



**THE INFLUENCE OF SCARCE SKILLS ON EMPLOYMENT OPPORTUNITIES
AMONGST GRADUATES OF A SELECTED UNIVERSITY**

by

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DECLARATION

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ABSTRACT

It has been reported that South Africa's joblessness rests in the perception that the unemployed usually have lower competencies than what is expected by the market. With the ever-increasing demand for competent workers due to industrial changes and the demand to become more economical worldwide, it would be anticipated that alumni would find employment without a struggle. Yet, contrary to expectations, joblessness has been increasing among youth who possess university and college credentials. This research study investigated the influence of scarce skills on employment opportunities of graduates of a selected university in the Western Cape in South Africa. Data indicate that graduates are improperly prepared for admission into the employment market. The study found that scarce skills are industry-specific despite individuals having general skills such as communication and other social competencies. The study provided evidence that scarce skills are usually industry-driven and comprise specialized and context-specific technologies and knowledge domains. It was observed that scarce skills often require experience and university education alone is inadequate. Therefore, a need exists for post-university education that is specifically directed at the acquisition of scarce skills. While graduate employability is largely dependent on scarce skills, it was found that recruitment and employment processes are challenged by unfair labour practices and a high degree of subjectivity. Often, employers do not employ based on skills but other criteria. Evidence was found that employment is influenced by factors such as networking and relationships among graduates and employers. This study followed a non-experimental design, which is often associated with qualitative research as structured questionnaires and interview guides were used to acquire the information. In respect of the information and evidence gathered as part of this study, the researcher recommends that universities should foster the development of scarce skills for the employability of graduates. Findings from the study showed that skills and experience were major reasons for the poor absorption of graduates in the labour market. The study also found that skills are affecting the employability of graduates and that university education is generalized and lacks specificity in addressing industry needs. The study also found evidence that mischief such as nepotism and relationship-based employment is affecting the employability of graduates. The study recommends the appointment of a scarce skills officer to be responsible for assessing and promoting skills-based curricula in universities.

Keywords: Skills, education, employability, graduates, joblessness.

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DEDICATION

This project is dedicated to my late father, Mtutuse Mafanyanga and my two late brothers, Maso and Ree. The support they gave me before their passing was immeasurable. I will forever be grateful to God for their lives. May their souls continue to rest in eternal peace.

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ABBREVIATIONS AND ACRONYMS

BRICS	Brazil, Russia, India, China, and South Africa
DHET	Department of Higher Education and Training
HESA	Department of Higher Education South Africa
HSRC	Human Sciences Research Council
Industry 4.0	Fourth Industrial Revolution
JIPSA	Joint Initiative for Priority Skills Acquisition
LMIP	Labour Market Intelligence Partnership
OBE	Outcomes-Based Education
PSET	Post-School Education and Training
SA	South Africa
SABPP	South African Board of People Practice
SPSS	Statistical Package for the Social Sciences
UCT	University of Cape Town
WEF	World Economic Forum

CHAPTER 1

INTRODUCTION

1.1 Introduction

Unemployment has emerged as a major social and economic problem facing South African university graduates. According to Mnguni and Morton Mckay (2022:1), the 2017 Statistics South Africa (Stats SA) periodical workforce survey for South Africa indicates that there are more than 430 000 unemployed people in the country with about 58% of them being between 15 and 34 years of age. Furthermore, analysts have revealed that the problem of unemployment among the youth as reported in South Africa is a global phenomenon as many countries face this challenge. Most of them are graduates with qualifications but they do not get hired. Frey and Osborne (2017:254) report on an operational scope perceived in labour demand movements that indicates a change in the direction of highly skilled employees. Yu (2020:276) postulates that the South African unemployment rate jumped from 26.7% to 27.1% around the second quarter of 2018. As reported in Coonan and Pratt-Adams. (2018), the youth (15-34) are better educated than in previous years when illiteracy used to be the norm. During the first quarter of 2017, the population of working-aged people increased by 157 000 compared to 2016 (Mnguni & Morton Mckay, 2022:1). Also, in the first quarter, employment and unemployment increased. This movement could increase registration numbers at higher learning institutions. Sutherland (2020:233) states that 57.0% of the South African labour force completed their tertiary level education.

1.2 Rationale for the research

1.2.1 Background

The rate of joblessness in South Africa has maintained a steady rise over the years. According to Yu (2020:276), Stats SA reported that graduate unemployment rose from 27% in first quarter of 2018, to 28% in the second quarter. Regarding these statistics, Thomas-Francois et al. (2017:83) stress that unemployment in graduates is a significant study since theory suggests the economy in South Africa observed the absence of Information Technology (IT) skills while the economy can produce enough jobs for graduates. This appears to oppose the scholarship statistic which indicates that where there is significant funding, the chances of getting employed increase (Song et al., 2020:107447).

Consequently, it can be argued that the identification of the factors for graduate employability is essential. The present study considers graduates as holders of degrees, which includes those with postgraduate degrees. Graduates who do not find jobs, join the unemployed youth between 16-35 years of age who are seeking employment. Most unemployed graduates fall

into the 20-24 years age group which coincides with entry into the labour market; effective labour market participation has previously been associated with this age group and higher (Jowah & Beretu, 2019:251). The main aim of the youth is to start a career by becoming employed by a reputable organisation. In this study, scarce skills are considered the qualification requisites of certain job categories, which very few graduates possess. The concept of scarce skills arises in respect of new careers or job categories where very few people are qualified for such jobs. Employment and employment opportunities are considered in this study to entail all government initiatives that dictate that public institutions should eliminate discrimination against job seekers based on the criteria of age, race, colour, creed, sex, religion, and disability. The study defines a young graduate as “an individual with any post-high school qualification such as a diploma, technical qualification or degree” (Nonyana & Njuho, 2018:1).

