STRATEGIES EMPLOYED BY FIRST-YEAR TRAINEE ACCOUNTANTS IN THE MAFIKENG AREA TO OVERCOME INFORMATION TECHNOLOGY CHALLENGES

by

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I declare that the above dissertation is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.

..... 20 June 2022

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Signature Date

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ABSTRACT

Globalisation and changes in the business environment, coupled with rapid advancement in information technology (IT) in the 20th century, have brought about various changes in the way accountants carry out their tasks. The purpose of this study was to explore the IT challenges first-year trainee accountants in the Mafikeng area in South Africa encounter and to report on their perceptions regarding the strategies they employ to overcome these challenges in the workplace.

The study adopted a qualitative research process and a phenomenological approach. Data were collected from two accounting firm managers and 13 first-year trainee accountants through face-to-face interviews. The data were analysed using an ATLAS.ti software program package and thematic data analysis. The findings indicate that first-year trainee accountants face various IT challenges, such as sophisticated software, technological stress and employers' expectations. The study further revealed that strategies such as practical solutions, being innovative and creative with IT software, consulting IT helpdesks and internet searches were adopted by the participants to overcome IT challenges in the workplace. The results of this study provide useful insights to accounting firms' managers, accounting professional bodies and other stakeholders into various IT challenges first-year trainee accountants are facing and the strategies they employ to overcome these challenges.

Keywords: Competency, Covid-19, employers' expectations, self-determination theory, skills development, stress and coping theory, technostress

OPSOMMING

Globalisering, omwentelings in die sakewêreld, en vooruitgang in inligtingstegnologie (IT) in die 20e eeu het die werkswyse van rekenmeesters in verskeie opsigte verander. In hierdie studie word ondersoek ingestel na die IT-probleme wat eerstejaars wat vir rekenmeester leer, in die omgewing van Mafikeng in Suid-Afrika ondervind. Verslag word ook gedoen van die strategieë wat hulle volg om aan hierdie probleme in die werkplek die hoof te bied.

Die navorsing is kwalitatief en fenomenologies benader. Onderhoude is in lewende lywe gevoer met twee bestuurders van rekenmeesterfirmas en 13 eerstejaars wat vir rekenmeester leer, om die data in te samel. Die data is met behulp van ’n ATLAS.ti-sagtewareprogram en tematies ontleed. Volgens die bevindings ondervind eerste jaars wat vir rekenmeester leer, verskeie IT-probleme, waaronder gevorderde sagteware, tegnologiestres en werkgewers se verwagtings. Daar is bevind dat die eerstejaars hulle IT-probleme in die werkplek te bowe kom deur praktiese oplossings daarvoor te vind, innoverend en kreatief met IT-sagteware om te gaan, IT-hulptoonbanke te nader, en internetsoektogte te doen. Die bevindings gee die bestuurders van rekenmeestersfirmas, beroepsliggame en ander belanghebbendes insig in die IT-probleme waarmee eerstejaars te kampe het en die strategieë wat hulle volg om dit op te los.

Sleutelbegrippe: Bevoegdheid, Covid-19, werknemers se verwagtings, selfbeskikkingsteorie, vaardigheidsontwikkeling, stres-en-hanteringsteorie, tegnostres

TSHOBOKANYO

Tshusumetsano ya batho lefatshe ka bophara le diphetogo mo tikologong ya kgwebo, gammogo le tswelelopele e e akofileng mo thekenolojing ya tshedimosetso (IT) mo ngwagakgolong wa bo20, di tlile ka diphetogo tse di farologaneng mo mokgweng o babalatlotlo ba dirang ditiro tsa bona ka ona. Maikemisetso a thutopatlisiso e ne e le go tlhotlhomisa dikgwetlho tsa IT tse bakatisiwa ba babalatlotlo ba ngwaga wa ntlha kwa tikologong ya Mafikeng mo Aforikaborwa ba kopanang nao le go bega ka megopolo ya bona malebana le ditogamaano tse ba di dirisang go samagana le dikgwetlho tseno mo lefolotirong.

Thutopatlisiso e dirisitse tirego ya patlisiso e e lebelelang mabaka le molebo wa go lebelela maitemogelo/fenomenoloji. Go kokoantswe *data* go tswa kwa batsamaising ba babedi ba difeme tsa palotlotlo le bakatisiwa ba babalatlotlo ba ngwaga wa ntlha ba le 13 ka dikopanopotsolotso tsa namana. *Data* e lokolotswe ka tiriso ya serweboleta sa ATLAS.ti le tokololo ya *data* ka meono. Diphitlhelelo di bontsha gore bakatisiwa ba babalatlotlo ba ngwaga wa ntlha ba lebagana le dikgwetlho di le mmalwa tsa IT, di tshwana le dirweboleta tse di marara, kgatelelo ya maikutlo e e bakwang ke thekenoloji le ditsholofelo tsa mothapi. Thutopatlisiso e senotse gape gore bannileseabe ba dirisitse ditogamaano di tshwana le ditharabololo tse di dirang, go dirisa dirweboleta tsa IT ka boitlhamedi le boitshimololedi, go golagana le dideseketuso tsa IT le ditshenko tsa inthanete go kgona dikgwetlho tsa IT mo lefelotirong. Dipoelo tsa thutopatlisiso eno di tlamela ka tshedimosetso e e mosola go batsamaisi ba difeme tsa palotlotlo, mekgatlho ya porofešenale ya babalatlotlo gammogo le baamegi ba bangwe, malebana le dikgwetlho tse di farologaneng tsa IT tse bakatisiwa ba babalatlotlo ba ngwaga wa ntlha ba kopanang natso gammogo le ditogamaano tse ba di dirisang go kgona dikgwetlho tseno.

Mafoko a botlhokwa: Bokgoni, Covid-19, ditsholofelo tsa mothapi, tiori ya boitlhophelo, tlhabololo ya dikgono, tiori ya kgatelelo ya maikutlo le mokgwa wa go samagana nayo, kgatelelo ya maikutlo e e bakwang ke thekenoloji

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ABBREVIATIONS AND ACRONYMS

4IR	Fourth Industrial Revolution
ACCA	Association of Chartered Certified Accountants
AICPA	Association of International Certified Professional Accountants
AIS	Accounting Information Systems
ANA	Assessment needs analysis
APC	Assessment of Professional Competence
CA	Chartered accountant
CA(SA)	Chartered accountant South Africa
CIMA	Chartered Institute of Management Accountants
CTA	Certificate in the Theory of Accounting
IC	Independent coder
ICT	Information and communications technologies
IFAC	International Federation of Accountants
IRBA	Independent Regulatory Board for Auditors
IT	Information technology
ITC	Initial Test of Competency
RTO	Registered training office
SAICA	South African Institute of Chartered Accountants
SAIPA	South African Institute of Professional Accountants
Unisa	University of South Africa

CHAPTER 1

INTRODUCTION TO THE STUDY

1.1 INTRODUCTION

Globalisation and changes in the business environment, coupled with rapid information technology (IT) advancement since the start of the 20th century, have brought about numerous changes in the way accountants carry out their tasks (Asonitou, 2015:1). This is reiterated by Imene and Imhanzenobe (2020:48), who state that "technology has changed the traditional accounting system which was previously characterized by series of paper-based processes that required longer periods into an entirely new IT-based model that gets the job done more effectively, efficiently and timely". Therefore, modern-day businesses need adaptable and broadly skilled accountants who can cope with the challenges of rapid advancement in financial technologies (Lubbe, Myers & Van Rooyen, 2020:91).

For years, accounting professional bodies have been appealing to accounting education institutions to enhance the IT content of accounting courses across the curriculum (Krahel & Vasarhelyi, 2014:1). Hinson (2020:n.p.) points out that in order to prepare the next generation of accountants for the realities of the rapid changing business environment, accounting education institutions need to be able to quickly make changes to their programmes. This became evident when higher education institutions had to adapt to full-time remote learning in response to the coronavirus disease of 2019 (Hinson, 2020:n.p.). A study by the Association of International Certified Professional Accountants (AICPA) revealed that the majority of accounting firms are now employing more non-accounting graduates who possess various skills sets, including IT skills, and fewer new accounting graduates (AICPA, 2019:2). This is mainly because the accounting curricula do not always prepare students to gain better understanding of IT and its applications within the profession (Hinson, 2020:n.p.).

In South Africa, the competency framework of the South African Institute of Chartered Accountants (SAICA) explains the essential computer skills a trainee accountant

should possess in building competencies, problem solving, self-management and determination to perform well (SAICA, 2021a:26; Warffemius, Kruger & Steenkamp, 2015:356), but the framework does not give much guidance to academia on how and what to incorporate into the curricula. Krahel and Vasarhelyi (2014:2) argue that although most accounting curricula have at least one course on Accounting Information Systems (AIS) in their degree programmes, these courses are often taught by an accounting staff member and not by an AIS specialist.

Lubbe et al. (2020:91) concur that IT challenges have called for changes in accounting education curricula and the training of accounting professionals. Although many universities are using a wide variety of information and communication technologies (ICT) tools to assist and support teaching, Gachago, Ivala, Backhouse, Bosman, Bozalek and Ng'ambi (2013:97) assert that accounting education institutions have been criticised for not adequately preparing accounting graduates to cope with emerging technologies used in the workplace. Stumke (2017:125) agrees that the teaching methods and accounting curricula used at South African universities have been criticised for not adequately exposing accounting graduates to IT competencies required for the workplace. Although trainee accountants who enter traineeship directly from universities have been exposed to some form of IT skills training, those skills are either inadequate or not relevant to the working environment (Stumke, 2017:125). Furthermore, the lack of basic IT skills among trainee accountants who enter traineeship directly from high school has led to employers incurring additional costs to train them when they enter employment, or not being able to employ them at all (Jackson, Michelson & Munir, 2020:10; Stumke, 2017:125).

It is evident from the aforementioned that the rapid technological developments worldwide have resulted in a significant increase in the use of IT in accounting firms (Selamat & Idris, 2019:77). However, studies have shown that the majority of early-career trainee accountants are struggling with the use of IT when they start working at an accounting practice (Andreassen, 2020:209; Jackson et al., 2020:10; Kunz & De Jager, 2019a:145). However, this situation is exacerbated by the fact that these trainee accountants in South Africa are expected to take responsibility for their own competencies and skills development (SAICA, 2020b:32). Therefore, the aim of the present study was to explore the various IT challenges first-year trainee accountants

encounter and to report on their perceptions regarding the strategies they employ to overcome these IT challenges. The present study applied the stress and coping theory of Lazarus and Folkman (1984) (see Section 2.9.1) and the self-determination theory of Deci and Ryan (1985) (see Section 2.9.2) to understand the strategies these first-year trainee accountants employ to overcome the challenges encountered while acquiring the IT skills required by the SAICA competency framework. The stress and coping theory of Lazarus and Folkman (1984) emphasises how individuals manage unfavourable effects of stress in a number of ways, depending on personal preferences and environmental demands (Proulx & Aldwin, 2016:41). The self-determination theory identifies three essential needs that, if satisfied, allow optimal functioning and growth of an individual at the workplace (Deci & Ryan, 2008:182). These three essential needs are autonomy, competence and relatedness (Deci & Ryan, 2008:182).

This introductory chapter (see Figure 1.1) provides a detailed overview of the study.

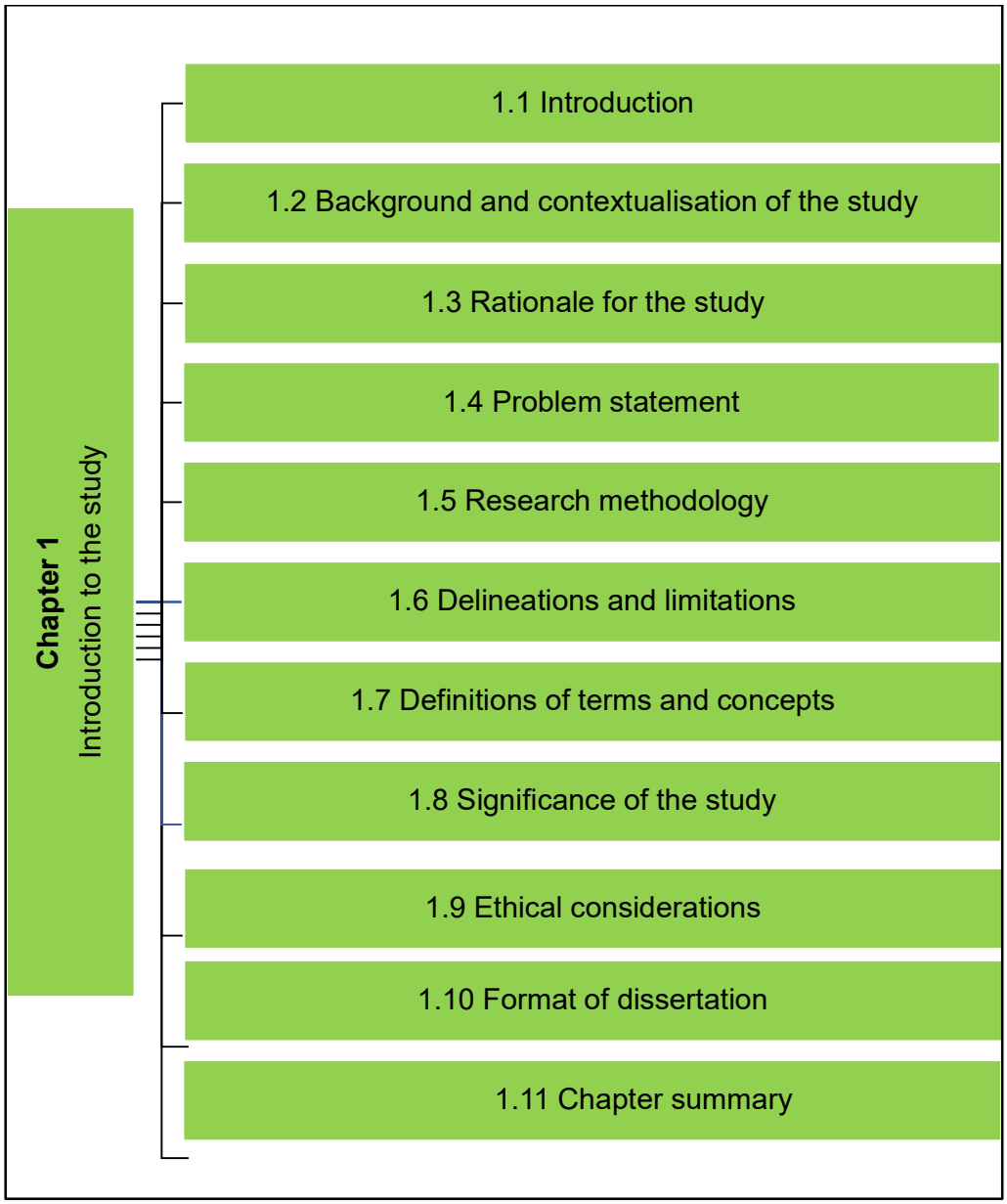

Figure 1.1: Layout of Chapter 1

Chapter 1 presents the background and contextualisation of the study, the rationale and the problem statement for the study. From these, the research objectives and research questions that guided the study are explained. A brief explanation of the research methodology employed in this study is also given in this chapter. The chapter further explains the delineations and limitations and presents a detailed clarification of the key concepts used in the study as well as the significance of the study. The chapter

concludes with the ethical considerations observed during the study and an outline of the chapters in the dissertation.

1.2 BACKGROUND AND CONTEXTUALISATION OF THE STUDY

According to the International Federation of Accountants (IFAC), a trainee accountant is an individual engaged in gaining practical experience or in a workplace training programme in order to qualify as a professional accountant (IFAC, 2015:23). In South Africa, a trainee accountant is defined by SAICA (2020b:7) as an "individual who is employed by an accredited training office and who is serving under a SAICA training contract". According to SAICA (2020b:16), the trainee accountant programme runs for a period of 36 to 60 months (see Figure 2.2), depending on the trainee accountant qualification at the start of the training contract. During this period, a trainee accountant needs to obtain a wide variety of skills, ranging from auditing and assurance, financial management, taxation and internal audit, risk management and governance, to accounting and external reporting, through to business ethics, management and leadership, with the integration of IT alongside all skills training.

SAICA has unceasingly emphasised the importance of technical knowledge and IT in its competency framework for first-year trainee accountants (Kunz & De Jager, 2019a:145; Stumke, 2017:121). The SAICA (2020a:9) competency framework for CA2025 entry-level chartered accountants (CAs) includes details to the extent that a South African chartered accountant (CA(SA)) should be able to understand how IT impacts a CA's daily functions and practices and should possess basic computer skills to be able to use essential accounting software within a relevant workplace context. The latest competency framework (SAICA, 2021b:3) emphasises the need for bringing professional values and attitudes as well as enabling skills in line with technical and technological skills. Scholars (e.g. Hinson, 2020; Krahel & Vasarhelyi, 2014; Lubbe et al., 2020) suggest that the use of IT in an accountancy environment cannot be overemphasised. Wessels (2006:145) points out that most business entities in South Africa are using a range of Microsoft products such as operating systems, OfficeSuite and email, which are typically used for the general automation of the office environment. Barac (2009:27) states that Sage Pastel Accounting is one of the dominant software packages used for recording, reporting and organising transactions in accounting firms.

The development of the new SAICA competency framework has called for the need for trainee accountants to have both professional and technical skills (SAICA, 2021a:1). Previous studies in accounting education have shown that employers' expectations of IT skills from accounting graduates are higher than the skills accounting graduates possess (Van Oordt & Sulliva, 2017:367; Viviers, Fouché & Reitsma, 2016:368). This expectation gap exists in terms of certain IT skills as well as pervasive competencies (Doman & Nienaber, 2012:953; Miller & Woods, 2000:223). Prior research investigating the views of trainee officers towards entry-level trainee accountants regarding their communication, analytical and interpersonal skills and computer abilities reveals that modern-day trainee accountants are exposed to working environments where IT skills go beyond the IT and technical knowledge generally taught at university (Van Oordt & Sulliva, 2017:367). In addition, limited research has focused on first-year trainee accountants who start with their training at an accounting firm directly after leaving school (Gebreiter, 2019:233). The present study was conducted in the Mafikeng (also officially known as Mahikeng) area in North West, a province of South Africa (see Figure 1.2).

Figure 1.2: North West province of South Africa

Source: Britannica (2019:n.p.)

The Mafikeng area has various foreign workers (Stats SA, 2012:1), resulting in ethnicity and cultural diversity at the workplace. Prinsloo and Huysamen (2018:26) assert that cultural and diversity play a critical role in the workplace. Turban, Wu and Zhang (2019:5) endorse that research conducted in businesses environments with gender, ethnic and cultural diversities tend to generate better results. The rural community of Mafikeng has workers from diverse cultural backgrounds, and it was anticipated that this study's findings would incorporate the participants' cultural beliefs and views. It then follows that the findings made in this study might constitute the experiences of the participants in relation to their ethnic and cultural diversities.

1.3 RATIONALE FOR THE STUDY

The accounting profession has gone through a series of technological changes that have affected the way accountants acquire, analyse and interpret data to inform organisational decision making (Jackson et al., 2020:6). Jackson et al. (2020:6) further point out that key trends in IT have indicated that tasks traditionally performed by first-year trainee accountants are now automated. Trainee accountants are therefore expected to have the required competencies and skills to use IT to complete tasks. However, the majority of early-career trainee accountants are struggling with the use of IT when they start working at an accounting practice (Andreassen, 2020:10; Jackson et al., 2020:212; Kunz & De Jager, 2019a:146). This problem has highlighted the need for studies on the desirable skills, competencies and attributes of trainee accountants (Lubbe et al., 2020:91) and strategies employed by first-year trainee accountants to overcome IT challenges.

Scholars (see Jackling & De Lange, 2008:373–374; Kavanagh & Drennan, 2008:283–284; Leggett, Kinnear, Boyce & Bennett, 2004:369; Stumke, 2017:122) have mostly focused on the general challenges faced by accounting trainees, which serves as an indication that limited studies have been conducted on the specific IT challenges faced by trainee accountants at the workplace. The rationale for this study was to contribute to the body of knowledge from a qualitative viewpoint with respect to strategies employed by first-year trainee accountants to overcome IT challenges. In this regard, first-year trainee accountants' views and perspectives on IT competency challenges they face during skills development and the strategies they employ to overcome these

IT challenges were investigated in the present study using a qualitative research approach.

1.4 PROBLEM STATEMENT

Over the past years, the business environment in which accounting professionals operate has changed vividly. In addition, the Covid-19 pandemic has forced the accounting profession to reconsider the role IT plays for future accountants (Jabin, 2021:8; SAICA, 2021e:6). The pandemic has also called for an investigation of how accountants should operate in a technological, often remote, environment (Yoon, 2020:8). These changes, which are not new to the profession, can be attributed to numerous factors, such as the fast developments in IT and worldwide communication facilitated by the internet (Barac, 2009:20).

Research has shown that due to the ever-changing technological and learning environment, IT is widely used in trainee offices; however, accounting education institutions are not adequately preparing students with the necessary IT skills and competencies that will equip them for the modern-day workplace (Stumke, 2017:122). Similarly, higher education institutions also may not have the capacity to provide adequate IT skills and competency training to accounting students (Van Romburgh, 2014:21). Stumke (2017:121) concurs that the various IT challenges encountered by trainee accountants are due to inadequate integration of IT programmes in accounting education institutions and limited collaboration between universities and accounting firms.

Kunz and De Jager (2019b:340) confirm that first-year trainee accountants often experience numerous challenges, but some trainee accountants in the Gauteng province in South Africa were found to be able to cope with these challenges. As trainee accountants need to develop various skills as per the requirements of SAICA (2020b:31), they are expected to take responsibility and demonstrate that they have (or are in the process of obtaining) these necessary competencies and skills. Hence, they should also strive to overcome any IT challenges they encounter. The problem addressed by the present study relates to the IT challenges first-year trainee accountants encounter while taking responsibility for their own skills development. The study also aimed to unravel the IT challenges faced by trainees before and after the

Covid-19 pandemic and the strategies first-year trainee accountants employed to overcome various IT challenges.

1.4.1 Research aim and objectives

The aim of the present study was to explore the various IT challenges first-year trainee accountants encounter and to report on their perceptions regarding the strategies they employ to overcome these IT challenges in the Mafikeng area in the North West province in South Africa.

The research objectives of the study were as follows:

1. Determine the IT skills required of first-year trainee accountants to perform their duties
2. Investigate whether first-year trainee accountants were exposed to IT training during their education at school and/or university
3. Identify IT-related challenges first-year trainee accountants experience when they enter the workplace
4. Identify any knowledge gaps between the IT education and IT skills required to perform their duties at their workplace
5. Identify IT-related support that accounting professional bodies and accounting firms provide to first-year trainee accountants
6. Determine the role self-determination plays when first-year trainee accountants encounter IT challenges at the workplace
7. Identify strategies used by trainee accountants to curb the challenges they experience while taking responsibility for their own IT skills development.

1.4.2 Research questions

In order to address the aim and objectives of the study, the study set out to answer the following research questions:

1. What IT skills are required of first-year trainee accountants to perform their duties?
2. To what extent were first-year trainee accountants exposed to IT during their education at school and/or university?

3. What IT-related challenges do first-year trainee accountants experience when they enter the workplace?
4. What IT knowledge gaps exist between the IT education and IT skills required to perform their duties at their workplace?
5. What IT-related support does accounting professional bodies and accounting firms provide to first-year trainee accountants?
6. What role does self-determination play when first-year trainee accountants encounter IT challenges at the workplace?
7. What strategies do trainee accountants use to curb the challenges they experience while taking responsibility for their own skills development?

1.5 RESEARCH METHODOLOGY

This section provides a brief overview of the research methodology that was used in the study, the data collection techniques and the procedures used to collect and analyse the data.

Within the field of qualitative research, social research paradigms include critical theory, constructivism, positivism and post-positivism (Bogna, Raineri & Dell, 2020:65). In the quest to answer the research questions of this study, a social constructivist research paradigm was followed, which is in essence an approach to qualitative research (Creswell, 2014:8). The goal of the social constructivist paradigm in this research was to rely as much as possible on the participants' views on how they were able to develop the necessary IT competencies and skills, the challenges they experienced and the strategies they implemented to overcome these challenges. Social constructivism was considered appropriate for this study, as the researcher sought to investigate social objects that were constructed, negotiated and organised by first-year trainee accountants in their attempt to make sense of strategies to overcome IT challenges in the workplace through the analysis of social discourse evolving from qualitative data (see Kelemen & Rumens, 2008:9).

A qualitative research approach is referred to as a research method that attempts to understand in depth the underlying reasons and motivations for actions (MacDonald & Headlam, 2015:8). The aim of a qualitative research approach is to provide a comprehensive description of people's experiences of a given research problem

(Mack, Woodsong, MacQueen, Guest & Namey, 2005:1) and how they interpret their experiences and the world around them (MacDonald & Headlam, 2015:8). Qualitative research was therefore considered appropriate for this research because it allowed the researcher to achieve rich perceptions from the trainee accountants in their natural setting.

In a natural setting, a researcher addresses the manner of interplay among people, focusing on the unique contexts in which human beings live and work (Mtsweni, 2008:55). A phenomenological research design aids in the decision of how the social phenomena will be studied (Groenewald, 2004:45). Therefore, the use of a phenomenological research design in this study enabled the researcher to understand the experiences of the trainee accountants as they took responsibility for developing their IT skills.

The target population of this study consisted of managers and trainee accountants at SAICA training offices in the Mafikeng area in the North West province in South Africa. There were four SAICA training offices in Mafikeng at the time of the study (SAICA, 2020a:n.p.; saYellow.com, 2021:n.p.). Maree (2014:34) states that a research population must be suitable and feasible. Kabir (2016:2) affirms that selecting a suitable research population occurs simultaneously with the practicalities of ensuring that data exist to allow the proposed research questions to be answered. The researcher therefore selected participants from all four SAICA training offices.

In this study, the researcher made use of face-to-face interviews to obtain an in-depth understanding of the IT challenges trainee accountants encounter while trying to meet their accounting training firm duties, including the competency and skills requirements outlined by SAICA. Data were first analysed using the ATLAS.ti™ 9 software package, after which thematic data analysis was done in order to present the findings obtained in the study. Saunders, Lewis and Thornhill (2012:10) established that thematic data analysis allows the researcher to code participants' responses into themes and categories. Thematic analysis allows for detailed coding of feedback obtained from participants in qualitative research, which allows for complex information about the research problem (Saldaña, 2016:3).

1.6 DELINEATIONS AND LIMITATIONS

Delineations of a study set the boundaries of the study and also indicate the exact position of a boundary (Simon & Goes, 2013:2). Simon and Goes (2013:2) further state that limitations of a study set the restrictions or constraints of a study and help in controlling or reducing boundaries in the study. Although the focus for the current study was on first-year trainee accountants, the IT skills were those identified in the literature as critical IT skills for any accountant. These include skills in a range of Microsoft products such as Microsoft Windows, a word-processing program (Microsoft Word), spreadsheet software (Microsoft Excel), as well as OfficeSuite, email and Sage Pastel Accounting (Albrecht & Sack, 2000:1; Barac & Du Plessis, 2014:55; Helliar, Monk & Stevenson, 2006:33; Wessels, 2008:169–170). One of the anticipated constraints to this study was that the sample used for the study was limited to first-year trainee accountants in the Mafikeng area; therefore, the results might not be generalised to all trainee accountants in South Africa.

1.7 DEFINITIONS OF TERMS AND CONCEPTS

The following terms were defined and situated in the context of the current study:

Trainee accountant

SAICA (2020b:7) defines a 'trainee accountant' as an individual employed by an accredited training office under a SAICA training contract. Trainee accountants referred to in this study were first-year trainee accountants employed by any SAICA-accredited training office in the Mafikeng area in the North West province in South Africa.

Skills development

'Skills development' is described as the process of identifying skills gaps and developing the required skills in order to execute a plan (Chau, 2012:n.p.).

Information technology (IT)

'IT' is defined as "the set of tools for acquisition, processing, storage and dissemination of vocal, pictorial, textual and numerical information by a microelectronics-based

combination of computing, telecommunications and video" (Kabanda, 2019:2). In the context of this study, IT represents all types of software used by trainee accountants to perform their duties.

Competency

According to SAICA (2021a:10), 'competency' is "the applied knowledge, skills and professional values/attitudes that enable professionals to successfully perform their work while learning outcomes are specific to a course of instruction". In the context of higher education, competency is defined as the ability to carry out a task to a defined standard with reference to a real-life work environment (Van Oordt & Sulliva, 2017:364). In the context of the current study, the competencies referred to are IT skills required by first-year trainee accountants as stipulated by SAICA.

Competence

'Competence' is the ability or capacity of a person to "feel successful in one's interactions with the external environment when mastering appropriately challenging tasks" (Bachman & Stewart, 2011:180).

SAICA competency framework

The SAICA competency framework is a document that recognises and describes the competencies, including professional ethics, enabling competencies and technical capabilities that an entry-level CA(SA) should demonstrate (SAICA, 2021a:2). Among other objectives, the SAICA competency framework sets out the basic principles on which the format of the SAICA training programme and the assessment of the competencies of the trainee accountant are grounded.

Covid-19

'Covid-19' is defined as "an infectious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)" (WHO, 2020:n.p.).

1.8 SIGNIFICANCE OF THE STUDY

SAICA (2021b:n.p.) is on the quest to improve the knowledge, skills and competencies of trainee accountants. Mkhize (2017:1–6) states that SAICA is on the lookout to

ensure that employers and trainee accountants have good perceptions of trainee accountants' ability to attain the required competencies for their own skills development. The trainees should also be provided with resources that will aid in attaining these IT competencies and skills required by SAICA during their contract period as trainee accountants. The findings of this study may give accounting firms (trainee firms) unique insight into the strategies that could be employed to overcome IT challenges faced by first-year trainee accountants.

From a policy perspective, the findings of this study may provide some insights to SAICA, accounting educators and the accounting profession at large into improving or adding more information to the current competency framework that will not only indicate the necessary skills, knowledge and competency required as trainee accountants, but also enable understanding of the IT challenges faced by trainees in developing their skills. The study also aimed to determine the strategies and didactical approaches they can use to curb the challenges they face and to ensure that they have the skills, knowledge and competency needed to carry out their duties by assessing the trainee accountants' perceptions.

The findings of this study contribute to the existing body of literature in accounting education relating to IT challenges trainee accountants face while taking responsibility for their own skills development. Furthermore, this study provides recommendations on possible strategies to alleviate IT challenges faced by trainee accountants in carrying out their duties.

1.9 ETHICAL CONSIDERATIONS

Ethical considerations by the researcher for the purpose of this study included the process of obtaining informed consent and gaining access to the various accounting firms for the study. The researcher formally obtained ethical clearance from the University of South Africa (Unisa) for the current research project to be carried out and a written consent letter was given to the accounting firms' managers and the trainee accountants. Participation was anonymous, and all measures were taken to protect and ensure the confidentiality of the information provided by the participants during the interviews. The researcher also ensured that the trainee accountants and the accounting firms' managers participating in the research were not distressed. They

were protected from physical and mental harm. The researcher made use of a recorder during the interviews to capture the detailed responses of the participants. No form of video or any objects that may pose harm to the participants were used for the study. The researcher managed all data storage by keeping the data on a password-protected computer and ensured that only the supervisors, transcriber and qualitative expert had access to the data. All electronic data used in software packages will be deleted from the computer after five years.

1.10 FORMAT OF DISSERTATION

This dissertation is structured into five chapters, as depicted in Figure 1.3.

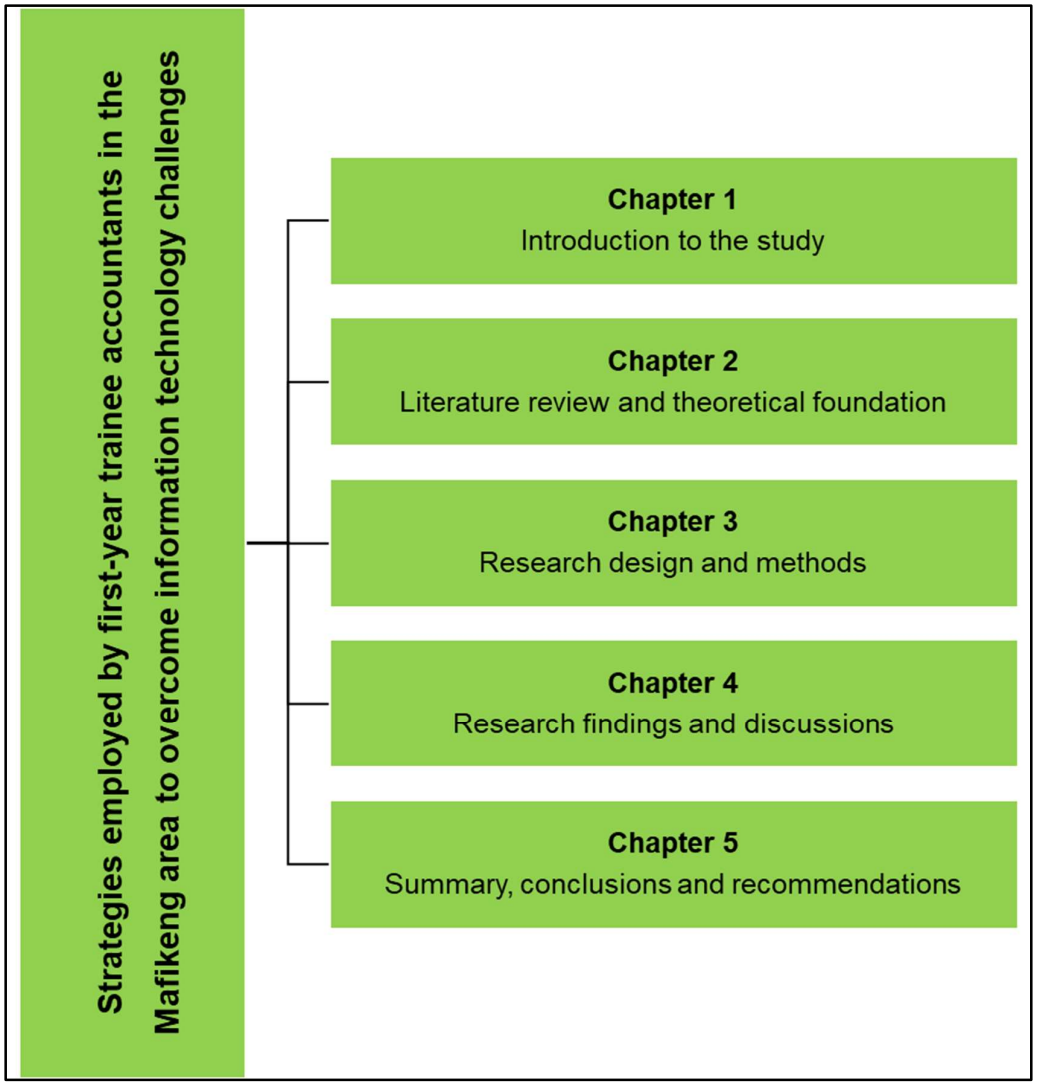

Figure 1.3: Format of dissertation

The layout of the five chapters of the dissertation is presented below.

Chapter 1: Introduction to the study

This introductory chapter provided a detailed overview, which included the background and contextualisation of the study, the rationale for the study and the problem statement for the study. From these, the research aim, objectives and questions that guided the study were extracted. A brief explanation of the research methodology employed in this study was also given in this chapter. The chapter further provided an explanation of the delineations and limitations of the study as well as a detailed clarification of the key concepts used for the study and the significance of the study. The chapter concluded with a brief discussion of the ethical considerations for the study and a detailed outline of the layout of the dissertation.

Chapter 2: Literature review and theoretical foundation

Chapter 2 of this study presents the literature review, focusing mainly on the stress and coping theory of Lazarus and Folkman (1984) (see Section 2.9.1) and the self-determination theory of Deci and Ryan (1985) (see Section 2.9.2). The chapter contextualises the concepts of accountancy and the profession in South Africa. This is followed by a description of the technical and professional skills requirements of a CA(SA). The chapter further expands on IT skills and the accounting profession, and explains the challenges associated with the use of IT in the workplace. The strategies to overcome the IT challenges are reviewed, and the role of accounting education institutions and accounting professional bodies in IT skills development is discussed. The chapter concludes with a visual presentation of the initial conceptual framework of this study.

Chapter 3: Research design and methods

This chapter provides the research paradigm that informed the study and an overview of the research design and methods that were used. The data collection techniques as well as the instruments used are explained. The chapter concludes with a detailed discussion of the criteria for trustworthiness and the various ethical measures taken during the study.

Chapter 4: Research findings and discussions

This chapter discusses the research findings in relation to the literature review. This was guided by the research questions stated in Chapter 1 of this study.

Chapter 5: Summary, conclusions and recommendations

The last chapter provides an overview of the literature review and the empirical study. The findings are discussed, after which conclusions are presented. The limitations of this study as well as recommendations for future research are provided.

