting systems in line with the requirements of digital transformation.

5.3.5 A change management mechanism to speed up the adoption of digital technologies

Gibson *et al.* (2012) propose a seven-step model for the management of organisational change to enhance and maximise change management and enhance speed of adoption, which is presented below:

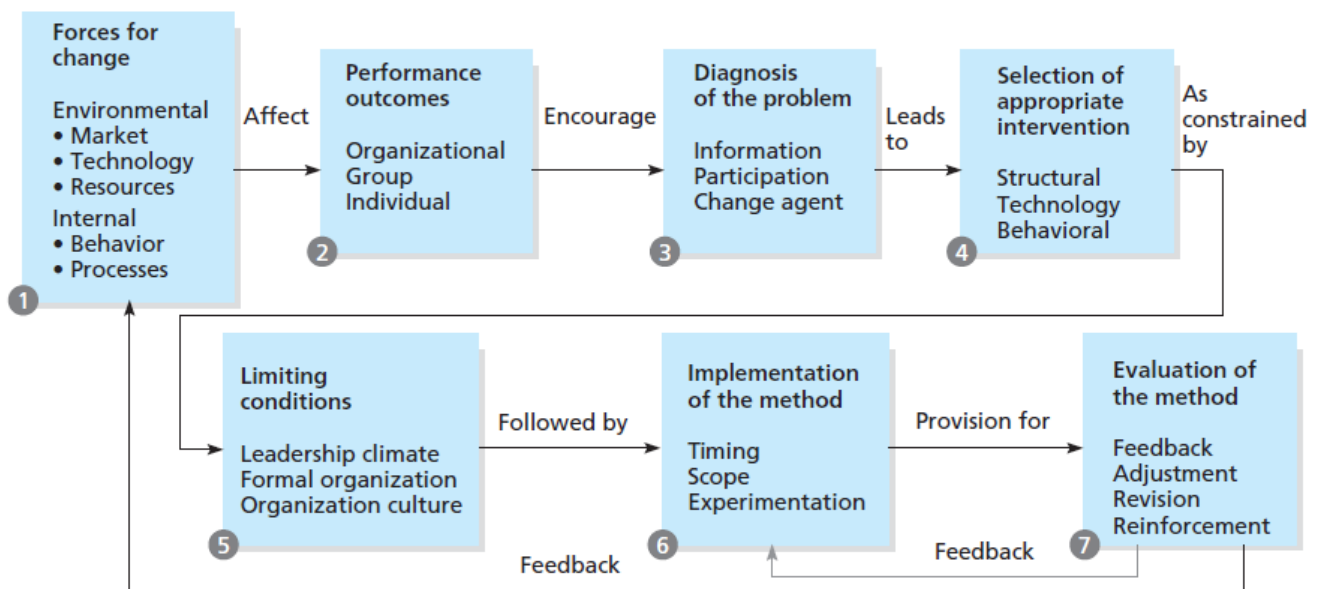


Figure 2: Seven-step model for the management of organisational change (Gibson *et al.*, 2021)

The model asserts that forces for change continually arise from changes in input, output, technological, and scientific environments. Diagnosis requires information gathering to determine root causes for inadequate speed of adoption, change required, outcomes expected, and measurement tools.

Measurable outcomes include efficiency, adaptiveness, and speed of adoption. The evaluation procedure is the final stage - end results should be operationally defined, and measurements should be taken (before and after) - enabling management to account for resources and provide feedback and corrections for the implementation phase.

5.3.5.1 Forces for change in the CA(SA) profession

The rapid advent of various technologies such as artificial intelligence, internet of things, smart technology, robotics, cloud computing, amongst others, is rapidly changing the way businesses operate. These technologies would require governments, businesses, and workplaces to transform digitally at a commensurate pace. In fact, technological developments, globalisation, and increasing competition are forcing professions, including accounting, to change constantly (Khanom, 2020).

The urgency for digital transformation has recently been heightened by an exogenous factor, such as the COVID-19 pandemic. Mudassir (2020) argues that the pandemic will trigger the next era of innovation and change the trajectory of governments, economies, and businesses for years to come. According to Khanom (2020), the dynamic nature of digital technologies is making the accounting profession the most affected sector in ways that were never anticipated.

Forces for change in the profession therefore include the environmental forces of changes in technology, markets, and resources, as well as internal behaviour and processes, and the pace of change is rapidly accelerating.

5.3.5.2 Performance outcomes in the CA(SA) profession

These forces for change are affecting the performance outcomes in the CA(SA) profession at both a discipline level and an individual level. It is estimated that by 2025, 85 million job roles may be displaced by the division of labour between humans and technology, while 97 million new roles may emerge that are more adapted. Accountants and auditors feature in the top five job roles of decreasing demand, together with accounting, bookkeeping and payroll clerks. The demand for data analysts and scientists is increasing, which highlights evolving roles required of CAs going forward.