1.2.2 Problem statement

In a country with a high unemployment rate such as South Africa, university graduates do not readily get employed after graduation. Unemployment of the youth is not only a problem in emerging countries like South Africa but also evident in the developed world (Fakih et al., 2020:311). The slow progress in addressing unemployment among the youth is not exclusive to South Africa but is also a huge challenge in both developing and developed countries. Although there is extensive literature on this subject which suggests many recommendations for government, little has been done to address young graduate unemployment (Wakefield et al., 2022:87).

1.2.3 Research aim and objectives

Given the background and the problem statement, the study aimed to investigate the deficiency of focus by government on young graduate employment which has increased poverty levels in many homes and communities. The main objective of this study, therefore, is to determine which factors contribute to graduate unemployment. The sub-objectives to address the main objective are:

- a) Investigate which skills are scarce among university graduates.
- b) Determine how scarce skills and employment opportunities relate to each other.
- c) Determine which skills are prioritised for graduate employment.

1.2.4 Research questions

The main research question is “Which factors contribute to graduate employability?” The sub-questions to address the main questions are:

- a) Which types of scarce skills are needed among graduates?

- b) What is the relationship between scarce skills and employment opportunities?
- c) Which skills are prioritised for graduate employment?

1.2.5 Preliminary literature review

This section clarifies significant theoretical approaches supporting the research objective. To obtain data on the subject, relevant literature will be reviewed, from secondary material published in the form of books, official government documents and web pages is the Internet, empirical, theoretical as well as conceptual research publications.

There are many difficulties in filling certain employment positions in South African companies, due to unskilled South African graduates. As a result of the problem unskilled graduates, the rate of unemployment is high in South Africa relative to other countries around the globe. In respect of the 2014/2015 10th talent shortage survey by Manpower South Africa which sampled 750 local businesses, 8.0% and 31.0% of employers respectively reported difficulty in filling job positions (Dubey et al., 2015:120). This report recorded that the number of employers that complained increased by 23.0%, relating to the number of South African graduates unfit for the vacancies available in companies.

The most difficult skilled positions to be filled in industries according to the survey are specialised trades, engineering persons, top executives, managers, accountants and financial specialists, salespersons, skilled secretaries, executive assistants, skilled receptionists, administration specialists and their assistants, office aides, drivers, industrial technical persons, educationists, and IT (Dubey et al., 2015:120). One of the major causes of lack of scarce skills among South Africans is students not applying for studies in these areas. Based on the report from Manpower South Africa's talent shortage survey in 2016, skilled trade and executive management positions are the most difficult to fill for South African employers (Lukhele & Soumonni, 2021:829837). Additional number of employers are struggling to fill available jobs. Globally, 45.0% of employers explain that they cannot find the skills that they need, up from 40% in 2017/2018, hence the number increased in a decade (Lukhele & Soumonni, 2021:829).

1.3 Industry requisites

Special industry skills are the skills required that allow for the achievement of specific industry outcomes (Venkatraman et al., 2018:194). Essentially, it is the skill set, attitudes and capabilities that are required for a specific job in certain industrial sectors. It is important that skills match what is in demand in industries. For example, engineering businesses require specific performance-related skills in workers to ensure they are suitably qualified for certain jobs. Such necessary skills are central to performance and are used to predict if a person can

adequately meet the requirements of a job; a lack of the requisite skills relevant to a sector or industry makes it difficult for graduates to find employment (Govindan et al., 2020:107575).

1.3.1 Engineering skill sets for employment

'Employability skills' are also called 'transferable skills', 'capability skills' or 'work skills', depending on the user and country, and are requisites in all facets of industries. The technical skills required by engineers for better employment are not very different from non-technical skills (Maisiri et al., 2019:90). According to Ayalew and Zeleke (2018:24), the requisite engineering skills, as developed by the Ministry of Higher Education, are listed in Table 1.1 below.

Table 1.1: Engineering skills for employment

No.	Skills	Description
1	Communication effectively	the ability to present ideas with confident and effective through aural, oral and written modes, not only with engineers but also with the community at large
2	Competent in application and practice	the ability to use the techniques, skills, and modern engineering tools
3	Interpersonal or team working skills	the ability to function effectively as an individual and in a group with the capacity to be a leader or manager as well as an effective team member
4	Engineering problem solving and decision making skills	the ability to undertake problem identification, apply problem solving, formulation and solutions
5	Apply knowledge of science and engineering principles	the ability to acquire and apply knowledge of engineering fundamentals
6	Competent in specific engineering discipline	the ability to acquire in-depth technical competence in a specific engineering discipline
7	Understand professional, social and ethical responsibilities	the ability to understand the social, cultural, global and environmental responsibilities of a professional engineer, and commitment to professional and ethical responsibilities
8	Lifelong learning	the ability to recognize the need to undertake life long learning, and possessing / acquiring the capacity to do so
9	Engineering system approach	the ability to utilize a systems approach to design and evaluate operational performance
10	Knowledge of contemporary issues	the ability to continue learning independently in the acquisition of new knowledge, skills and technologies. Nowadays, the use of information, communication and computing technologies are very essential in the knowledge-based era.

Source: Ayalew and Zeleke (2018:24)

1.3.2 Teaching skills set for employability

In South Africa, teaching is a scarce skill; classes are overcrowded, experienced teachers are leaving the country to look for greener pastures overseas. Teachers for maths and physical science are very scarce. Coetzee and Schreuder (2011:76) define employability as a personal

skill or capability for own career development resulting in successful career progression. Employable individuals possess certain knowledge, skills, intelligence, capabilities, and qualities that put them in a better position to become employed and perform to the satisfaction of an employer (Shuck et al., 2011:300325). Therefore, the ability to secure employment relates to the possession of certain skills that are admired by employers (Wilton, 2014:242) and can ensure continued marketability in the labour market.