1.11 CHAPTER SUMMARY

This introductory chapter has revealed that first-year trainee accountants face IT challenges when they enter the workplace. A review of the literature revealed that limited qualitative research has been conducted to determine what these challenges are and to explain the strategies trainee accountants implement to overcome these challenges. The stress and coping theory of Lazarus and Folkman (1984) and the self-determination theory of Deci and Ryan (1985) were used in this study, which was briefly discussed in this chapter. The chapter then provided information of the participants of the study who were selected from four accounting firms in the Mafikeng area in the North West province of South Africa. In addressing the research objectives and questions stated in this chapter, the study followed a qualitative approach to obtain an in-depth understanding of the challenges faced by the trainee accountants. The chapter further provided a detailed clarification of the key concepts used for the study as well as the significance of the study. The chapter concluded with a brief discussion of the ethical considerations for the study and provided a detailed outline of the chapter division for the dissertation.

Chapter 2 presents the literature review relating to the accounting profession in South Africa and the skills required of a CA(SA) by SAICA. The chapter then focuses on IT skills and the challenges associated with obtaining these skills. The chapter also presents the theories that formed the basis of this research in order to develop a conceptual framework for the study.

CHAPTER 2

LITERATURE REVIEW AND THEORETICAL FOUNDATION

2.1 INTRODUCTION

In Chapter 1, the IT challenges first-year trainee accountants experience when entering the workplace were briefly discussed. The present study set out to determine what strategies these trainee accountants implement to overcome these challenges. This chapter presents relevant literature relating to the topic under investigation for this study. The literature review aided the researcher in providing answers to the research objectives and questions through a review of prior knowledge on the topic.

Figure 2.1 provides a visual presentation of how the chapter is structured.

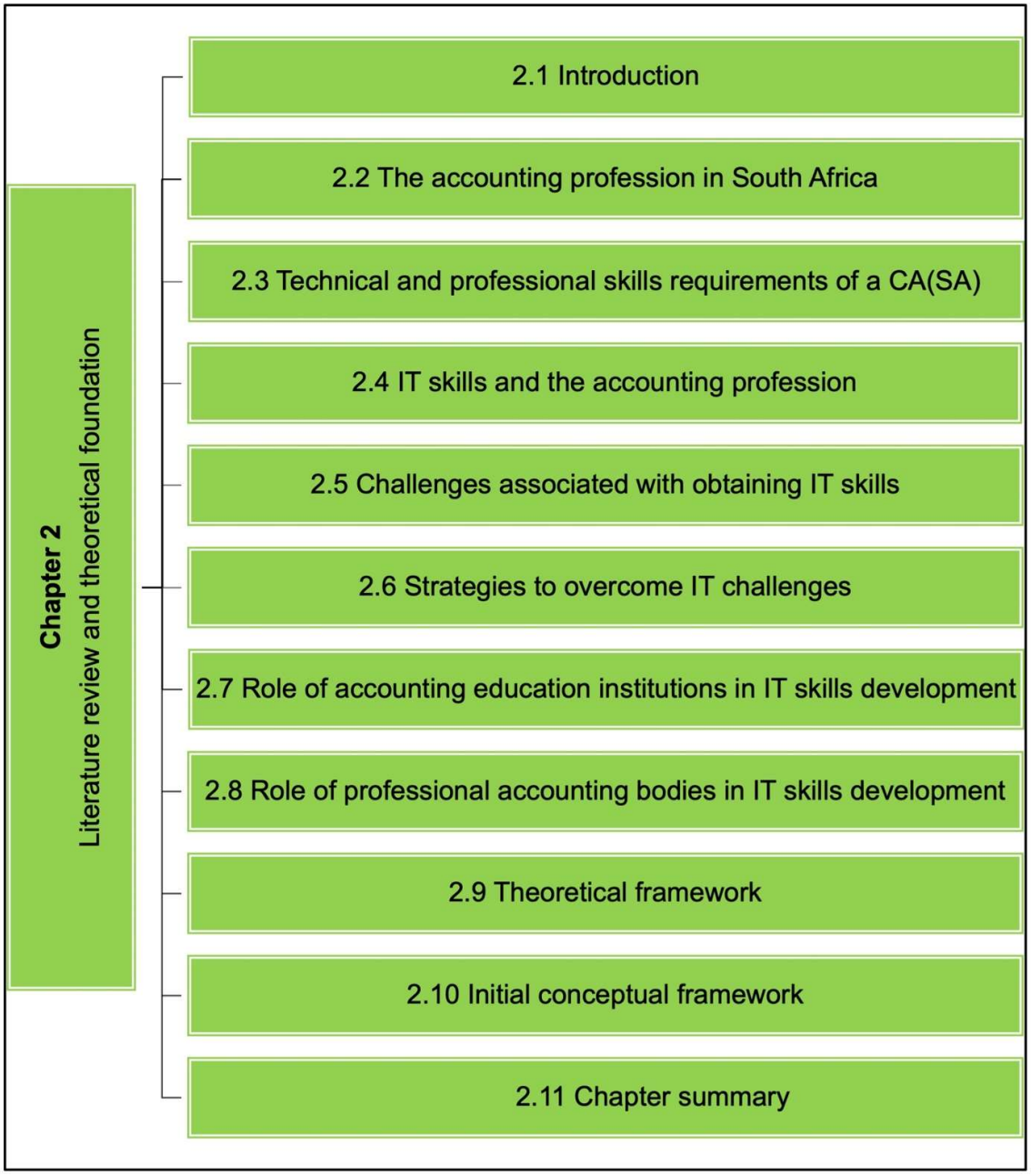

Figure 2.1: Layout of Chapter 2

Section 2.2 contextualises the concepts of the accounting profession in South Africa. Section 2.3 describes the technical and professional skills requirements of a CA(SA). Section 2.4 expands on IT skills and the accounting profession, while Section 2.5 explains the challenges associated with obtaining IT skills. In Section 2.6, strategies identified from the literature to overcome challenges are explained. Sections 2.7 and 2.8 highlight the role of accounting education institutions and professional accounting

bodies in IT skills development, respectively. In Section 2.9, the theoretical framework for the study is outlined and Section 2.10 provides the conceptual framework of the current study, followed by the chapter summary in Section 2.11.

2.2 THE ACCOUNTING PROFESSION IN SOUTH AFRICA

The accounting profession plays a vital role in ensuring that financial statements of businesses are properly prepared, and the effect of non-financial reporting is correct (Sonnerfeldt & Pontoppidan, 2020:6). The World Economic Forum Global Competitiveness Survey for 2017/2018 ranked the South African accountancy profession number one for strength of auditing, corporate governance and reporting standards for seven consecutive years (Independent Regulatory Board for Auditors [IRBA], 2021:19). However, the South African ranking has decreased drastically due to recent accounting scandals and the need to improve IT in practice (Roux, 2017:n.p.). Accounting graduates in South Africa have the option to obtain membership from various professional bodies. These professional bodies include SAICA, the South African Institute of Professional Accountants (SAIPA), the Chartered Institute of Management Accountants (CIMA), the Association of Chartered Certified Accountants (ACCA), IFAC and the Independent Regulatory Board for Auditors (IRBA).

There are certain steps a trainee accountant needs to follow in South Africa before he or she can qualify as a CA(SA). These are discussed in the section below.

2.2.1 Becoming a CA(SA) in South Africa

The journey of becoming a CA(SA) starts when one enrols for a Bachelor of Commerce degree in accounting at a SAICA-accredited university (SAICA, 2020b:15–16). As of December 2021, there are 23 SAICA-accredited universities in South Africa, with 19 of these institutions offering postgraduate programmes in accounting that allow access to SAICA's Initial Test of Competency (ITC) assessment (SAICA, 2021c:26). SAICA is responsible for developing a syllabus that should be completed by a potential CA(SA), at a SAICA-accredited university, prior to writing the final qualifying examinations administered by SAICA (Coetzee & Oberholzer, 2009:422). Potential CA(SA) candidates can obtain their qualification on either a part-time or a full-time basis. Figure 2.2 gives a holistic view of the process of becoming a CA(SA).

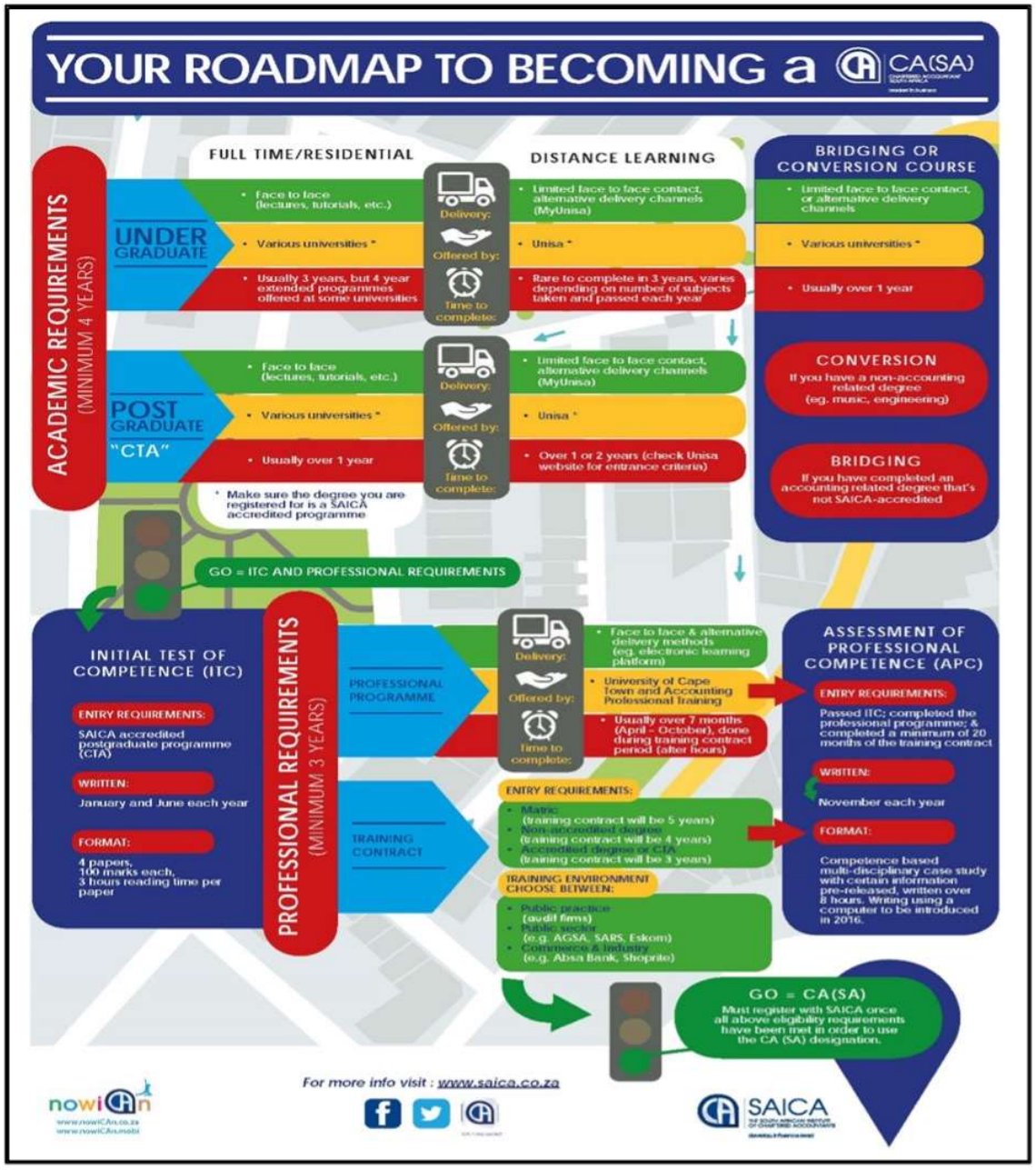

Figure 2.2: The qualification route of a CA(SA) in public practice in a full-time or part-time academic programme

Source: University of Johannesburg (2021:n.p.)

Figure 2.2 shows the full-time and part-time academic programme routes. After students have obtained a National Senior Certificate (matric), they can enter either the full-time or the part-time academic programme route. The full-time academic programme route requires of students to complete an undergraduate degree and a

postgraduate Certificate in the Theory of Accounting (CTA) qualification at a SAICA-accredited university. The CTA qualification focuses on Accounting, Auditing, Taxation and Financial Management and takes a minimum of one year to be completed. Hereafter, students must register for at least a three-year training contract with a registered training office (RTO) (SAICA, 2020b:15–16). However, some trainees decide to complete their training programme simultaneously with the academic programme and hence embark on a four- or five-year training programme (SAICA, 2021a:10).

RTOs recruit graduates into the accounting discipline as trainees. However, SAICA (2020b:13) stipulates that the RTO may not include as part of the terms and conditions of the employment the requirement that a trainee accountant must pass the ITC and the Assessment of Professional Competence (APC) as a prerequisite for him or her to continue with the training contract.

In addition, SAICA developed and introduced a competency framework in 2008, which incorporates the assessment needs analysis (ANA) and professional skills review, as well as the high-level description of competencies that a CA(SA) should possess once entering the profession (SAICA, 2020b:1). ANA is also currently used as a mechanism to evaluate trainee accountants' levels of demonstrated competency in terms of both technical and professional skills (SAICA, 2020b:24). The professional skills review guidelines for completion are used as a mechanism for trainees to put forward their abilities to demonstrate the required professional (pervasive) skill capabilities in terms of the training model (SAICA, 2020b:24). It is evident that trainee accountants need to develop both professional and technical skills in the pursuit of their career. The present study focused on the numerous IT challenges that may hinder the skills development of first-year trainee accountants while busy with their qualification process and training contract with an RTO.

The education and training programmes of most professions, including the CA profession in South Africa, stress the importance of successful completion of a written qualification examination and traineeship in order to enter the profession (Coetzee & Oberholzer, 2009:422). Accounting education provides the basic technical knowledge, skills and attitudes necessary for an entry-level first-year trainee accountant (SAICA, 2021a:37). According to the part-time academic programme route (see Figure 2.2), a

student who wants to study on a part-time basis towards a SAICA-accredited qualification could immediately enter into a training contract with an RTO. The duration of the contract will be five years and it would be expected from the trainee accountant to complete the undergraduate qualification and obtain a CTA qualification (SAICA, 2020b:16). It is therefore evident that in both the full-time and the part-time academic programme routes to qualifying as a CA(SA), prospective candidates need to successfully complete a National Senior Certificate (matric), a bachelor's degree in chartered accountancy and a CTA qualification before entering into a SAICA training contract or during a SAICA training contract with an RTO (Warffemius et al., 2015:354).

The CA(SA) designation is a competency- and skills-based designation containing an academic as well as a practical training component (SAICA, 2021a:4). According to SAICA (2020b:24), the goal of accounting education and training in an accountancy environment is to produce competent professional accountants who will make a positive contribution to the profession and society in which they work. SAICA has also noted with great concern the significant challenges trainee accountants often face in respect of the ITC examinations written in January and June annually, as an average mark of 59% was obtained in the September 2021 results (SAICA, 2021d:3). ITC is a qualifying examination set by the SAICA examination committee as one of the prerequisites for qualifying and registration as a CA(SA) (SAICA, 2020b:6). To write the ITC examination, students must have completed their training programme.

In 2014, SAICA introduced the APC as its final professional examination before a trainee can register as a CA(SA) (Parsons, Davidowitz & Maughan, 2020:1). The APC is an eight-hour case study examination assessing both the technical knowledge and the pervasive skills that collectively represent the professional competence requirements of an accountant entering the profession (Parsons et al., 2020:1). To write the APC examination, trainee accountants have to first complete a three-, four- or five-year training contract as a preparatory programme designed to develop professional competency (SAICA, 2021a:10). However, during the training contract period, trainee accountants are faced with IT challenges that require effective strategies to be overcome. One of these challenges is that the RTO might not have the necessary IT tools for a trainee accountant to perform his or her duties and responsibilities as stipulated by SAICA (2021a:36).

2.2.2 Defining a trainee accountant

A trainee accountant is referred to as individual employed as an accounting clerk at any SAICA-accredited training office who carries out his or her duties under the supervision of a senior accountant or a senior manager in order to learn and carry out the day-to-day activities of the business (SAICA, 2020b:7). Trainee accountants are required to become representative analysts who are well equipped with the pervasive or universal business skills of abstraction and competencies to work with data and ideas to develop an all-inclusive understanding of global economic changes and IT (Asonitou, 2015:2). However, a majority of trainee accountants are facing prevalent challenges during skills development as a result of external and internal forces surrounding the whole process of becoming qualified accountants. Shen-Miller, Schwartz-Mette, Sickle, Jacobs, Grus, Hunter and Forrest (2014:1) list some of these factors as program characteristics (the ability to identify the items in an IT program), personal contexts (the ability to understand what an IT program contains) and fear of negative consequences. However, there are various options available to trainee accountants who want to obtain the required skills to qualify as a CA(SA).

2.2.3 Different training sectors

In 2021 there were approximately 11 000 registered SAICA trainees in South Africa, and these included all trainees from first- to final-year level (Potgieter, 2021:n.p.). Furthermore, there were approximately 720 registered SAICA training offices in South Africa (Potgieter, 2021:n.p.). A trainee accountant can elect to complete his or her traineeship in the academic environment, public practice, the commerce and industry sector or the public sector (SAICA, 2021a:27).

2.2.3.1 Academic trainee accountants

Trainee accountants can decide to complete their traineeship at an accredited education institution. An academic trainee accountant is a trainee accountant who participates in SAICA's academic trainee accountantship programme and spends the first year of his or her training contract at an accredited education institution that offers an academic training programme accredited by SAICA for this purpose (SAICA, 2020b:4). The remainder of his or her traineeship is completed at a trainee office in public practice, the commerce and industry sector or the public sector. The academic

traineeship programme was developed by SIACA to provide trainee CAs with the opportunity to complete one of their three-year traineeships in an academic environment (Warffemius et al., 2015:354). To qualify as an academic trainee, the candidate is required to successfully complete the ITC assessment. Warffemius et al. (2015:354) argue that the academic training programme should be restructured given the changes in the academic environment, such as increased emphasis on research, and changes in the overall CA(SA) training programme, such as the increased focus on the development of the prescribe competencies, particularly pervasive skills. Warffemius et al. (2015:354) found that academic trainees spend the majority of their time presenting tutorials and marking assessments or on student consultations. These factors contribute to their low levels of skills development.

2.2.3.2 Public practice, the commerce and industry sector or public sector trainee accountants

Another option for trainee accountants is to complete their training at a public practice office. Accountancy firms or public practice offices of all sizes make up almost 80% of SAICA RTOs in South Africa (Potgieter, 2021:1). Traineeship in public practice can be categorised into small, medium-sized and large firms (Van Romburgh & Van der Merwe, 2015:143). Traineeship offered in public practice focuses on developing future professional accountants who can provide various services, including preparing tax returns, providing advisory and business consulting services, preparing and issuing public financial reports for companies, providing personal financial services and providing auditing and related services to contractual clients (Bar-Yosef, D'Augusta & Prencipe, 2019:1).

Almost 14% of SAICA RTOs are in the commerce and industry sector, of which approximately 1% are banks (Potgieter, 2021:n.p.). The commerce and industry sector widely uses sophisticated computer systems to analyse and store financial information (Bar-Yosef et al., 2019:1). On the other hand, nearly 4% of SAICA training offices are in the public sector, including the Auditor-General South Africa, the South African Reserve Bank and other government departments and state-owned enterprises (Potgieter, 2021:n.p.). From the aforementioned, it is evident that trainee accountants can complete their training in various sectors, where they should obtain the technical and professional skills necessary to qualify as a CA(SA).

2.3 TECHNICAL AND PROFESSIONAL SKILLS REQUIREMENTS OF A CA(SA)

Professional competence is referred to as the trainee accountant's ability to perform a given task at a defined standard (SAICA, 2021b:3). SAICA (2021b:3) further states that "professional competence goes beyond knowledge of principles, standards, concepts, facts, and procedures; it is the integration and application of (1) professional values and attitudes, (2) enabling competencies and (3) technical competencies in the value creation process".

2.3.1 Professional values and attitudes

Professional qualities such as people skills, business acumen and leadership skills are becoming more prominent alongside the IT technical skills required of a CA(SA), and companies are requiring accountants to possess these competencies in addition to technical skills and expertise (CIMA, 2014:1). Trainee accountants must be able to complete activities in the real world in order to demonstrate professional competency (IFAC, 2019:7). As a result, they must have the appropriate expertise, which includes general knowledge, organisational and business knowledge, IT knowledge and accounting-related knowledge, in order to perform their jobs (Van der Merwe, 2014:297). This implies that, in order to attain the skills and competency required of trainee accountants, strategies and methodologies need to be introduced to trainee accountants to enable them to overcome the challenges they face in developing their own skills.

2.3.2 Enabling competencies

The practical aspect of accounting is the ability to develop competencies in a technical aspect of accounting (Chartered Professional Accountants, 2012:1). Borgonovo, Friedrich and Wells (2019:5) state that technical knowledge in accounting encompasses the ability to have the required knowledge and the development of skills. It also enables accountants to increase their skills in auditing and make professional judgements on a set of financial statements (Borgonovo et al., 2019:5). 'Enabling competencies' can then be referred to as the ability of trainee accountants to develop and utilise skills during their training.

2.3.3 Technical competencies

Technical competencies are business and accountancy skills and knowledge that an accountant in the academic environment, public practice, the commerce and industry sector or the public sector is expected to have (SAICA, 2021a:27). Technical competency includes skills in technological and digital computational thinking, data understanding and strategising, data analytics, new technologies and protocols, cyber security and user competencies, which are some of the skills that influence how people operate and make business decisions (SAICA, 2021b:23). Employers seek graduates who can demonstrate not only the technical knowledge and competencies of their discipline, but also a variety of work-related skills and competencies (Clarke, 2018:1923). Navatte and Schier (2017:99) state that the technical skills required by accountants have necessitated the need for a spin-off approach to accounting. This approach will ensure that risks are reduced and profit is maintained in business (Navatte & Schier, 2017:99).

IT skills are clearly crucial for the CA(SA) to achieve technical skills, as seen by the aforementioned competencies. It is therefore a concern that trainees may face difficulties in using technology to carry out their duties effectively. Scholars (e.g. Al-Hattami, 2021:1; Damasiotis, Trivellas, Santouridis, Nikolopoulos & Tsifora, 2015:537) have endorsed that the use of IT in accounting is widespread and has become commonplace, to the point that most accounting and financial procedures can no longer be performed without it. The Covid-19 pandemic has also necessitated a rapid improvement in IT skills in the accountancy profession (Rapanta, Botturi, Goodyear, Guàrdia & Koole, 2020:924). This means that IT is now of utmost importance in many organisations and trainee accountants need to have the necessary capacity in relation to IT skills.

2.4 IT SKILLS AND THE ACCOUNTING PROFESSION

The modern-day business world is changing at a fast rate as a result of globalisation, advanced IT investments and the fast pace of technological change (Alves, 2010:103). A study conducted by Parvaiz, Mufti and Gul (2017:90) in Pakistan revealed that most trainees seem to experience challenges in terms of IT skills development. The underdeveloped skills among trainee accountants were found to be a result of

inadequate integration of IT in accounting education (Parvaiz et al., 2017:83). It has been established from the preceding review that IT skills are part of the technical skills required by a CA(SA). This section of the study further reviews literature on IT skills, the concept of IT, the impact of IT on the accounting profession, IT skills required by trainee accountants, high school learners' IT experiences and university accountancy programmes and IT.

2.4.1 Defining IT

IT is defined as the ability to manage a wide variety of areas that include, but are not limited to, features such as processes, computer software, information systems, computer hardware, programming languages and data processing (Ghasemi, Shafeiepour, Aslani & Barvayeh, 2011:113). Akpokiniovo and Oyovwe (2015:3) explain that IT encompasses a broad range of activities and includes all the tools, applications and information that are available and accessible through computers. IT may be classified in the form of hardware and software (Imene & Imhanzenobe, 2020:48). Hardware includes physical devices through which trainee accountants are required to capture data, process the data and obtain information in the form of reports, while software includes computer programs installed onto the hardware to enable trainee accountants to perform their tasks effectively and efficiently (Imene & Imhanzenobe, 2020:48).

2.4.2 Impact of IT on the accounting profession

According to Jackson et al. (2020:7), the accounting profession has called on the need for accountants to improve their practices by incorporating IT functionalities when performing their tasks in their business practices. The high rate of IT adoption among accounting functions is due to a push for improved productivity among accounting professionals (Gary & Poh-Sun, 2016:167). Accounting firms are now investing in auditing software and knowledge-sharing applications to enhance the gathering, organisation, processing, evaluation and presentation of financial data (Curtis, Jenkins, Bedard & Deis, 2009:79; Gary & Poh-Sun, 2016:167). Ghasemi et al. (2011:112) point out that IT and computerised accounting systems have provided various proficiencies to the accounting profession, such as enhanced functionality, faster processing, improved accuracy and improved external reporting. IT innovations

are changing the professional environment in which modern-day accountants work (Akpokiniovo & Oyovwe, 2015:2).

Previously, accountants were faced with challenges such as difficulty in storing large amounts of data on paper, delays in transaction processing and reporting, and regular errors and misstatements (Imene & Imhanzenobe, 2020:48). The accounting profession has transformed in the past few years following the emergence of advanced IT tools to complete accounting and financial reporting functions and processes (Imene & Imhanzenobe, 2020:48). The internet, computers, servers and wireless and personal digital devices have transformed the manner in which accounting firms conduct business (Ghasemi et al., 2011:113). Ghasemi et al. (2011:113) further point out that smart accounting software packages and systems have automated the traditional paper ledgers and account books to shorten the lead time needed by accountants to perform their duties and have enhanced the overall efficiency and accuracy of accounting information. With the emergence of IT tools, accountants in the IT era are now able to prepare and present financial reports more accurately and timely (Imene & Imhanzenobe, 2020:48). Although advancement in IT has changed many firms in the professional services industry, the transformational impact of IT in the public accounting industry is more noticeable (Ghasemi et al., 2011:112).

Computers and other digital IT tools have facilitated the fast exchange of information and collection and analysis of data (Imene & Imhanzenobe, 2020:48). The most influential impact IT has made on the accounting profession is the ability of accounting professionals to develop and use computerised systems to track and record financial information (Ghasemi et al., 2011:112). Ghasemi et al. (2011:112) further contend that computer systems and IT networks have reduced the time required by accountants to prepare and publish annual financial reports.

2.4.3 IT skills required by trainee accountants

The demand for IT skills among first-year trainee accountants and the need for skilled accountants who can cope with the challenges of rapid advancement in financial technologies have been emphasised in previous studies (Lubbe et al., 2020:91; Viviers et al., 2016:368). As mentioned in Section 1.6, various studies identified IT computer skills requirements for accounting graduates in IT such as spreadsheet software

(Microsoft Excel), Microsoft Windows, a word-processing program (Microsoft Word) and internet capabilities (Albrecht & Sack, 2000:1; Barac & Du Plessis, 2014:55; Helliar et al., 2006:33; Wessels, 2008:169–170). A study conducted in Australia emphasised that it is important for first-year trainee accountants to be able to use word processing, spreadsheets and presentation software (Helliar et al., 2006:33). These include standard internet software and database software and spreadsheet software (Microsoft Excel), Microsoft Windows, a word-processing program (Microsoft Word) and internet capabilities. Thottoli (2021:2) suggests that accounting firms worldwide consider computer skills important among first-year trainee accountants; however, many trainees' lack the ability to use basic computer and basic office and accounting software. In South Africa, Wessels (2008:169–170) conducted a comprehensive study on IT skills and proficiencies and identified that a first-year trainee accountant should be able to master the Microsoft range of products, OfficeSuite, web browsers and email for the general day-to-day office environment. First-year trainee accountants can obtain these IT skills and proficiencies from school and/or university.

2.4.4 High school learners' IT experience

High school learners in some South African schools struggle to acquire IT knowledge, as there are limited computerised environments to foster such teaching and learning (Anyanwu, 2016:12). Most learners lack IT skills and do not have adequate knowledge to use IT (Chisango, 2021:151). Skhephe and Matashu (2021:264) assert that the use of IT is of paramount importance in an accounting classroom in order to prepare learners for their university career.

2.4.5 University accountancy programmes and IT

The Fourth Industrial Revolution (4IR) has necessitated the need for integration of IT into the university curricula of the future generation of accountants in South Africa (Olarewaju, 2021:150). Marx, Mohammadali-Haji and Lansdell (2020:2) concur that accountants are expected to develop various technical and professional skills with the aid of IT in achieving their aim. However, the current accounting education offered at universities has failed to meet the expectations of employers in relation to IT skills required by accountants (Marx et al., 2020:2). This could be mainly due to more coverage of technical content in accountancy curricula compared to IT skills

(Boulianne, 2016:304). Scholars (Boulianne, 2016:308; Damasiotis et al., 2015:532) further called for accounting programmes to train skilled professional accountants by incorporating advanced-level IT training. It can be ascertained from the literature that the accountancy curricula might be lacking in IT training for accountancy students (Islam, 2017:1).

Within this context, there exists a need to look beyond universities improving on their accounting programmes in terms of IT competency skills (Marx et al., 2020:2). It was also found that the IT knowledge obtained by trainee accountants at university can help to develop professional skills and relevant competency in carrying out their responsibilities (IFAC, 2015:2). Although basic IT programs such as Sage Pastel Accounting and Microsoft are taught at university level, evidence has shown that these are insufficient, as first-year trainee accountants are struggling to incorporate these skills in the workplace (Brenner, 2018:1). Literature in the field of IT challenges has shown that ICT can provide users with various functions that may enable them to actively adopt available applications to organise their work, and thereby may eventually ease their IT problems (Yin, Ou, Davison & Wu, 2018:1193).

2.5 CHALLENGES ASSOCIATED WITH OBTAINING IT SKILLS

The fast-changing work environment and the pressure associated with the advanced transformation in IT have unavoidably affected the manner in which accounting work is executed (Selamat & Idris, 2019:74). Various challenges associated with IT skills are explained in more detail in the next sections.

2.5.1 Use of sophisticated software

Ghasemi et al. (2011:112) identified the use of difficult auditing software, automated audit tasks and knowledge-sharing applications as the most critical IT challenges facing trainee accountants. Islam (2017:1) found that the increasing use of sophisticated and smart technologies and software such as cloud computing in accounting firms is one of the challenges facing accountants. There is therefore a need for trainee accountants to update their IT skills through training and inductions so as to cope with the sophisticated software packages in the workplace (Ghasemi et al., 2011:113).

The job description of a trainee accountant is to work with senior accountants so as to acquire and develop knowledge of the accounting industry and to gain practical experience (Brenner, 2018:1). In particular, first-year trainee accountants are involved with tasks such as creating and sending invoices, managing accounts and tracking inventory (Brenner, 2018:1). These tasks require of trainee accountants to have strong IT skills and know-how. Trainee accountants are required to have the ability to use accounting software such as CaseWare and Sage Pastel Accounting, database software such as Microsoft Excel and Microsoft Access, as well as computer software to input and amend data and records (Brenner, 2018:1). It remains a concern that when first-year trainee accountants are not properly inducted in the use of this software, they tend to make mistakes, which increases their workplace stress (Zhao, Xia & Huang, 2020:103). Zhao et al. (2020:103) further posit that the use of sophisticated IT can lead to technological stress and may be detrimental to an employee's work performance if the employer's expectations are not met.

2.5.2 Employers' expectations

There is a growing demand for accounting graduates with advanced IT knowledge and skills (Gary & Poh-Sun, 2016:168). Gary and Poh-Sun (2016:166) further posit that advanced IT knowledge and skills such as AIS data analytics are noticeably lacking among accounting graduates. Hence, the accounting industry urgently needs professionals with enough knowledge and skills to handle sophisticated IT demands in accounting activities and services. Practitioners have identified that IT skills in word processing, spreadsheets, standard internet and database software should be mastered by first-year trainee accountants before entering the workplace (Greenstein & McKee, 2004:236). A study conducted by Kunz and De Jager (2019a:145) revealed that the performance of first-year trainee accountants does not meet the expectations of trainee offices.

Siegel, Sorensen, Klammer and Richtermeyer (2010:44) highlight that some employers want their trainee accountants to be able to 'hit the ground running' when they start at their accounting firms and to be productive when their duties commence. Deci and Ryan (2008:182) assert that the majority of trainees struggle to overcome any of the challenges they face, but many are self-determined to attain their full qualification. To buttress this point, Van Romburgh (2014:5) asserts that many

accountancy graduates do not adequately meet the standards set by potential employers. This might be due to the lack of exposure to IT skills required during training, as Marx et al. (2020:1) confirm that in most cases, many cannot fully implement basic IT skills in day-to-day highly demanding accounting practices.

2.5.3 Workload of trainee accountants

The workload placed on trainees is also challenging (Salmon, 2017:n.p.). Theresa Hammond (2018:1), whose ground-breaking research focused on the underrepresented minorities in the accounting profession, explains that after her first two weeks of induction training, she felt as if she had been thrown into the deep end. There was a lot more work with a lot more complexities in terms of IT skills to be implemented and it felt as if the work had multiplied overnight (Hammond, 2018:1). The workload placed on trainees is challenging and strategies should be in place to enable them to cope with the workload challenge and IT stress (Bukaliya, 2012:118).

2.5.4 Psychological and family challenges

In addition to workload challenges, psychological and family challenges such as illnesses in the family and relationship problems can bring psychological disorder to a trainee if not addressed (Hill, 2014:278). Trainees may also struggle to meet IT skills requirements due to physical or mental health issues, personal relationship issues and a dysfunctional relationship between trainee and trainer (Mistry, Mistry & Latoo, 2009:35). Darling-Hammond, Flook, Cook-Harvey, Barron and Osher (2020:97) affirm that a vast majority of trainees in various fields of study struggle to fulfil IT skills requirements due to challenges such as family and other work environment issues. Mahmood (2012:18) is of the opinion that some trainees may be harassed or discriminated against if they are not able to effectively use IT in carrying out their duties. To combat these IT demands and psychological problems among trainees, a well-positioned counsellor should be provided (Brady-Amoon & Keefe-Cooperman, 2017:42).

2.5.5 Technological stress (technostress)

Technological stress, shortened to 'technostress', is defined as "the stress that individuals experience from their inability to cope with the demands of IT use" (Ayyagari, Grover & Purvis, 2011:831). In the digital era, the widespread integration of new technologies into the workplace has given rise to employees' perception of technostress (Goetz & Boehm, 2020:1). Chen, Ngoc and Nguyen (2019:86) describe technostress as a modern challenge of adaptation caused by an inability of individuals to cope with modern computer technologies. Technostress comprises five components, namely techno-invasion, techno-overload, techno-uncertainty, techno-insecurity and techno-complexity (Goetz & Boehm, 2020:11). Techno-invasion refers to the IT stress caused by a situation in which an individual is required to constantly be connected and the potential of being reached anytime and anywhere (Camacho & Barrios, 2022:3). Techno-overload is a technology-related stress that results from information overload in the workplace and significantly reduces job satisfaction (Yin et al., 2018:1189). Techno-uncertainty refers to the IT challenges caused by the fast-changing pace of ICT, and IT users being required to remain up to date with new ICT developments (Li & Wang, 2021:315). Techno-insecurity refers to the IT stress in the workplace caused by the thought of the likelihood of being replaced by employees who are acquainted with new IT (Camacho & Barrios, 2022:3). Techno-complexity is the IT stress caused by the demand of learning and becoming acquainted with IT in the workplace (Tarafdar, Cooper & Stich, 2019:7).

Technostress in the workplace relates to the use of IT devices, including computers, smart phones, tablets and IT software (Tarafdar et al., 2019:6). Technostress can create negative outcomes such as a decrease in job satisfaction, being less productive, high turnover intentions and less innovation and organisational commitment (Tarafdar, Pullins & Ragu-Nathan, 2015:103). Lee (2021:3) asserts that technostress is real in growing businesses and that graduates might be caught in the midst of this, which may impact negatively on their work performance. Leslie (2017:134) maintains that some employees might be vulnerable to bullying due to lack of IT skills. It can be inferred that trainee accountants might be engrossed with IT skills and the ability to effectively use IT, creating technostress (Leslie, 2017:133).

Even though IT skills are important in a business environment to improve the financial feasibility of a company, many organisations have not spent a considerable amount of time on addressing the technostress of employees (Moll & Yigitbasioglu, 2019:1). Yin et al. (2018:1190) assert that techno-overload is a concept that is also detrimental to employees and that organisations need to address these challenges. Technostress has presented new problems to first-year trainee accountants, necessitating a greater understanding of these challenges in order to develop better solutions to overcome them (Goetz & Boehm, 2020:2).

2.5.6 Challenges as a result of Covid-19

Like most professions, the accountancy profession has experienced tremendous challenges during the Covid-19 pandemic (SAICA, 2021e:6). Covid-19 has changed the way accountants had to work and from where they worked. This change required new skills, including an excellent grasp of IT skills (Jabin, 2021:8). Covid-19 has also highlighted the importance of IT skills that can accommodate the new working practices that align to new public demands (Fogarty, 2020:564). During the pandemic, most organisations expected their employees to work from home. First-year trainee accountants therefore had to cope with technologies in a different workplace (SAICA, 2021e:6). These Covid-19-related technological challenges have added to the IT challenges already experienced by first-year trainee accountants (Fogarty, 2020:564).