5.3.5.3 Diagnosis of the problem in the CA(SA) profession

The research problem statement is inadequate speed of adoption of rapidly changing technologies to maintain the relevance of the CA(SA) profession. The impact on performance outcomes encourages a diagnosis of the root cause of the problem. The findings highlight the decreasing relevance of some of the traditional roles of a CA.

Most finance teams and professionals are not evolving their skills fast enough to account for the impact of artificial intelligence, block chain, cybersecurity, robotic process automation and other innovative technologies. Literature supports that only an estimated 10% of finance teams have sufficient technical skills to support their organisation's digital journey. This asserts that the profession has not fully embraced technology / digital transformation.

5.3.5.4 Selection of appropriate interventions in the CA(SA) profession

The diagnosis of the problem above leads to the selection of appropriate interventions, and these include structural, behavioural, and technological interventions. Accountants must adapt to the changes and engage in digital upskilling. To prepare for these new roles, accountants need to acquire or strengthen essential technical skills – including data management, coding and an understanding of databases and cloud computing.

In addition, top three emerging skills relevant to the profession are analytical thinking and innovation, critical thinking, and analysis and complex problem-solving. Further important skills are creativity/originality/initiative and active learning strategies. Existing literature asserts that AI and Machine Learning technologies are replacing repetitive daily tasks, leaving accountants more time to focus on data consulting and analysis.

Rather than spending hours on customary tasks, accountants of the future will be able to use and analyse AI data to provide effective business solutions for customers. This means that enhancing efficiency, productivity, and value of CAs requires transformation in people, processes, and infrastructure. This includes talent management, employee engagement, enhanced general policies and procedures, robust governance, and information security.

Based on the findings of this study, the following three practical interventions are suggested:

1. The current skills gap could be partially addressed at a tertiary and board examination level, with both the Honours Degree and the Board Examination curriculum including a required module on Digital Transformation. Suggested components of the curriculum could include:
 - a. Disruptive technologies: artificial intelligence, cloud computing, big data and robotic process automation, block chain technology and The Internet of Things
 - b. Data management: the management of data, coding, and an understanding of databases
 - c. Ethics: IT governance, ethics, and cybersecurity
2. To address inadequate understanding of the risks / opportunities of digital transformation to the profession, it is suggested that SAICA's Continuing Education Programme (CPD) policies and procedures include requirements for CAs(SA) to attend at least some of the extensive CA of the Futures seminars, conferences and training programmes already offered by SAICA.

This approach has already been followed for SAICA ethics training, which is mandatory for all CAs(SA) to attend. As CAs(SA) hold senior leadership positions in their fields and organisations, these professionals may not be dedicating sufficient time, attention and focus to this key strategic imperative.

3. SAICA implement one annual online conference on Managing the Digital Transformation Change, that registered members attend as part of their annual membership renewal process. To achieve this, it is suggested that the conference be virtual, after-hours, limited to two hours only and recorded, acknowledging the leadership roles these members hold in their organisations. Suggested focus areas could include:
 - a. the impact of the digital era in general and on the profession.
 - b. the state of readiness of CAs(SA) and the profession to digital transformation.
 - c. the degree of technical competence and experience with innovative technologies.
 - d. the impediments of digital transformation on the accounting profession
 - e. the requisite skills and competencies to manage the digital transformation; and
 - f. the change management mechanisms to be used to accelerate the adoption of digital transformation.

5.3.5.5 Limiting conditions in the CA(SA) profession

It is acknowledged that the selection of appropriate interventions is constrained by certain limiting conditions, including leadership climate, the formal organisation and organisational culture. The top three barriers to adoption of innovative technologies by CAs(SA) are suggested to be an insufficient understanding of opportunities, skills gaps in the local labour market and skills gaps among the organisation's leadership.

In addition, further significant barriers include a shortage of investment capital and an inability to attract specialised talent. CAs(SA) in the professional services sectors, being over 12 000 or 25% according to SAICA, face a shortage of investment capital in more than half of the companies they manage, and skills gaps in the labour market in just under half, which are key barriers to adoption of new technologies.

5.3.5.6 Implementation of the method in the CA(SA) profession

These limiting conditions are followed by implementation of the method, including consideration of timing, scope, and experimentation. It is suggested that implementation is urgently required. The pace of advancement in technology is accelerating, and the world is changing at breakneck velocity. The urgency for digital transformation has recently been heightened by exogenous factors, such as the COVID-19 pandemic. The proposed scope includes three suggested practical interventions:

- a. the Honours Degree and the Board Examination curriculum including a required module on Digital Transformation covering proficiency in, among others, artificial intelligence, cloud computing, big data, data management, coding, IT ethics, governance, and cybersecurity;
- b. SAICA's CPD policies and procedures including requirements for CAs(SA) to attend at least some of the extensive online CA of the Futures seminars, conferences and training programmes already offered by SAICA;
- c. SAICA offer formal SAICA Business School Online accreditation programmes on proficiency in analytical thinking and innovation; critical thinking; and analysis and complex problem-solving; and
- d. an annual virtual, two-hour conference on Managing the Digital Transformation Change as part of the annual SAICA membership renewal process. Suggested topics include the impact of the digital era in general and on the profession; the state of readiness of CAs(SA) and the profession to digital transformation; the degree of technical competence and experience with innovative technologies; the impediments of digital transformation on the accounting profession; the requisite skills and competencies to manage the digital transformation; and the change management mechanisms utilised to accelerate the adoption of digital transformation.