1.3.3 Skills gap

'Skills breach' is defined as the alteration in the skills mandatory for the job and the actual skills held by the people who are expected to have the skills needed for the job they were employed to do (Rosenberg et al., 2012:7). Gursoy et al. (2008:448) define a 'skills gap' as when people's skills sets do not align with the skills, they need to perform their jobs. Martin and Knudsen (2010:345), define 'skills deficiencies' in terms of specific training needs, either employers are not providing skills training or educational institutions are not adequately skilling graduates. This study considers the problem from the perspective that educational institutions are lacking and there is a need for them to address the curricula that they offer to meet the skills requirements of employers. It is also important to appreciate that whenever a skills deficiency exists, the nature of the skills deficiency should be established. To address the skills challenge, the gaps should be considered from industry or from educational deficiencies, in which case the curriculum in educational institutions should be upgraded to match industry demands.

1.4 Overview of research approach and methodology

1.4.1 Research paradigm

Generally, a paradigm is "a world view underlying the theories and methodology of a particular scientific subject" (Kaushik & Walsh, 2019:255). Additionally, Laininen (2019:161) states that paradigms are "universally recognized scientific achievements that for a time provide model problems and solutions to a community of practitioners". This study analyses the skills gap between industry and institution, which gives a true picture of the level of skills possessed by graduates as compared to industrial requirements; hence the qualitative research approach is appropriate for the study as it deals with human lives, how they live and how they interact with the environment (Kaushik & Walsh, 2019:255). This research approach will aid the researcher to acquire in-depth knowledge of the experiences of unemployed graduates in South Africa (Laininen, 2019:170).

1.4.2 Research methodology

This study made use of a mixed methods approach. Qualitative methodologies consider the study units or individuals in their original circumstances and allow the collection of original data

associated with certain contexts. This ensures the gathering and close study of contextually rich information that describes specific situations in detail (Mohajan, 2018:23). The objective or quantitative aspect of the enquiry relied on a survey questionnaire that was issued to graduates from a certain educational institution. The qualitative aspect of the project was conducted through interviews with graduates within the jurisdiction.

1.4.3 Research design

The study utilised a mixed method approach. Essentially, inductive, and deductive methods complemented each other and both qualitative and quantitative data were extracted to enhance the strength, reliability as well as the validity of findings. The triangulation of methods was essential to ensure multidimensional analysis through the amalgamation of data, views, and perspectives (Newman & Gough, 2020:3). The methodology of a study relates to the sequential steps that a researcher follows in seeking relevant data that address a research problem (Newman & Gough, 2020:4). Hesse-Biber and Leavy (2011:45) explain that research ought to be based on data from a sufficiently large sample that allows for the generalisation of findings. As a result, researchers like Peffers et al. (2018:129) opine that critical generalisation of results is used as the basis for the findings of a study. Peffers et al. (2018:130) note that it is important to consider multiple case studies. When considering the arguments above, the case from which data were collected was selected in a way that allowed for data to be transferred.

1.4.4 Population

Jennings (2010:147) avers that a population relates to elements of the entire field of interest. In relation to this study, the population comprised of all individuals who completed their degrees and who are employed, unemployed and post-graduates in the technical university in Cape Town. The population for the study was 2000 students.

1.4.5 Sample size

Research methodology acknowledges that sample size is the number of participants from the population that participate in a study. As such, a sample is simply part of a population. The sample size was chosen using non-probability sampling methods that are discussed in later chapters of the study.

A total of 200 graduates participated in the study.

1.4.6 Sampling method

According to Mason (2010:2), saturation sampling establishes most of the sample size. Saturation sampling can also be referred to as 'saturation surveys' which are used with

distinctive populations that are small. -The target members are studied as a whole because of the size of the population (Jennings, 2010:443). A saturation sampling method was employed because the study does not have a large population.

1.4.7 Data gathering instruments

The instruments that were used to collect data in response to the research questions and objectives were questionnaires (see Appendix D) and focus group interview guides (see Appendix C). A semi-structured discussion schedule was compiled to address the four objectives of the study. From the focus group discussion, important themes and data patterns were identified. Brown and Danaher (2019:76) describe a semi-structured interview program as a framework for gathering detailed and in-depth data for a specific study. The interviews were conducted in a manner that ensures the reliability of data. Questions in the interview schedule were framed in a way that allowed flexibility and permitted respondents to provide additional information. The interviews commenced by providing an overview that introduced the objectives of the study as well as ethical issues in relation to participation: confidentiality, consent to digital recording of the interviews, data handling as well as data processing techniques.

1.4.8 Data collection and fieldwork

The data collection process relied on digital recording to capture the responses of participants and ensure that exact data was collected with minimum distortion. The recorder offers the main advantage of allowing the discussion sessions to mainly focus on the substantial issues of the study, thereby allowing for the observation of other essentials such as non-verbal cues and relevant actions linked to the responses. During the discussions, there was normal functioning of the tape recorder, the consent of participants was also recorded, so there were no problems during the interview process and quality of data was assured (Brown & Danaher, 2019:76).

1.5 Ethical considerations

Empirical research must demonstrate objectivity by ensuring the correct use of instruments and allowing the responses of the participants to be free from the influence of the views of the researcher (Bryant & Charmaz, 2010:31). In other words, the subjective views of the researcher must not affect the independence of the participants. This study was conducted in a manner that honoured the beliefs and perspectives of the respondents. Participation in the study was voluntary and informed consent was obtained from each participant. Respondents were assured of anonymity and confidentiality. They were advised of their right to withdraw from the study at any time and that they would suffer no consequences.

1.6 Demarcation/delimitation of the study

The study was based on the analysis of students from a selected technical institution of higher education in Cape Town, and the study focus was limited only to graduates in Business faculty. Methodology was limited to a case study research design and carefully considered the contextual factors in relation to the graduates' skills gap and employability he contextual factors in relation to the graduates' skills gap and employability.

1.7 Outline of the dissertation

1.7.1 Chapter 1: Introduction

Chapter 1 introduces and provides the background to the study. The research problem, objectives, significance of the study and the research questions are stated. Definitions of the key terms used in the study are provided.

1.7.2 Chapter 2: Literature review

This chapter provides the theoretical basis of the study. It reviews related studies and provides the theoretical basis for the study. It considers both the empirical and conceptual basis of the study, thereby placing the study into context.