2.5.7 Challenges of the 4IR

Without the necessary IT skills in the 4IR, the sustainability of careers in accounting, especially for first-year trainee accountants, becomes more difficult (Navatte & Schier, 2017:99). The 4IR is defined as “a fusion of advances in artificial intelligence, robotics, the Internet of Things, 3D printing, genetic engineering, quantum computing, and other technologies” (McGinnis, 2020:1). The 4IR is at the global focus of attention and originally started in the manufacturing industry; however, the 4IR is widely spreading and disrupting almost every industry, including the accounting industry (Schwab, 2016:1). Accountants need the necessary 4IR IT skills to survive the future (Botha, 2019:1; Half 2020:1). Navatte and Schier (2017:99) further argue that technological platforms such as machine learning, robotics and artificial intelligence with higher processing power are free from human error and are replacing traditional accounting

jobs. Navatte and Schier (2017:97) found that new methods of work are eliminating entry-level work and therefore it is essential for first-year trainee accountants to gain early career experience of workplace IT skills.

The continued rise of advanced automation in accounting is changing the profession globally (ACCA, 2018:3). Jackson et al. (2020:15) assert that the rapid development of communication networks, information systems and databases has directly affected the accounting profession, and the demand for accounting graduates with IT skills to deal with these new social situations is high. To cope with the technological challenges of the 4IR, trainee accountants increasingly need education in digital technology, including cloud computing and the use of big data (Tsiligiris & Bowyer, 2021:264). According to a January 2016 World Economic Forum report, the impact of the 4IR was observed in the financial sector, with 29% job losses in the banking sectors (Robert, 2019:n.p.). It can therefore be asserted that the 4IR and associated IT skills pose a huge challenge to trainees and as such a need exists to develop strategies to overcome these IT challenges.

2.6 STRATEGIES TO OVERCOME IT CHALLENGES

In recent years, knowledge regarding human development and learning has grown (Darling-Hammond et al., 2020:97). This has presented an opportunity for accounting education institutions and the accounting profession to look at various ways to implement more effective educational practices and competencies. A study conducted in South Africa by Parsons et al. (2020:1) revealed that IT skills development among trainee accountants is more effective when there are no challenges experienced during their training period. The next sections review various strategies that can be implemented to reduce IT challenges.

2.6.1 Training and mentorship programmes

According to Parsons et al. (2020:4), individual feedback, teamwork and mentorship programmes are positive factors or strategies that can be adopted to overcome IT challenges. To manage the IT challenges faced by trainee accountants, Warffemius et al. (2015:354) found that trainees require of professional accounting bodies and

accounting education institutions to provide training and mentorship on how they should spend their time and develop technological skills in the workplace.

Continuous IT training and development are regarded as effective strategies that should be put in place to confront the dynamic changes in the workplace (Milhem, Abushamsieh & Aróstegui, 2014:12). The use of smart phones, tablets and mobile application software has also been considered to assist employees to overcome stress associated with traditional business interactions (Yin et al., 2018:1190). Social and emotional learning programmes can also assist to foster trainee skills, efficacy and productive behaviours, habits and mindsets that enable progress during the skills development process (Darling-Hammond et al., 2020:99). Keevy (2020:140) proposes that accounting education institutions need to make greater efforts to include pervasive skills in accounting programmes by using real-life, practical examples. This could eliminate some of the skills development challenges faced by trainee accountants. Darling-Hammond et al. (2020:99) accentuate the importance of creating a supportive training environment that fosters an effective productive instructional strategy that supports motivation, competence and self-direction. Darling-Hammond et al. (2020:101) further advocate that trainees' prior knowledge and experiences should be taken into consideration when training them in IT skills.

2.6.2 Workplace friendship

Various scholars have also identified workplace friendship as a possible strategy to overcome IT challenges. For example, Guohao, Pervaiz and Qi (2021:1448) assert that to maintain a positive and well-cultured working environment, employees are advised to engage with colleagues who are experts in certain skills development that may help to improve their own level of competence. Guohao et al. (2021:1448) further argue that workplace friendship exposes employees to hidden skills and creates opportunities to learn from one another. Interaction with others, the desire to learn and the use of multiple learning methods are possible strategies to overcome IT challenges (Selamat & Idris, 2019:74). It may therefore be inferred that IT challenges might be overcome when trainee accountants are able to indulge in positive workplace friendships that create an environment to develop themselves while taking up their responsibilities.

2.6.3 Proactive and reactive coping

'Coping' is referred to as a person continuously changing cognitive and behaviour strategies to effectively manage and overcome specific internal and external challenges (Schoenmakers, Van Tilburg & Fokkema, 2015:153). Kroon, Alves and Martins (2021:3) state that proactive coping is a strategy in which an individual attempts to diminish the impact of potential stressors and to cope with any situation by actively engaging in activities that reduce stress. First-year trainee accountants can adopt proactive coping strategies to overcome IT challenges by attempting new challenges, creating new opportunities and making every effort towards achieving challenging goals (Ersen & Bilgiç, 2018:2).

Proactive coping strategies also reinforce the effects of reactive coping strategies and depend on the individuals' behaviour in coping with stress factors (Demirkan, Demirkan & McKee, 2020:189; Kroon et al., 2021:2; Pirkkalainen et al., 2019:1179). Agbaria and Mokh (2021:9) assert that reactive coping strategies can assist an individual to actively cope with industry stress. Selamat and Idris (2019:74) identified workplace learning and technology (internet searches, online communications, web conferences and discussions) as stress factors for which employees, including first-year trainee accountants, can use reactive coping strategies to ensure that they effectively cope with these stress factors.

2.6.4 Disturbance-handling coping strategy

Another coping strategy is the disturbance-handling coping strategy, which can be applied to overcome IT challenges when an individual perceives that control over the IT challenge is high (Beaudry & Pinsonneault, 2005:494; Chen et al., 2019:86). The disturbance-handling coping strategy is a combination of problem-focused coping and emotion-focused coping strategies (Chen et al., 2019:86; Elie-Dit-Cosaque & Straub, 2011:590). First-year trainee accountants can adopt problem-focused coping strategies to improve their relationships with others in the workplace (Schoenmakers et al., 2015:153). Schoenmakers et al. (2015:153) further contend that emotion-focused coping would lower first-year trainee accountants' expectations of their relationships with others.

2.6.5 Self-preservation strategy

The self-preservation strategy can be applied to overcome IT challenges when the individual perceives that control over IT challenge is low (Beaudry & Pinsonneault, 2005:494). When an individual has limited control over a particular IT challenge, that individual will apply the self-perseverance strategy. The self-preservation strategy is an emotion-focused strategy to adapt to the situation by possibly regaining emotional steadiness and lowering the pressure of the difficulty of the situation (Chen et al., 2019:86).

2.6.6 Work-based learning

Work-based learning, or work-integrated learning, and cooperative education have received significant attention as a strategy for evaluating graduate workplace performance (Jackson, 2018:25; Jackson & Meek, 2020:3). Work-based learning can be grouped into two categories, namely placement work-based learning and authentic learning experiences. Placement work-based learning is where trainee accountants are physically based in a professional setting for a defined period, such as an internship, practicums or work placement (Jackson, 2018:25). Authentic learning experiences, on the other hand, comprise recreational activities, client-based projects and consultancy-based work that do not require the trainee to be physically present in the workplace for a specific period (Jackson, 2018:23).

It can be deduced from the literature that various strategies can be implemented by individuals to reduce IT challenges. In the next sections, the responsibilities of educators and professional bodies for providing trainee accountants with the necessary IT skills are discussed.

2.7 ROLE OF ACCOUNTING EDUCATION INSTITUTIONS IN IT SKILLS DEVELOPMENT

Education prepares people for life, so education should provide those being educated with specific abilities (Parvaiz et al., 2017:83). This is also true for professional accounting education, whereby educators are being handed the responsibilities to provide students with the necessary skills fit for employment (Silva, 2018:13). Asonitou (2015:5) confirms that the challenges in the accounting profession require accounting

education to develop accounting students' analytical ability, among others. In this regard, the inclusion of basic spreadsheet and word-processing software in accountancy is of upmost importance (Stumke, 2017:121). Barac and Du Plessis (2014:74) assert that the current curricula at tertiary institutions rely on traditional teaching and assessment practices to incorporate pervasive skills in undergraduate modules, but fail to integrate IT skills and ways of dealing with IT challenges faced in the workplace.

In addition, Peens (2018:1) indicates that the aim of accounting education and training must be to produce competent professional accountants. However, it is evident that during the process of obtaining the competency and skills required, trainee accountants in accounting firms experience challenges (Kgapola, 2015:3). The lack of incorporating technology practices in the curricula of tertiary institutions creates challenges for graduates when they enter the workplace (Peens, 2018:1). Although trainees undergo training on the use of technology in accounting at tertiary institutions, it becomes evident that the majority of these students pass the course for the purpose of obtaining a degree and not for knowledge creation purposes (Keevy, 2015:458).

Rapid changes in the area of IT have exposed accounting education to regular changes and development and have continuously challenged the competencies of accounting graduates (Islam, 2017:1; Larres, Ballantine & Whittington, 2003:100). These challenges have called for accounting education institutions to review the existing accounting information system curriculum and assess whether the current curriculum is adequate to equip accounting graduates with advanced IT knowledge and skills (Gary & Poh-Sun, 2016:168). Sithole (2015:47) argues that the inclusion of computer skills into the accounting curriculum is needed to address the various forms of information system and IT challenges that are increasingly challenging the work of accountants in the modern-day business environment.

Accounting education has a key role to play in the professional development of accountants, even more so the improvement of their professional skills (Asonitou, 2015:1). The accountancy profession has always shaped and supported trainee accountants to overcome challenges associated with skills development. To continue to add value to the accountancy profession, professional accounting bodies, accounting education institutions and accounting firms must collaborate to develop

strategies to assist accountants to overcome challenges associated with skills development so as to meet the current needs and anticipated emerging demands of business in the 4IR (ACCA, 2019:9).

Stanciu and Bran (2015:546) argue that accounting education represents the link between trainee accountants and the profession, therefore education institutions should provide their students with adequate support to gain at least theoretical knowledge in the IT area. Studies have argued that integrating sophisticated IT into the already overcrowded accounting curriculum is difficult (Samkin, Low & Taylor, 2012:5). This is an indication that accounting education institutions have to modify their accounting curricula by incorporating more exposure to IT. Viviers et al. (2016:368) agree that accounting education institutions need to produce accounting graduates with core IT and soft skills and to achieve this, new innovative teaching methods in accounting are necessary.

In addition, the changes of the 4IR, which include robotic process automation, machine learning and artificial learning, are redefining and escalating the role of accountants (Botha, 2019:1). In this regard, first-year trainee accountants are required to possess skills such as data analytics and data visualisation. Accounting students need to understand the importance of IT for workplace purposes (Jackson & Meek, 2020:2). Wong, George and Tanima (2021:1) argue that accounting curricula focus too much on technical content rather than students' skills development and do not expose students enough to IT and the ways IT can be used in the business environment. As a result, accounting degree programmes should explore incorporating current and new accounting and business technologies across their academic curricula.

Academically and professionally, the discipline of AIS is undergoing significant changes (Tornow, 2015:1). According to Vasarhelyi, Tschakert, Kokina and Kozlowski (2017:1), accounting education institutions and professional bodies should incorporate learning experiences that build skills and knowledge linked to the integration of IT into accounting.

2.8 ROLE OF PROFESSIONAL ACCOUNTING BODIES IN IT SKILLS DEVELOPMENT

The accounting profession is facing numerous challenges relating to accountability, stewardship, ethical conduct and corporate governance (Lubbe et al., 2020:94). The profession has also been changing over the last decades and accountants are called upon to adjust in order to be successful and responsive to the increasing demand of changes in the 4IR (Asonitou, 2015:1). To this end, SAICA requires trainee accountants to attain specific skills at the end of their training programme (SAICA, 2020b:15). Kgapola (2015:3) argues that the ability of a trainee accountant to work productively in an accounting firm and to meet the skills requirements in the training programme creates challenges in terms of attaining the CA(SA) designation.

Changes in the global corporate climate have put professional accountants' skills to the test (Makarenko & Plastun, 2017:10). Technical knowledge, skills and attitudes are included as necessary competencies of a CA(SA) (SAICA, 2021a:10). In addition, ACCA (2019:1) also provides a competency framework to help trainee accountants and accounting students plan their careers and reflect on the skills they need to acquire during their accounting education. These competencies are the technical knowledge and the measurable skills a trainee accountant gains by completing the professional accounting qualification, which comprises a mix of examinations, IT experience and ethics (ACCA, 2019:1). Research has shown that for an organisation to address the current and future challenges associated with training and skills development, a wide range of strategies is needed, such as training of individuals for their present task as well as knowledge sharing to enhance the organisational horizon (Milhem et al., 2014:12).

It is obvious that the accounting profession is changing from the traditional accounting work activities to newer, more value-added and soft skills work activities to embrace the 4IR (Goretzki, Strauss & Weber, 2013:41). Professional accounting bodies have developed strategies, including long-term strategic planning, to overcome challenges associated with skills development (Asonitou, 2015:1). In addition, the SAICA (2021a) competency framework classifies pervasive skills into three categories, namely ethical behaviour and professionalism, personal attributes and professional skills. Among these pervasive skills, the professional skills require of first-year trainee accountants

to understand the impact of IT as well as to apply technical skills and knowledge in the workplace (Viviers et al., 2016:370). In response to the call for accounting professional bodies to address the IT challenges facing trainee accountants, SAICA (2020b:5) has developed ANA as part of the evaluation process to keep record of trainee accountants' cumulative competencies, analyse trainees' development needs and provide development and support plans on how these needs will be addressed.

2.9 THEORETICAL FRAMEWORK

A theoretical framework provides the setting of a research study (Hymovich, 1993:75). Theories are formulated to explain, predict and apprehend phenomena and, in many cases, to prolong existing understanding within the limits of fundamental bounding assumptions (Swanson, 2013:22). The theoretical framework adopted in this study provided the basis through which the research questions were formulated, established the relationship between variables in the study and guided the interpretation of results.

IT has become an important element in the workplace, as professional daily tasks are engrossed with IT skills and knowledge (Hatlevik, Throndsen, Loi & Gudmundsdottir, 2018:107). A number of institutions and governments have developed strategies in other to integrate IT with pedagogical methods so as to prepare graduates for the workplace (Tondeur, Aesaert, Prestridge & Consuegra, 2018:32). Theories that focus on challenges and motivation could provide a relevant view from which to explore strategies employed by first-year trainee accountants to overcome IT challenges. The presented study adopted the stress and coping theory of Lazarus and Folkman (1984) in combination with the self-determination theory of Deci and Ryan (1985) to understand the strategies first-year trainee accountants in the Mafikeng area in the North West province employed to overcome IT challenges.

2.9.1 Stress and coping theory

The stress and coping theory originally proposed by Lazarus and Folkman (1984) explains the process an individual usually goes through to cope with a stressful condition and produce appropriate and effective adaptation behaviour (Chen et al., 2019:88). The theory describes people's cognitive and emotional behaviours to manage, address and deal with stressful situations (Pirkkalainen et al., 2019:1180).

Betke, Basińska and Andruszkiewicz (2021:3) assert that the stress and coping theory guides individuals to effectively develop a positive atmosphere to cope with any work-related stress factors. Bhattacherjee, Davis, Connolly and Hikmet (2018:395) affirm that new implementation and use of IT in a workplace often engender a wide range of responses among users. These responses encompass a variety of emotions, such as stress and excitement, and the need for the ability to effectively manage and cope with the new technology. Internet-related technologies such as cloud computing, big data and blockchain are examples of sources of IT stress with which employees need to cope in an organisation (Moll & Yigitbasioglu, 2019:3; Tiron-Tudor, Deliu, Farcane & Donțu, 2021:480).

Various studies (e.g. Betke et al., 2021:4; Pirkkalainen et al., 2019:1180; Saleem, Malik, Qureshi, Farid & Qamar, 2021:3) have adopted the stress and coping theory to investigate how people cope with challenges in the workplace, but limited studies have investigated how accounting trainees cope with IT challenges in the workplace. This study therefore applied the stress and coping theory to identify the IT challenges and strategies trainee accountants implement to cope with IT challenges while developing their own skills. According to the stress and coping theory, there are two continual stages of the coping process, namely cognitive appraisal and coping efforts (Chen et al., 2019:86).

2.9.1.1 Cognitive appraisal

During cognitive appraisal, a person evaluates the consequences caused by a particular challenge from the external environment (Chen et al., 2019:86). The cognitive appraisal process is divided into primary and secondary appraisal phases. In the primary appraisal phase, a person will judge whether an event is irrelevant and stressful (harm, loss, threat or challenges) or positive (exhilaration, joy, love or happiness). On the other hand, the secondary appraisal phase is when a person applies a particular strategy or set of strategies to overcome the challenges and make progress (Chen et al., 2019:86). In the cognitive appraisal process, first-year trainee accountants should be able to evaluate an IT challenge and determine that the decision is still under their control. Applying the stress and coping theory to the current study, it can be deduced that cognitive appraisal can be employed by first-year trainee accountants to overcome IT challenges in the workplace.

2.9.1.2 Coping efforts

Coping efforts have been theorised as effective methods to alleviate an individual's perceived stress level (Lazarus, 1993:5). Coping efforts integrate the disturbance-handling coping strategies (namely problem-focused coping and emotion-focused coping) (Yin et al., 2018:1193). Problem-focused coping refers to redefining problems, generating alternative solutions, weighing the alternatives in relation to individuals' costs and benefits, and choosing the best alternatives so as to be able to solve the problem (Lazarus & Folkman, 1984:19). Emotion-focused coping comprises actions or thoughts to control the undesirable feelings that originated from stressful circumstances (Salimzadeh, Hall & Saroyan, 2021:2). Yin et al. (2018:1193) point out that emotion-focused coping can change a person's observation of the working environment, but not the external environment.

Research has found that an individual who adopts the problem-focused coping strategy will more easily avoid the stresses that occur in the workplace (Yin et al., 2018:1193). If this strategy is successful, the individual's personal emotional stability will be restored and the perceptions of the challenges linked with the event will be reduced (Chen et al., 2019:86).

2.9.2 Self-determination theory

The self-determination theory was developed by Deci and Ryan (1985) to understand which factors enhance motivation and healthy psychological and behavioural functioning. The theory observed motivation as a multidimensional concept, illuminating upon the changing aspects of human needs, qualities of motivation and psychological well-being within a social context (Ronald, 2019:31). The self-determination theory is an empirically based theory of human motivation (the ability to motivate oneself to achieve desired goals), development (the act of being eager to learn) and wellness (Deci & Ryan 2008:182). Ronald (2019:31) further concurs that the self-determination theory looks into the motivation that surrounds the decisions an individual makes without being influenced by anyone.

The self-determination theory is centred on the belief that human nature shows persistent positive features even if challenges occur and that it repeatedly shows effort, agency and commitment in one's life, also known as "inherent growth tendencies"

(Deci & Ryan, 2012:85). To support this point further, Krause, North and Davidson (2019:2) state that the self-determination theory helps to develop competence and perceived motivation in coping with challenges. Ryan and Deci (2017:150) maintain that employees seek to attain a goal with both intrinsic and extrinsic motivation that will aid in attaining the goal despite any challenges encountered.

The theory focuses on the need to be effective and to share a close working relationship with others in order to be able to overcome any challenges (Deci & Ryan, 2008:182). In terms of the self-determination theory, three essential needs are identified that, if satisfied, allow optimal functioning and growth of an individual at the workplace (Deci & Ryan, 2008:182). These are autonomy, competence and relatedness (see Figure 2.3). Applying these concepts to the current study, trainee accountants' level of self-determination can be improved by satisfying these three major motivations. In this regard, for first-year trainee accountants to overcome IT challenges, they need support on basic needs for autonomy, competence and relatedness essential for effective functioning of the individual. Figure 2.3 presents the three essential needs of the self-determination theory.

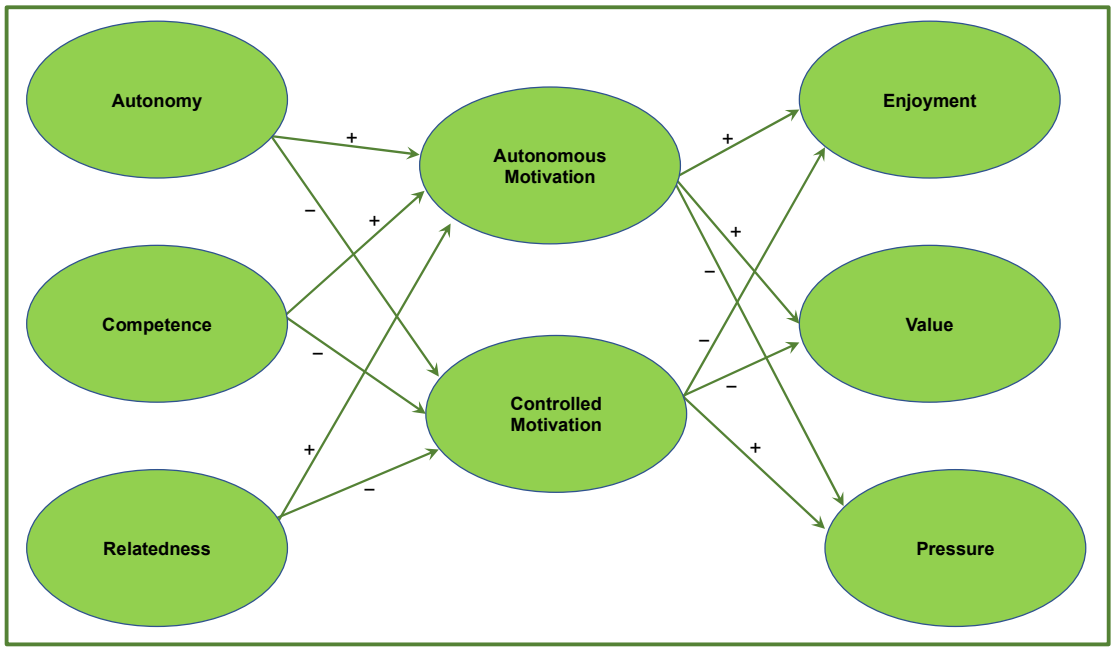

Figure 2.3: Three essential needs of the self-determination theory

Source: Deci and Ryan (2008:182)

From Figure 2.3, it is evident that autonomy, competence and relatedness form the main pillars of the self-determination theory (Wang et al., 2019:6) and these will be discussed in more detail in the next sections.

2.9.2.1 Autonomy

'Autonomy' refers to the desire to be a causal agent of one's own life and act in harmony with one's integrated self (Deci & Ryan, 2008:182). Arvanitis (2017:58) affirms that autonomy is linked to regulation by the self and pertains to the personal acts through which individuals control their own behaviour. Arvanitis (2017:57) further states that the "self-determination theory does not deny the presence of contingencies, although it is focused on a person's endorsement of the act itself". Adams and Khojasteh (2018:382) argue that autonomy is a psychological state through which a person perceives internal control over learning goals and outcomes. Hence autonomy has a significant influence on trainee accountants' level of IT satisfaction in the workplace, as they will have a sense of learning autonomy based on the IT challenges faced in the workplace.

2.9.2.2 Competence

'Competence' refers to the desire to overcome challenges and obtain a good outcome (Deci & Ryan, 2008:182). Nikou and Economides (2017:83) refer to competence as the effective behaviour, the enhancement of personal capabilities and the desire to become self-sufficient. For this reason, self-determination specifies that competence allows individuals to master tasks or achieve aims with ease (Ryan & Deci, 2017:9).

Racero, Bueno and Gallego (2020:6) argue that in the field of ICT, the need for competence is associated with factors such as job satisfaction, levels of job burnout, experience in using technology, expectations of the outcomes of using computers, emotional reactions to computers and actual computer use, among others. Consequently, it is possible to define a relationship between competence and the degree to which people benefit from the use of ICT (Infante-Moro, Infante-Moro & Gallardo-Pérez, 2019:201). Adopting the self-determination theory, Infante-Moro et al. (2019:208) further indicate that the competencies to which most entry-level employees attach greater importance are the ability to use different office tools such as word processors, databases and spreadsheets for the handling of information.

2.9.2.3 Relatedness

Relatedness is described as the desire to interact with and be connected with other individuals (Deci & Ryan, 2008:182). In the workplace context, relatedness refers to the capacity of the trainee accountant to engage in tasks that allow for collaboration and communicating with other colleagues. Racero et al. (2020:5) found that relatedness is a strong predictor of trainee accountants' intention to continue working despite IT challenges. A trainee accountant's level of readiness to face any IT challenges in the workplace can reduce fear and increase the possibility to share IT-related knowledge with others. Racero et al. (2020:5) concur that in the field of ICT, relatedness is one of the most important incentives, as individuals tend to value the opinions of those to whom they feel connected as highly relevant.

Hence, it can be concluded that, in many instances, trainee accountants are actually using self-determined learning as a strategy to overcome individual IT challenges in the workplace (Noour & Hubbard, 2014:3955). Bachman and Stewart (2011:182) agree that motivation of a fundamental strategy will motivate trainees to ensure their success, which will enable them to be self-determined in engaging in and completing a particular task that requires basic IT skills and knowledge effectively.

2.10 INITIAL CONCEPTUAL FRAMEWORK

According to Hymovich (1993:75), a conceptual framework illustrates the frame of reference to a study. It outlines the important variables for the study and how these variables can be related in attaining the research objectives of the study. A conceptual framework is most likely to be constructed in a visual format before data collection (Swaen, 2020:1). Figure 2.4 presents the initial conceptual framework for the study.

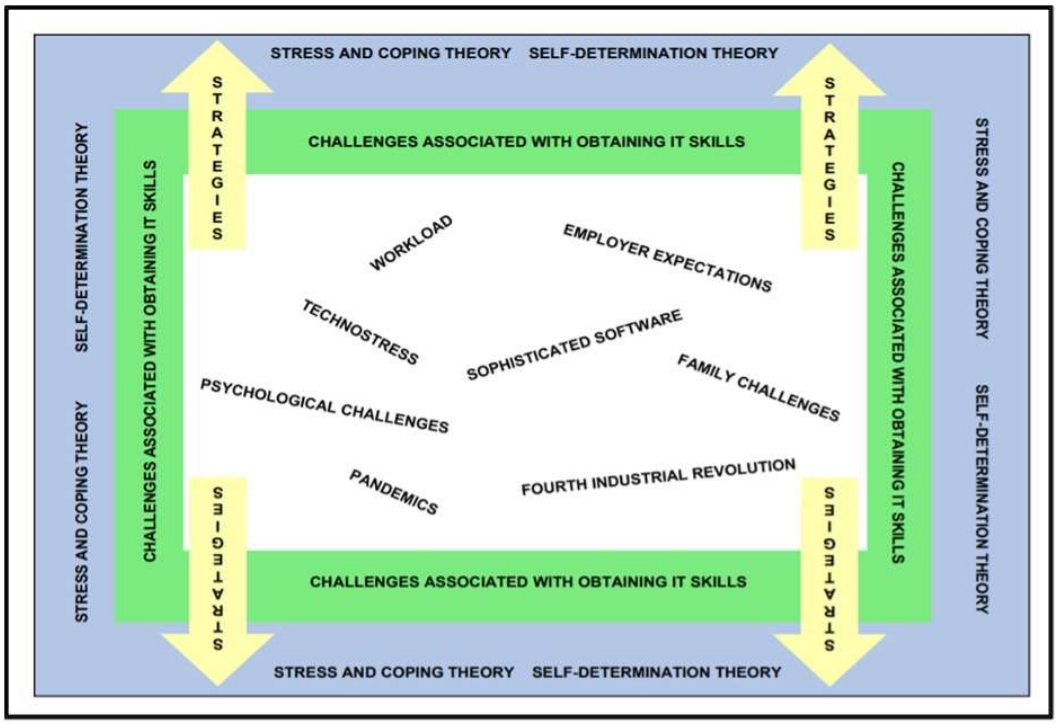

Figure 2.4: Initial conceptual framework

The initial conceptual framework depicted in Figure 2.4 emerged from the review of literature and the theories presented in this chapter. Figure 2.4 demonstrates how the stress and coping theory as well as the self-determination theory will facilitate the identification of the strategies first-year trainee accountants employ to overcome IT-related challenges in the workplace. These challenges are associated with technostress, employers' expectations, workload, family responsibilities, the pandemic and the use of sophisticated software. This conceptual framework created a roadmap for data collection and the interpretation of the findings of this study.

2.11 CHAPTER SUMMARY

Chapter 2 presented a review of the relevant literature relating to the strategies employed by first-year trainee accountants to overcome IT challenges. The literature revealed that a trainee accountant can elect to complete his or her traineeship in the academic environment, public practice, the commerce and industry sector or the public sector. These trainee accountants are required to have the ability to use accounting software such as CaseWare and Sage Pastel Accounting, database software such as Microsoft Excel and Microsoft Access as well as computer software to input and amend

data and records (Brenner, 2018:1). However, Gary and Poh-Sun (2016) argue that advanced IT knowledge and skills such as IT auditing and data analytics are noticeably lacking among trainee accountants. The literature indicates that first-year trainee accountants face challenges with the use of sophisticated software, workload, psychological and family challenges, technostress, Covid-19-related challenges and challenges relating to the 4IR.

Continuous IT training and development, workplace friendship, proactive and reactive coping strategies and work-based learning are regarded as effective strategies that should be put in place to confront the dynamic challenges relating to IT. Accounting education institutions and professional bodies also play a role in addressing these challenges. SAICA (2020b:5) has developed ANA as a method to evaluate and keep track of trainee accountants' cumulative competence and developmental needs and to provide developmental and support plans on how these needs should be addressed.

The stress and coping theory (Lazarus & Folkman, 1984) and the self-determination theory (Deci & Ryan, 1985) were adopted in this study to obtain an in-depth understanding of the challenges and strategies relating to obtaining the required IT skills of trainee accountants. In the stress and coping theory (Lazarus & Folkman, 1984), one stage of the coping process is referred to as cognitive appraisal, which is a process where a person evaluates the consequences caused by a particular challenge from the external environment, with the second stage being coping efforts, which is seen as an effective method to alleviate an individual's perceived stress level. The self-determination theory (Deci & Ryan, 1985) identifies three essential needs that, if satisfied, allow optimal functioning and growth of an individual at the workplace. These needs are autonomy, which is referred to as the desire to be a causal agent of one's own life and act in harmony with one's integrated self; competence, also referred to as the desire to overcome challenges and obtain a good outcome; and relatedness, referred to as the desire to interact with and be connected with other individuals.

The next chapter discusses the research process of this study. This includes the research design and the methods employed in the collection and analysis of the research data to attain the research objectives of the study.

CHAPTER 3

RESEARCH DESIGN AND METHODS

3.1 INTRODUCTION

The previous chapter reviewed relevant literature relating to the accounting profession in South Africa and its technical and professional skills requirements. In addition to the challenges associated with IT skills in the workplace, Chapter 2 also discussed various strategies identified from the literature that can assist in overcoming these challenges, and the theoretical and conceptual underpinnings of the current study were also discussed. This chapter focuses on the research design and methods adopted in the study. A qualitative research approach was used to obtain in-depth data for this study, as it enabled the researcher to gain insight into the lived experiences of the participants in their natural settings. Figure 3.1 presents the chapter layout, which illustrates the content covered in this chapter.

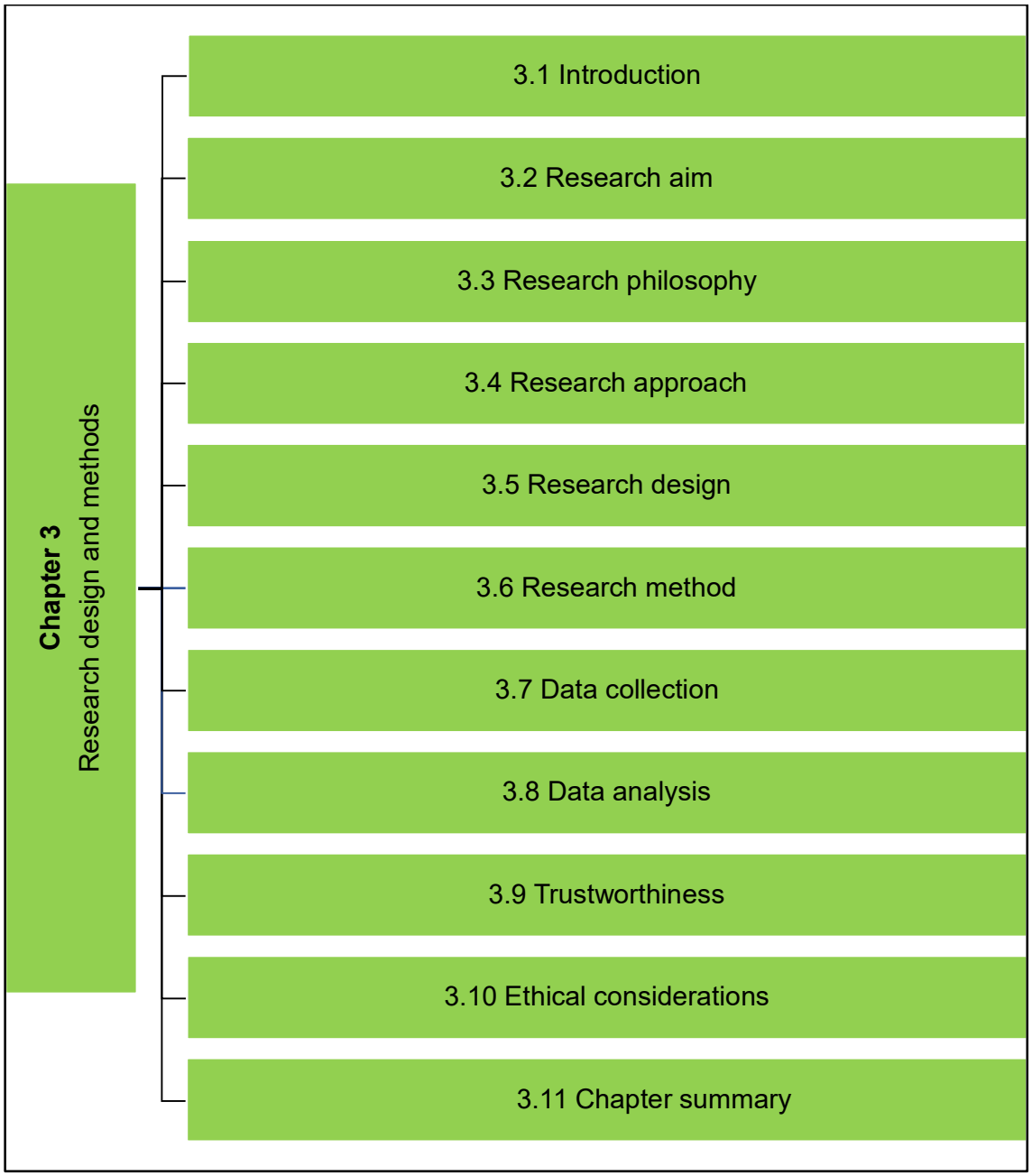

Figure 3.1: Layout of Chapter 3

3.2 RESEARCH AIM

The purpose of this study was to explore strategies employed by first-year trainee accountants in the Mafikeng area in the North West province in South Africa to overcome IT challenges. As stated in Chapter 1 (see Section 1.4.1), the main aim was to explore the various IT challenges first-year trainee accountants encounter and to

report on their perceptions regarding the strategies they employ to overcome these IT challenges.

The research objectives derived from the main aim of this study were as follows:

1. Determine the IT skills required of first-year trainee accountants to perform their duties
2. Investigate whether first-year trainee accountants were exposed to IT training during their education at school and/or university
3. Identify IT-related challenges first-year trainee accountants experience when they enter the workplace
4. Identify any knowledge gaps between the IT education and IT skills required to perform their duties at their workplace
5. Identify IT-related support that accounting professional bodies and accounting firms provide to first-year trainee accountants
6. Determine the role self-determination plays when first-year trainee accountants encounter IT challenges at the workplace
7. Identify strategies used by trainee accountants to curb the challenges they experience while taking responsibility for their own IT skills development.

The researcher adopted a qualitative research approach (see Section 3.4) and a phenomenological design (see Section 3.5), which helped in achieving the aim of this study. A detailed discussion of the research philosophical assumptions that shaped the design and methodology that were used for the empirical investigation of this study is presented in the sections that follow.

3.3 RESEARCH PHILOSOPHY

A research philosophy includes all the systems of interconnected practice and viewpoints that define the nature of the investigation for researchers (Žukauskas, Vveinhardt & Andriukaitienė, 2018:123). The three basic dimensions of a philosophical foundation of a research paradigm comprise of ontology, epistemology and methodology (Kamal, 2019:1389).