Experimentation could include introducing the Digital Transformation module as an Honours elective, adopting a reinforcement approach by rewarding participation at the CA of the Future or annual conference programme or the introduction of SAICA Certificates in formal training programmes on AI, Big Data, coding, and others.

The evaluation procedure could include repeating the research survey adopted in this study on an annual basis, to gauge trends and improvement. The competence of trainees could be assessed via the formal learning outcomes in the Honours degree and Board exam, and a general / enhanced member survey could be conducted to receive feedback on the success of the interventions.

5.4 Reflection on the research

The research approach adopted in this study is considered to have been effective in answering the research questions. The research appropriately addresses a change management model to accelerate the speed of adoption by CAs(SA) of disruptive technologies and how to manage the change. The research does raise the question on how quickly the change can be effected, given the extent of the interventions required, and how effectively the change management model will address the continuous updating of rapidly advancing technologies.

Future studies could therefore build on the conclusions in this study to address these two questions. Unexpected insights included that only one-third of respondents agree that the profession locally is adapting quickly enough, and that a notable 86% of the respondents agree that they need to improve their own skills and competencies.

5.5 Limitations of the study

A limitation of the study has been the brief period that the survey was open for responses, with the distribution of the survey on 4 October 2022, and the closing date being 15 October 2022 (see Appendix 3). The planning approach was for a one-month survey with two reminders.

This resulted in the response rate being lower than anticipated, though still well-supported by literature as representative of the population as per similar studies. It is recommended that future studies allow for one month for ethical clearance procedures and for the survey to be open for at least one month, to allow all members to respond.

Furthermore, to improve the response rate, the survey was also posted on LinkedIn (see Appendix 6), which resulted in nine non-CA(SA) respondents participating. The opening survey question confirms that respondents are SAICA-registered CAs(SA), which allowed for easy identification of the nine, and this was overcome by filtering the responses to include only responses from SAICA-registered CAs(SA). It is recommended that future surveys include page logic on this question to route non-CAs(SA) directly to the last thank you page.

Finally, to allow for ease of completion and increased response rate, none of the survey questions were mandatory. This did have the limitation that not all respondents answered all questions, as indicated in the final data. It is recommended that future studies make all questions mandatory for ease of data analysis.

5.6 The contribution of this research

This study contributes to the development of knowledge in the accounting field, by surveying Chartered Accountants in South Africa on their views, perceptions, and experiences in managing the digital transformation change. It contributes to existing literature on the conceptual and practical framework of digital transformation and its impact on the profession by focusing further on the requirements for successful digital transformation, such as the digital strategy, the necessary knowledge, skills and competencies of accountants, and the effects and obstacles facing the digitisation of the profession.

The data and findings provide valuable new insights (particularly post-COVID) on the impact of the digital era on the profession, and the variables impacting the speed of adoption. The data and findings have been used to develop a change management model that will accelerate digital transformation in the CA profession. The research aspires to influence these professionals to pay particular attention to and apply the recommended change management model to enhance enabling competencies as they continue to provide responsible leadership, serve their stakeholders, and contribute value to society.

This research is novel especially as it relates to CAs, because the rapid acceleration of disruptive technologies is changing the way businesses operate. These technologies require businesses and the profession to transform digitally at a commensurate pace. In fact, technological developments, globalisation, and increasing competition are forcing professions, including accounting, to change constantly (Khanom, 2020).

The urgency for digital transformation has recently been heightened by an exogenous factor, such as the COVID-19 pandemic. Mudassir (2020) argues that the pandemic will trigger the next era of innovation and change the trajectory of governments, economies, and businesses for years to come. According to Khanom (2020), the dynamic nature of digital technologies is making the accounting profession the most affected sector in ways that were never anticipated.

5.7 Areas for future research

The study has identified the following avenues for future research:

An area for future research may include extending the context to Africa or the global profession, as it can be argued that the context and challenges of the profession are aligned globally. A further area could be to reperform the survey annually to assess trends and improvements in the digital transformation adoption of CAs(SA), and to inform feedback, adjustment, and revision of the suggested change management model.

Furthermore, the questionnaire has provided rich data, and further studies could include analysing the correlation between seniority of position, years of experience, industry, and age of respondents to the speed of adoption; the correlation between size of firm, geographic location of firm, and industry of firm to speed of adoption; the impact of COVID on digitisation and the correlation between industry, firm size, and firm age/maturity to barriers to adoption.

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