1.7.3 Chapter 3: Research methodology

Chapter 3 describes the research philosophy, paradigm, and design of the study, including the data collection procedure. It outlines the research procedure, data collection instruments, the population, and the sampling procedure.

1.7.4 Chapter 4: Data analysis

Chapter 4 analyses the data collected from the respondents. It identifies relationships, patterns and the main themes that emerge from the data in relation to the study aims and objectives. The chapter establishes the main outputs of the study and allows for a deeper understanding of the problem under study and how it can be solved.

1.7.5 Chapter 5: Conclusion and recommendations

Chapter 5 summarises the study. Conclusions are drawn, recommendations are made and directions for future research are suggested.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

The previous chapter introduced and sketched the background to the study. The problem statement, research questions and study objectives were stated. Furthermore, the chapter explained the research problem, the main research question, and sub-questions.

Chapter 2 reviews relevant existing literature to explore the reason why there is a lack of focus by the government on young graduate employment which has exacerbated the poverty levels in many communities and homes. Some phenomena related to scarce skills are of crucial importance to the study. In addition, legislative and policy frameworks, journals, and industry-related reports were reviewed in the investigation of the influence of scarce skills on employment opportunities for graduates.

With the focus on employment of mostly youth graduates, most researchers have discovered that their unemployment is significantly high. Youth is defined by the National Youth Commission Act (South Africa, 1996b) as individuals between the ages of 14–35 years. It embraces varied categories of youth from different socio-economic and political or cultural contexts. According to Sawyer et al. (2018:223), 14 years is marked as the lowest age, and 15 years is often recognised as the age at which entry into the formal market begins. This age marked the lowest level for discussions on employment and unemployment. A 35-year-old youth lived under conditions of political conflict which could have affected educational attainment, while a 14-year-old youth is growing up under conditions of change and transformation from political conflict to democracy and equalisation of South African society. Employment is mainly determined by the level of skills and level of higher education of graduates. Redmond and Sharafizad (2020:102452) define employment as offering physical or intellectual abilities or labour in exchange for monetary or non-monetary rewards. Financial rewards can be in the form of wages (hourly or weekly) or can be in the form of a salary, depending on the nature of work. Those employed in certain industries and sectors can be rewarded in other ways which include stocks, bonuses, and gratuities. On the other hand, employees in some sectors may be rewarded with benefits. Such benefits include health insurance, housing, disability insurance or the use of a gym. The employment relationship is often subject to certain laws and legalities which are meant to promote a healthy labour system.

2.1.1 History of higher learning institutions

Higher education institutions have been part of the South African educational system for a long time, and they are seen as critical for the attainment of industrial and workplace-relevant knowledge, attitudes, and skills (Ogren, 2021:4). The evidence of a crisis in the higher education system has manifested in the form of protest actions that mirror the history of resistance that led to the attainment of democracy. Student protests can also be regarded as evidence of serious structural and institutional challenges within the higher education system in South Africa. Higher learning institutions in South Africa include colleges, universities of technology and traditional universities; they are designed (i.e., state universities and government-owned institutions) to ensure that everyone receives education—low-income earners, high-income earners, and the middle class (Ogren, 2021:4).

As reported by Eybers (2019:1), the transformations that took place within the higher education system in South Africa resulted in the creation of three categories of higher educational institutions, namely, (1) the old traditional universities like UCT, UWC and Rhodes University, (2) universities of technology that include Mangosuthu University of Technology, Cape Peninsula University of Technology; Vaal University of Technology and Tshwane University of Technology, and (3) technical and vocational education and training colleges, such as Berea Technical College and the College of Cape Town. Despite these transformations, concerns that the system is racial and promotes inequality remain. Stakeholders in the higher education and training system, including students, still maintain that the system has retained its racial dimension and continues to favour whites and other socially advantaged groups.

2.2 Higher education worldwide

Looking at education worldwide, it is perceived that growth in education enrolment has been witnessed over the 20th century in economically developed countries (Wright & Horta, 2018:25). The increase is higher where enrolment in secondary school is higher and in cases where government control of education is low, in agreement with theories and models of conflict and competition. Theories of institutional development of higher education claim that the growth in higher education enrolment has accelerated across both developed and developing countries since the 1960s. Marginson (2016:243) adds that higher education revolves around the institutional process which includes an increase in science, the spread of democracy as well as broadening of people's rights including the rise of development-oriented national policies in global politics. Taking note of these transformations, a novel framework of societal development hinged on education rose worldwide—one whereby educational knowledge, skills and competencies became suitable for broad social transformation and responsibilities.

The result was that education became an essential component within many societies across the globe. Another goal of educational attainment relates to its contribution to self-reliance among nations and the development of own economic systems driven by locals – which is often criticised for promoting over-emphasis on the essence of education - was changed to an open-system approach to education as essential “intellectual capital” for accelerated progress. Worldwide, significant advancements have resulted in many developing countries attaining higher enrolment rates when compared to many countries across Europe when the situation in previous years is compared with the present (Yang & McCall, 2014:25). It has been noted that about one-fifth of the global cohort is now enrolled in higher education.

2.2.1 Higher education and employability

According to Välimaa and Hoffman (2008:265), education has both psychological and economic values. In addition, education promotes imagination, creativity, and interest in knowledge. Suleman (2016:169) adds that higher education produces graduates, also known as critical pillars, connecting higher education institutions with industry. This theory is the underpinning component of the human capital theory promoted by Gary Becker, explaining the relationship between the individual level of academic realization and earnings in the labour market (Ciganda & Lorenti, 2019:218). Researchers criticized this theory on the basis that it lacked universal application, especially in developing countries. Therefore, education adds value to persons who embark on education, equipping them with the skills and tools they need to contribute to the world while surviving as they may receive better incomes for their socio-economic development. The labour market is such that educational attainment is not a guarantee for getting employment since the existence of matching vacancies also influences absorption in the labour market (Gorz, 1999). Prevailing skills requirements at the time also affect the ability to gain employment. In addition, education promotes independence and sustainability and allows individuals to be self-reliant (Brown, 2008:30). Education provides students with various skills in broad fields such as sport, the arts, music, business management, engineering, and the sciences, to mention only a few, so the students can explore what suits them.