‘Ontology’ is about the nature of existence or social realities (Kamal, 2019:1390) and the presumptions the researcher makes in order to conceptualise the form of reality, in addition to what he or she believes could be known concerning such a reality (Scotland, 2012:9). Antwi and Hamza (2015:217) define ontology as “the way the investigator outlines the truth and reality”. In conducting qualitative, socially constructed research from an ontological perspective, researchers embrace the notion of multiple realities. ‘Epistemology’, subjectively interpreted, is concerned with the various ways in which researchers can obtain knowledge about a social reality (Gray, 2014:20; Kamal, 2019:1390), how the truth is known and the knowledge that researchers acquire in order to expand and enhance knowledge in their field of research (Mezmir, 2020:17). Kivunja and Kuyini (2017:27) argue that epistemology examines the relationship between the researcher and the phenomenon being investigated.

‘Methodology’ is defined as “the approach used in conducting the investigation” (Antwi & Hamza, 2015:218). Kamal (2019:1391) opines that the methodological stance of a research study should conform to the ontological and epistemological assumptions of the research. For these reasons, the methodology adopted in the current study employed socially anchored, qualitatively based assumptions that included “the minds and meaning-making, sense-making activities” (Lincoln & Guba, 2013:40) of the participants. This enabled the researcher to construct ideas and meanings from the participants as they narrated their experiences regarding strategies they used to overcome IT challenges during their first-year training.

3.3.1 Research paradigm

Research paradigms constitute an important part of research. According to Creswell (2014:6), research paradigms demonstrate the general philosophical orientation about the world and the nature of the research that a researcher is conducting. Creswell (2014) further stresses that the worldview of the researcher also determines the approach to follow in the study when collecting and analysing data. Furthermore, Mayer (2015:54) states that a researcher determining the philosophical assumption that will underpin the study is among the first crucial considerations in the research process. Therefore, it is imperative to carefully determine and make a stance regarding the paradigm to adopt in a study. Similarly, Cameron (2011:99) asserts that the

paradigm could be considered as the lens through which researchers view the world, which in turn influences their choices. Babbie (2014:31) affirms that a paradigm is a worldview that impacts a specialist's thinking, translation of ideas and understanding of social marvels. Babbie (2014:31) further indicates that the translation and comprehension of social marvels cultivate the capacity of a study to make a productive judgement in the social world. Kim (2014:539) argues that a paradigm gives an ontological, epistemological and methodological supposition supporting specialists' understanding of their reality. Pfadenhauer and Knoblauch (2018:2) express that a worldview is significant, as it impacts the entire investigation.

When following a social constructivist paradigm, individuals attempt to understand the world within which they live by developing subjective meanings of their daily experiences (Galbin, 2014:82). The goal of a constructivist paradigm in this research was to rely on the participants' views on how they developed their competencies and skills required by SAICA, the challenges they faced and the strategies they implemented to overcome these challenges. Therefore, constructivist researchers focus on the complexity and interrelatedness of different individuals within their communities in order to know the historical and cultural settings of the participants (Galbin, 2014:83). The researcher's intention, then, is to make sense of the meaning participants have about the world (Creswell, 2014:8).

Kim (2014:539) explains that a social constructivist research paradigm helps qualitative researchers in discovering meaning and understanding a phenomenon through the active construction of meaning from participants' responses. In this study, the researcher was of the opinion that the world and the meaning of things could be adequately understood through subjective meanings of human daily experiences as well as 'realities' that occur around them. Therefore, the adoption of a social constructivist research paradigm in this study enabled the researcher to understand the experiences of these trainee accountants as they took responsibility for developing the IT skills needed in the workplace. In order to actualise the objective of this study, the study focused on the specific context of the Mafikeng area in the North West province in South Africa. According to Creswell (2014:8), researchers adopting a social constructivist research paradigm focus on a distinct context in which the participants

live and work in order to understand their history, views and perceptions regarding a phenomenon under study.

3.4 RESEARCH APPROACH

There are three major research approaches for collecting data, namely qualitative, quantitative and mixed-method research (Grove, Burns & Gray, 2012:47). The selection of a research approach relies on the researcher's worldview (philosophical assumption) that he or she brings to the study (Creswell, 2014:1). A summary of the differences between qualitative, quantitative and mixed-method research is provided in Table 3.1.

Table 3.1: Comparing qualitative, quantitative and mixed-method research

Qualitative research	Quantitative research	Mixed-method research
Inductive in nature	Deductive in nature	Both inductive and deductive
Approach is subjective	Approach is objective	Integrated approach
Based on constructivism	Based on objectivism	Based on pragmatism
Interpretivism	Positivism	Pragmatism
Often has interviews as instrument of data collection	Often has questionnaires as instrument of data collection	Use qualitative and quantitative methods of data collection
Generates word data	Generates numerical data	Generate word and numerical data, theory building
Data presented in words	Data presented in tables	Data can be triangulated
Findings cannot be generalised	Findings can be generalised	Findings can be generalised

Source: Adopted from Bryman and Bell (2011:1), Oates (2008:1) and Polit and Beck (2017:814)

3.4.1 Qualitative research

Qualitative research is an approach for exploring and upstanding the meaning people or groups of individuals attribute to a specific research problem. Gill, Stewart, Treasure

and Chadwick (2008:291) concur that qualitative researchers use different types of date collection techniques, such as observation, interviews (structured, semi-structured and unstructured) and document analysis. The qualitative research method helps to analyse people's perceptions, emotions, behaviours and social lives and the meanings people give to human issues (Brink, Van der Walt & Van Rensburg, 2018:104; McCusker & Gunaydin, 2015:537). Creswell (2014:162) indicates that qualitative researchers regularly undertake countless designs in realising research objectives through ethnography, narratives, phenomenology, grounded concepts and case studies.

Qualitative research is aimed at addressing a research problem from the participants' point of view through interviews and observations (Orb, Eisenhauer & Wynaden, 2001:94). In this regard, the researcher listened to the perceptions of the participants in their natural environment. Qualitative research was viewed as the appropriate method for this study because it assisted the researcher to obtain rich textual data from the accounting firm managers and the trainee accountants in their natural setting. In a natural setting, a researcher addresses the manner of interaction among humans, focusing on the special contexts in which human beings live and work (Aspers & Corte, 2019:147). As such, this gives the researcher a chance to apprehend the social phenomenon from the participants' perspective.

3.4.2 Quantitative research

Quantitative research is a type of research strategy that involves the collection and evaluation of data that are structured and can be numerically represented (Goertzen, 2017:12). Martin and Bridgmon (2012:29) explain that quantitative research is different from qualitative research, as quantitative methods generate quantifiable results owing to their reliance on large samples regarded as representative of the whole population.

Queirós, Faria and Almeida (2017:370) state that quantitative research approaches concentrate on objectivity and are preferable when there is a need to collect quantifiable measures of variables and inference from a sample of a given population. In addition, Apuke (2017:2) explains that a quantitative research strategy focuses on quantifying and analysing variables to achieve results. It evaluates numerical information through adopting statistical techniques to answer the research questions.

Owing to the methodological stance of the quantitative approach and the researcher's worldview that underpinned this study, this study favoured a qualitative research approach over the former.

3.4.3 Mixed-method research

According to Creswell (2015), a mixed-method approach entails collecting and analysing facts through the adoption of both qualitative and quantitative approaches. Niglas (2009:34) states that mixed-method research is widely used amongst scholarly owing to its capability to enhance the findings of a study. Furthermore, Polit and Beck (2017:811) explain that mixed-method research is not just about gathering qualitative and quantitative data, as it includes the integration of data at some stage of the research process. Creswell and Plano Clark (2011:55) further state that blending qualitative and quantitative research procedures enhances the findings and contributions of a study. The main aim of a mixed-method approach is to strengthen the research findings (Schoonenboom & Johnson, 2017:110), as the combination of the two methods provides more detailed and robust data.

3.4.4 Justification of the research approach adopted

This study adopted a qualitative research approach. DeJonckheere and Vaughn (2019:2) posit that the qualitative research approach enables a connection between the researcher and the participants during the process of data collection and allows for probing deeper questions for broader data. Qualitative researchers can adopt several methods in realising the objectives of their study (Creswell, 2014:20). Some of these methods include interviews, observations and open-ended questionnaires. Queirós et al. (2017:370) argue that a qualitative research approach relies on the understanding of the problem through the investigation of the participants' perceptions, experiences and views, rather than being concerned about numerical findings. Therefore, in qualitative research, the researcher is both the subject and the object of the research.

In this study, a qualitative research approach enabled the researcher to understand the experiences of the trainee accountants as they took responsibility for developing their IT skills. In addition, qualitative research was considered as the appropriate method for this research because it allowed the researcher to achieve rich perceptions

from the trainee accountants in their natural setting. This assisted the researcher to answer the research questions of the study.

3.5 RESEARCH DESIGN

A research design is a framework, structure, blueprint and plan through which research is conducted (Kothari, 2004:31; Maree, 2014:69). Creswell (2014:22) explains that a research design is the procedures and decisions involving data collection, analysis and presentation. Yin (2014:15) posits that a research design is a strategy adopted by researchers in actualising the study objectives. Punch (2009:2) further holds that a research design situates a researcher in the empirical world, thereby competently linking the researcher's worldview to information series and evaluation processes. To that effect, the research design in this study refers to the study blueprint that guided the decision making related to the processes and analysis.

According to Creswell (2015:53), there are five types of qualitative research designs (see Table 3.2) that a researcher can use in a study.

Table 3.2: Types of qualitative research designs

Qualitative research design	Description
Narrative research	Describing, analysing and decoding the stories of individual's lived experiences, focusing on what came about and why
Phenomenology	Understanding the lived experiences of individuals while studying their lives
Grounded theory	Action or interaction that is 'grounded' in the opinions or observations of the contributors to the research
Ethnography	Studying a person over a prolonged period through observation
Case study	Exploring in depth over a target population, process or event to describe and explain the case

Source: Creswell (2009:30)

This study made use of a phenomenological research design. According to Polit and Beck (2017:665), phenomenological research allows researchers to study and present the lived journey of the research participants. Bakanay and Çakır (2016:1) similarly

assert that phenomenological research focuses on the essence and structures regarding a phenomenon from the participants' perspectives. Researchers adopting phenomenological research are of the view that a participant's beliefs of a phenomenon are distinct and important. Neubauer, Witkop and Varpio (2019:90) attest that a phenomenological design permits the qualitative researcher to recognise the experiences of others and provides possible strategies to solve the participants' problems. Therefore, the use of a phenomenological design in this study enabled the researcher to understand the challenges the first-year trainee accountants' experiences and to probe the phenomenon under study (see Research objective 3) and the strategies they implemented to overcome these challenges while taking responsibility for developing their own IT skills.

3.6 RESEARCH METHOD

Research methods involve the procedures of data collection, analysis and interpretation that researchers propose for their studies (Creswell, 2015:132). The research method entails how qualitative, quantitative or mixed-method approaches are carried out, such as through surveys, case studies, interviews, questionnaires, focus group discussions or observations (Creswell, 2015:132). The next sections provide more detail on the adopted qualitative research method of this study and the site selection, target population, sampling technique, data collection technique, construction and validation of the interview questions and the data analysis.

3.6.1 Site selection

Maree (2014:34) indicates that in choosing a site for a study, researchers ought to endeavour to confirm that the site is suitable for the specific research. Creswell and Plano Clark (2007:118) state that among the most important considerations of a researcher, an appropriate site is imperative to adequately obtain information. As indicated in Chapter 1, this study was conducted at SAICA training offices in the Mafikeng area in the North West province of South Africa (see Figure 1.2).

The Mafikeng area was selected because, firstly, the inherent diversity that provides a mix of different population groups and cultural backgrounds. The Mafikeng area is predominantly rural with a fairly low-income community and a mix of population groups

and cultures. Secondly, the role model intervention project, an innovative partnership initiative between SAICA and the North West Department of Education, was an initiative used to promote the accountancy profession in the Mafikeng area (Matsemela, 2016; SAICA, 2008).

3.6.2 Target population

Maree (2014:34) states that a population must be suitable and feasible. Anderson and Widener (2007:329) affirm that selecting an acceptable research population occurs simultaneously with the practicalities of ensuring that data exist to permit the proposed research questions to be answered. At the time of this study, there were approximately 11 000 registered trainee accountants and 720 registered SAICA training offices (Potgieter, 2021:n.p.). The target population of this study consisted of SAICA training offices in the Mafikeng are. There were four SAICA training offices in the Mafikeng as at July 2021 (SAICA, 2020a:n.p.; saYellow.com, 2021:n.p.).

Maree (2014:34) points out that a research population must be suitable and feasible. In terms of participants, the target population for this study was all first-year trainee accountants and their respective managers in the four targeted SAICA training offices.

3.6.3 Sampling technique

Selecting a sample that is representative of the population is an essential issue of qualitative research (Omair, 2014:142). A purposive non-probability sampling technique was used to select participants for this study. A purposive sampling approach is the deliberate identification and selection of individuals due to the fact of their characteristics. According to Creswell (2012:125), purposive sampling is a non-probability sampling technique that is used in participant selection based on predetermined features of a particular study population. DeJonckheere and Vaughn (2019:3) suggest that researchers use purposive sampling for research that already has a target set of participants who have characteristics that will aid the study.

The four SAICA training offices in the Mafikeng area were included in the sample for this study. These firms employed training accountants who could share a variety of experiences and perceptions with the researcher. In each selected firm, the researcher

utilised first-year trainee accountants. Figure 3.2 shows the proposed sample size for the study.

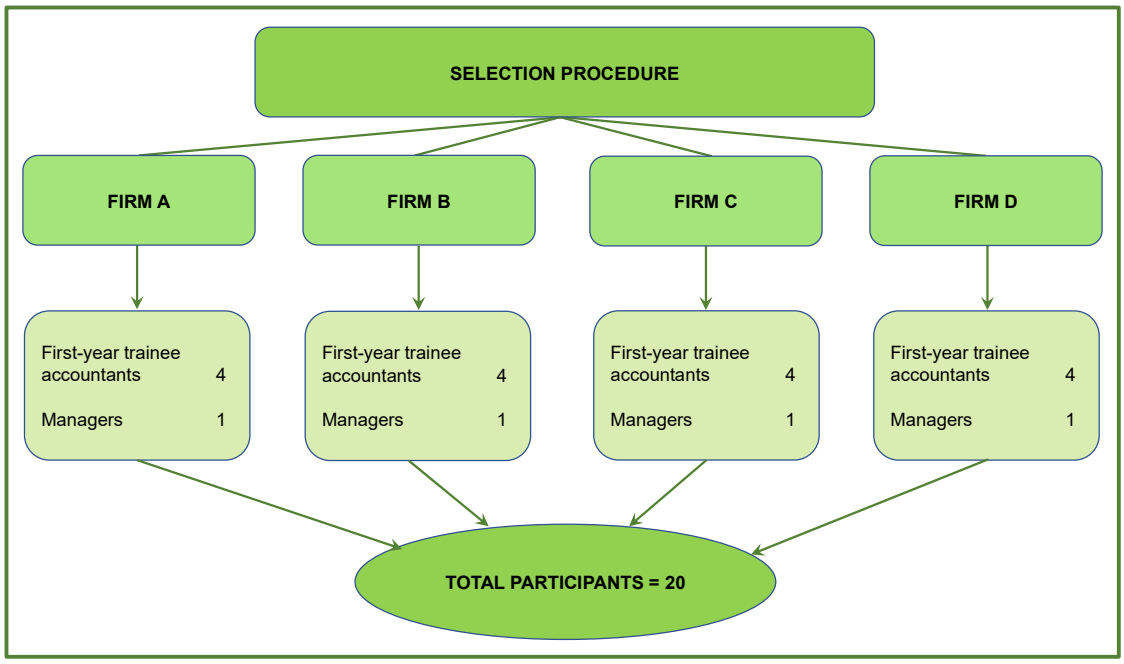

Figure 3.2: Sample size selection of participants

Figure 3.2 shows the sample size selection of the participants for the study. In selecting the final participants, the researcher employed a purposive sampling technique to select four first-year trainee accountants and one manager from each of the four SAICA training offices. The trainee accountants had to be first-year trainees and available for an interview as some trainees were off site due to audit responsibilities. The manager had to be the direct line manager responsible for the supervision of the trainees. This led to 20 participants in total to be interviewed in this study. As the entire population identified in a study cannot always be included in a qualitative study, it was important that a sampling technique was used to select first-year trainee accountants who could be interviewed in the study. The purposive sampling enabling the researcher to select first-year trainee accountants who could be interviewed in the study. However, during the current study, a point of saturation, which is a point where no new information is obtained, was reached after interviewing 15 participants (13 trainees and 2 managers).

3.7 DATA COLLECTION

Data collection techniques in qualitative research include individual interviews or focus group discussions, observations and textual or visual analysis from books or videos (Wilson, 2017:65). The current study adopted individual interviews as a data collection technique. According to Padilla-Díaz (2015:104), interviews can be the most convenient data collection technique in a phenomenological research design. Interview information collection methods allow the researcher to interact with the participants in order to understand their perceptions, experiences and opinions regarding the phenomenon being studied (Rossman & Rallis, 2012:176).

According to Rubin and Rubin (2012:321), interview data collection techniques in phenomenological research design helps in the description of the meaning of the phenomenon. They recommended that interviews in a phenomenological research design should be in-depth and well probed, while providing the participants with enough ground to express their views regarding the phenomenon under study. Conducting interviews in a phenomenological research design could be considered complex and demands for ample time in order to foster probing and depth. In this study, the researcher made use of face-to-face interviews to obtain an in-depth understanding of the IT challenges first-year trainee accountants encounter while trying to meet the competency and skills requirements to carry out their duties. Therefore, interviews as a data collection technique were deemed best suited for this study.

The researcher made use of an interview schedule (see Annexure C), which guided the researcher during the interviews. The interviews were electronically recorded and lasted approximately 20 to 25 minutes per participant.

3.7.1 Construction and validation of the interview questions

There were nine interview questions for the first-year trainee accountants and ten questions for the managers (see Appendix C). These questions were compiled so as to assist with answering the research questions of the study, and focused on the following aspects:

3.7.1.1 IT skills required of first-year trainee accountants

IT skills required of a first-year trainee accountant include the flexibility to use basic accounting software (Sage Pastel Accounting) and database software (Microsoft Excel and Microsoft Access) to capture and amend data and records, create and send invoices, manage accounts and track inventory (Barac & Du Plessis, 2014:55). The participants were asked to provide details on the IT skills first-year trainee accountants need to have when they enter the workplace and whether they had these skills when they started working as trainee accountants.

3.7.1.2 Computer capabilities

From the literature review, nine computer capabilities as identified by Barac (2009:31) were empirically investigated based on SAICA educational requirements. These were the following:

- Word processing (e.g. Microsoft Word), which is used in creating and editing documents
- Spreadsheets (e.g. Microsoft Excel), which are used to create and organise data in rows and columns in a worksheet
- Databases (e.g. Microsoft Access), which are systems that collect data and allow access, retrieval and use of the data
- Standard internet, which includes email and web browsers (e.g. Microsoft Windows)
- Business presentation software (e.g. Microsoft PowerPoint)
- Accounting packages (e.g. Sage Pastel Accounting)
- Utility software, which includes computer-assisted audit tools
- Auditing paper-related software (e.g. CaseWare)
- Special research tools such as Research Toolbox.

Participating trainee accountants and managers were also asked to explain the various challenges faced when using these and/or similar computer software and packages. Participants were also asked to identify the various strategies trainee accountants implement to overcome these challenges.

3.7.1.3 IT competence

The level of first-year trainee accountants' IT competence was investigated using the IT competences as identified in the self-determination theory by Racero et al. (2020:6). Interview questions were used to guide the interviewees to provide their perceptions on aspects such as job satisfaction, levels of job burnout, experience in using technology, expectations of the outcomes of using computers, emotional reactions to computers and actual computer use.

3.7.1.4 IT-related support from accounting professional bodies and accounting firms

Questions were also asked to obtain more information regarding the role accounting professional bodies and accounting firms play or should play to assist first-year trainee accountants to overcome IT skills challenges.

3.7.1.5 Various strategies employed to overcome IT challenges

In order to obtain feedback regarding the strategies first-year trainee accountants employed to overcome some of the IT skills challenges they encountered, the participants were asked to provide their views. The researcher guided the interviewees to share their perceptions on aspects such as workplace friendships, family responsibilities, stress, coping, self-determination and career decisions. The interviews provided the researcher with rich data, which were recorded and transcribed and analysed afterwards.

3.8 DATA ANALYSIS

Qualitative data analysis is the formal interpretation of collected data to create order, produce meaning and express findings (Harding & Whitehead, 2013:142). Mottram (2011:165) explains that "data analysis concerns line-by-line evaluation to derive codes and steady evaluation of the codes to set up categories". Data gathered through the interviews were first transcribed from audio to text by a qualified transcriber. The data were then thematically analysed with the assistance of an independent coder (IC) (see Annexure F) using the ATLAS.ti™ 9 software program. According to Saunders et

al. (2012:10), thematic data evaluation permits the researcher to code participants' responses into codes, themes and categories.

Thematic data analysis is a technique of analysing qualitative data, and is usually applied to a group of texts, such as interview transcripts (Braun & Clarke, 2006:93; 2019:589). Employing thematic data analysis, the researcher closely examines the transcript data to identify common themes, topics, ideas and patterns of meaning. In conducting the thematic data analysis, the researcher followed the six-phase process as identified by Braun and Clarke (2006:93), shown in Table 3.3.

Table 3.3: Phases of thematic analysis

Phase	Description of the process
1. Familiarising yourself with your data:	Transcribing date (if necessary), reading and rereading the data, noting down initial ideas.
2. Generating initial codes:	Coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code.
3, Searching for themes:	Collating codes into potential themes, gathering all data relevant to each potential theme.
4. Reviewing themes:	Checking in the themes work in relation to the coded extracts (Level 1) and the entire data set (Level 2), generating a thematic 'map' of the analysis.
5. Defining and naming themes:	Ongoing analysis to refine the specifics of each theme, and the overall story the analysis tells; generating clear definitions and names for each theme.
6. Producing the report:	The final opportunity for analysis. Selection of vivid, compelling extract examples, final analysis of selected extracts, relating back of the analysis to the research question and literature, producing a scholarly report of the analysis.

Source: Braun and Clarke (2006:93)

The researcher applied the phases in Table 3.3 during the process of data analysis. Although there was no code book, the strategy was to obtain insights into the research objectives and the theoretical underpinnings using deductive reasoning. The IC

followed various stages of coding using experience and sound practice for second coding (see Barbour, 2001:441; MacPhail, Khoza, Abler & Ranganathan, 2016:198; Smith & McGannon, 2018:102). Coding the data within ATLAS.ti™ 9 entails cognitive thought-based and manual tasks as handled by the tools of the software. The IC read the transcripts as part of the pre-coding work and thereafter followed the theoretical coding route. Extra reading was done on the theories in order to obtain a working knowledge of the terminology and underpinnings of the theories.

Thereafter, the IC reviewed the research questions and determined the relatedness of research questions to the theories. The renaming of the codes, taking them close to theory, as well as merging of sub-themes, renaming sub-themes and checking them against quotations, followed next. The final cycle included a final review of subthemes to the quotations, and then forming a network group from the stable list of the sub-themes (see Table 4.1).

3.9 TRUSTWORTHINESS

The basic principle for assessing the quality of qualitative research is through the concept of trustworthiness (Harding & Whitehead, 2013:153). Trustworthiness is referred to as the accuracy of a research study, data and findings (Harding & Whitehead, 2013:153). Trustworthiness is regarded is the foundation of good-quality qualitative research (Birt, Scott, Cavers, Campbell & Walter, 2016:1802) with the main aim to ensure that the results of the study are “worth paying attention to” (Lincoln & Guba, 1985:290). The trustworthiness of qualitative data analysis is often evaluated using four main components, namely credibility, transferability, dependability and conformability (Lincoln & Guba, 1985:316–318).

3.9.1 Credibility

‘Credibility’ refers to how accurate and real the research findings are described (Harding & Whitehead, 2013:154). Korstjens and Moser (2018:121) argue that credibility determines whether the research findings represent the exact interpretation of the actual information drawn from the participants’ original data. To ensure credibility of the results of this study, the researcher restated and summarised information during the interview process and then questioned the participants to determine accuracy (see

Harper & Cole, 2012:511). The research participants provided their opinion as to whether the summaries reflected their views, perceptions and experiences (see Harper & Cole, 2012:511). An IC was used for credibility of analysis. The researcher's work cohered favourably with the IC's extensive reports.

3.9.2 Transferability

'Transferability' refers to the extent to which the research findings are extrapolatable to other contexts, which encompass comparable situations, populations and similar phenomena (Gasson, 2004:98). To ensure transferability of the findings of this study, the researcher used thick descriptions to interpret the themes and categories that originated (see Korstjens & Moser, 2018:120). Furthermore, transferability was ensured by providing adequate information of the researcher's role during the study, the research context and processes, the participants and the relationship between the researcher and the participants. This information will allow the reader to decide how the findings of this study could be applicable to similar situations, comparable populations and similar phenomena (Morrow, 2005:252).

3.9.3 Dependability

'Dependability' is the extent to which the findings of the study are consistent and repeatable (Morrow, 2005:252). Gasson (2004:94) states in terms of dependability, "the way in which a study is conducted should be consistent across time, researchers, and analysis techniques". The dependability of this study was established through the use of an audit trial, which was then reviewed by the qualitative data analysis expert to evaluate the information so as to verify that the findings of the study were reliable. An IC was also used to improve dependable analysis.

3.9.4 Conformability

'Conformability' is the degree to which the findings of the analysis are objective and free from any potential bias or personal motivations of the researcher (Harding & Whitehead, 2013:154). To ensure conformability, the researcher took all possible steps to be unbiased so as not to misinterpret the perceptions of the participants. To ascertain conformability, the researcher worked on a precise narrative and provided an audit trial that highlights each step of data analysis so as to supply explanations.

3.10 ETHICAL CONSIDERATIONS

The ethical considerations relating to this study included the process of obtaining informed consent and gaining access to the participants at the four accounting firms for the study (see Annexure B). The researcher formally obtained ethical clearance from Unisa (see Annexure A) for the current research project to be carried out and a written consent letter was given to the accounting firms' managers and trainee accountants in the accounting firms. Participation was anonymous, and all measures were taken to protect and ensure the confidentiality of the information provided by the participants during the interviews. The researcher also ensured that the trainee accountants and the accounting firms' managers taking part in research were not distressed. They were protected from physical and mental harm. This meant the researcher did not embarrass, frighten, offend or harm the participants. The researcher only made use of a recorder during interviews to capture the detailed responses of the participants. No form of video or any object that may pose harm to the participants was used for the study.

During the data collection and analysis process, the researcher applied all reasonable steps to respect any cultural, religious, gender and other demographic differences of the participants and research sites (see Creswell, 2014:136). All the research participants voluntarily agreed to participate in the research without any financial gain or other form of pressure (see Weinbaum, Landree, Blumenthal, Piquado & Gutierrez, 2019:6). The researcher managed data storage by keeping the data in a password-protected location on a computer and ensured that only the supervisors, transcriber and IC had access to the data. All electronic data will be deleted from the computer after five years.

3.11 CHAPTER SUMMARY

In this chapter, the social constructivist research paradigm employed in this study was discussed in detail. The research method as well as the rationale for adopting a qualitative research approach was explained. The chapter further explained the phenomenological research design as well as the justification for adopting this research design. Furthermore, the research methodology, which comprised the site selection, target population and sampling technique, was explained in detailed. The

study employed individual interviews for data collection procedures and data analysis was done with the aid of ATLAS.ti™ 9, which served to code the data and identify themes and sub-themes that answered the research questions. The chapter concluded with issues of trustworthiness and the ethical considerations for the study. The next chapter presents the research findings.

CHAPTER 4

RESEARCH FINDINGS AND DISCUSSIONS

4.1 INTRODUCTION

Chapter 3 explained the research design and methods used to collect data. In this chapter the focus is on the presentation of the research findings of the study, which set out to understand the strategies employed by first-year trainee accountants in the Mafikeng area to overcome IT challenges. The findings are presented according to the themes and sub-themes that emerged, which directly relate to the research objectives of the study, as indicated in Chapter 1. The chapter presents and discusses the findings derived from the study with the aid of the existing literature and theories used in the study. Figure 4.1 presents the chapter layout.

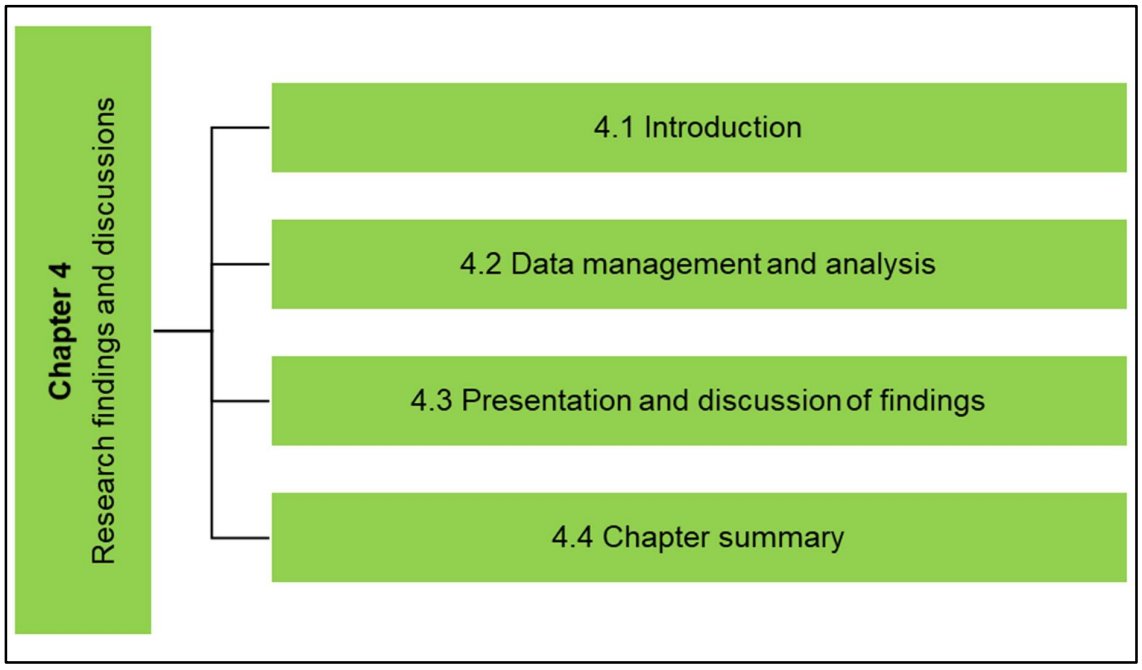

Figure 4.1: Layout of Chapter 4

4.2 DATA MANAGEMENT AND ANALYSIS

As presented in Chapter 3 (Section 3.6.3), 20 participants were sampled for the study. However, 15 participants (13 trainee accountants and 2 managers) were ultimately interviewed, as a point of saturation was reached. The participants were given pseudonyms, with the trainee accountants presented as T1 to T13 and the managers as M1 and M2. The data from the interviews were analysed using a deductive coding method. The IC worked both inductively from the data and deductively from the theoretical positions and objectives provided by the researcher's study. These streams coalesced favourably with the researcher's interpretations and there was consensus between the researcher's codes and the IC's codes. Ethically, the researcher used the IC's coding work to verify and add depth to her coding, yet the analytical work of theming the data was done by the researcher in the manner described herein. Working with data, organising and breaking them down into manageable components, categorising and synthesising them into themes and sub-themes, and presenting the findings to extract meaning from the participants' responses were all part of this process. ATLAS.ti™ 9 software was used to assist with the analysis and coding processes to discover and integrate emerging themes and sub-themes from the data. To keep the investigation on track, these codes were cross-referenced with the research objectives. The IC also used the objectives as a confirming lens. The research objectives, themes and sub-themes that emerged from the coded data are summarised in Table 4.1.

Table 4.1: Research objectives, themes and sub-themes

Research objectives	Themes	Sub-themes
1. Determine the IT skills required of first-year trainee accountants to perform their duties	Theme 1: IT skills requirements	• Microsoft Excel • Word documents • Email • Google functions (see Sections 2.4.1–2.4.3)
2. Investigate whether first-year trainee accountants were exposed to IT training during their education at school and/or university	Theme 2: Exposure to IT training	• University • High school (see Sections 2.4.1–2.4.3)
3. Identify IT-related challenges first-year trainee accountants experience when they enter the workplace	Theme 3: IT-related challenges	• Software challenges • Software training • Family responsibilities • Covid-19-related challenges • Employers' expectations (see Sections 2.5.1–2.5.7)
4. Identify any knowledge gaps between the IT education and IT skills required to perform their duties at their workplace	Theme 4: Knowledge gaps	• IT education • IT at workplace (see to Sections 2.4.4–2.4.5)
5. Identify IT-related support that accounting professional bodies and accounting firms provide to first-year trainee accountants	Theme 5: IT-related support	• Mentorship programmes • Training received from accounting firms and professional bodies • Web-based learning
6. Determine the role self-determination plays when first-year trainee accountants encounter IT challenges at the workplace	Theme 6: Role of self-determination	• Eagerness to learn • Improved work relationships • Motivation (see Section 2.9.2)
7. Identify strategies used by trainee accountants to curb the challenges they experience while taking responsibility for their own IT skills development	Theme 7: Strategies employed	• Developing competencies • Innovation and creativity • Internet searches • IT helpdesk • Practical solutions (see Sections 2.6.1–2.6.6)

Verbatim comments from the participants are presented in block form and discussed with the literature and applicable theories presented in the conceptual framework in Chapter 2. As a result, the findings from the participants are presented in the following sections in accordance with the study's emergent themes and sub-themes.

4.3 PRESENTATION AND DISCUSSION OF FINDINGS

In this section, the findings from the study are presented and consequently discussed. In each theme presented, the findings from each sub-theme are separately presented in order to provide a clear view of the responses of the participants. The ATLAS.ti™ 9 network group was used to present a graphic presentation of the themes and sub-themes derived from the analysis. It should be noted that these graphic representations and quotes from the participants represent verbatim quotes. The idea of presenting the sub-themes separately enabled the researcher to view and discuss each case in detail and then collates the participants' responses in the summary of the study in Chapter 5.

4.3.1 Theme 1: IT skills requirements

Theme 1 relates to Research objective 1 of this study (see Section 1.4.1). The findings of the study revealed that the participants were able to identify the IT skills IT skills required to perform their duties at their workplace. This is represented in Figure 4.2.

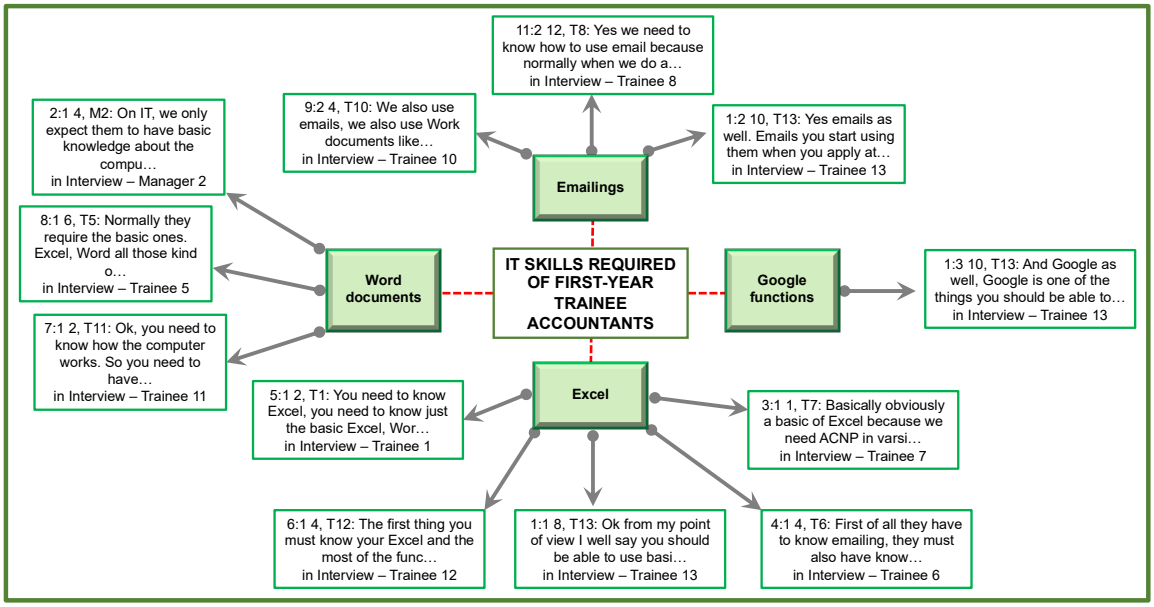

Figure 4.2: IT skills required of first-year trainee accountants

Figure 4.2 shows the sub-themes and quotes that emerged from Theme 1. The participants indicated which IT skills are required of first-year trainee accountants before they venture into training at accounting firms. These IT skills include the use of Microsoft Excel, Word documents (i.e. Microsoft Word), email and Google functions.

4.3.1.1 Microsoft Excel

According to Brenner (2018:1), data-based software such as Microsoft Excel functions is one of the IT-related tasks required of trainee accountants. Even though they are required to have basic knowledge of CaseWare and Sage Pastel Accounting, the findings from the study showed that Microsoft Excel was an important IT function required of trainees, while other IT software skills were obtained through training. This is evident from responses by participants T1 and T7:

> *T1: You need to know Excel; you need to know just the basic Excel, Word, mostly Excel, because even after a year they took us for [an] advanced Excel course at North-West University. Yes, so you need to know Excel and then they will take you through the TeamMate system.*

> *T7: Basically, Excel, because we need ACMP [Advanced Certificate in Management Practice] in varsity. And then there is this period where they*

train us, so they will teach us how those softwares work, you know. We use things like TeamMate, they show us how it works, how to import, export, the hyperlinks, those interesting things. At first it was not easy to adjust but I managed to cope.

The inference drawn from the verbatim quotes is that first-year trainee accountants are expected to have basic knowledge of Microsoft Excel functions and how to utilise these functions. As discussed in Section 3.7.1.1, trainee accountants are required to have the ability to use accounting software to capture and amend data and records (Barac & Du Plessis, 2014:55). Participant M2 further confirmed the need for first-year trainee accountants to have basic computer knowledge, but said that accounting firms do provide training to them on other IT software:

M2: On IT, we only expect them to have basic knowledge about the computer, how to use Excel functions. Yes, we train them on those kinds of programs that we use, but at least they should come with that basic knowledge of the computer, how to use the computer.

In further reinforcement of this point, Participant T8 indicated that Microsoft Excel functions were taught at university, but to a limited extend.

T8: One of the skills is on Excel, you know in school we studied some of these packages, but it was very shallow, so now when they were exposed to it [it] was a little bit of a challenge. So, I needed to put in more effort to be able to grab the content I use of Excel as a package in accounting.

Both Participant T8 and Participant T10 suggested that the Microsoft Excel functions are needed for first-year trainee accountants. However, this was taught at a basic level. This means that first-year trainee accountants need to implement strategies, which relates to the cognitive appraisal method (see Section 2.9.1.1), to develop their IT knowledge to carry out their duties.

4.3.1.2 Word documents

First-year trainee accountants are required to have basic Microsoft Word skills to carry out their duties.

> *T13: You need to know how the computer works, so you need to have knowledge [of] Microsoft Office that includes your Word documents and how the functions in the Word document work.*

This view was supported by Participant M2:

> *M2: On IT, we only expect them to have basic knowledge on how to use Word, how to type on Word, how to save documents so that they can be able to retrieve them later. So that kind of knowledge, not the deeper knowledge of IT, so we do not expect them to have all that knowledge, because we train them.*

These views indicate that first-year trainee accountants need to have basic knowledge of Microsoft Word. This includes the ability to type and apply various Microsoft Word functions. This finding supports the literature discussed in Section 2.9.2.2, which indicates that trainees need to have competency such as the ability to process information in a Word document (Infante-Moro et al., 2019:208). Albrecht and Sack (2000:n.p.) also highlight the word-processing program (Microsoft Word) as an IT skill required of accounting graduates.

4.3.1.3 Email

Email is one of the most important IT tools used in many organisations to communicate. Wessels (2006:145) points out that most business entities in South Africa are using a range of Microsoft products such as operating systems, OfficeSuite and email, which are typically used for general automation and communication in the office environment.

Participants T2, T8 and T13 explained that emailing is an important IT skill required of trainee accountants.

T2: Yes, like the email etiquette, how to write an email properly. And being able to use so-called business language and not using text language when you are writing an email. I think that is a big one also.

T8: Yes, we need to know how to use email because normally when we do auditing using that sometimes you just have to write formal requests […] for information from the client. So, you need to send it to the client […] via email.

T13: Yes, emails as well. Emails you start using them when you apply at university. So, I think it might also be an expectation, you are expected because when you start applying at university you should be able to communicate using your email and what not. And even at university most of the time you communicate with your lecturers. Like I use to do that at university, communicating like maybe exam papers, questions and what not. Some of the lecturers will be communicating with us by using emails.

The findings show that emailing is an important IT skill required by first-year trainee accountants. One would argue that emailing is an obvious IT skill that individuals should have, and Participant T13 indicated that she already used it at university to communicate with her lecturers. According to the literature (see Section 2.4.3), emailing is one of the general day-to-day office functions and first-year trainee accountants require this skill to carry out their duties (Wessels, 2008:169–170). Vdovin (2020:1) also affirms that email is an important communication tool in many workplaces and that it is important to improve email functions among organisations.

4.3.1.4 Google functions

Section 2.4.3 explained the importance of web browsers or Google functions used by organisations. The findings from this study also showed that participants were of the view that Google functions are also one of the IT skills required by first-year trainee accountants.

T3: […] and Google as well, Google is one of the things you should be able to do. I think most people can use it.

Similarly, Participant M1 also mentioned that first-year trainee accountants should be able to navigate through Google searches and find solutions to problems they

encounter. This means that the Google function is also seen as an IT skill required by first-year trainee accountants when developing their skills. In Section 2.6.3 it was stated that workplace learning and technology (internet searches, online communications, web conferences and discussions) are stress factors for which first-year trainee accountants can use reactive coping strategies to ensure that they effectively cope with these factors (Selamat & Idris, 2019:74). The stress and coping theory (see Section 2.9.1) also highlights a process that an individual usually goes through to cope with a stressful situation and produce appropriate and effective adaptation behaviour (Lazarus & Folkman, 1984:141).

In addition, the findings above also show that first-year trainee accountants are required to have knowledge of basic IT skills; however, the IT software used by the firm may be different from what they have learnt at university. This new software includes TeamMates, CaseWare and Sage Pastel Accounting. First-year trainees will need to acquire the necessary skills through IT training, workshops and orientation sessions organised by the accounting firm.

4.3.2 Theme 2: Exposure to IT training

This theme relates to Research objective 2 (see Section 1.4.1). The aim of this research objective was to investigate whether first-year trainee accountants were exposed to IT training at school and/or university. The sub-themes and some of the quotes relating to them are represented in Figure 4.3.

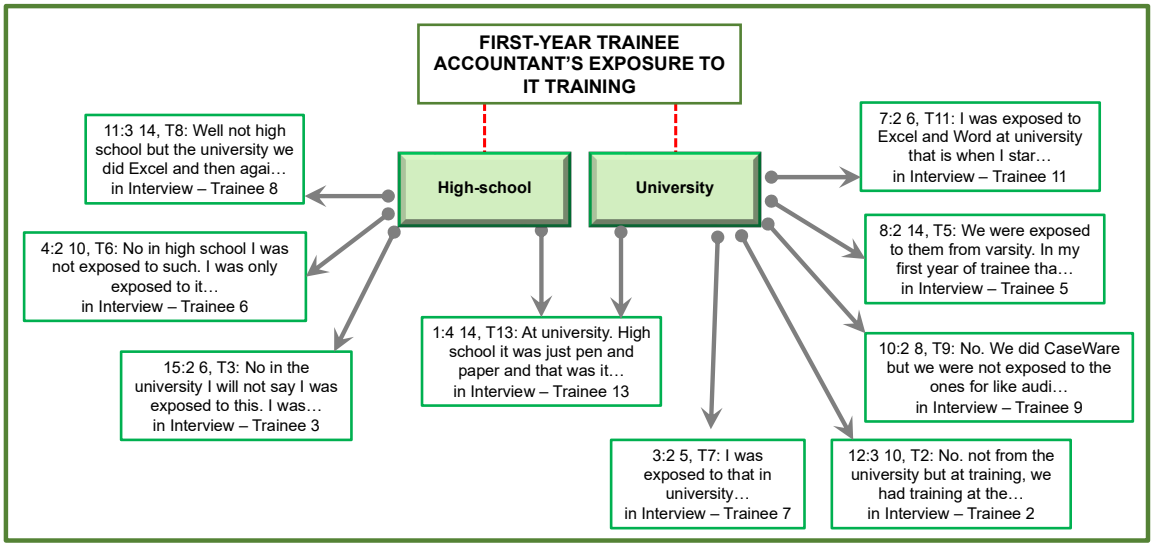

Figure 4.3: First-year trainee accountants' exposure to IT training

Figure 4.3 depicts the two sub-themes, namely university and high school, which were identified from the data.

4.3.2.1 University

Some of the participants attested to having obtained basic IT skills at university. These skills include the ability to send emails, as acknowledged by various participants:

> *T8: Well not high school, but the university, we did basic Excel and we communicated with lecturers through emails.*

> *T7: At university. High school it was just pen and paper and that was it.*

> *T9: No in high school I was not exposed to such. I was only exposed to it when I went to university and during my spare time when I was using [a] laptop, I was just playing by myself to learn more. I only obtained the basic IT skills at the university, and I passed it just because I wanted to pass.*

> *T11: I was exposed to Excel and Word at university, that is when I started using it.*

> *T12: We were exposed to them at university. In my first year [as] trainee that is when I got exposed to TeamMate. That was something new to me.*

And then the company as well decided to [send] us for classes for [an] advanced Excel certificate, because that is what we mainly use.

The findings suggest that some of the trainee accountants were exposed to basic IT skills at university, while some also received training from the accounting firm. As discussed in Section 2.4.5, the 4IR has necessitated the need for the integration of IT in many organisations (Olarewaju, 2021:150). Although basic IT skills are taught at university level, research has shown that these are often insufficient, as first-year trainee accountants are struggling to incorporate these skills in the workplace (Brenner, 2018:1). This was also evident from this study, as one manager stated:

M1: No, initially when they first come, they do not know about it. That is the challenge that we encounter most of the time, because they have not been exposed to it at university.

This problem was confirmed by some of the trainee accountants:

T8: No. We did CaseWare, but we were not exposed to the ones for auditing at the university. The CaseWare in terms of accounting, processing general information, for auditing, it is different, so they had different software. So, we had to learn it, but even if you learn, like in orientation, you are not going to know everything. So, you learn during the process how to use it.

T2: No, not from the university, but at training. We had training at the beginning of the contract, so they gave us a quick two to three days' training on the different applications that we are going to use for auditing, as we didn't know much from the university.

The inference drawn from the comments of the trainee accountants supports the views of the managers. Accounting firms take the necessary steps to provide training to first-year trainee accountants to obtain the IT skills needed to carry out their duties. Although some of the participants indicated that they were exposed to IT skills development at high school and university, this training seems to lack the skills needed in the accounting workplace. However, Participant T8 indicated that this training was not enough, as she had to take up the responsibility of teaching herself along the process of her training, which links to the coping method discussed in Section 2.9.1.2.

The stress and coping theory identifies two continual stages of the coping process, namely cognitive appraisal and coping efforts (Chen et al., 2019:86). In this regard, coping efforts entail the need to be able to use diverse approaches to cope with IT-related challenges. This implies that some of the trainees needed to teach themselves even after attending an IT training workshop in order to obtain more IT skills to carry out their duties.

4.3.2.2 High school

Only one participant indicated that he was exposed to IT training at high school.

> *T3: At the university I will not say I was exposed to IT. I was actually only exposed to IT in high school, so that was a bit of an advantage. And I had that as a subject, so that was very beneficial actually to have done that in high school.*

The lack of IT knowledge gained by first-year trainee accountants can be attributed to the lack of exposure to IT training at high school. Considering the fact that the Mafikeng area is mainly a rural community, one could argue that participants were probably not exposed to IT training at high school, as these schools may not have had the necessary IT equipment to teach learners IT skills.

4.3.3 Theme 3: IT-related challenges

This theme relates to Research objective 3 (see Section 1.4.1). The aim of this research objective was to identify the IT-related challenges first-year trainee accountants experience when they enter the workplace. The relevant sub-themes and quotes are presented in Figure 4.4.

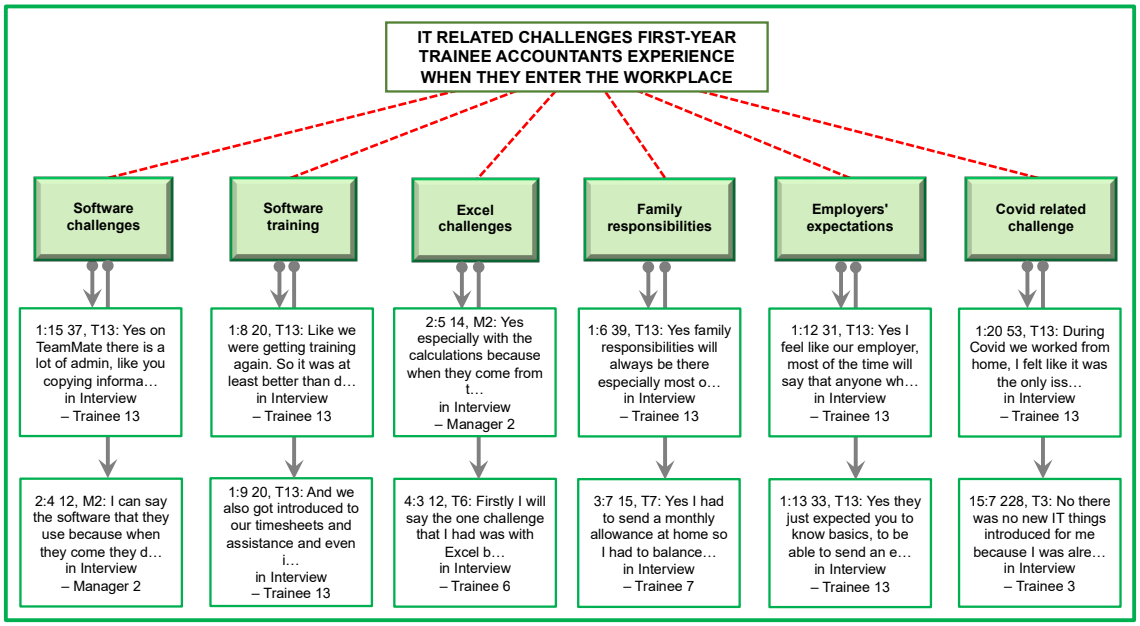

Figure 4.4: IT-related challenges first-year trainee accountants experience when they enter the workplace

Figure 4.4 depicts the findings for Theme 3 and the seven sub-themes, namely software challenges, software training, family responsibilities, Covid-19-related challenges and employers' expectations.

4.3.3.1 Software challenges

Software challenges was one of the challenges identified by the participants. Participants mentioned that CaseWare, Microsoft Excel and TeamMate programs are challenging. The following are extracts of participants' comments:

> *T3: I was just using the audit programs, yes, because there are mainly two. It is CaseWare for private and TeamMate for the public sector. So, the challenge would only be getting your way around using the software and knowing how to navigate around those applications.*

> *T13: IT challenges that I have experienced thus far when I started with my training was the audit software. TeamMate is an audit software as well. So, when we got here at least we went for training to Bloemfontein, where they taught us the basics. All of us were there. So, during that week I felt so lost, I felt like the information was too much and overwhelming.*

T14: Yes, during that first period. At the beginning it was so confusing. Like when they say you should send an update, there is a replica of the updates, so you won't know which is which. But as time goes by you get used to those things.

When asked by the researcher what the exact IT challenges were with the software, participants T7 and T13 replied as follows:

T7: The IT challenge was that I did not know how to do some other things like hyperlinks, I did even know how to solve an issue using the software. That is something that you learn along the way when you audit as a first-year trainee being assisted by your assistant managers.

T13: Like on TeamMate, there is a lot of administration, like you're copying information, copying from this tab to that tab and knowing which method to use. I felt I take long compared to those that are very fast when it comes to that. Even now, I [feel] I am still doing the same.

This may be an indication that the software programs are not user-friendly, resulting in challenges encountered by the first-year trainees, as most still struggled with the programs even after training. Ghasemi et al. (2011:112) also state that software is a challenge facing trainee-accountants (see Section 2.5.1). Zhao et al. (2020:103) further posit that sophisticated use of IT can lead to technostress for employees, as many of them do not have the necessary knowledge and skills to use IT software. This was confirmed by Participant M2:

M2: I can say the software that they use of the audit and Excel software is a challenge, because when they come, they do not have any idea of the program that we use, so we have to start by introducing them to the software and then teach them how to use it. So, some will get it at no time, but some will struggle, they take time before they can understand it at second or third year.

When asked by the researcher whether they were taught how to use accounting software at university, participants T4 and T6 indicated they were thought Sage Pastel Accounting; however, at the accounting firm they used a different software program.

This is in line with the findings of Van Oordt and Sulliva (2017:367), who argue that modern-day trainee accountants are exposed to working environments were IT skills go beyond the IT and technical knowledge generally taught at university. Brenner (2018:1) also found that although basic IT programmes such as Sage Pastel Accounting and Microsoft are taught at university level, evidence has shown that these are insufficient, as first-year trainee accountants are struggling to incorporate these skills in the workplace. This was also evident from this study, as participants T4, T6 and M2 expressed that the lack of obtaining the basic knowledge of software programs at the university has led to IT stress at the workplace (see Section 2.5.1). Participant T5 further said that she was determined to overcome the challenges and to ensure that she understands the applications, which depicts the self-determination theory presented in Section 2.9.2. Therefore, it can be deduced from these findings that the use of software programs is also part of the IT challenges that create stress for first-year trainees at the workplace, and trainee accountants can only overcome such challenges if they are self-determined.

As discussed in Section 2.4.3, skills in the Microsoft Excel package is critical for accountants. The findings from this study confirmed this view, as the majority of the participants indicated that they struggled with the Microsoft Excel formulas and that it was a difficult process for them, as most of them did not cover the application details at university. Participant T6 stated:

> *T6: Firstly, I will say the only challenge that I had was with Excel, because I did not have much knowledge about it from the university. The deeper knowledge like formulas and others. I only knew the basic of Excel; that was my challenge.*

Microsoft Excel has many formulas that are challenging (Miller, 2018:1). If these formulas are not correctly applied, errors may occur. This suggests that first-year trainee accountants may be faced with challenges relating to formula errors in Microsoft Excel. Participants T7 and T9 also confirmed that most of the time they made mistakes with the formulas, and this make them look incompetent. Participant M2 also stated:

M2: Yes, especially with the calculations, because when they come from the university, they have the basic knowledge of Excel. They struggle to apply the formulas in Excel and even after training they still face challenges.

Judging by the views depicted above, one can say that participants T6, T7, T9 and M2 attested that Microsoft Excel is one of the IT programs that is creating IT challenges for first-year trainee accountants. Designing formulas in Microsoft Excel is challenging and if not employed correctly, the data analysis can be prone to errors (McCann, 2019:1). Therefore, to assist first-year trainee accountants it is important to regularly coach them on the use of Microsoft Excel spreadsheet features.

4.3.3.2 Software training

To reinforce the point presented in Section 4.3.3.1, the findings of this study also revealed that the participants perceived the training sessions they go through at the start of their first year as challenging, as they had to cover a considerable amount of technical aspects. Evidence can be found in the statements of participants T13 and T6 below:

T13: […] Like we were getting training at [the] start. So, it was at least better than doing the whole training for two weeks. That time you were useless, because [a] lot of things were introduced.

T6: The training was really challenging for me, as we had to learn a lot of things at that time. Like timesheets, software, navigating, importing, etc.

The picture painted by participants T13 and T6 above suggests that the training period is short and that much information was covered in a short period. This can be draining and stressful to the first-year trainee accountants, as one would argue that, because they might not be familiar with the different software programs, it might take additional steps to grasp them fully. As such, too much information might seem to be too cumbersome for the trainees. It was also discussed in Section 2.6.1 that continuous IT training and development are effective strategies that should be put in place to confront the dynamic changes in the workplace (Milhem et al., 2014:12). Professional bodies can also provide software training to first-year trainee accountants (Warffemius et al., 2015:354). This means that there is a need for continuous training for the trainees,

which might advance their knowledge and IT skills as they continue with their first-year training.

4.3.3.3 Family responsibilities

Family responsibilities are a very practical challenge indicated by the participants as hindering their IT skills development (see Section 2.5.4). Two participants (T3 and T13) shared that they were faced with IT challenges due to their family responsibilities. Participant T3 explained that, during her first-year, she was faced with training and taking care of her child.

> *T13: Yes, family responsibilities will always be there, especially [because] most of the times we are always here and when we think of our family, we feel stressed with our IT workload. We are always here, like Saturdays, Sundays, we are working overtime every day.*

Studies (Darling-Hammond et al., 2020:98; Kara, Erdoğdu, Kokoç & Cagiltay, 2019:12) have affirmed that the majority of graduates in various fields of study struggle to attain IT skills requirements due to challenges such as family and other work environment issues. Participant T7 shared that she sent financial allowances to her family and then had to move to another place in order to focus on her training. This resulted in stress related to training and skills development. In Section 2.9.1, it was stated that the stress and coping theory guides individuals to develop a positive atmosphere to cope with any work-related stress. Brady-Amoon and Keefe-Cooperman (2017:42) suggest that in order to combat any family or psychological problems among trainees, a well-positioned counselling service should be provided.

4.3.3.4 Covid-19-related challenges

When the Covid-19 pandemic became a reality, many organisations had to adapt. As discussed in Section 2.5.6, there were various changes in the accounting profession due to the impact of Covid-19. In this regard, the participants revealed the following:

> *T13: During Covid-19 we worked from home. I felt like it was the only issue was from our client's side, I think because it became so difficult for the clients because we were working with entities and they were not exposed*

to the IT environment. We would always go to their premises to get the hard copies, since they are not exposed to IT skills.

T4: During Covid-19 it affected us not necessarily in terms of technology, but from the client. We [took] time to finish some audits because sometimes there will be Covid-19 cases at the clients and we could not go there because we had to go there for documents and you cannot do the work without supporting documents.

When asked whether the first-year trainees received training during Covid-19, Participant T13 responded as follows:

T13: During Covid-19 we did not get any training.

Participant T1 indicated that most of their meetings were done virtually, and they had to solve IT challenges virtually, as no training was provided. Covid-19 changed the way accountants had to work and from where they worked, and all these changes required new skills (Jabin, 2021:8). In this regard, first-year trainee accountants have to cope with technologies in the workplace so as to keep their jobs (SAICA, 2021e:6).

Participant T3 indicated as follows:

T3: No, there were no new IT things introduced [to] me because I was already accustomed to Microsoft Teams. I was studying online, my CTA I did online. So, I was already accustomed with Microsoft Teams and how it functions. So, I did not really struggle.

Even though Participant T3's comments revealed that she might not have faced challenges relating to IT skills during Covid-19, other participants, such as T1, T4 and T13, experienced IT challenges during Covid-19. This can therefore not be overlooked, as Fogarty (2020:564) explains that the technological challenges brought by the Covid-19 pandemic have added to the IT challenges already experienced by first-year trainee accountants.

4.3.3.5 Employers' expectations

According to Gary and Poh-Sun (2016:168), the world is evolving, and IT knowledge is important in this 4IR, while advanced knowledge of IT is required of employees. Participants T4 and T3 stated the following:

> *T4: Yes, I feel like our employer, most of the time will say that anyone who comes here is the best. This makes us feel like they want us to perform and know more.*

> *T13: Yes, they just expected you to know [the] basics, to be able to send an email, be able to Google, and know how to use the basic Excel formulas.*

Kunz and De Jager (2019a:145) revealed that the performance of first-year trainee accountants often does not meet the expectations of the trainee office. It was also stated in Section 2.5.2 that some employers want their trainee accountants to be able to 'hit the ground running' when they start at their accounting firms and to be productive from the start of their duties (Siegel et al., 2010:44).

This study determined that it is important that employers try to reduce their expectations of the IT skills of first-year trainees to enable them to feel relaxed and to cope with the new and advanced knowledge. Both Participant T6 and Participant T7 reported that the expectations of their employers were not high in terms of IT skills requirements and that they were very patient with first-year trainee accountants. This does not mean that employers should employ trainees with no knowledge of IT, but rather that they expect basic knowledge of IT, as discussed in Section 4.3.1. If universities can teach basic IT skills to students, it will assist these graduates before they go into training when they start their new jobs at accounting firms, as discussed in Section 4.3.2.

4.3.4 Theme 4: Knowledge gaps

This theme relates to Research objective 4 (see Section 1.4.1). The aim of this research objective was to identify any knowledge gaps between the IT education and IT skills required by first-year trainee accountants to perform their duties at their workplace. Verbatim quotes of the various participants are presented in Figure 4.5:

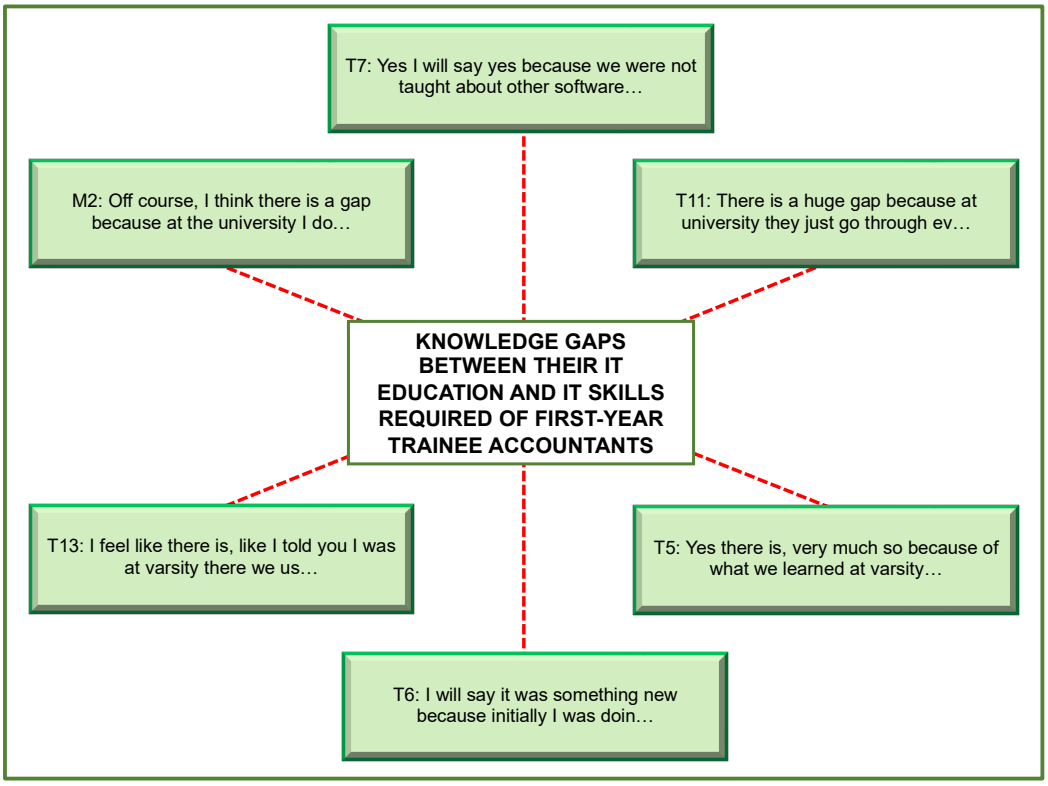

Figure 4.5: Knowledge gaps between IT education and IT skills required by first-year trainee accountants to perform their duties at their workplace

The findings as shown in Figure 4.5 indicate that participants T5, T6, T7, T11, T13 and M2 agreed that there is a knowledge gap between IT education (university) and IT skills required by first-year trainee accountants to perform their duties at their workplace. The findings in Section 4.3.2 also attest to these findings, as the majority of the participants indicated that they obtained basic IT skills at the university and that they attended to it for the purpose of passing the course, rather than understanding the concepts. Some of their responses support this.

> *T11: There is a huge gap, because at university they just go through everything and they do not let people learn and grasp all the concepts. So, there was a gap, especially with Microsoft Excel, because there [is] so [much] stuff that you need to use, like your tables, your complex formulas, so there is a big gap.*

> *T7: I will say yes, because we were not taught about other software or audit software at the university. I feel like it is something that […] should be added*

in the syllabus at university. I feel like I would have come up with that image of being more competitive if I was exposed to those kinds of software at the university.

M2: I do not think that they are taught about IT that much, so when they come here, they need to fill those gaps that were not filled by the university. The information that they were taught by the university. So yes, I will say there is a gap.

Participants T5 and T13 stated:

T5: Yes, there is a gap, very much so because [of] what we learned at varsity. You know, varsity is based on theoretical information. Then when you get to the workplace, it is something different, because I was struggling a bit with auditing at university because I could not understand. But when I got to the workplace during my first year, I felt like it was something easy because I was doing it practically. It was kind of easier at the workplace as compared to when I was doing it at university. So, I think [universities] should change their method of teaching these packages.

T13: I feel like there is a huge gap, like at university we use pen and paper. So, I feel like there is a gap from high school and university and from university to here.

The feedback obtained from Participant M2 clearly indicated that there is a gap between what universities are teaching their students and the IT skills required by first-year trainees when they enter the workplace. In Section 2.9.1, it was highlighted that employees must apply the stress and coping theory to bridge any gaps that exist in carrying out their duties. If first-year trainee accountants are self-determined to fill in these gaps, they will be determined to succeed and cope with IT-related stress in carrying out their duties. Wessels (2008:169–170) identified that a first-year trainee accountant should master the Microsoft range of products such as operating systems, OfficeSuite, web browsers and email, which are used in the general day-to-day office environment. It then becomes a challenge for employers when first-year trainee accountants do not have the basic IT skills required at the workplace.

4.3.5 Theme 5: IT-related support

This theme relates to Research objective 5 (see Section 1.4.1). The aim of this research objective was to identify the IT-related support that accounting professional bodies and accounting firms provide to first-year trainee accountants. Sub-themes and verbatim quotes are presented in Figure 4.6:

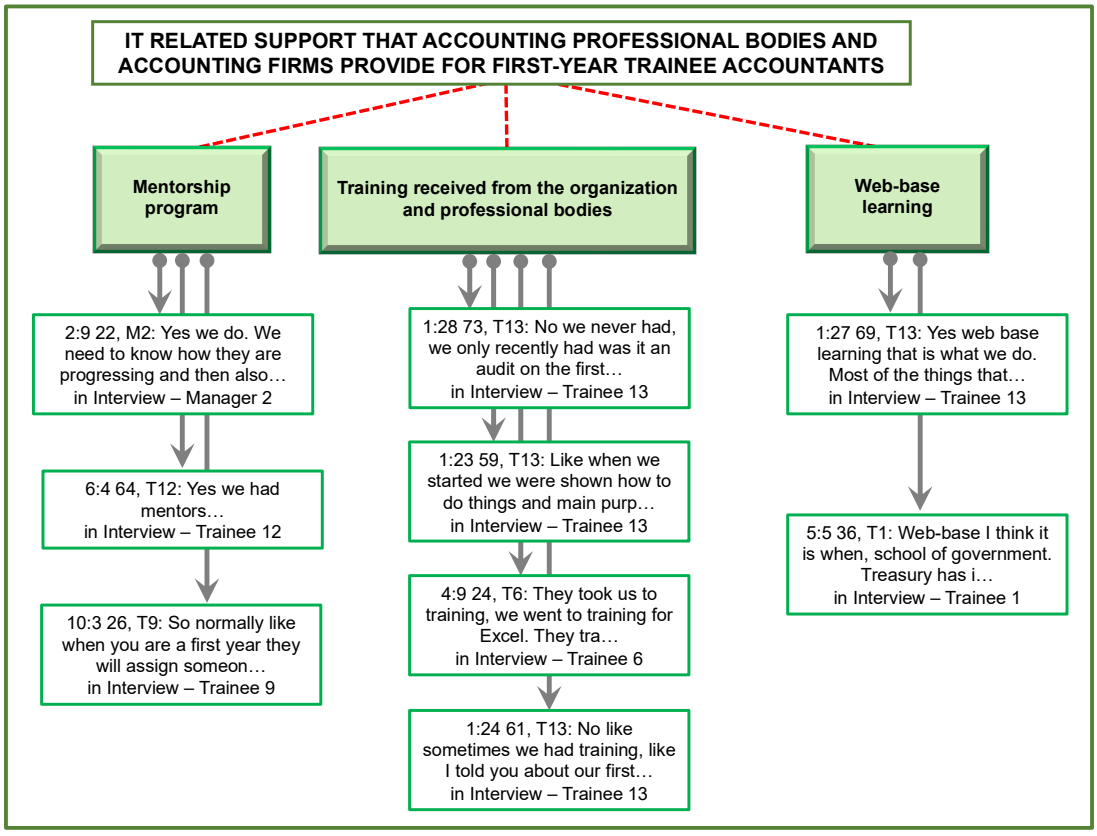

Figure 4.6: IT-related support that accounting professional bodies and accounting firms provide to first-year trainee accountants

Figure 4.6 shows the sub-themes derived from the findings that relate to the IT-related support theme. The sub-themes that were identified are mentorship programmes, training received from accounting firms and professional bodies, and web-based.

4.3.5.1 Mentorship programmes

As discussed in Section 2.8, accounting professional bodies and accounting firms have an important role to play in enhancing the competencies of trainee accountants. According to the findings of this study, participants attested that mentorship

programmes are organised by the accounting firms to advance their IT skills. These perceptions are found in the following quotes:

> *T2: Yes, we do have mentorship programmes with our mentors. They also ask us what our challenges are and how can they assist.*

> *T9: So, normally like when you are a first-year, they will assign someone, they will say it is a peer or a mentor for you, so if you are struggling you will ask this person to assist you, to show you the ropes in terms of how to use new software. And they also have the IT department, which you can call to assist you as well.*

> *T10: Yes, they did. That actually helped us, to help me as a person, I will not speak for others, but me as a person it helped me a lot. Even my senior colleagues, you know, sometimes when I have challenges, I also approach them, and they put me through.*

As discussed in Section 2.6.1, mentorship programmes are also an evolving positive initiative and strategy that can be used to overcome IT-related stress (Parsons et al., 2020:4). Participant T12 also reported that mentors are provided to support first-year trainee accountants, and this was confirmed by Participant M2:

> *M2: Yes, we do. We need to know how they are progressing and then also they need to feel free. When they have mentors, they are able to contact them in any case whether they understand something or whether they want to share ideas with them. The mentors also can make sure that the trainees are performing well, they can check with them and see whether they are following whatever we are trying to teach them.*

Milhem et al. (2014:12) state that organisations should ensure continuous mentorship programmes to enable employees to understand their duties, which supports the findings of this study. It can then be deduced from the findings that some accounting firms make use of mentorship programmes to support first-year trainee accountants.

4.3.5.2 Training received from accounting firms and professional bodies

In addition to mentorship programmes, the findings of this study also revealed that first-year trainee accountants attend training workshops organised by their accounting firm and professional bodies. According to Warffemius et al. (2015:354), trainees require professional accounting bodies and accounting firms to provide training and mentorship on how they should spend their time and develop technical skills in the workplace. This is important to track the progress and the competencies of the trainees. The findings from the study showed that some of the participants (T13, T6, T11 and T5) received such training, as is evident from their comments:

> *T13: No, like sometimes we had training, like I told you about our first training, we had those training, so we will go to Bloemfontein and they will teach us most of the things that we need to know.*

Participant T13 was then asked whether professional bodies also came to provide training on IT skills and the response was:

> *T13: No, we never had, we only recently had an audit on the first-years, something like that, and it was something like an audit [of the training progress], so they came here.*

Participant M2 stated:

> *M2: We offer them training and we make them know that they are welcome to ask us anything, to ask anybody working with them, because we understand that they are here to get more skills and knowledge, so we provide support to them.*

Participants T13 and M2 indicated that the accounting firms are the ones providing the IT skills training and not the professional bodies. Participants T2 and T12 confirmed that even though they had training with SAICA, the training was never about IT skills and the advancement of IT skills.

> *T2: Not training, we have training, but it is provided by the company [accounting firm]. We had a SAICA visit this year where they were just*

asking us about our challenges as trainees and what managers can do differently to make this journey smooth for us.

T12: I do not know if it is SAICA or maybe it is just a company. But they will just come once a year and they will just ask us about contracts, not basically what we are doing, they will just come and ask us whether we have challenges with our contract, are we happy.

In addition to the findings, it was found that participants appreciated the training provided by the accounting firms. For example, Participant T5 indicated that the IT training for first-year trainees had provided her with an opportunity to advance her Microsoft Excel knowledge and afforded her the know-how to use the software during audits. These findings are in line with those of Darling-Hammond et al. (2020:99), who accentuate the importance of creating a supportive training environment that fosters an effective, productive instructional strategy that supports motivation, competence and self-direction. Participant T6 stated:

T6: They took us to training, we went to training for Excel. They trained us, they taught us how TeamMate works, the background of how TeamMate works. They also tried to help us with the IT challenges.

Participants T5 and T11 explained as follows:

T11: My employer was more understanding and has worked through the process of training and has also wanted me to be the best version of myself.

T5: For IT, I will say they played a big role for exposing us to training, because they will take us to, like I said, advanced Excel training and they will take us to other training that was related to IT.