This provides them with the foundation that they need to achieve developmental activities through effective labour market participation and continued education. If learners plan their career progression early it will improve their prospects of succeeding in their chosen careers by attaining the essential education (Balfanz, 2009:3) and educational depth that is necessary for industry. Kirk et al. (2011:89) are of the view that parents are concerned about equipping their children with proper and quality education so that they become competitive in the world of dynamic graduates who possess degrees and diplomas from different institutions of higher learning. The belief that education eliminates poverty is valued in most countries. In the South

African environment, it is clear that education is critical for one to be competent and succeed in the job market as it generates qualified people needed to build the country's economy (Allais, 2012:632).

2.2.2 Higher education and technology

The evolution of globalization and technology have affected education worldwide. Information technology (IT) has had a great impact on education which includes the use of the Internet for academic purposes and communication, effective tools for the management of universities and recent methodologies for learning and teaching (Daggett, 2014:167). The Internet is one of the major tools used to speed up direct contact and communicate globally. The traditional mailing method has been replaced by the Internet and makes the communication of knowledge immediate. According to Daggett (2014:167), the Internet has changed research communication by permitting researchers and scholars across the world equal access to knowledge.

On the other hand, there are also restrictions such as copyright and traditional journal systems usually create barriers to free access. With the introduction of IT, the formal knowledge communication infrastructures have been gravely interrupted. This has given a chance to structures such as websites and other networks to be strengthened and more inclusive by IT. According to Loshali and Krishnan (2013:9), university management has been simplified using IT because it is easier to collect, analyse and communicate data. IT has facilitated the Internet to be used to develop online courses, online degrees, and even an entire virtual academic institution. Although most students enrol and study online courses at institutions in their countries, many of them still study across borders online and the numbers keep increasing.

2.2.3 The employment of graduates

An educational certificate in respect of any qualification does not immediately translate to absorption into the labour market and success in life. There has been significant interest in graduate employability. For instance, Lundvall and Lema (2014:327) considered the reasons for poor labour market absorption of graduates in the South African context and established a wide range of issues that impact successful job seeking and final recruitment in any sector or industry. As renowned authorities in development studies, Lundvall and Lema (2014:327) report a mismatch when considering higher education, job seekers and corporates. Lundvall and Lema noted the job market is flooded by job seekers in relation to the jobs available, thereby demonstrating a need to address industry-wide factors impacting the availability of jobs. Their study further asserted that the jobs available in the labour market favour professional and highly specialised skills which are not the ones that are attained by most graduates in higher learning institutions. The study recommended strong collaboration

between learning institutions and industry to ensure that graduates possess the requisite skills sought by industry.

2.2.3 Scarce skills

Arrowsmith and Parker (2013:2692) believe that the common and widely accepted concept of the 'skills gap' accounts for joblessness and poor socioeconomic development in South Africa and is the causal factor for low innovativeness among graduates and school leavers. As a result, addressing skills deficiencies and shortages has been a major policy goal of recent educational strategic outcomes (Arrowsmith & Parker, 2013:2692). The 'skills gap' agenda is popular and generally accepted, to the extent that the notion of scarce skills seems to be marginalised and lacking appeal. Some scholars have taken the concept of 'scarce skills' to be a discursive agenda. A discursive agenda or practice is often taken to mean "...the principles and laws associated with how discourse is shaped, principles that determine what can be mentioned and what is not open to talk, including those who can speak with authority on certain issues as well as the expectations of who should listen" (McKee-Ryan & Harvey, 2011:962). In South Africa, the term 'skills shortage' is associated with a specific interpretation related to the link between learning and the socio-economic environment: one which posits that human talent development can reduce economic marginalisation, economic imbalances and address unemployment as well as determine the appropriateness of education and the level at which it effectively addresses market needs. According to the discursive perspective, scarce skills encourage a specific 'line of reality' which denotes an interpretation of socio-economic truth that is associated with the perceptions, needs and desires of capital. In this study, the reference to scarce skills in South Africa has been normalized to such an extent that it is no longer questioned: major policies of national policy, position documents, industry reports, economic strategic plans, and well-funded.

2.3 Higher education in South Africa

Generally, the educational system of South Africa has not benefitted all citizens due to the apartheid era which was associated with the Caste system (Reygan, 2016:65). After the era 1994-2011, there was a total turnaround in the history of South Africans regarding the educational sector. According to du Plessis (2009:12), the political thinking in 1994 was to abolish the old systems linked to apartheid, while introducing new policies in all spheres of the educational system. Nongxa (2010:11) argues that South Africa had the wealthiest economy but the weakest educational system on the continent. On the other hand, Malada (2010:12) avers that many of the previous systems were excellent even though they were flawed. Malada opines that the systems should have been improved rather than adopting the approach of discarding the tested basic principles of the educational system which was Outcomes-Based Education (OBE); this approach had failed in First World countries and failed as well in terms

of implementation in a Third World country such as South Africa. Due to the previous discrimination in the educational system of South Africa, there is a need for the tertiary education sector for formerly disadvantaged groups to be on par with completing their qualifications.

2.3.1 Education in South Africa

Evaluations of the South African education model or framework have observed that it suffers from notable shortcomings along various dimensions. Significant research suggests that the education system still suffers from historical imbalances and imperfections that were associated with the apartheid government. Education for the white race has remained stubbornly stronger than that of the black, Indian, or coloured population (Reygan, 2016:65). In other words, while some racial groups enjoy quality, globally relevant, education, some groups are still provided with weak education. An essential aspect is that knowledge acquisition and the imparting of skills and competencies in schools has not been even and relevant to the various socioeconomic groups in South Africa and their complex needs and desires as noted by Nongxa (2010:11). As such, addressing scarce skills is a matter that needs holistic consideration.