Al-Khaled and Chung (2021:109) highlight the importance of having efficient and effective human resources to assist with the training of employees. This is because the world is changing and evolving to the 4IR (see Section 2.5.7) and new technologies, software and applications are introduced regularly, making work easier and faster. Employers must be ready to train employees on the use of these applications in order to fit into the changing work environment. SAICA (2021a:10) also confirms that to ensure that the aim of 4IR is attained, the competency framework includes aspects of

technical knowledge, skills and attitudes. This then means that the IT training provided to first-year trainees is aimed at enhancing their IT skills.

4.3.5.3 Web-based learning

Web-based learning can be referred to as online learning or e-learning, as it is often associated with activities involving IT and applications of diverse networking that allow for interactions with different people (Wasim, Sharma, Khan & Siddiqui, 2014:446). Web-based learning was identified by the participants in this study as one of the support programmes provided by the accounting firms to enhance their IT skills. The role this web-based learning plays in IT skills development was explained by participants T13 and T1:

> *T13: Yes, web-based learning that is what we do. Most of the things I know is from web-based learning. I think that is the best way because you won't forget them, it is not like you are sitting in a class and they teach you. So, coming here and doing the work you do not forget.*

> *T1: Web-based, I think it is when school, government, treasury has its own facilitators who train you for the workplace, so we had to attend training once a year. But we had to, because some of the people had not attended training.*

It can be deduced that some accounting firms provide web-based learning to their first-year trainees in order to enhance their IT skills. These findings can be linked to Section 4.3.3.4, as some participants indicated that before Covid-19 the firms had been accustomed to web-based learning and IT skills was not a challenge to them during Covid-19. Laskaratos, Parry and El-Mileik (2016:113) found in their study that trainees should be exposed to various forms of support that enhances their knowledge and increases productivity. This leads to the conclusion that web-based learning might be another way in which accounting firms can enhance IT skills among first-year trainee accountants in carrying out their duties at the workplace.

4.3.6 Theme 6: Role of self-determination

This theme relates to Research objective 6 (see Section 1.4.1). The aim of this research objective was to determine the role self-determination plays when first-year

trainee accountants encounter IT challenges at the workplace. Verbatim quotes and sub-themes are presented in Figure 4.7:

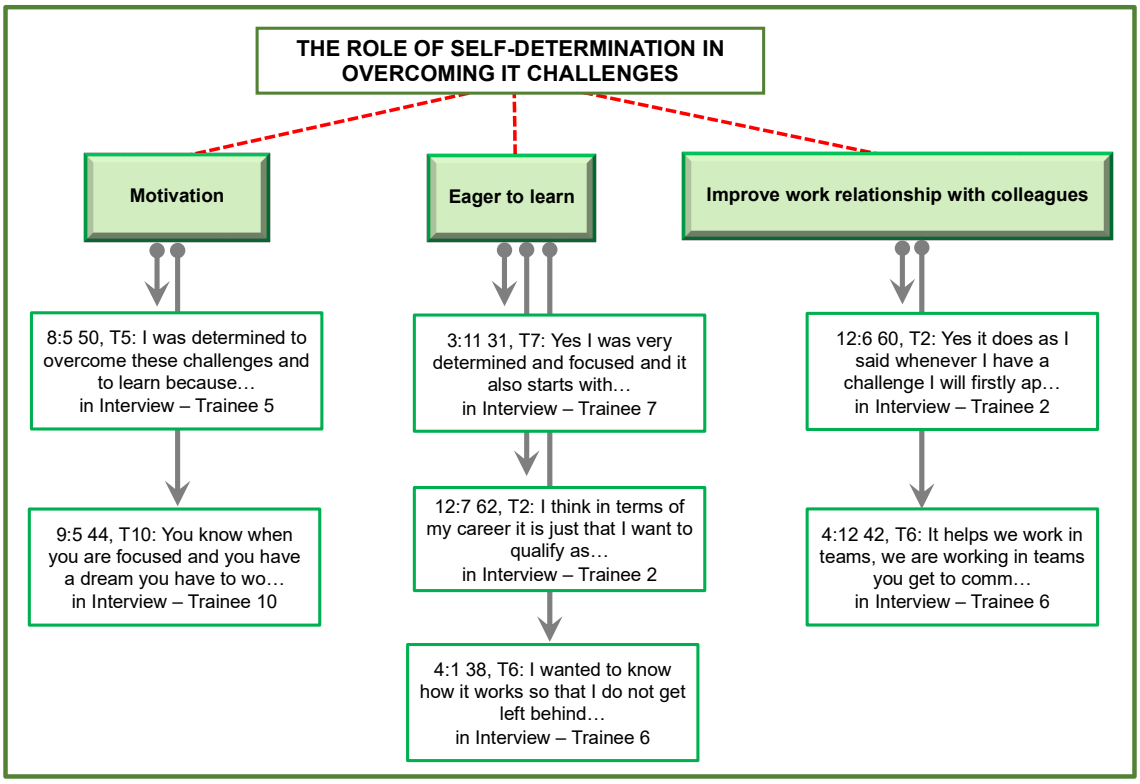

Figure 4.7: Role of self-determination in first-year trainee accountants' IT challenges at the workplace

Figure 4.7 shows the sub-themes derived from the findings, namely eagerness to learn, improved work relationships and motivation.

4.3.6.1 Eagerness to learn

Self-determination enables first-year trainee accountants to be eager to learn any difficult IT skills in carrying out their duties. As discussed in Section 2.9.2, the self-determination theory is centred on the belief that human nature shows persistent positive features to learn, even if challenges occur (Deci & Ryan, 2012:85). The accounting professional bodies and the accounting firms have a role to play in enhancing the competence of trainee accountants. In this regard, Participant T6 stated that with self-determination, there is a need to learn more in order to achieve desired goals. This was supported by Participant T7:

T7: Yes, I was very much determined and focused, and it also starts with you being honest with yourself. You must accept and be honest and tell the truth and focusing to achieve you desired goals.

Participant T1 indicated that self-determination creates an intrinsic act of one being eager to learn, and added:

T1: Yes, I was really determined because if you do not get something done, my manager will not give me another job, so I make sure that I get things done and then you do it properly.

Participant T2 explained:

T2: I think I was determined because my career requires these IT skills and I definitely need to know it in order to qualify as an accountant. So, I think it helped me a lot not to give up until I achieve that goal.

The interpretation of the findings above is that first-year trainees applied the theory of self-determination in overcoming their IT challenges. They were eager to learn the required IT skills and to be competent in their duties. Participant T3 said as follows:

T3: The first thing that you have to say to yourself is to ensure that you must be competent in everything that you do. So, for me that is the self-determination, knowing that whatever I do, I must ensure that I am competent in it. And even if I am going to make mistakes, it must be something that I am going to be able to learn from.

Judging by Participant T3's view, one can say that he employed the aspect of competency as a means of self-determination (see Section 2.9.2.2). Nikou and Economides (2017:83) refer to competence as the effective behaviour, the enhancement of personal capabilities and the desire to become self-sufficient. For this reason, one can say that self-determination allows first-year trainee accountants to be eager to learn and to be competent in their duties. Infante-Moro et al. (2019:208) explain that competencies are also linked to the ability to use diverse tools to carry out duties. This means that first-year trainee accountants can further develop their competencies when they are eager to learn and adapt more IT skills that may enhance their capabilities.

4.3.6.2 Improved work relationships

As discussed in Section 2.9.2.3, relatedness is an intrinsic aspect of self-determination, as it creates an environment for first-year trainees to interact with other colleagues to improve their working relationships.

> *T6: It helps [when] we work in teams; [when] we are working in teams you get to communicate if there is a problem. If I have challenge with TeamMate I ask my colleagues what is happening [and] they will assist me.*
>
> *T5: Yes, I normally ask this other colleague of mine, he was an internal auditor.*
>
> *T2: Yes, it does, as I said whenever I have a challenge, I will firstly approach my colleagues.*

The inference drawn from the findings above is that self-determination creates relatedness. This implies that first-year trainee accountants had to interact with their colleagues in order to learn from them. Racero et al. (2020:5) found that relatedness is a strong predictor of trainee accountants' intention to continue working despite IT challenges. Arvanitis (2017:60) argues that the pressure placed on trainee accountants has led them to create relatedness to improve their knowledge.

Participant M2 confirmed this:

> *M2: Yes, I think it does. Like I said, the structures are there, there are mentors and colleagues to help. If you do not take initiative and if you keep quiet and we forget you for whatever reason, you will finish your work slower than others and you fall behind. We will not renew your contract.*

The interpretation of Participant M2's comment is that the accounting firm has provided first-year trainee accountants with mentors (also see Section 4.3.5.1) who can assist them with their IT skills challenges. It then becomes the responsibility of the first-year trainees to communicate with them about any aspect they are struggling with. Participant T4 said:

T4: Like if I understand clearly, self-determination is you as a person determined to get something or that you are determined to complete something. Like you are telling yourself that you are going to do this. So, if you will start by telling yourself that it is possible you can do it, then it will be easier for you to work with your colleagues and learn more from them.

Based on the findings presented above, it can be deduced that working relationships of first-year trainee accountants with their senior trainees and colleagues can improve their knowledge.

4.3.6.3 Motivation

It was also found in this study that self-determination plays a significant role in motivating first-year trainee accountants. According to Ronald (2019:31), the self-determination theory presents motivation as a multidimensional concept, illuminating upon the changing aspects of human needs, qualities of motivation and psychological well-being within a social context. In Section 2.9.2 it was stated that self-determination includes intrinsic and extrinsic motivation. This entails that motivation creates an environment for first-year trainees to improve their knowledge. This was supported by the comments of participants T11 and T5:

T11: What motivated me was to finish my training contract and I had an end goal on what I wanted to achieve. So that motivated me to learn more, to never waste time on things that are not important and just learn as much as I can.

T5: I was determined to overcome these IT challenges and to learn because I was motivated that when my contract ends, I must have known all of these IT skills, so that seeking [a] job wouldn't be a problem.

The findings of this study therefore indicate that first-year trainee accountants are motivated to overcome their IT-related challenges, as they want to be productive in their next job after completing their training contract at the accounting firm. Participant T10 also confirmed:

T10: You know when you are focused and you have a dream, you have to work towards it. So, I was able to sit down and know that I had to work hard,

as whatever I set out to do I want to achieve it. So that mindset enabled me to cope with the stress of having to make sure that I pass at the end of the day.

Participant T3 stated that what motivates her was her son, so she had to keep working hard in order to become a CA(SA). Hence, she had to cope with any IT-related stress. This implies that Participant T3's family responsibility motivates her to be self-determined in overcoming IT-related stress. Krause et al. (2019:2) found that the self-determination theory helps to create human motivation to cope with challenges. The findings above show that first-year trainee accountants are motivated to cope with IT stress.

Participant M2 explained:

M2: They do relate well, and their self-determination is pushing them, because they look at their seniors and they see that they are doing great and they understand some of the things that they do not understand. So, they want to be like them, they want to do things in a way that they are doing, so they are motivated to work hard.

Participant T9 stated:

T9: Yes, for me I think you need to have self-motivation, it has to come from you if you want something, it must first come from within.

These perceptions explain and support the theory of self-determination. Self-determination satisfies essential needs and allows optimal functioning and growth of an individual at the workplace. Noour and Hubbard (2014:3955) suggest that self-determination can be recognised through motivation. Bachman and Stewart (2011:182) agree that motivation is a fundamental strategy for motivating trainees for ensuring their success, which will enable them to be self-determined in achieving their goals. Judging from these sources, one can say that determination creates motivation, which can lead to successful goals and vision.

4.3.7 Theme 7: Strategies employed

This theme relates to Research objective 7 (see Section 1.4.1). The aim of this research objective was to identify the strategies used by trainee accountants to curb the challenges they experience while taking responsibility for their own IT skills development. Verbatim quotes and sub-themes are presented in Figure 4.8:

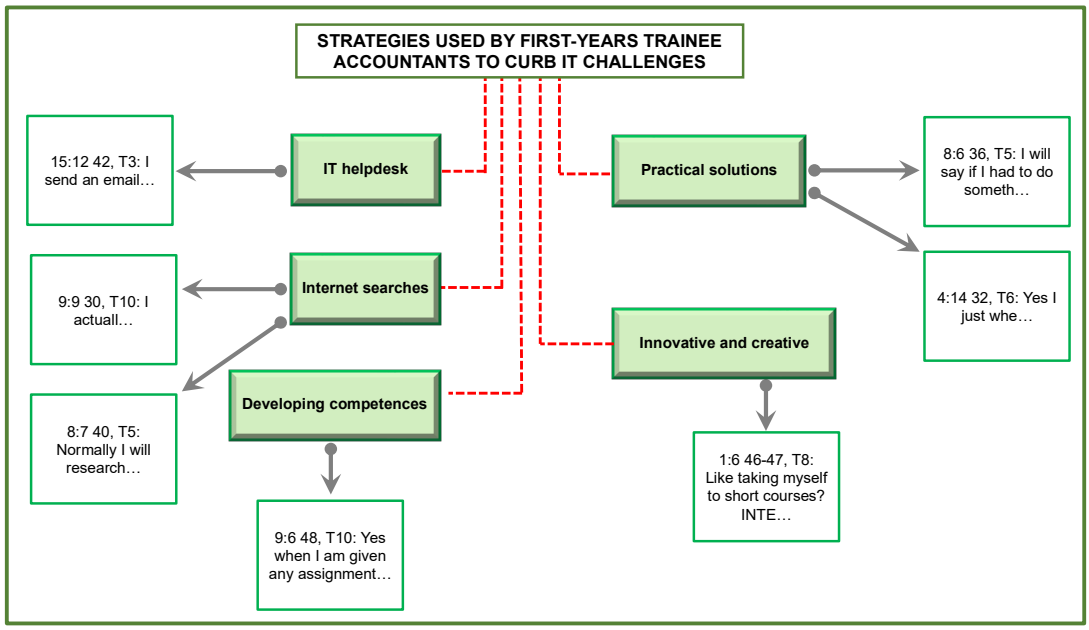

Figure 4.8: Strategies used by trainee accountants to curb the challenges they experience while taking responsibilities for their own IT skills development

Figure 4.8 shows the sub-themes derived from the findings, namely developing competencies, innovation and creativity, internet searches, IT helpdesk and practical solutions to overcome IT-related challenges encountered while developing their skills.

4.3.7.1 Developing competencies

As discussed in Section 2.3, first-year trainees are expected to have both technical and professional competencies in carrying out their duties. This was confirmed in this study, as some participants indicated that to overcome IT-related challenges, they tended to develop their professional competencies. Participant T10 indicated:

> *T10: Yes, when I am given any assignment I make sure that I go all out to get the necessary information that will enable me to deliver as expected.*

The comment above indicates that to develop professional competencies, Participant T10 needed to ensure that the task was done by ensuring that the necessary information required to carry out the task was obtained. IFAC (2019:7) asserts that to demonstrate professional competency, trainee accountants must be able to execute tasks in the real world, as they have to take responsibility for their own professional growth. In this regard, Participant T12 stated:

> *T12: […] because you must take responsibility for your own growth, skills. We are working on getting our competencies, which is the skills.*

Regarding the development of their technical competence, participants T3 and T10 stated:

> *T3: Yes, I use my own competencies. And you learn also, you learn on your own. Some people call it throwing under the bus, but I look at it from the perspective of if you are not given something you do not know, you will never know.*

> *T10: Yes, like I said I never fail in anything that I set out to do, so I am making it and I won't quit. I will go all out to learn more IT skills that will enable [me] to carry out my job.*

The picture painted by participants T3 and T10 above is that they developed their own technical competencies by striving not to give up in terms of IT challenges. This aspect is important, because employers want graduates who can demonstrate not only the technical knowledge and competencies of their discipline, but also a range of work-related skills and aptitudes (Clarke, 2018:1923). It is therefore important for first-year trainees to develop different competencies that may help them to overcome IT challenges. SAICA (2018:5) also stipulates that a trainee accountant is required to attain technical skills in relation to auditing, financial management, taxation, management accounting and financial accounting. Horváthová, Čopíková and Mokrá (2019:2595) found that employers want to hire employees who are able to develop their own competency in overcoming challenges. This confirms that developing the competencies of first-year trainee accountants might be a way to overcome IT-related challenges faced by them.

4.3.7.2 Innovation and creativity

According to Gumula (2020:95), many organisations are behind with creative and innovative training for their employees. Peek (2021:n.p.) states that creativity and innovation are required at the workplace. This study found that in some accounting firms, first-year trainees can adapt in innovative and creative ways to dealing with IT-related challenges. To be innovative, Participant T8 said she attended short courses that helped to advance her IT knowledge in carrying out her duties.

Participant T8 also stated:

> *T8: Yes, teaching yourself something, if you do not understand something, you teach yourself.*

To be creative, Participant T4 mentioned the need to use IT-related software to do new things.

> *T4: By obviously doing new things that I have not done before, like for example during my training I learned CaseWare skills and TeamMate skills, which I did not have before I started my training.*

Peek (2021:n.p.) highlights that to generate creativity, people need to think outside the box and sometimes go against the norm. This implies that first-year trainee accountants can be creative by using different software packages to carry out their work effectively. Participant T2 stated in this regard:

> *T2: In terms of skills development, there are certain things that I want to do outside my career. Such things as programming and data analysis. So, in terms of my own skills development is trying to learn outside the workplace different things that are going to help me with this journey.*

The comment above suggests that Participant T2 tried to be creative by developing her own competencies. Day (2018:1) found that to be creative, one must conceive something new. The manager, Participant M2, also confirmed these assertions:

> *M2: I think they do, because we have meetings where we meet once a week, all of us, because we want to find out the progress from them. So, in*

these meetings we usually ask them to tell us what they have learned during the week. So, because when you are new, and you are learning something, you want to impress the people that are helping you. They will tell us about things that they have learnt that we are not even aware of that they were learning. So, I think they become innovative and very creative on their own because they learn some of the things on their own without assistance.

Judging from the above, it can be deduced from this study that in order to overcome IT-related challenges faced by first-year trainee accountants at the workplace, they have to be innovative and creative. This can be done by attending short courses, considering different software that might be utilised to carry out their tasks and familiarising them with the current software used to carry out their duties.

4.3.7.3 Internet searches

In addition to the strategies mentioned above, this study also revealed that internet searches are additional ways to overcome IT-related challenges faced by first-year trainee accountants at the workplace. Some participants indicated that they utilised YouTube videos and Google searches to clarify any confusion they had regarding the software packages. The participants confirmed as follows:

T5: Normally I will search on Google and then it will take me to YouTube.

T10: I actually had to do a lot of online searches and I had to study very hard, create time to face my workload. I use other packages like TeamMate to work hard to overcome those challenges.

T10: Yes, a lot of that and I also recommend that in the university a student should be exposed to these and individuals should put up things [on] YouTube to assist those who are also studying to become a professional accountant. YouTube packages will help a lot, as [they were an] advantage to me, I saw them to be very useful.

The interpretation of the findings above is that making use of YouTube is an effective strategy to consider. Participant T10 attested that it helped considerably to solve challenges relating to IT. Participant T3 also mentioned having challenges using IT

device in the workplace, but through the aid of YouTube a better understanding was obtained. Participants T9 and T2 also confirmed as follows:

> *T9: Yes. We are all using that, even for Excel, if you forget something you can always Google it. I know we learned it from school, but anything you forget you can always Google something on how to do that. Just to remind yourself.*

> *T2: I think for me it is mostly if I had a challenge I will maybe go online, use platforms like YouTube.*

Using YouTube can be a cost-effective way employed by accounting firms and trainee accountants to enhance the competencies of trainees.

4.3.7.4 IT helpdesk

The IT helpdesk was also found to be a strategy employed by first-year trainee accountants to overcome IT challenges. Brown (2015:1) regards an IT helpdesk as a multidimensional resource, designed to help reduce IT stress among employees. It is user-friendly and aids in a quick resolution of immediate needs, incidents and technical issues (Brown, 2015:1). Participant T12 indicated the need to ask the IT helpdesk for assistance relating to any Microsoft Excel challenges, as they were familiar with the software. Participant T3 also stated:

> *T3: I send an email to helpdesk, IT helpdesk, and also, we communicate with our managers that we have an issue with, our managers then will communicate with IT helpdesk if the challenge is beyond them.*

In addition to the above, Participant T2 also indicated that she sometimes employed the service of an IT helpdesk. Paracha (2019:n.p.) states that organisations should adopt an IT helpdesk device that helps employees with challenges they face. It can be deduced that this strategy can also help first-year trainee accountants to overcome IT challenges.

4.3.7.5 Practical solutions

Practical solutions during the training programme to qualify as a professional accountant are important in an accounting firm (IFAC, 2015:23). Participant T7 explained:

> *T7: I think the more you do your work and practice and ask questions, that will assist you, that is what actually works for me.*

Participant M2 stated:

> *M2: Yes. Practice makes perfect, so the more they practice, they become good at the end.*

As further confirmation, participants T6 and T5 indicated as follows:

> *T6: Yes, whenever I had a chance I will use the laptop, software books and go through it just to learn some of the things; I will go on TeamMate, see what is happening. I also have a manual for TeamMate.*

> *T5: I will say if I had to do something IT-related and I will not be able to do it during that time when I was asked, I will redo [it] again on my own to see whatever that I did or what I missed, what I am saying is I will do it on my own at my own time.*

Judging from the statements above, one can deduce that some first-year trainee accountants continuously did some IT-related tasks on their own in order to understand the software packages. It is important for trainees to apply practical solutions to IT-related challenges (Andriotis, 2018:1). Keevy (2020:143) proposes that accounting education institutions need to make greater efforts to include practical examples in their curricula.

4.4 CHAPTER SUMMARY

This chapter presented a presentation and discussion of the findings obtained from the study. An overview of the themes and sub-themes that emerged from the findings was presented, followed by a discussion of the findings from the analysis, supported with literatures and theories used in the study. This chapter presented seven themes that

emerged from the findings. These are IT skills requirements, exposure to IT training, IT-related challenges, knowledge gaps, IT-related support, role of self-determination and strategies employed. It was found in this study that first-year trainee accountants try to develop their competencies and to be innovative and creative, make use of the IT helpdesk, do internet searches and apply practical solutions to overcome IT challenges encountered during training. Chapter 5 provides a summary of the study and presents the conclusions and recommendations. Recommendations for future studies on strategies to overcome IT-related challenges faced by first-year trainee accountants are also given.

CHAPTER 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

In Chapter 4 the research findings were presented and discussed. The evidence gathered from the findings was also linked to relevant literature and theories as presented in Chapter 2. The aim of the current study was to explore the various IT challenges first-year trainee accountants encounter and to report on their perceptions regarding the strategies they employ to overcome these IT challenges in the Mafikeng area in the North West province in South Africa. Section 5.2 presents a summary of the study, followed by Section 5.3, which provides a summary of the findings presented and discussed in Chapter 4 in terms of the research questions posed in Chapter 1 of this study. Section 5.4 further presents the conclusions on the entire study, which were made with the aid of a final conceptual framework presented in Figure 5.2. Sections 5.5 and 5.6 provide the recommendations on strategies that can be employed by first-year trainee accountants to overcome IT challenges at the workplace and for future research. The study's limitations and concluding remarks are presented in sections 5.7 and 5.8. A summary of the chapter is also shown in the chapter layout in Figure 5.1.

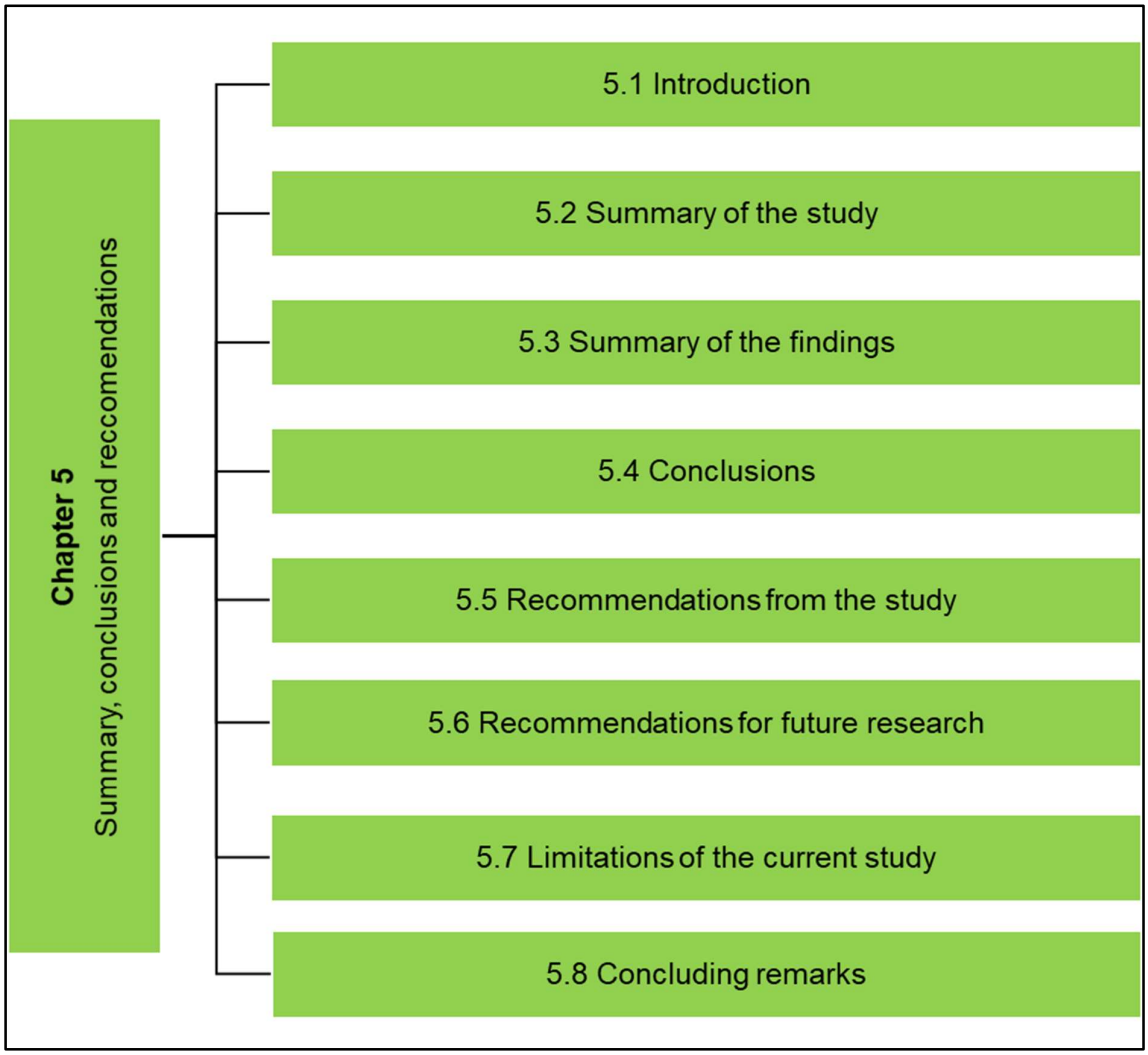

Figure 5.1: Layout of Chapter 5

5.2 SUMMARY OF THE STUDY

A summary of the entire study is provided in this section.

In Chapter 1, the study was introduced. It presented a detailed overview of the background of the study and the problem statement. From these, the research aim and objectives were identified and the questions that guided the study were presented. The stress and coping theory of Lazarus and Folkman (1984) and the self-determination theory of Deci and Ryan (1985) were also introduced. A brief explanation of the research methodology employed in this study was then given. The chapter further provided a detailed clarification of the delineations and limitations of the study as well as the key terms used in the study. The chapter concluded with the significance of the

study, a brief discussion of the ethical considerations of the study and a detailed outline of the chapters of the dissertation.

In Chapter 2, the literature review and the theoretical foundation of the study were presented, followed by a discussion of the accounting profession in South Africa and the technical and professional skills required by the profession. Focusing more on the IT skills required of an accountant, challenges associated with obtaining these IT skills, the strategies to overcome these IT challenges and the role of accounting education institutions and professional accounting bodies in these processes were considered. The theoretical framework on which this study was underpinned was the stress and coping theory and the self-determination theory (see sections 2.9.1 and 2.9.2). The stress and coping theory (Lazarus & Folkman, 1984) explains the processes an individual must go through to cope with a stressful situation. In addition, the self-determination theory (Deci & Ryan, 1985) relates to the role motivation plays when individuals want to achieve a specific goal. The chapter also highlighted that limited research in the accounting domain focused on these two theories to address the challenges associated with IT skills requirements in the workplace. The chapter concluded with an initial conceptual framework that guided the data collection and interpretation of the findings.

Following the literature review, Chapter 3 presented the research aim, philosophy and approach of the study. The research aim was to identify the strategies first-year trainee accountants implement to overcome the IT challenges they experience in the workplace. A social constructivist research paradigm was used to understand the research problem by developing subjective meanings of first-year trainee accountants' daily experiences in addition to the 'realities' that occur around them. A phenomenological research design was employed to understand first-year trainee accountants' perceptions regarding the strategies they employ to overcome IT challenges at the workplace. In Section 3.6 the site selection, the target population and the sampling technique were described in detail. The chapter concluded with discussions of the data collection and analysis processes, the trustworthiness of the findings as well as relevant ethical considerations.

Chapter 4 contained the presentation and discussion of the findings. This chapter commenced with a brief overview of how the data were managed. The chapter further

presented in Table 4.1 the emerging themes and sub-themes, and these seven themes were discussed (with verbatim quotes) in Section 4.3.

Chapter 5, the last chapter, began with an overview of the study. This is followed by a summary of the findings in relation to the research questions. The initial conceptual framework (see Figure 2.4) was modified and Figure 5.2 presents the final conceptual framework of the study. The chapter concludes with recommendations from the study and for future research, and the limitations of the study are also discussed.

5.3 SUMMARY OF THE FINDINGS

In this section, the summary and the conclusion of the findings obtained through the empirical investigation are presented in accordance with the research questions (see Section 1.4.2) of the study.

5.3.1 Research question 1

Research question 1: What IT skills are required of first-year trainee accountants to perform their duties?

Research question 1 set out to determine which IT skills are required of first-year trainee accountants to perform their duties. The findings revealed that first-year trainee accountants must have basic IT knowledge such as Microsoft Excel, word-processing programs (Microsoft Word), email and Google functions (see Section 4.3.1). These findings are parallel to previous studies, whose findings indicate that trainee accountants (accounting graduates) required IT computer skills and knowledge such as spreadsheet software (Microsoft Excel), Microsoft Windows, word-processing programs (Microsoft Word) and internet capabilities (Albrecht & Sack, 2000), spreadsheets and presentation software (Brenner, 2018; Helliar et al., 2006; Vdovin, 2020), as well as mastery of the Microsoft range of products, OfficeSuite, web browsers and email (Wessels, 2008).

The participants indicated that they were provided with training on how to use Microsoft Excel, as most of them only had a limited understanding of the program. It was also

found that the first-year trainee accountants needed to use TeamMate, Sage Pastel Accounting or CaseWare to carry out their duties, depending on the software package used by their firm. Many first-year trainee accountants attested that they did not have experience in the use of these IT packages when they started working at the accounting firms. However, they had to undergo training to keep abreast of the use of these software programs. Learning the software was stressful for some first-year trainees and many of the participants indicated that they did not receive adequate training during their university studies.

5.3.2 Research question 2

Research question 2: To what extent were first-year trainee accountants exposed to IT during their education at school and/or university?

Research question 2 was aimed at assessing first-year trainee accountants' exposure to IT training (see Section 4.3.2) before they entered the workplace and was a follow-up question on the first research objective, which determined the IT skills required of first-year trainee accountants. The findings showed that most of the participants were exposed to basic IT skills training at university, while a few participants were already exposed to IT skills training at high-school level. These basic skills include email, the use of Microsoft Excel, word-processing programs and Google searches (see Section 4.3.1). It was evident that universities do not provide in-depth training in other software such as Sage Pastel Accounting, CaseWare and TeamMate, which are often used at the workplace. These findings are parallel to Peens's (2018) explanation that inadequate integration of the use of technology practices in the curricula of tertiary institutions creates challenges for graduates when they enter the workplace.

In most cases, the participants indicated that the IT programs offered at universities are not what is currently utilised by most accounting and auditing firms. In line with this finding, Keevy (2015) found that although trainees had undergone training on the use of technology in accounting at tertiary institutions, the majority of them passed the course for the purpose of obtaining a degree and not for knowledge creation purposes. For these reasons, accounting education institutions have to modify their accounting curricula by incorporating more exposure to IT (Viviers et al., 2016:368).

5.3.3 Research question 3

Research question 3: What IT-related challenges do first-year trainee accountants experience when they enter the workplace?

Research question 3 set out to determine the IT-related challenges first-year trainee accountants experience when they enter the workplace. From the findings, it was evident that first-year trainee accountants face challenges with regard to software functions and training, family responsibilities, Covid-19-related challenges and employers' expectations. Even though the participants had received training in these computer programs, the training was not sufficient, as many still struggled with these programs and related functions. These findings are in line with previous studies, which findings indicate that trainee accountants are facing diverse IT-related challenges such as increased use of sophisticated and smart technologies and software such as cloud computing in accounting firms (Islam, 2017) and inadequate basic IT skills in day-to-day demanding accounting practices (Kunz & De Jager, 2019a; Marx et al., 2020).

As a result of the Covid-19 pandemic, the accountancy profession has experienced tremendous challenges that required new skills, including an excellent grasp of IT skills (Jabin, 2021:8; SAICA, 2021e:6). This research therefore concluded that IT-related challenges faced by first-year trainee accountants are realistic and may hinder the effective training of these trainees. This is so because the inability of trainee accountants to understand these IT packages and the use thereof might hinder their effective learning and competency. Fogarty (2020:564) concurs that Covid-19-related technological challenges have added to the IT challenges already experienced by first-year trainee accountants.

5.3.4 Research question 4

Research question 4: What IT knowledge gaps exist between the IT education and IT skills required to perform their duties at their workplace?

Feedback addressing Research question 4 in this study showed a huge knowledge gap between the IT education and IT skills required by first-year trainee accountants to perform their duties. Many of the first-year trainee accountants indicated that they obtained most of their IT knowledge from training sessions they attended at the accounting firms and from support by their senior colleagues and managers. These findings support Research question 2 (see Section 5.3.2), as first-year trainee accountants indicated that universities do not provide sufficient IT software training. Prior studies (Van Oordt & Sulliva, 2017:367; Viviers et al., 2016:368) generated similar findings, indicating that employers' expectations of IT skills from accounting graduates are higher than the skills accounting graduates possess, thereby creating IT knowledge gaps between the IT education and IT skills required to perform duties at their workplace.

5.3.5 Research question 5

Research question 5: What IT-related support does accounting professional bodies and accounting firms provide to first-year trainee accountants?

Research question 5 aimed to determine the IT-related support provided by accounting professional bodies and accounting firms to first-year trainee accountants. The findings suggested that accounting firms and professional bodies provide support such as mentorship programmes, continuous IT training and development, and web-based learning (see Section 4.3.5). These findings were consistent with a study by Parsons et al. (2020), which revealed that individual feedback, teamwork and mentorship programmes are positive strategies that can be adopted to overcome IT challenges faced by trainee accountants in general.

Warffemius et al. (2015:354) emphasise the need for SAICA trainees to be exposed to various support and strategies to overcome IT challenges faced in the workplace. This study found that even though managers indicated that accounting firms train first-year trainee accountants in the basics and advanced knowledge of the IT software they currently utilise, this is not cost-effective and can also be time-consuming for the trainees and the firms. In most cases, accounting firms were more involved in providing IT support for first-year trainee accountants than professional accounting bodies, which merely visited the firms and did not engage in IT training or support for first-year trainee accountants. These findings contradict previous studies by Ersen and Bilgiç (2018) and Pirkkalainen et al. (2019), which indicated that graduates could adopt proactive and reactive coping strategies to overcome IT challenges by trying new challenges, creating new opportunities and making every effort towards achieving challenging goals.

5.3.6 Research question 6

Research question 6: What role does self-determination play when first-year trainee accountants encounter IT challenges at the workplace?

Research question 6 aimed to examine the role self-determination plays when first-year trainee accountants encounter IT challenges at the workplace. Based on the self-determination theory (Ryan & Deci, 2017), it was deduced that trainee accountants will seek both intrinsic and extrinsic motivation that will aid them in attaining their goals, despite any IT challenges encountered. The findings from this study indicated that self-determination is what made first-year trainee accountants eager to learn and motivated in carrying out their work and also led to an improved work relationship with colleagues (see Section 4.3.6.2). Both the first-year trainee accountants and their managers also attested that self-determination is a drive that enables one to keep striving for success in order to achieve predetermined goals. These perceptions are in line with the findings of a study by Krause et al. (2019), which revealed that the self-determination theory essential needs (autonomy, competence and relatedness) help individuals to develop competence and perceived motivation in coping with challenges in the workplace, including IT challenges.

5.3.7 Research question 7

Research question 7: What strategies do trainee accountants use to curb the challenges they experience while taking responsibility for their own skills development?

Research question 7 aimed to identify strategies trainee accountants implement to curb the challenges they experience while taking responsibility for their own IT skills development. The stress coping theory highlights the process that an individual usually goes through to cope with a stressful condition and produce appropriate and effective adaptation behaviour (Chen et al., 2019:88). The findings of this study identified various strategies (see Section 4.3.7), which included the use of the IT helpdesk and internet searches. The participants suggested the need for regular updating of YouTube videos to help address IT-related challenges. Some of the first-year trainee accountants indicated that internet searches were a tremendous help, as they tended to listen to and watch YouTube videos to either create a formula in Microsoft Excel or to understand the use of a specific aspect in the software. This study also found that some of the first-year trainee accountants were innovative and creative, as they developed new ideas on how the software should be utilised in solving problems and also enrolled for training courses that helped to expand their IT competency. These findings contradicted the results of previous studies, which revealed that strategies that can be implemented by individuals to overcome IT challenges include IT skills development among trainee accountants, teamwork and mentorship programmes (Parsons et al., 2020:4), workplace friendship (Guohao et al., 2021), proactive coping strategies (Ersen & Bilgiç, 2018), reactive coping strategies (Agbaria & Mokh, 2021) and disturbance-handling coping strategies (Chen et al., 2019).

5.4 CONCLUSIONS

The findings from the participants' responses and elements of the initial conceptual framework depicted in Figure 2.4 were conceptualised, leading to the proposed conceptual framework. The framework was developed to provide first-year trainee

accountants with strategies to overcome IT challenges in the workplace. A visual presentation of the developed conceptual framework is portrayed in Figure 5.2.

Figure 5.2: Conceptual framework of the study

From the coding and theme compilation it is evident that there were rich data to be included and integrated into the literature in order to substantiate elements of the conceptual framework. **Block 1** in Figure 5.2 identified elements from the self-

determination theory (autonomy, competence and relatedness) and the stress and coping theory (cognitive appraisal and coping efforts) that can assist first-year trainee accountants to overcome IT-related challenges. It is clear from the research findings that first-year trainee accountants can employ autonomy, competence and relatedness to develop competence and perceived motivation in coping with challenges in the workplace, including IT challenges. Furthermore, they can use cognitive appraisal as a particular strategy or set of strategies to overcome IT challenges and to make progress. Although the current study did not produce any findings relating to coping efforts, the literature (refer to Section 2.9.1.2) has shown that individuals who adopt the coping effort strategy will more easily avoid stresses that occur in the workplace (Yin et al., 2018:1193). Furthermore, the individual's personal emotional stability will be restored, and the perception of the challenges linked with the event will be reduced (Chen et al., 2019:86).

Block 2 depicts IT-related challenges identified in the literature. It was deduced that first-year trainee accountants face workplace IT-related challenges such as workload, technostress, psychological challenges, the Covid-19 pandemic, sophisticated software, 4IR, family challenges and employers' expectations.

Block 3 of the proposed conceptual framework depicts some of the new concepts that emerged from the participants' responses. These include software challenges, software training, family responsibilities, employers' expectations and the Covid-19 pandemic. It was evident from the findings that IT challenges are a part of technostress, which create a large workload (see Section 4.3.3.1). Furthermore, the findings of this study revealed that some employers had high expectations of the first-year trainee accountants, which in turn poses a challenge in terms of their IT skills (see Section 4.3.5). Likewise, the Covid-19 pandemic created an atmosphere for more IT-related challenges, as new IT skills had to be learnt to carry out their duties. These challenges have prompted the need for the stress coping theory and self-determination as mechanisms to overcome IT challenges.

The above findings are a concern, as managers will have to provide training to first-year trainees to ensure that they have knowledge of the IT skills required to perform their duties. This study also found that first-year trainees employed the coping theory to effectively understand and cope with the new IT knowledge introduced by the firms.

From the findings above, this study strongly supports the need for universities to re-examine the IT courses presented to students in their final year at the university.

Block 4 present strategies to overcome IT challenges as identified in the literature. It was deduced that training and mentoring, workplace friendship, disturbance handling coping strategies, proactive and reactive environment, self-perseverance and work-based learning (see Section 2.6) are some of the strategies that can be used to overcome the IT challenges shown in blocks 2 and 3. It was clear from the findings of this study that accounting firms expect trainee accountants to have basic IT knowledge and other software knowledge and skills, for example in Sage Pastel Accounting, CaseWare or TeamMate. However, this was not the case, as the majority of the participants in this study did not understand how these software functions and they had to undergo training in order to obtain adequate knowledge, as most of them did not acquire adequate knowledge of these IT skills at university.

In **Block 5**, some of the concepts identified in the literature were confirmed and new concepts that emerge from the findings were identified. These include practical solutions, innovation and creative IT skills, IT helpdesk, internet searches and developing competencies, which are personal and situational factors that reduce stress and are also used by first-trainee accountants to overcome IT challenges (see Section 4.3.7). What is new from the findings is that some first-year trainee accountants continuously performed some IT-related tasks on their own in order to understand the software packages. Most of the IT skills these trainees learnt were from communication with friends through emails and other word document processing. This justifies that despite the IT challenges faced, first-year trainees where able to overcome these challenges and developed their own skills and competencies.

Block 6 shows that the self-determination theory explains how both personal and situational factors can reduce IT-related stress. As most of the participating first-year trainee accountants were experiencing IT-related stress in the workplace, they mentioned that they employed practical solutions, being innovative and creative, internet searches, the IT helpdesk and developing competencies as diverse strategies to overcome IT challenges. The first-year trainee accountants also attested to having received IT support from colleagues and managers while developing their skills. It became clear that the perceived autonomy, competence and relatedness can create

self-determination and cognitive appraisal and coping effort can also foster the ability to cope with stress among first-year trainee accountants in developing their IT skills at the workplace.

5.5 RECOMMENDATIONS FROM THE STUDY

Based on the findings of this study, the following recommendations are proposed to managers at accounting firms and accounting professional bodies:

5.5.1 Recommendations for accounting firm managers

The following recommendations are proposed for managers at accounting firms:

- Managers should organise regular workshops for first-year trainee accountants. The first-year trainee accountants interviewed in this study indicated that although a once-off IT training workshop is provided by accounting firms (see Section 4.3.5.2), a great number of IT skills are covered in a short space of time. Hence, they struggle to utilise the IT software effectively. The trainee accountants were of the opinion that workshops at least three to four times a year will solve these challenges. Managers and training staff should also ensure that the content covered in a specific workshop is not too comprehensive in order to allow the first-year trainee accountants enough time to grasp and apply the skills.
- During the training workshops, more attention should be directed at explaining the technical concepts of the software and the application thereof. If required, accounting firms can utilise software experts to ensure proper training in the technical content of the software.
- Microsoft Excel seems to be challenging for many first-year trainees (see Section 4.3.1.1). Even though this is taught at university, the findings from this study showed that the first-year trainee accountants did not have an in-depth understanding of the formulas in Microsoft Excel. It is therefore recommended that during the workshops, more attention be paid to the use of Microsoft Excel.
- Managers may consider organising workshops that address the psychological, family and study needs of first-year trainee accountants, as this study has revealed that first-year trainee accountants identified family responsibilities as

IT-related challenges (see Section 4.3.3.3). These workshops might help to reduce the tension and assist them to cope with the IT skills required of first-year trainee accountants.

- The study proposes that managers should ensure that they have relevant IT software books and materials available at the workplace to enable first-year trainee accountants to consult them (see Section 4.3.7.5). This can be done by setting up a committee that would investigate the provision of support materials from the professional bodies; the committee can also request the purchase of relevant support materials from the professional bodies. In the event that funding is required for this to be effective, finance can be raised for it.

5.5.2 Recommendations for accounting professional bodies

The following recommendations for accounting professional bodies are proposed:

- The professional bodies should ensure more integration of IT skills for trainee accountants in carrying out their duties. Provision must be made specifically for first-year trainee accountants for in-depth training by the professional body. The workshop organised by professional bodies should include IT training, as the first-year trainee accountants who participated in this study mentioned that the training does not cover any IT-related skills used to carry out their duties. This will ensure that professional bodies are also involved in the IT skills development of first-year trainee accountants
- The professional bodies should provide recordings of short videos on YouTube that address the concerns of first-year trainee accountants on the use of the IT-related software in carrying out their duties. These videos will enhance the use of internet searches as a measure for curbing IT-related challenges encountered by first-year trainee accountants at the workplace.

5.6 RECOMMENDATIONS FOR FUTURE RESEARCH

Other study methodologies employed by first-year trainee accountants to tackle IT issues need to be researched further. The following subjects can be addressed in the future, the reason being that the world is moving towards the 4IR, and IT is becoming

increasingly significant in the accounting firm. As a result, the following topics will be important in the future:

- A similar study in another province on strategies used by first-year trainee accountants to overcome IT challenges
- A comparative study with other countries to investigate strategies used by first-year trainee accountants to overcome IT challenges
- Factors that encourage trainee accountants to be determined in coping with work-related stress
- The employer-trainee-account and related challenges and strategies
- The impact of IT software used in accounting firms on the 4IR
- A framework for developing the IT competencies of trainee accountants at the workplace.

5.7 LIMITATIONS OF THE CURRENT STUDY

According to Creswell (2009:10), all study designs have limits. Although the current study adhered to scientific rigor, trustworthiness, a research design and methodological requirements, there are possible weaknesses associated with the current research, which are discussed below:

- The study's limitations are compounded by the fact that it was a small-scale case study, with conclusions that cannot be applied to all first-year trainee accountants in all South African accounting firms.
- The study was limited to accounting firms in Mafikeng, North West province; if the study is expanded to other locations, other findings may emerge on a provincial level.
- In order to acquire a detailed account of the selected case, this study used a qualitative research approach. If a mixed or quantitative research strategy is applied, the results will be more accurate. As a result, new data collection strategies are required.
- The study's primary participants were first-year trainee accountants and managers. If additional individuals, such as second- or third-year trainee

accountants, were added in future studies, more conclusions would be obtained.

5.8 CONCLUDING REMARKS

The aim of this study was to explore the various IT challenges first-year trainee accountants encounter and to report on their perceptions regarding the strategies they employ to overcome these IT challenges. This chapter provided a summary of the study, the conclusions and recommendations. The limitations of the study were also discussed.

It is evident that IT skills are important skills for first-year trainee accountants in developing their competency (see Section 2.3). This is because IT skills are also relevant in the accounting profession in South Africa and trainees are expected to be knowledgeable in these skills when entering the workplace (see Section 2.4). In order to become knowledgeable in these IT skills, first-year trainee accountants need to develop self-determination to cater for the challenges they will encounter while developing their IT skills during training (see sections 2.9.1 and 2.9.2). Through the interviews with the participants to attain the aim of the study and the research objectives (see Section 1.4.1) and the analysis of relevant literature in Chapter 2, it was identified that IT skills necessary for first-year trainee accountings in carrying out their duties are skills in Microsoft Excel functions, email, Google functions, and auditing and accounting software such as CaseWare, Sage Pastel Accounting and TeamMate (see sections 4.3.1 and 4.3.3). First-year trainee accountants identified some of these IT elements as challenging (see sections 4.3.3 and 5.3). Figures 2.4 and 5.2 provided theoretical and conceptual lenses on strategies employed by first-year trainee accountants to overcome these IT challenges (see Section 4.3.7), and thereby provided the point of view from where recommendations were made.

REFERENCE LIST

ACCA (Association of Chartered Certified Accountant). 2018. *The rise of automation in accounting*. Johannesburg: Deloitte.

ACCA (Association of Chartered Certified Accountants). 2019. *Competency framework*. Glasgow.

Adams, C. & Khojasteh, J. 2018. Igniting students' inner determination: The role of a need supportive climate. *Journal of Education and Administration*, 56:382–397.

Agbaria, Q. & Mokh, A.A. 2021. Coping with stress during the coronavirus outbreak: The contribution of Big Five personality traits and social support. *International Journal of Mental Health and Addiction*, 20(3):1–19.

AICPA (Association of International Certified Professional Accountants). 2019. *AICPA trends report: Trends in the supply of accounting graduates and the demand for public accounting recruits*. Available at: https://www.aicpa.org/interestareas/accountingeducation/newsandpublications/aicpa-trends-report.html (Accessed on 15 February 2021).

Akpokiniovo, S.R. & Oyovwe, C.T. 2015. *Information and communication technology and the development of the accounting profession in Nigeria beyond 2020*. Available at: https://www.semanticscholar.org/paper/INFORMATION-AND-COMMUNICATION-TECHNOLOGY-AND-THE-OF-Akpokiniovo-OYOVWE/8104a888511a72c4a929fab0b172d48ef8779dd0 (Accessed on 9 March 2021).

Albrecht, W.S. & Sack, R.J. 2000. *Accounting education: Charting the course through a perilous future.* Accounting Series, No. 16. Sarasota, FL: American Accounting Association.

Al-Hattami, H.M. 2021. University accounting curriculum, IT, and job market demands: Evidence from Yemen. *SAGE Open*, 1–14.

Al-Khaled, A.A.S. & Chung, J.F. 2021. The significance of training in organizations on the performance and capabilities of employees. *International Journal of Economics, Business and Management Research*, 5(2):109–117.

Alves, M.C.G. 2010. Information technology roles in accounting tasks: A multiple-case study. *International Journal of Trade, Economics and Finance*, 1(1):103–107.

Anderson, S.W. & Widener, S.K. 2007. Doing quantitative field research in management accounting. In C.S. Chapman, A.G. Hopwood & M.D. Shields (eds.). *Handbook of management accounting research*. Oxford: Elsevier, 319–341.

Andreassen, R.I. 2020. Digital technology and changing roles: A management accountant's dream or nightmare? *Journal of Management Control*, 31:209–238.

Andriotis, N. 2018. *Training and development challenges and solutions in the workplace*. TalentLMS. Available at: https://www.talentlms.com/blog/training-challenges-solutions-workplace/ (Accessed on 27 December 2021).

Antwi, S.K. & Hamza, K. 2015. Qualitative and quantitative research paradigms in business research: A philosophical reflection. *European Journal of Business and Management,* 7(3):217–226.

Anyanwu, M.A. 2016. Experiences of the South African high school classroom: A case study of high school English classroom experiences of student-teachers of English at a university in KwaZulu-Natal. Unpublished MA dissertation, University of KwaZulu-Natal.

Apuke, O.D. 2017. Quantitative research methods: A synopsis approach. *Kuwait Chapter of Arabian Journal of Business and Management Review*, 33(5471):1–8.

Arvanitis, A. 2017. Autonomy and morality: A self-determination theory discussion of ethics. *New Ideas Psychology,* 47:57–61.

Asonitou, S. 2015. The evolution of accounting education and the development of skills. Paper presented at the 11th Interdisciplinary Workshop on Intangibles, Intellectual Capital and Extra-financial Information, Athens University of Economics & Business.

Aspers, P. & Corte, U. 2019. What is qualitative in qualitative research. *Qualitative Sociology*, 42:139–160.

Ayyagari, R., Grover, V. & Purvis, R. 2011. Technostress: Technological antecedents and implications. *MIS Quarterly*, 35(4):831–858.

Babbie, E. 2014. *The basics of social research*. Seventh edition. Belmont, CA: Wadsworth, Cengage Learning.

Bachman, C.M. & Stewart, C. 2011. Self-determination theory and web-enhanced course template development. *Teaching of Psychology*, 38(3):180–188.

Bakanay, Ç.D. & Çakır, M. 2016. Phenomenology and its reflections on science education research. *International Online Journal of Educational Sciences*, 8(4):1–17.

Barac, K. 2009. South African training officers' perceptions of the knowledge and skills requirements of entry-level trainee accountants. *Meditari Accountancy Research Journal*, 17(2):19–46.

Barac, K. & Du Plessis, L. 2014. Teaching pervasive skills to South African accounting students. *Southern African Business Review Journal*, 18(1):53–79.

Barbour, R.S. 2001. Checklists for improving rigour in qualitative research: A case of the tail wagging the dog? *British Medical Journal*, 322(7294):1115–1117.

Bar-Yosef, S., D'Augusta, C. & Prencipe, A. 2019. Accounting research on private firms: State of the art and future directions. *The International Journal of Accounting,* 54(2):1–75.

Beaudry, A. & Pinsonneault, A. 2005. Understanding user responses to information technology: A coping model of user adaptation. *MIS Quarterly,* 29(3):493–524.

Betke, K., Basińska, M.A. & Andruszkiewicz, A. 2021. Sense of coherence and strategies for coping with stress among nurses. *BMC Nursing*, 20(107):1–10.

Bhattacherjee, A., Davis, C.J., Connolly, A.J. & Hikmet, N. 2018. User response to mandatory IT use: A coping theory perspective. *European Journal of Information Systems,* 27(4):395–414.

Birt, L., Scott, S., Cavers, D., Campbell, C. & Walter, F. 2016. Member checking: A tool to enhance trustworthiness or merely a nod to validation? *Qualitative Health Research,* 26(13):1802–1811.

Bogna, F., Raineri, A. & Dell, G. 2020. Critical realism and constructivism: Merging research paradigms for a deeper qualitative study. *Qualitative Research in Organizations and Management,* 15(4):461–484.

Borgonovo, A., Friedrich, B. & Wells, M. 2019. *Competency-based accounting education, training, and certification: An implementation guide*. Washington, DC: International Bank for Reconstruction and Development / The World Bank.

Botha, N. 2019. The future professional accountant in 4IR. *Bizcommunity*, 16 August. Available at: https://www.bizcommunity.com/Article/196/511/194420.html (Accessed on 10 March 2021).

Boulianne, E. 2016. How should information technology be covered in the accounting program? *Canadian Journal of Administrative Sciences / Revue canadienne des sciences de L'administration,* 33(4):304–317.

Brady-Amoon, P. & Keefe-Cooperman, K. 2017. Psychology, counseling psychology, and professional counselling: Shared roots, challenges, and opportunities. *The European Journal of Counselling Psychology*, 6(1):41–62.

Braun, V. & Clarke, V. 2006. Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2):77–101.

Braun, V. & Clarke, V. 2019. Reflecting on reflexive thematic analysis. *Qualitative Research in Sport, Exercise and Health,* 11(4):589–597.

Brenner, L. 2018. What are the duties of a trainee accountant? *Chron*, 29 June. Available at: https://work.chron.com/duties-trainee-accountant-15910.html (Accessed on 16 September 2020).

Brink, H., Van der Walt, C. & Van Rensburg, G. 2018. *Fundamentals of research methodology healthcare professionals*. Fourth edition. Cape Town: Juta.

Britannica. 2019. North West. Available at: https://www.britannica.com/place/North-West-province-South-Africa (Accessed on 28 April 2022).

Brown, R. 2015. *What is a help desk and its importance for your organization.* Invensis. Available at: https://www.invensis.net/blog/what-is-help-desk-and-its-importance-for-your-organization/ (Accessed on 16 October 2021).

Bryman, A. & Bell, E. 2011. *Business research methods.* Third edition. New York, NY: Oxford University Press.

Bukaliya, R. 2012. The potential benefits and challenges of internship programmes in an ODL institution: A case for the Zimbabwe Open University. *International Journal on New Trends in Education and Their Implications*, 3(1):118–133.

Camacho, S. & Barrios, A. 2022. Teleworking and technostress: Early consequences of a COVID-19 lockdown. *Cognition, Technology & Work*, 1–17.

Cameron, R. 2011. Mixed methods research: The five Ps framework. *The Electronic Journal of Business Research Methods*, 9(2):96–108.

Chartered Professional Accountant. 2012. *Competency map understanding the competencies a candidate must demonstrate to become a CPA*. Available at: https://smith.queensu.ca/ConversionDocs/GDA/CFA.pdf (Accessed on 18 June 2022).

Chau, C. 2012. *Skills development*. Personal Excellence. Available at: https://personalexcellence.co/blog/skills-development/ (Accessed on 9 January 2020).

Chen, J., Ngoc, A. & Nguyen, T. 2019. Understanding the discontinuance behaviour of mobile shoppers as a consequence of techno stress: An application of the stress coping theory. *Computers in Human Behaviour*, 95:83–93.

Chisango, G. 2021. The digital divide at three disadvantaged secondary schools in Gauteng. *South Africa Journal of Education*, 82(2):151–165.

CIMA (Chartered Institute of Management Accountants). 2014. *Professional accountants – competency framework*. Available at: https://www.cimaglobal.com/Employers/CGMA-The-new-global-standard/CGMA-Competency-Framework/ (Accessed on 25 January 2020).

Clarke, M. 2018. Rethinking graduate employability: The role of capital, individual attributes and context. *Studies in Higher Education Journal,* 43(11):1923–1937.

Coetzee, S. & Oberholzer, R. 2009. The tax knowledge of South African trainee accountants: A survey of the perceptions of training officers in public practice. *Accounting Education: An International Journal*, 18(4/5):421–441.

Creswell, J.W. 2009. *Research design: Quantitative, qualitative and mixed method approaches*. Third edition. Thousand Oaks, CA: Sage.

Creswell, J.W. 2012. *Qualitative inquiry and research design: Choosing among five approaches*. Third edition. Thousand Oaks, CA: Sage.

Creswell, J.W. 2014*. Research design: Qualitative, quantitative, and mixed methods research approaches*. Fourth edition. Thousand Oaks, CA: Sage.

Creswell, J.W. 2015. *A concise introduction to mixed methods research*. Thousand Oaks, CA: Sage.

Creswell, J.W. & Plano Clark, V.L. 2007. *Designing and conducting mixed methods research*. Thousand Oaks, CA: Sage.

Creswell, J.W. & Plano Clark, V.L. 2011. *Designing and conducting mixed methods research*. Second edition. Los Angeles, CA: Sage.

Curtis, M.B., Jenkins, J.G., Bedard, J.C. & Deis, D.R. 2009. Auditors' training and proficiency in information systems: A research synthesis. *Journal of Information System,* 23(1):79–96.

Damasiotis, V., Trivellas, P., Santouridis, I., Nikolopoulos, S. & Tsifora, E. 2015. IT competences for professional accountants: A review. *Procedia - Social and Behavioral Sciences*, 175(12):537–545.

Darling-Hammond, L., Flook, L., Cook-Harvey, C., Barron, B. & Osher, D. 2020. Implications for educational practice of the science of learning and development*. Applied Developmental Science*, 24(2):97–140.

Day, J. 2018. *What's the real difference between creativity and innovation?* IdeaScale. Available at: https://ideascale.com/whats-the-real-difference-between-creativity-and-innovation/ (Accessed on 5 October 2021).

Deci, E.L. & Ryan, R.M. 1985. The general causality orientations scale: Self-determination in personality. *Journal of Research in Personality*, 19:109–134.

Deci, E.L. & Ryan, R.M. 2008. Self-determination theory: A macro theory of human motivation, development, and health. *Canadian Psychology*, 49(3):182–197.

Deci, E.L. & Ryan, R.M. 2012. Motivation, personality, and development within embedded social contexts: An overview of self-determination theory. In R.M. Ryan (ed.). *Oxford Handbook of Human Motivation.* Oxford, UK: Oxford University Press, 85-107.

DeJonckheere, M. & Vaughn, L.M. 2019. Semistructured interviewing in primary care research: Balance of relationship and rigour. *Family Medicine and Community Health*, 7(2):1–8.

Demirkan, S., Demirkan, I. & McKee, A. 2020. Blockchain technology in the future of business cyber security and accounting. *Journal of Management Research and Analysis,* 7(2):189–208.

Doman, S. & Nienaber, G. 2012. Tax education: Current views and preferences of South African employers. *International Business & Economics Research Journal*, 11(8):951–962.

Elie-Dit-Cosaque, C.M. & Straub, D.W. 2011. Opening the black box of system usage: User adaptation to disruptive IT. *European Journal of Information Systems,* 20(5):589–607.

Ersen, O. & Bilgiç, R. 2018. The effect of proactive and preventive coping styles on personal and organizational outcomes: Be proactive if you want good outcomes. *Cogent Psychology*, 5(1):1–14.

Fogarty, T.J. 2020. Accounting education in the post-COVID world: Looking into the Mirror of Erised. *Accounting Education*, 29(6):563–571.

Gachago, D., Ivala, E., Backhouse, J., Bosman, J.P., Bozalek, V. & Ng'ambi, D. 2013. Towards a shared understanding of emerging technologies: Experiences in a collaborative research project in South Africa. *The African Journal of Information Systems,* 5(3):94–105.

Galbin, A. 2014. An introduction to social constructionism. *Social Research Reports*, 26:82–92.

Gary, P. & Poh-Sun, S. 2016. Preparing accounting graduates for digital revolution: A critical review of information technology competencies and skills development. *Journal of Education for Business,* 91(3):166–175.

Gasson, S. 2004. Rigor in grounded theory research: An interpretive perspective on generating theory from qualitative field studies. In M.E. Whitman & A.B. Woszczynski (eds.). *The handbook of information systems research*. Hershey, PA: Idea Group, 79–102.

Gebreiter, F. 2019. Making up ideal recruits: Graduate recruitment, professional socialization and subjectivity at Big Four accountancy firms. *Accounting, Auditing & Accountability Journal*, 33(1):233–255.

Ghasemi, M., Shafeiepour, V., Aslani, M. & Barvayeh, E. 2011. The impact of information technology (IT) on modern accounting systems. *Procedia - Social and Behavioural Sciences*, 28:112–116.

Gill, P., Stewart, K., Treasure, E. & Chadwick, W. 2008. Methods of data collection in qualitative research: Interviews and focus groups. *British Dental Journal*, 204:291–295.

Goertzen, M.J. 2017. Introduction to quantitative research and data. *Library Technology Reports*, 53(4):12–18.

Goetz, T.M. & Boehm, S.A. 2020. Am I outdated? The role of strengths use support and friendship opportunities for coping with technological insecurity. *Computers in Human Behaviour,* 107:1–14.

Goretzki, L., Strauss, E. & Weber, J. 2013. An institutional perspective on the changes in management accountants' professional role. *Management Accounting Research*, 24:41–63.

Gray, D.E. 2014. *Doing research in the real world*. London: Sage.

Greenstein, M. & McKee, T.E. 2004. Assurance practitioners' and educators' self-perceived IT knowledge level: An empirical assessment. *International Journal of Accounting Information Systems,* 5(2):213–243.

Groenewald, T. 2004. A phenomenological research design illustrated. *International Journal of Qualitative Methods*, 3(1):42–55.

Grove, S.K., Burns, N. & Gray, J.R. 2012. *The practice of nursing research: Appraisal, synthesis, and generation of evidence*. Eighth edition. St. Louis, MO: Elsevier Health Science.

Gumula, J. 2020. Creativity training in organizations: A ready-to-implement concept. *Gruppe. Interaktion. Organisation,* 51(2):95–102.

Guohao, L., Pervaiz, S. & Qi, H. 2021. Workplace friendship is a blessing in the exploration of supervisor behavioral integrity, affective commitment, and employee proactive behaviour: An empirical research from service industries of Pakistan. *Psychology Research and Behavior Management,* 21(14):1447–1459.

Half, R. 2020. *Accounting skills you need to succeed on the job*. Robert Half Talent Solutions. Available at: https://www.roberthalf.com/blog/salaries-and-skills/the-accounting-job-skills-you-need-to-succeed (Accessed on 15 February 2021).

Hammond, M. 2018. *My three years trainee accountant experience*. RSM. Available at: https://www.rsm.global/southafrica/news/my-three-years-trainee-accountant (Accessed on 22 August 2019).

Harding, T. & Whitehead, D. 2013. Analysing data in qualitative research. In Z. Schneider & D. Whitehead (eds.). *Nursing and midwifery research: Methods and appraisal for evidence-based practice*. Fourth edition. Marrickville: Elsevier, 141–160.

Harper, M. & Cole, P. 2012. Member checking: Can benefits be gained similar to group therapy? *The Qualitative Report*, 17(2):510–517.

Hatlevik, O.E., Throndsen, I., Loi, M. & Gudmundsdottir, G.B. 2018. Students' ICT self-efficacy and computer and information literacy: Determinants and relationships. *Computers and Education,* 118:107–119.

Helliar, C.V., Monk, E.A. & Stevenson, L.A. 2006. The skill-set of trainee auditors. Paper presented at the National Auditing Conference, University of Manchester.

Hill, H.R. 2014. Transitions to systemic practice for a clinical psychology trainee. *Australian and New Zealand Journal of Family Therapy*, 35(3):277–290.

Hinson, Y. 2020. *Preparing accounting students for a changing profession*. AICPA. Available at: https://blog.aicpa.org/2020/05/preparing-accounting-students-for-a-changing-profession.html#sthash.ARJfdZkx.Ima1l2GR.dpbs (Accessed on 15 February 2021).

Horváthová, P., Čopíková, A. & Mokrá, K. 2019. Methodology proposal of the creation of competency models and competency model for the position of a sales manager in an industrial organisation using the AHP method and Saaty's method of determining weights*. Economic Research-Ekonomska Istraživanja*, 32(1):2594–2613.

Hymovich, D.P. 1993. Designing a conceptual or theoretical framework for research. *Journal of Paediatric Oncology Nursing,* 10*:*75–78.

IFAC (International Federation of Accountants). 2015*. Framework for international education statements*. Available at: https://www.ifac.org/system/files/publications/files/2017-Handbook-of-International-Education-Pronouncements.PDF (Accessed on 30 April 2019).

IFAC (International Federation of Accountants). 2019. *An illustrative competency framework for accounting technicians*. Available at: https://www.ifac.org/system/files/publications/files/IFAC-AAT-An-Illustrative-Competency-Framework-for-Accounting-Technicians.pdf (Accessed on 10 March 2021).

Imene, F. & Imhanzenobe, J. 2020. Information technology and the accountant today: What has really changed? *Journal of Accounting and Taxation,* 12(1):48–60.

Infante-Moro, A., Infante-Moro, J. & Gallardo-Pérez, J. 2019. The importance of ICTs for students as a competence for their future professional performance: The case of the Faculty of Business Studies and Tourism of the University of Huelva. *Journal of New Approaches in Educational Research*, 8(2):201–213.

IRBA (Independent Regulatory Board for Auditors). 2021. *Strategic plan for 2021–2025*. Available at: https://www.irba.co.za/upload/IRBA%205-Year%20Strategy%202021-%202025.pdf (Accessed on 8 February 2021).

Islam, M.A. 2017. *Future of accounting profession: Three major changes and implications for teaching and research*. IFAC. Available at: https://www.ifac.org/knowledge-gateway/preparing-future-ready-professionals/discussion/future-accounting-profession-three-major-changes-and-implications-teaching-and-research (Accessed on 29 May 2021).

Jabin, S. 2021. The impact of COVID-19 on the accounting profession in Bangladesh. *Journal of Industrial Distribution & Business,* 12(7):7–14.

Jackling, B. & De Lange, P. 2008. Do accounting graduates' skills meet the expectations of employers? A matter of convergence or divergence. *Accounting Education: An International Journal,* 18(4/5):369–385.

Jackson, D. 2018. Developing graduate career-readiness in Australia: Shifting from extra-curricular internships to work-integrated learning. *International Journal of Work-Integrated Learning,* 19(1):23–35.

Jackson, D. & Meek, S. 2020. Embedding work-integrated learning into accounting education: The state of play and pathways to future implementation. *Accounting Education*, 30:1–23.

Jackson, D., Michelson, G. & Munir, R. 2020. *The impact of technology on the desired skills of early career accountants*. Macquarie University. Available at: https://researchers.mq.edu.au/en/publications/the-impact-of-technology-on-the-desired-skills-of-early-career-ac (Accessed on 9 January 2020).

Kabanda, G. 2019. *Trends in information technology management*. Munich: GRIN Verlag.

Kabir, S. 2016. *Methods of data collection*. Chittagong: Book Zone.

Kamal, S.S.L.B.A. 2019. Research paradigm and the philosophical foundations of a qualitative study. *PEOPLE: International Journal of Social Sciences*, 4(3):1386–1394.

Kara, M., Erdoğdu, F., Kokoç, M. & Cagiltay, K. 2019. Challenges faced by adult learners in online distance education: A literature review. *Open Praxis,* 11(1):5–22.

Kavanagh, M.H. & Drennan, L. 2008. What skills and attributes does an accounting graduate need? Evidence from student perceptions and employer expectations. *Accounting and Finance*, 48(2):279–300.

Keevy, M. 2015. Using collaborative learning exercises to transfer pervasive skills: Some South African evidence. *Journal of Economic and Financial Sciences*, 8(2):456–473.

Keevy, M. 2020. Core subjects in accounting academic programmes: Development of pervasive skills. *South African Journal of Accounting Research,* 34(2):140–160.

Kelemen, M.L. & Rumens, N. 2008. Organisational paradigms and management research. In M.L. Kelemen & N. Rumens (eds.). *An introduction to critical management research*. London: Sage, 21–36.

Kgapola, M.P. 2015. Professional accountant's perspective of skills required to move into management position. Unpublished PhD thesis, North-West University.

Kim, M.S. 2014. Doing social constructivist research means making empathic and aesthetic connections with participants. *European Early Childhood Education Research Journal*, 22(4):538–553.

Kivunja, C. & Kuyini, A.B. 2017. Understanding and applying research paradigms in educational contexts. *International Journal of Higher Education,* 6(5):26–41.

Korstjens, I. & Moser, A. 2018. Series: Practical guidance to qualitative research. Part 4: Trustworthiness and publishing. *European Journal of General Practice*, 24(1):120–124.

Kothari, C.R. 2004. *Research methodology: Methods and techniques*. Second edition. New Delhi: New Age.

Krahel, J.P. & Vasarhelyi, M.A. 2014. AIS as a facilitator of accounting change: Technology, practice, and education. *Journal of Information Systems,* 28(2):1–15.

Krause, A.E., North, A.C. & Davidson, J.W. 2019. Using self-determination theory to examine musical participation and well-being. *Frontiers in Psychology,* 10(405):1–12.

Kroon, N., Alves, M.D.C. & Martins, I. 2021. The impacts of emerging technologies on accountants' role and skills: Connecting to open innovation – a systematic literature review. *Journal of Open Innovation: Technology, Market, and Complexity*, 7(163):1–27.

Kunz, R. & De Jager, H. 2019a. Exploring the audit capabilities expectation-performance gap of newly employed first-year trainee accountants in Gauteng: Audit managers at large firms' perceptions. *South African Journal of Accounting Research,* 33(2):145–162.

Kunz, R. & De Jager, H. 2019b. Performance of newly employed trainee accountants in Gauteng, South Africa, versus the skills expectations of employers: How big is the gap? *Industry and Higher Education Journal*, 33(5):340–349.

Larres, P.M., Ballantine, J. & Whittington, M. 2003. Evaluating the validity of self-assessment: Measuring computer literacy among entry-level undergraduates within accounting degree programmes at two UK universities. *Accounting Education*, 12(2):97–112.

Laskaratos, F., Parry, D. & El-Mileik, H. 2016. The educational value of post-take ward rounds for senior trainees. *The Ulster Medical Journal*, 85(2):113–117.

Lazarus, R.S. 1993. From psychological stress to the emotions: A history of changing outlooks. *Annual Review of Psychology,* 44:1–21.

Lazarus, R.S. & Folkman, S. 1984. *Stress: Appraisal and coping*. New York, NY: Springer.

Lee, Y.-K. 2021. Impacts of digital technostress and digital technology self-efficacy on Fintech usage intention of Chinese Gen Z consumers. *Sustainability,* 13:1–15.

Leggett, M., Kinnear, A., Boyce, M. & Bennett, I. 2004. Student and staff perceptions of the importance of generic skills in science. *Higher Education Research & Development,* 23(3):295–312.

Leslie, R.S. 2017. Workplace bullying in digital environments: Antecedents, consequences, prevention, and future directions. In B. Christiansen & H.C. Chandan (eds.). *Handbook of research on organizational culture and diversity in the modern workforce.* Hershey, PA: IGI Global, 132–154.

Li, L. & Wang, X. 2021. Technostress inhibitors and creators and their impacts on university teachers' work performance in higher education. *Cognition, Technology & Work*, 23(2):315–330.

Lincoln, Y.S. & Guba, E.G. 1985. *Naturalistic inquiry*. Thousand Oaks, CA: Sage.

Lincoln, Y.S. & Guba, E.G. 2013. *The constructivist credo*. Walnut Creek, CA: Left Coast Press.

Lubbe, I., Myers, L.P. & Van Rooyen, A. 2020. Introduction to special issue: Challenges for academics educating accounting professionals in South Africa. *South African Journal of Accounting Research*, 34(2):91–95.

MacDonald, S. & Headlam, N. 2015. *Research methods handbook: Introductory guide to research methods for social research*. Manchester: Centre for Local Economic Strategies.

Mack, N., Woodsong, C., MacQueen, K.M., Guest, G. & Namey, E. 2005. *Qualitative research methods: A data collector's field guide*. Research Triangle Park, NC: Family Health International.

MacPhail, C., Khoza, N., Abler, L. & Ranganathan, M. 2016. Process guidelines for establishing intercoder reliability in qualitative studies. *Qualitative Research*, 16(2):198–212.

Mahmood, T. 2012. Dealing with trainees in difficulty. *Facts, Views & Vision in ObGyn*, 4(1):18–23.

Makarenko, I. & Plastun, A. 2017. The role of accounting in sustainable development. *Accounting and Financial Control,* 1(2):4–12.

Maree, K. 2014. *First step in research*. Pretoria: Van Schaik.