Evidence has been found that the education system seems to favour some racial groups more than others and that these variations in performances reflect early. It has been established that by the 4th grade certain learners or groups of learners' face limitations that inhibit their Matric success (McKee-Ryan & Harvey, 2011:962). In respect of the significant challenges faced by many in their attempts to attain university education, this major problem within the education system has significant impacts on the performance of the school leavers in the labour market as well as on social mobility. Poor educational quality becomes a trap for continued poverty among many children in South Africa.

When considered within the perspective of the skills requirements in the labour market in South Africa, the largest challenge seems to be the inadequacies and weakness of the education system. Early childhood education has not resulted in notable betterment of the quality of education as indicated by attainment. In contrast and respect of higher education, the higher education system operates better, even though it is unequal, but still entertains a comparatively small portion of the people in developing nations (Loshali & Krishnan, 2013:9). In addition, outputs from the higher education institutions system are low; after as much as six years of study, not more than half the undergraduates will have completed a three- or four-year degree programme (Loshali & Krishnan, 2013:9). This poor progression may relate to the quality of the early education encountered by many students. Essentials of the post-secondary school education system, such as Technical and Vocational Colleges (TVET), have become a model that has grown significantly but has not been important in ensuring skills that are essential in

industry and the various labour market sectors, including the Sector Education and Training Authorities (SETAs), whose operations have been repeatedly poor (McKee-Ryan & Harvey, 2011:962). Therefore, young persons are likely to see universities as critical to providing the opportunities that they need for successful absorption into the labour market. When this situation is considered, the vocational education arrangement and SETAs are likely to remain lucrative because of those who lack other options that they can take (McKee-Ryan & Harvey, 2011:962).

2.3.2 The role of education

Tertiary education is the highest contributor in terms of socio-economic development in South Africa. The development can be achieved in different ways such as intellectual capital, building of knowledge bases, dissemination, use of the body of knowledge and maintenance of the knowledge.

Mtawa et al. (2019:2), state that education is a key determinant of economic growth, while higher education is beneficial and can be associated with non-economic benefits such as health and wellness; the South African government supports the sector financially.

The past decade has been extraordinary in terms of access to education throughout South Africa. Many countries have increased access to higher education and tertiary education to improve the quality of education at all levels. Nowadays, investing in women and children is very effective in terms of investment in developing countries, especially South Africa. Educating a woman can create significant remuneration for families and homes; it promotes better health, improves birth spacing, improves infant mortality rate and aids in attainment of children. According to Mutie and Makewa (2017:16), Second World and First World countries increasingly integrate into the world markets for manufacturing goods and the ability to compete in these markets, while providing a globalised service market depends on the excellence of the human capital due to competition. Investing in education as a country is hard but it furthers economic development which often is considered human capital.

2.4 Alignment of higher education and skills development

Over the years, industry has complained about the suitability of school leavers and university graduates from higher education institutions while officials in the higher learning institutions believe that the industry simply does not appreciate the skills and competencies of graduates as they prefer experience to qualifications. These arguments are supported by Shivoru et al. (2018:216) who state that misalignment exists in respect of perspectives of industry and employers, institutions of higher learning and graduates regarding the qualities that are critical for driving productivity in industry. Matongolo et al. (2018:3) claim that in higher learning, there are many stakeholders engaged in the polishing and preparation of quality employees. There

have been suggestions that preparations for the labour market among graduates ought to consider such skills and capabilities as innovativeness, professionalism, and accountability, Furthermore, such qualities as analytical thinking, governance, administration, use of modern technologies, systems thinking, ethical conduct, and literacy and quantitative skills have also been mentioned as important (Van Laar et al., 2017:577).It was added that higher education institutions are also responsible for enhancing employability attributes. Mtawa et al. (2019:2) define employability as the possession of qualities, traits and knowledge that are required by industry and that allows career progression. Hence, the purpose of higher learning institutions is to offer graduates the relevant skills and attributes to secure employment and enhance their socio-economic stability.

According to Shivoro et al. (2018:218), insufficient consideration of qualities for labour market absorption in policy documents in terms of policy deliverables, content, delivery, and evaluation of student learning plays a significant role in the quality of students graduating from higher learning institutions. Apart from that, the unavailability of work-based learning (internships), that may offer a fundamental chance and opportunities for learners to acquire employability qualities, also affects the quality of graduates released to the labour market (Jackson & Collings, 2018:403).

It has been a considerable time since higher learning and the workplace possessed the same opinion and understanding concerning the essence of each other. According to the Department of Higher Education South Africa (HESA), to have a better appreciation of graduate qualities and the way these are assessed in the workplace, a study has been done (Gill, 2018:84). The importance of higher learning in human resources enrichment and socio-economic development is not a novel phenomenon (Angel-Urdinola & Gukovas, 2018:17). The Joint Initiative for Priority Skills Acquisition (JIPSA) included within the model and vision of improved and combined development offered additional capacity for the study of “graduate attributes” and “employability” (Maxwell & Armellini, 2019:8).

The link between higher education and the labour market is a central matter of concern for government programmes in many nations. There is a great need for higher learning from both government and employers to prepare graduates who are employable based on their competencies, qualities, attitudes, required skills and traits as well as behaviours to work effectively (Mtawa et al., 2019:3). In a study conducted by Gill (2018:84), it was proven that skills were critical to advance nuanced methods, which foster hands-on skills, understanding, individual competencies, and metacognition. Two foundational assumptions formed the basis of the study on the capabilities of graduates who emerge from public higher learning institutions in South Africa: firstly that the capabilities, behaviours, competencies and values of university leavers (the combined “graduate attributes” that are essential as determinants for a graduate

to have attained 'employability') may lack alignment to the needs and expectations of industries and corporates; and secondly, that the concept of skills may need to be re-considered from the context of a transforming world of work (Maxwell & Armellini, 2019:11). It is crucial that the higher learning institution curriculum is designed in such a way that suits the labour market requirements in terms of skills required for graduates to be employable. Higher learning faces a new imperative that not only rests on the abilities of graduates but also in respect of the size of the graduation pool in the various fields of study. Hence, during enrolment of students, the following should be considered a) expectations of employers; and b) their perceptions of the current situation.