Martin, W. & Bridgmon, K. 2012. *Quantitative and statistical research methods: From hypothesis to results*. San Francisco, CA: Jossey-Bass.

Marx, B., Mohammadali-Haji, A. & Lansdell, P.A. 2020. University accounting programmes and the development of Industry 4.0 soft skills. *Journal of Economic and Financial Sciences*, 13(1):1–17.

Matsemela, M.L. 2016. *Address by the honourable MEC, Maphefo Lucy Matsemela on the occasion of the release of the 2015 results on 06 January 2016.* North West Department of Education and Sport Development. Available at: **Error! Hyperlink reference not valid.** (Accessed on 10 October 2021).

Mayer, I. 2015. Qualitative research with a focus on qualitative data analysis. *International Journal of Sales, Retailing & Marketing*, 4(9):53–67.

McCann, E. 2019. *Why Excel accounting is a threat to your business*. Method. Available at: https://www.method.me/blog/why-excel-accounting-is-a-threat-to-your-business/ (Accessed on 10 October 2021).

McCusker, K. & Gunaydin, S. 2015. Research using qualitative, quantitative or mixed methods and choice based on the research. *Perfusion Journals*, 30(7):537–542.

McGinnis, D. 2020. *What Is the Fourth Industrial Revolution?* Salesforce. Available at: https://www.salesforce.com/blog/what-is-the-fourth-industrial-revolution-4ir/ (Accessed on 29 May 2021).

Mezmir, E.A. 2020. Qualitative data analysis: An overview of data reduction, data display and interpretation. *Research on Humanities and Social Sciences*, 10(21):15–27. doi: 10.7176/RHSS/10-21-02

Milhem, W., Abushamsieh, K. & Aróstegui, M.N.P. 2014. Training strategies, theories and types. *Journal of Accounting – Business & Management*, 12(1):12–26.

Miller, A.M. & Woods, C.M. 2000. Undergraduate tax education: A comparison of educators' and employers' perceptions in the UK. *Accounting Education*, 9(3):223–224.

Miller, S. 2018. *Voices the debate about Excel.* Accounting Today. Available at: https://www.accountingtoday.com/opinion/the-debate-about-microsoft-excel (Accessed on 10 October 2021).

Mistry, M., Mistry, J.L.M. & Latoo, J. 2009. The dysfunctional relationship between trainer and trainee: Mother of all problems. *British Journal of Medical Practitioners*, 2(3):35–48.

Mkhize, M.V. 2017. Accounting firms' managers' and trainees' perceptions of managerial competencies required to manage diversity in KwaZulu-Natal, South Africa. *South African Journal of Economic and Management Sciences*, 20(1):1–11.

Moll, J. & Yigitbasioglu, O. 2019. The role of internet-related technologies in shaping the work of accountants: New directions for accounting research. *The British Accounting Review,* 51(6):1–10.

Morrow, S.L. 2005. Quality and trustworthiness in qualitative research in counselling psychology. *Journal of Counselling Psychology*, 52(2):250–260.

Mottram, A. 2011. Like a trip to McDonalds: A grounded theory study of patient experiences of day surgery. *International Journal of Nursing Studies,* 48:165–174.

Mtsweni, J.I.M. 2008. *The role of educators in the management of school discipline in the Nkangala Region of Mpumalanga*. Unpublished Master dissertation. University of South Africa, Pretoria.

Navatte, P. & Schier, G. 2017 Spin-offs: Accounting and financial issues across the literature. *Accounting Auditing Control*, 23:97–125.

Neubauer, B.E., Witkop, C.T. & Varpio, L. 2019. How phenomenology can help us learn from the experiences of others. *Perspectives on Medical Education*, 8(2):90–97.

Niglas, K. 2009. How the novice researcher can make sense of mixed methods designs. *International Journal of Multiple Research Approaches*, 3:34–46.

Nikou, S.A. & Economides, A.A. 2017. Mobile-based assessment: Integrating acceptance and motivational factors into a combined model of self-determination theory and technology acceptance. *Computers in Human Behaviour,* 68:83–95.

Noour, A.T. & Hubbard, N. 2014. The implementation of self-determination theory on the opportunities and challenges for blended e-learning in motivating Egyptian logistic learners. *International Journal of Educational and Pedagogical Sciences*, 8(12):3955–3960.

Oates, B.J. 2008. *Researching information systems and computing*. London: Sage.

Olarewaju, O.M. 2021. Fourth Industrial Revolution, accounting profession well-being, and environmental well-being in South Africa. In E. Abe (ed.). *Future of work, work-family satisfaction, and employee well-being in the Fourth Industrial Revolution*. Hershey, PA: IGI Global, 150–160.

Omair, A. 2014. Sample size estimation and sampling techniques for selecting a representative sample. *Journal of Health Specialities*, 2(4):142–147.

Orb, A., Eisenhauer, L. & Wynaden, D. 2001. Ethics in qualitative research. *Journal of Nursing Scholarship*, 33(1):93–96.

Padilla-Díaz, M. 2015. Phenomenology in educational qualitative research: Philosophy as science or philosophical science. *International Journal of Educational Excellence*, 1(2):101–110.

Paracha, B. 2019. *5 challenges your IT service desk faces everyday*. INRY. Available at: https://www.inry.com/insights/5-challenges-your-it-service-desk-faces-everyday (Accessed on 11 February 2022).

Parsons, S., Davidowitz, B. & Maughan, P. 2020. Developing professional competence in accounting graduates: An action research study. *South African Journal of Accounting Research,* 34(6):1–21.

Parvaiz, G.S., Mufti, O. & Gul, S. 2017. Problems and challenges in skills development: A perspective from professional accounting education. *Business & Economic Review*, 9(4):83–112.

Peek, S. 2021. Creativity is not innovation (but you need both). *Business News Daily*, 23 July. Available at: https://www.businessnewsdaily.com/6848-creativity-vs-innovation.html (Accessed on 16 October 2021).

Peens, S. 2018. Enhancing further education and training accounting teacher-training capacity at a University of Technology: Educational implications for theory and practice. Unpublished PhD thesis, Central University of Technology.

Pfadenhauer, M. & Knoblauch, H. 2018. *Social constructivism as paradigm? The legacy of the social construction of reality*. London: Routledge.

Pirkkalainen, H., Salo, M., Tarafdar, M. & Makkonen, M. 2019. Deliberate or instinctive? Proactive and reactive coping for technostress. *Journal of Management Information Systems*, 36(4):1179–1212.

Polit, D.F. & Beck, C.T. 2017. *Nursing research*: *Generating* and *assessing evidence* for *nursing practice*. Tenth edition. Philadelphia, PA: Wolters Kluwer Health.

Potgieter, C. 2021. *Understanding training contracts and office training dynamics*. AccountancySA. Available at: https://www.accountancysa.org.za/understanding-training-contracts-and-office-training-dynamics/ (Accessed on 29 May 2021).

Prinsloo, M. & Huysamen, E. 2018. Cultural and religious diversity: Are they effectively accommodated in the South African workplace? *Journal of Law, Democracy & Development,* 22(1):26–38.

Proulx, J. & Aldwin, C.M. 2016. Stress and coping theory in geropsychology. In N.A. Pachana (ed.). *Encyclopedia of Geropsychology.* New Delhi: Springer, 1-10.

Punch, K.F. 2009. *Introduction to research methods in education*. New Delhi: Sage.

Queirós, A., Faria, D. & Almeida, F. 2017. Strengths and limitations of qualitative and quantitative research methods. *European Journal of Education Studies*, 3(9):369–387.

Racero, F.J., Bueno, S. & Gallego, M.D. 2020. Predicting students' behavioural intention to use open source software: A combined view of the technology acceptance model and self-determination theory. *Applied Sciences,* 10(8):1–15.

Rapanta, C., Botturi, L., Goodyear, P., Guàrdia, L. & Koole, M. 2020. Online university teaching during and after the COVID-19 crisis: Refocusing teacher presence and learning activity. *Postdigital Science and Education*, 2(3):923–945.

Robert J.S. 2019. *Has the 4IR caught the banking sector unawares?* Business Essentials. Available at: https://www.businessessentials.co.za/2019/10/10/has-the-4ir-caught-the-banking-sector-unawares/ (Accessed on 9 February 2022).

Ronald, S. 2019. What's the Big Idea? The role of social interaction as a motivator in online classes. Unpublished PhD thesis, University of Bath.

Rossman, G.B. & Rallis, S.F. 2012. *Learning in the field: An introduction to qualitative research.* Third edition. Los Angeles, CA: Sage.

Roux, K. 2017. *SA loses number 1 ranking (out of 138 countries) for auditing standards.* 702. Available at: http://www.702.co.za/articles/274762/sa-loses-number-1-ranking-out-of-138-countries-for-auditing-standards (Accessed on 29 April 2022).

Rubin, H.J. & Rubin, I.S. 2012. *Qualitative interviewing: The art of hearing data*. Third edition. Los Angeles, CA: Sage.

Ryan, R.M. & Deci, E.L. 2017. *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. New York, NY: Guilford Press.

SAICA (South African Institute of Chartered Accountants). 2008. *Mafikeng excels with implementation of Saturday class.* Available at https://www.saica.co.za/DesktopModules/EngagePublish/printerfriendly.aspx?itemId=1259&PortalId=0&TabId=695 (Accessed on 10 October 2021).

SAICA (South African Institute of Chartered Accountants). 2020a. *SAICA training offices*. Available at: https://www.saica.co.za/Training/Training/FindaTrainingOffice/tabid/412/language/en-US/Default.aspx (Accessed on 10 January 2022).

SAICA (South African Institute of Chartered Accountants). 2020b. *Training regulations – 1 January 2020*. Available at: https://www.saica.co.za/portals/0/documents/Training%20Regulations%201%20Jan%202020%20-%20with%20markup.pdf (Accessed on 28 October 2020).

SAICA (South African Institute of Chartered Accountants). 2021a. *CA(SA) competency framework.* Available at: https://saicawebprstorage.blob.core.windows.net/uploads/Competency-Framework-2021-Preface.pdf (Accessed on 28 April 2021).

SAICA (South African Institute of Chartered Accountants). 2021b. *CA(SA) competency framework 2021: Guidance on the content, development and assessment of competencies in the training programme.* Available at: https://ca2025.co.za/wp-content/uploads/2021/03/DOCUMENT-4-CASA-Competency-Framework-2021-Guidance-to-the-Training-programme.pdf (Accessed on 28 April 2021).

SAICA (South African Institute of Chartered Accountants). 2021c. *List of SAICA accredited programmes (CA(SA) and AGA(SA)) – 2021, updated 8 December 2021.* Available at: https://saicawebprstorage.blob.core.windows.net/uploads/resources/List-of-accredited-programmes.pdf (Accessed on 12 February 2022).

SAICA (South African Institute of Chartered Accountants). 2021d. *SAICA – Initial Test of Competence: September 2021*. Available at: https://saicawebprstorage.blob.core.windows.net/uploads/SAICA-Initial-Test-of-Competence-September-2021.pdf (Accessed on 9 February 2022).

SAICA (South African Institute of Chartered Accountants). 2021e. *SAICA* strategy *2021*–2023. Available at: https://saicawebprstorage.blob.core.windows.net/uploads/SAICA-Strategy-Document-2021.pdf (Accessed on 7 February 2022).

Saldaña, J. 2016. *The coding manual for qualitative researchers*. Thousand Oaks, CA: Sage.

Saleem, F., Malik, M.I., Qureshi, S.S., Farid, M.F. & Qamar, S. 2021. Technostress and employee performance nexus during COVID-19: Training and creative self-efficacy as moderators. *Frontiers in Psychology,* 12:1–16.

Salimzadeh, R., Hall, N.C. & Saroyan, A. 2021. Examining academics' strategies for coping with stress and emotions: A review of research. *Frontiers in Education*, 6:1–15.

Salmon, B. 2017. *What's it like working as a trainee solicitor?* Burges Salmon. Available at: https://www.burges-salmon.com/careers/careers-blog/what-is-it-like-working-as-a-trainee-solicitor (Accessed on 15 February 2021).

Samkin, G., Low, M. & Taylor, J. 2012. Incorporating financial literacy into the secondary school accounting curriculum: A New Zealand perspective. *Australasian Accounting, Business and Finance Journal*, 6(4):5–30.

Saunders, M., Lewis, P. & Thornhill, A. 2012. *Research methods for business students.* London: Pearson Education.

saYellow.com. 2021. *Accounting firms in Mafikeng*. Available at: https://www.sayellow.com/south-africa/chartered-accountants-in-mahikeng (Accessed on 10 January 2021).

Schoenmakers, E., Van Tilburg, T. & Fokkema, T. 2015. Problem-focused and emotion-focused coping options and loneliness: How are they related? *European Journal of Ageing*, 12:153–161.

Schoonenboom, J. & Johnson, R.B. 2017. How to construct a mixed methods research design. *Kolner Zeitschrift fur Soziologie und Sozialpsychologie,* 69(2):107–131.

Schwab, K. 2016. *The Fourth Industrial Revolution: What it means, how to respond.* World Economic Forum. Available at: https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/ (Accessed on 12 March 2021).

Scotland, J. 2012. Exploring the philosophical underpinnings of research: Relating ontology and epistemology to the methodology and methods of the scientific, interpretive, and critical research paradigms. *English Language Teaching*, 5(9):9–16.

Selamat, R. & Idris, N. 2019. Competence acquisition issues and challenges: The experiences of accountancy trainees. *Journal of Advanced Research in Business and Management Studies*, 2(1):74–92.

Shen-Miller, D.S., Schwartz-Mette, R., Sickle, K.S.V., Jacobs, S.C., Grus, C.L., Hunter, E.A. & Forrest, L. 2014. Professional competence problems in training: A qualitative investigation of trainee perspectives. *Training and Education in Professional Psychology, 9(2):*1–9.

Siegel, G., Sorensen, J.E., Klammer, T. & Richtermeyer, S.B. 2010. The ongoing preparation gap in accounting education: A call to action. *Management Accounting Quarterly Journal,* 11(3):41–52.

Silva, I. L. 2018. How learning theories can be applied in accounting education. *Millenium - Journal of Education, Technologies, and Health*, *2*(7):13–20.

Simon, M.K. & Goes, J. 2013. *Assumptions, limitations, delimitations, and scope of the study*. Dissertation Recipes. Available at: http://dissertationrecipes.com/wp-content/uploads/2011/04/AssumptionslimitationsdelimitationsX.pdf (Accessed on 28 January 2020).

Sithole, S. 2015. Information technology knowledge and skills accounting graduates need. *International Journal of Business and Social Science*, 6(8):47–52.

Skhephe, M. & Matashu, M. 2021. The use of technology in accounting classrooms during COVID-19: What do accounting teachers in the Eastern Cape, South Africa, have to say? *Research in Social Sciences and Technology*, 6(2):264–278.

Smith, B. & McGannon, K.R. 2018. Developing rigor in qualitative research: Problems and opportunities within sport and exercise psychology. *International Review of Sport and Exercise Psychology,* 11(1):101–121.

Sonnerfeldt, A. & Pontoppidan, C. 2020. The challenges of assurance on non-financial reporting. *Accounting, Economics, and Law: A Convivium*, 10(2):1–23.

Stanciu, V. & Bran, F.P. 2015. The accounting profession in the digital era. *Proceedings of the International Conference Ecological Performance in a Competitive Economy, Supplement of Quality-Access to Success*, 16(1):546–550.

Stats SA (Statistics SA). 2012 *South African statistics*. Available at: http://www.statssa.gov.za/publications/SAStatistics/SAStatistics2012.pdf (Accessed on 28 April 2021).

Stumke, O. 2017. Information technology in accountancy curricula: Necessity or afterthought. *International Journal of eBusiness and eGovernment Studies*, 9(2):121–136.

Swaen, B. 2020. *Conceptual framework*. Scribbr. Available at: https://www.scribbr.com/dissertation/conceptual-framework/ (Accessed on 28 December 2019).

Swanson, R.A. 2013. *Theory building in applied disciplines.* San Francisco, CA: Berrett-Koehle.

Tarafdar, M., Cooper, C.L. & Stich, J.F. 2019. The technostress trifecta – techno eustress, techno distress and design: Theoretical directions and an agenda for research. *Information Systems Journal*, 29(1):6–42.

Tarafdar, M., Pullins, E.B. & Ragu-Nathan, T.S. 2015. Technostress: Negative effect on performance and possible mitigations. *Information Systems Journal,* 25(2):103–132.

Thottoli, M.M. 2021. Knowledge and use of accounting software: Evidence from Oman. *Journal of Industry - University Collaboration*, 3(1):2–14.

Tiron-Tudor, A., Deliu, D., Farcane, N. & Donțu, A. 2021. Managing change with and through blockchain in accountancy organizations: A systematic literature review. *Journal of Organizational Change Management*, 34:477–506.

Tondeur, J., Aesaert, K., Prestridge, S. & Consuegra, E. 2018. A multilevel analysis of what matters in the training of pre-service teacher's ICT competencies. *Computers and Education,* 122(1):32–42.

Tornow, E. 2015. *The effects of changing AIS on user experience and business role.* Senior Honours Theses no. 113. Available at: rethttps://digitalcommons.brockport.edu/honors/113 (Accessed on 9 March 2021).

Tsiligiris, S. & Bowyer, D. 2021. Exploring the impact of 4IR on skills and personal qualities for future accountants: A proposed conceptual framework for university accounting education. *Accounting Education*, 30(6):621–649.

Turban, S., Wu, D. & Zhang, L. 2019. Research: When gender diversity makes firms more productive. *Harvard Business Review*, 11 February. Available at: https://hbr.org/2019/02/research-when-gender-diversity-makes-firms-more-productive (Accessed on 15 February 2021).

University of Johannesburg. 2021. *How to become a chartered accountant South Africa (CASA)*. Available at: https://www.uj.ac.za/faculties/college-of-business-and-economics/schools/school-of-accounting/department-of-accountancy/how-to-become-a-chartered-accountant-south-africa-casa/ (Accessed on 10 October 2021).

Van der Merwe, D. 2014. A comparative overview of the (sometimes-uneasy) relationship between digital information and certain legal fields in South Africa and Uganda. *Potchefstroom Electronic Law Journal,* 17(1):297–327.

Van Oordt, T. & Sulliva, I. 2017. Experiential learning as a method to address the employer expectation gap on pervasive competencies in an undergraduate taxation curriculum. Paper presented at the Southern African Accounting Association Biennial International Conference Proceedings, Champagne Sports Resort, Drakensberg.

Van Romburgh, H. 2014. Accounting education: Investigating the gap between school, university and practice. Unpublished Master dissertation, North-West University.

Van Romburgh, H. & Van der Merwe, N. 2015. University versus practice: A pilot study to identify skills shortages that exist in first-year trainee accountants in South Africa. *Industry and Higher Education Journal*, 29(2):141–149.

Vasarhelyi, M.A., Tschakert, N., Kokina, J. & Kozlowski, S. 2017. How business schools can integrate data analytics into the accounting curriculum. *The CPA Journal*, October. Available at: https://www.cpajournal.com/2017/10/11/business-schools-can-integrate-data-analytics-accounting-curriculum/ (Accessed on 29 May 2021).

Vdovin, A. 2020. *The advantages and disadvantages of email for communications in a company.* Deskalerts. Available at: https://www.alert-software.com/blog/the-advantages-and-disadvantages-of-email (Accessed on 10 October 2021).

Viviers, H.A., Fouché, J.P. & Reitsma, G.M. 2016. Developing soft skills (also known as pervasive skills): Usefulness of an educational game. *Meditari Accountancy Research,* 24(3):368–389.

Warffemius, P., Kruger, L. & Steenkamp, G. 2015. SAICA's academic traineeship programme: Would guidelines facilitate focused skills development? *Journal of Economic and Financial Sciences,* 8(2):354–371.

Wasim, J., Sharma, S.K., Khan, I.A. & Siddiqui, J. 2014. Web based learning. *International Journal of Computer Science and Information Technologies*, 5(1):446–449.

Weinbaum, C., Landree, E., Blumenthal, M.S., Piquado, T. & Gutierrez, C.I. 2019. *Ethics in scientific research: An examination of ethical principles and emerging topics*. Santa Monica, CA: RAND Corporation.

Wessels, P.J. 2006. The South African business environment in which accountants' function and the role of information technology in that environment. *Meditari Accountancy Research*, 14(2):131–149.

Wessels, P.J. 2008. The identification and discussion of strategies for implementing an IT skills framework in the education of professional accountants. *South African Journal of Accounting Research,* 22(1):147–181.

WHO (World Health Organization). 2020. *Clinical management of severe acute respiratory infection when novel coronavirus (nCoV) infection is suspected: Interim guidance*. Available at: https://www.who.int/publications-detail/clinical-management-of-severe-acute-respiratory-infection-when-novel-coronavirus-(ncov)-infection-is-suspected (Accessed on 15 October 2021).

Wilson, E. 2017. *School-based research: A guide for education students*. Third edition. Los Angeles, CA: Sage.

Wong, A., George, S. & Tanima, F.A. 2021. Operationalising dialogic accounting education through praxis and social and environmental accounting: Exploring student perspectives. *Accounting Education,* 30(5):525–550.

Yin, P., Ou, C., Davison, R. & Wu, J. 2018. Coping with mobile technology overload in the workplace. *Internet Research*, 28(5):1189–1212.

Yin, R.K. 2014. *Application of case study research*. Fifth edition. Thousand Oaks, CA: Sage.

Yoon, S. 2020. A study on the transformation of accounting based on new technologies: Evidence from Korea. *Sustainability*, 12(20):1–22.

Zhao, X., Xia, Q. & Huang, W. 2020. Impact of technostress on productivity from the theoretical perspective of appraisal and coping processes. *Information & Management*, 57(8):103–265.

Žukauskas, P., Vveinhardt, J. & Andriukaitienė, R. 2018. Philosophy and Paradigm of Scientific Research. In P. Žukauskas, J. Vveinhardt & R. Andriukaitien (eds.), *Management Culture and Corporate Social Responsibility*. London: IntechOpen, 121–139.

APPENDIX A: PARTICIPANT INFORMATION SHEET

24 June 2021

Ethics approval reference number: 2021_CAS_025 (2021-06-09)

Title: *Strategies employed by first-year trainee accountants in the Mafikeng area to overcome information technology challenges*

Dear prospective participant

My name is Lilian Ifunanya Nwosu and I am doing research with Mrs L Labuschagne and Dr AA van Rooyen, senior lecturers in the Department of Financial Accounting at the University of South Africa (Unisa), towards an MPhil (Accounting Sciences). We are inviting you to participate in my study.

WHAT IS THE PURPOSE OF THE STUDY?

I am conducting this research to determine the information technology (IT) challenges first-year trainee accountants encounter when they enter the workplace and the strategies they employ to curb these challenges.

WHY AM I BEING INVITED TO PARTICIPATE?

Your contact details were obtained from a manager and/or staff member at your firm. There was no specific reason for selecting you for participation in this research study; the only criterion considered was that a chosen participant must be:

- a first-year full-time trainee accountant at an accounting firm in the Mafikeng area in the North West province, or
- a manager at an accounting firm in the Mafikeng area in the North West province who works closely with first-year trainee accountants.

Approximately 20 participants will be interviewed. A summary of the participants is provided in the following table:

Participants	Number
Four first-year full-time trainee accountants from four selected accounting firms	16
Four managers from four selected accounting firms	4
Total number of participants	**20**

WHAT IS THE NATURE OF MY PARTICIPATION IN THIS STUDY?

The study involves audio-recorded semi-structured interviews, which are estimated to last between 20 and 30 minutes. The questions to be asked will relate to the following topics:

i. IT skills required by first-year training accountants

ii. IT challenges experienced by first-year training accountants in Mafikeng

iii. Strategies employed by first-year trainee accountants to curb the IT challenges they experience.

CAN I WITHDRAW FROM THIS STUDY EVEN AFTER HAVING AGREED TO PARTICIPATE?

Participating in this study is voluntary and you are under no obligation to participate. If you do decide to take part, you will be given this information sheet to keep and you will be asked to sign a written consent form. You are free to withdraw at any time and without giving a reason by simply informing the researcher via email, text message or telephone call.

WHAT ARE THE POTENTIAL BENEFITS OF TAKING PART IN THIS STUDY?

There are no direct possible benefits for individual participants. However, the data provided by participants will assist the researcher in fulfilling the aim set out in her research study and will also provide relevant information about the IT challenges experienced by first-year trainee accountants in Mafikeng and the strategies they employ to curb these challenges. The findings of the study may be beneficial to SAICA, other accounting firms and trainee accountants.

ARE THERE ANY NEGATIVE CONSEQUENCES FOR ME IF I PARTICIPATE IN THE RESEARCH PROJECT?

There are no foreseeable negative risks associated with participation in this research study. The foreseeable inconvenience to you for participating is the use of your time, which the researcher requests you to kindly set aside for interviews as outlined above. All the information provided by you in this research will be treated as highly confidential and your name will not be used in any report on this research study without your consent. The information obtained from you will only be used for the purpose of this study, which may include publications in accredited journals, whereafter the records on supplied information will be destroyed according to the university's policy on collected data for research purposes.

WILL THE INFORMATION THAT I CONVEY TO THE RESEARCHER AND MY IDENTITY BE KEPT CONFIDENTIAL?

Your name and that of your firm will only be known to the researcher and identified members of the research team. You will be given a code and you will be referred to in this way in the data, any publications or other research reporting methods such as conference proceedings.

Your answers may be reviewed by people responsible for ensuring that the research is conducted properly, including the transcriber and external coder, who will be required to sign a confidentiality agreement, and members of the Research Ethics Review Committee. Otherwise, records that identify you will be available only to people working on the study.

Your anonymous data may be used for other purposes, such as a research report, journal articles and/or conference proceedings. In whatever form your supplied data may be used, your name and identity will always be kept confidential and private.

HOW WILL THE RESEARCHER(S) PROTECT THE SECURITY OF DATA?

Hard copies of your answers will be stored by the researcher for a minimum period of five years in a locked cupboard/filing cabinet at the office of Mrs L Labuschagne for future research or academic purposes; electronic information will be stored on a

password-protected computer. Future use of the stored data will be subject to further research ethics review and approval, if applicable. After five years, the records of the data collected from you will be destroyed as follows:

- Hard copies will be shredded and/or
- Electronic copies will be permanently deleted from electronic devices.

WILL I RECEIVE PAYMENT OR ANY INCENTIVES FOR PARTICIPATING IN THIS STUDY?

There are no payments or incentives for participating in this research study, as participation is voluntary. Furthermore, there are no foreseeable costs that will be incurred by participating in this research study.

HAS THE STUDY RECEIVED ETHICS APPROVAL?

This study has received written approval from the Research Ethics Review Committee of the College of Accounting Sciences, Unisa. A copy of the approval letter can be obtained from the researcher if you so wish.

HOW WILL I BE INFORMED OF THE FINDINGS/RESULTS OF THE RESEARCH?

If you would like to be informed of the final research findings, please contact Lilian Ifunanya Nwosu on 078 883 1073 or 55505511@mylife.unisa.ac.za. The findings are accessible for five years. Should you require any further information or want to contact the researcher about any aspect of this study, please contact her on the previously mentioned contact details.

Should you have concerns about the way in which the research has been conducted, you may contact Mrs L Labuschagne on 012 429 4694 or labusl@unisa.ac.za. Contact the research ethics chairperson of the College of Accounting Sciences Research Ethics Review Committee on 012 429 8844 or erasmlj1@unisa.ac.za if you have any ethical concerns.

Thank you for taking the time to read this information sheet and for participating in this study.

Lilian Ifunanya Nwosu

APPENDIX B: CONSENT LETTER

INFORMED CONSENT AGREEMENT FOR PARTICIPANTS

I, ... (participant name), confirm that the person asking my consent to take part in this research has told me about the nature, procedure, potential benefits and anticipated inconvenience of participation.

I have read (or had explained to me) and understood the study as explained in the information sheet.

I have had sufficient opportunity to ask questions and they were all answered to my satisfaction.

I understand that my participation is voluntary and that I am free to withdraw at any time without penalty (if applicable).

I am aware that the findings of this study will be processed into a research report, journal publications and/or conference proceedings, but that my participation will be kept confidential unless otherwise specified.

I agree to the recording of the semi-structured interviews.

I have read and understood this consent form and agree to participate in this research study.

Participant's name and surname: ..... (Please print)

Participant's signature: ..... Date: .....

Researcher's name and surname: Lilian Ifunanya Nwosu

Researcher's signature: .....Date: .....

APPENDIX C: INTERVIEW GUIDE – TRAINEE ACCOUNTANTS

SEMI-STRUCTURED INTERVIEW QUESTIONS – TRAINEE ACCOUNTANTS

Interview protocol: Semi-structured interviews: First-year full-time trainee accountants (20–30 minutes)

Title: Strategies employed by first-year trainee accountants in the Mafikeng area to overcome information technology challenges

The research is mainly about identifying information technology (IT) challenges first-year trainee accountants experience when they enter the workplace and determining what strategies they employ to curb these challenges. IT refers to software (e.g. Microsoft Excel, Microsoft Access, Microsoft Word), software packages (e.g. Sage Pastel Accounting, CaseWare) and also related applications such as email, web browsers and cloud computing.

Date of interview:	
Time of interview:	
Place of interview:	
Interviewer:	**Lilian Ifunanya Nwosu**
Interviewee:	
Highest education qualification of interviewee:	
Position of firm:	
Proposed questions	
1. What IT skills do first-year trainee accountants require when they enter the workplace to perform their duties? Prompt for general skills in email, web search, Microsoft Word, Microsoft Excel, Sage Pastel Accounting, CaseWare. Prompt for exposure to the skills mentioned by the participant to determine whether he/she was exposed to any of these at school or university.	

2. Are you of the opinion that a knowledge gap exists between IT training at school and university and the skills required when you start as a trainee accountant at an accounting firm? Please explain your answer.
3. What challenges did you encounter as first-year trainee accountant with specific reference to the required IT skills? Prompt for types of software, employer expectations, workload, family responsibilities, stress, own studies, psychological, Covid-19.
4. What role did your employer (accounting firm) play to assist you to overcome these challenges? Prompt for training programmes (SAICA and firm), mentorship, work-based learning.
5. What strategies did you apply to assist you with the IT challenges? Prompt for workplace friendships, internet searches, online/social media discussions, family and friends, other.
6. How do you cope with stress associated with IT skills? Prompt for stressful situations, emotions, atmosphere at work, practical solutions (cost, time, benefit, alternatives).
7. What role does your own self-determination play when encountering IT challenges in the workplace? Prompt for motivation, coping with specific situations, working relationships, effectiveness, own needs, own competencies, mental health, career decisions.
8. As trainee accountant you need to take responsibility for your own skills development. Do you see yourself achieving this during your training? Please explain your answer.
9. Other related ideas you want to share with me?

APPENDIX D: INTERVIEW GUIDE – MANAGERS

SEMI-STRUCTURED INTERVIEW QUESTIONS – MANAGERS

Interview protocol: Semi-structured interviews: Managers (20–30 minutes)

Title: Strategies employed by first-year trainee accountants in the Mafikeng area to overcome information technology challenges

The research is mainly about identifying information technology (IT) challenges first-year trainee accountants experience when they enter the workplace and determining what strategies they employ to curb these challenges. IT refers to software (Microsoft Excel, Microsoft Access, Microsoft Word), software packages (Sage Pastel Accounting, CaseWare) and also related applications such as email, web browsers, cloud computing.

Date of interview:	
Time of interview:	
Place of interview:	
Interviewer:	**Lilian Ifunanya Nwosu**
Interviewee:	
Highest education qualification of interviewee:	
Position of firm:	
Proposed questions	
1. What IT skills do you expect from new accounting trainees when they enter the workplace? Prompt for general skills in email, web search, Microsoft Word, Microsoft Excel, Sage Pastel Accounting, CaseWare. Prompt for differentiation between trainees who come directly from school and those who have been exposed to university studies.	
2. Are you of the opinion that a knowledge gap exists between IT training at school and university and the skills required when one starts as a trainee accountant at an accounting firm? Please explain your answer.	

3. What challenges do these first-year trainee accountant encounter with specific reference to the required IT skills? Prompt for types of software, employer expectations, workload, family responsibilities, stress, own studies, psychological, Covid-19.
4. What role do you as employer play to assist the trainee accountants to overcome these challenges? Prompt for training programmes (SAICA and firm), mentorship, work-based learning. Prompt to determine whether the employer is of the opinion that these are sufficient or not to overcome challenges.
5. What strategies do these first-year trainees apply to assist with their IT challenges? Prompt for workplace friendships, internet searches, online/social media discussions, family and friends, other.
6. Are you of the opinion that trainee accountants can cope with stress associated with IT skills? Please explain your answer. Prompt for examples of stressful situations, emotions, atmosphere at work (both positive and negative), practical solutions.
7. Do you think their own self-determination plays a role when they encounter IT challenges in the workplace? Please explain your answer. Prompt for motivation, coping with specific situations, working relationships, effectiveness, needs, competencies, mental health, career decisions.
8. Do trainee accountants take responsibility for their own IT skills development while working at your accounting firm? Please explain your answer. Prompt for SAICA requirements, training programmes, academic studies.
9. Were there trainee accountants who could not cope with IT skills challenges in the past? Prompt for examples, reasons, SAICA training requirements, who is responsible.
10. Other related ideas you want to share with me?

APPENDIX E: ETHICAL CONSIDERATION

UNISA university of south africa

UNISA COLLEGE OF ACCOUNTING SCIENCES RESEARCH ETHICS REVIEW COMMITTEE

Date: 9 June 2021

ERC Reference # : 2021_CAS_025
Name : L I Nwosu
Student no: 55505511

Dear Ms L I Nwosu,

Decision: Ethics Approval from 8 June 2021 to 7 June 2024

Researcher(s): Ms Lilian Ifunanya Nwosu (55505511@mylife.unisa.ac.za)
Supervisor(s): Ms Lizelle Labuschagne (labusl@unisa.ac.za)
Dr Annelien van Rooyen (vrooyaa@unisa.ac.za)

Working title of research:
STRATEGIES EMPLOYED BY FIRST-YEAR TRAINEE ACCOUNTANTS IN THE MAFIKENG AREA TO OVERCOME INFORMATION TECHNOLOGY CHALLENGES

Qualification: MPhil and Non-degree

Thank you for the application for research ethics clearance by the Unisa College of Accounting Sciences Research Ethics Review Committee for the above mentioned research. **Ethics approval is granted for data collection through interviews.** The certificate is valid for the period **8 June 2021 to 7 June 2024.**

*The **low risk application** was **approved** by the CAS RERC on **8 June 2021** in compliance with the Unisa Policy on Research Ethics and the Standard Operating Procedure on Research Ethics Risk Assessment.*

The proposed research may now commence with the provisions that:

1. The researcher(s) will ensure that the research project adheres to the values and principles expressed in the UNISA Policy on Research Ethics.
2. Any adverse circumstance arising in the undertaking of the research project that is relevant to the ethicality of the study should be communicated in writing to the CAS RERC.
3. The researcher(s) will conduct the study according to the methods and procedures set out in the approved application.

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4. Any changes that can affect the study-related risks for the research participants, particularly in terms of assurances made with regards to the protection of participants' privacy and the confidentiality of the data, should be reported to the Committee in writing, accompanied by a progress report.
5. The researcher will ensure that the research project adheres to any applicable national legislation, professional codes of conduct, institutional guidelines and scientific standards relevant to the specific field of study. Adherence to the following South African legislation is important, if applicable: Protection of Personal Information Act, no 4 of 2013; Children's act no 38 of 2005 and the National Health Act, no 61 of 2003.
6. Only de-identified research data may be used for secondary research purposes in future on condition that the research objectives are similar to those of the original research. Secondary use of identifiable human research data require additional ethics clearance.
7. No fieldwork activities may continue after the expiry date **(7 June 2024)**. Submission of a completed research ethics progress report will constitute an application for renewal of Ethics Research Committee approval.

Note:
*The reference number **2021_CAS_025** should be clearly indicated on all forms of communication with the intended research participants, as well as with the Committee.*

Yours sincerely,

Signature : **Prof Lourens Erasmus**

Chair of CAS RERC

E-mail: erasmlj1@unisa.ac.za
Tel: (012) 429-8844

Signature : **Dr Chisinga Chikutuma**

Digitally signed by Dr CN Chikutuma, PhD
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APPENDIX F: ATLAS.TI CERTIFICATE OF CODING

INDEPENDENT CODER CERTIFICATE

I, Charmaine Williamson, attest to being an independent coder (IC) for Ms Lilian Ifunanya Nwosu in terms of her Masters of Philosophy study titled “Strategies employed by first-year trainee accountants in the Mafikeng area to overcome information technology challenges”.

I am qualified to serve as an IC in my role as academic advisor to higher education and have thus served as IC for Ms Nwosu with the documentation thereof submitted as a full methodological audit trail. This is a means to verify the trustworthiness of the research analysis process with regard to coding and categorising the data of the researcher.

I may be contacted in this regard for any matters pertaining to the IC working and for assurances in respect of the scholarly originality and autonomy of the student in the undertaking of the study.

SIGNED BY  on 19 September 2021

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