According to Shivorro et al. (2018:217), the major assumption is what graduates need the most are competencies that go beyond the subjects of disciplines of their study. Such attributes ought to be incorporated within the curriculum and those in which graduates require increased training. Looking at the employers' views, attributes are critical, and graduates are expected to have them when they enter the workplace. The extent to which graduates from South Africa's public higher education institutions demonstrate these attributes is evident from the outcomes in the working environment (Assaad et al., 2018:945).

Employers place value on the conceptual basis and prerequisites of knowledge and intellectual approach to projects which are enhanced by higher learning. There may be more of a common language between higher education and employers than is generally perceived. All the challenges faced between employability and graduates' output from higher education show that there is a huge gap between employers' expectations and education output. To bridge this gap, focus must be on proactive task-directed engagement and the application of knowledge. Coonan and Pratt-Adams (2018:10) add that a certain level of realism is essential and needs to be sustained on both sides about how far higher education can be expected to "bridge the gap" and the role that only employers can play in providing on-the-job learning and continuing development. More creative ways are needed in which higher education and business can work together to create a seamless interface between these two crucial opposing factors, that is employers' expectations versus higher education outcomes.

The views and expectations of employers and the quality of graduates produced by higher education institutions need to continuously be evaluated to ensure the desired outcomes from higher education. Assaad et al. (2018: 945) state that the role of higher education is to contribute to economic growth and societal progress. This has been their major role, to suit the job or human capital demand. According to the study done by Angel-Urdinola and Gukovas (2018:17), in the South African context, there is little doubt that the Joint Initiative for Priority Skills Acquisition (JIPSA) has served as a powerful tool in realising renewed focus skills needs of the economy and the role and contributions of higher education.

The economy needs a “skills revolution”, a notion that has been expressed by the former Deputy President, Phumzile Mlambo-Ngcuka, in her desire to enhance collective high-level support for crucial skills development (SAG, 2007).

After completing three to four years of tertiary education, a significant number of graduates still fail to find jobs. These assertions are supported by Salmi (2017:45) when revealing that the case of jobless graduates, those without certain skills and capabilities to self-employ and self-determine after their tertiary education, is an indication of the problem in our education at a tertiary level. This may be because those tasked with curriculum development appear to pay scant attention and place no emphasis on issues of criticality and ensure the required skills and abilities that graduates require when they graduate from tertiary education (Rowe & Zegwaard, 2017:88).

Skills transformation in the curriculum of tertiary learning is the best strategy to address the skills gap. In the view of Rowe and Zegwaard (2017:88), for good development of career paths among graduates, higher learning is expected to be proactively involved with the skills requirements of the economy, and at the same time, to ensure through research, knowledge generation and innovation, the many crucial imperatives that affect South Africa when it is a developmental state as well as a young democracy.

Furthermore, in recognition of international economic challenges that have prevailed since the 2008 crisis, it has become critical that South Africa produces significantly skilled graduates who are capable of competitiveness within a transforming global labour force (Gill, 2018:84). The higher education sector has been affected by significant issues, ranging from the initiation of policy models and regulatory strategies specifically prepared to lead the change of the sector, to the radical transformation of the situation and minimisation in the number of public higher learning institutions, from 36 to 23, comprising 11 universities, six basic universities as well as six universities of technology (Suleman, 2016:169). The identities of these new forms of institutions still need to be strengthened and there is the expectation that the institutions will attend to niche areas of speciality within a wide landscape to engage successfully with the problems of the present times.

2.5 Common skills in South Africa

After the 1994 advent of democracy in South Africa, there was a greater need to address the problem of skills that created challenges for the absorption of mainly black people in the labour market (Suleman, 2016:169). Analysts have found that the skills development and acquisition initiatives were poorly organised, poorly implemented and there was very little progress. The previous problems remained, and unemployment persisted. This was an indication that the skills shortage problem required improved institutional organisation and planning as well as

effective implementation mechanisms. In respect of these observations, the central government crafted a strategy driven by the desire to set up a strong system for skills planning under output 5.1 of the Department of Higher Education and Training (DHET) in 2009 (Rowe & Zegwaard, 2017:88). Associated with this output was a delivery agreement that captured the need to ensure a skilled labour force that would support the country's national growth objectives.

To ensure the attainment of the skills objectives discussed earlier, the DHET (2012) began a Labour Market Intelligence Partnership (LMIP) initiative which was led by the Human Sciences Research Council (HSRC) and was composed of such universities as the University of Cape Town (UCT) and University of Witwatersrand (Klofsten et al., 2019:149). This measure was undertaken by the Minister of Higher Education and Training, who set up the LMIP and launched it to ensure the provision of scientific principles for skills supply and development in the country. This was important to ensure that the supply of skills met the skills demand. This should be viewed in the context of the apartheid era skills deprivation that significantly disadvantaged the black population.

The skills problem was also considered in the White Paper for Post-School Education and Training (PSET) which came into effect after Cabinet approval in 2013 (Klofsten et al., 2019:149). The PSET observed that despite the skills development initiatives that were proposed by various government initiatives, progress on the skills question has remained poor. Studies by government agencies and international bodies such as the World Economic Forum (WEF) have continued to underscore the skills problem as a serious challenge in the competitiveness of South Africa as a nation. The WEF emphasises education, knowledge, skills, and attitude inadequacies in the South African labour market while government agencies have found structural challenges in the implementation of the South African skills strategy. The LMIP has conducted many such studies and some of its recommendations have resulted in the promulgation of various government instruments for the betterment of skills in South Africa. Recognising that skills are central to the performance of people in organisations and the development of South Africa as a democratic nation, human resources development has been identified as a critical strategy for the South African productive sector. Skills development through education and training is the vehicle for addressing skills deficiencies and this process often starts with the identification of the skills needed by people, organisations, industry as well as the nation (Wright & Horta, 2018:25). In this way, skills development is conceptualised in phases that start with a needs analysis involving the study of existing skills in comparison to skills needs. In this way, the skill gaps are identified, and corrective measures could be implemented.

2.6 Employment opportunities in South Africa

2.6.1 National perspective

As a key legal instrument, Section 29 of the Constitution of the Republic of South Africa (1996) prescribes the right to education for all South Africans. In providing this right, the Constitution recognises the need to ensure the effective acquisition of skills using the right language that ensures understanding and sustainable skills development (Sayed & Kanjee, 2013:5). The realisation of the envisioned right depends on the effective introduction of correct educational programmes in public and private institutions as well as the provision of an effective learning and development climate. Appropriate instructional methodologies are crucial in enhancing quality and access to skills acquisition and the development framework.

Analysts have commented that the realisation of the right to education and the acquisition of relevant skills require effective institutional strategies that consider the need to address the segregatory framework of the past. Scholars like Sayed and Kanjee (2013:5) have advocated for the need to expand the existing education and learning system in a way that promotes both public and private institutions of learning and skills acquisition. Everyone has the right to education, and it is important that learning institutions be expanded or increased in number to accommodate people across the racial and socio-economic divide. Sayed and Kanjee (2013) found that the labour supply in urban areas is high and only those who are well skilled could be absorbed into the labour market. On the other hand, demand for labour and skills in rural areas is low, resulting in rural to urban migration. As such, it is important to open the institutional systems available for education and skills development, to achieve the skills needs and targets expected. As a growing economy, South Africa requires a broad range of skills for development. Therefore, the available education and training institutions may require expansion.

Research into unemployment has revealed patterns that show that some groups across the demographical structure of South Africa suffer more from unemployment than others. Unemployment among the youth tends to be higher than in other age segments (Wright & Horta, 2018:25). It has been also established that this problem is not only prevalent in South Africa but has been observed in many developing countries across the globe. Researchers have recommended the need to target the youth in various skills development initiatives to increase their employability and the labour market absorption rate. Furthermore, compounded elements within the skills matrix such as black youth, female youth or youth with disabilities are deep-rooted structural dimensions to the skills problem. This clearly illustrates the need for concerted investigations to achieve the desired targets (Curtis et al., 2020:1771-1772). However, so far, little attention has been paid to the issue of youth unemployment in South

Africa (Curtis et al., 2020:1771-1772) and the high youth unemployment rate remains largely unexplained.

The South African labour market has its own peculiar factors which cannot be considered in a blanket fashion with other factors across the globe. South Africa largely owes its conditions to its harsh apartheid history, remnants of which remain in many institutions today (Du Toit, 2018:1086). In respect of this argument, there may be a need for South Africa to follow a unique approach that is relevant to its own circumstances. This is especially so when considering that unemployment in South Africa is not homogeneously spread across its different populations. The demographical divide shows that the youth from the black population (which is largest), youth with disabilities as well as the female youth group seems to be characteristically less skilled and represent the majority in the unemployment rates (du Toit, 2018:1086). Despite the skills argument, it is also important to consider dark factors in the labour market such as discrimination and the unwillingness to adopt affirmative action by some employers. Furthermore, skills that translate to viable exploitation of entrepreneurship opportunities are also important in addressing both the skills gap and unemployment. Consideration should be given to the situation in respect of rural populations to ensure equitable distribution of economic participation across all communities.

2.6.2 Critical skills in South Africa

The concept of critical skills became relevant in South Africa owing to skills scarcity. The Department of Labour refers to critical skills as a scarcity of qualified and experienced people who meet the requirements of a particular occupation (Cappelli, 2015:264). When defined in this way, scarce skills represent a key component in human resource development that is critical to making available people who meet the requirements of industry. The concept of scarce skills brings into focus two important issues in the labour market, namely (i) skills and labour supply and (ii) skills and labour demand. It is the balance between these two concepts that result in the notion of scarce skills. While labour supply relates to the availability of suitably and relevantly skilled people to take responsibility for delivering outputs within a certain occupation, labour demand relates to employers who need available skills (Cappelli, 2015:264). The balance between labour supply and demand is mediated by private and public sector institutions that are involved in education and training, thereby ensuring that there are fit and competent individuals for absorption into the labour market.

The general orientation of skills policy in South Africa is towards addressing the limitations and inadequacies that were left by the apartheid government (Motala & Pampallis, 2020:14). The Bantu education system which was implemented by the apartheid government presented labour problems that needed to be addressed. The need to grow the economy, transform the society and achieve national development meant that there were new skills requirements for

the country (Motala & Pampallis, 2020:14). These skills were not readily available, resulting in a serious skills shortage that the government must now develop. Furthermore, the economic recession that South Africa experienced in the past few years meant that there were new skills required to address the various sectors that are critical for economic development. In its various sectors, South Africa faced the need to ensure certain skills were available for the realisation of desired performance levels (Cappelli, 2015:264). It appears that the education in the country lacked these skills, resulting in skills shortage and the emergence of the concept of critical skills.

2.6.3 South African universities and scarce skills

The need to address the educational inadequacies created by the apartheid government has been associated with the transformation of the entire education system over the past 20 years (Butler-Adam, 2018:1). Some of the literature suggests that although the South African education system has made great advancements in producing knowledge, very little has been achieved in respect of skills development. Some analysts have suggested that the main thrust of the South African education system has been to ensure an adequate impact on the greater population to ensure that the majority attain an education. South Africa has also taken up the challenge to ensure that its universities and educational institutions acquire regional and global status (Butler-Adam, 2018:1). As such, there has been greater pressure on South Africa's public and private educational institutions to reach a certain level internally, regionally, and internationally. The skills development challenge, therefore, is an important priority for national development in South Africa.

2.6.4 Western Cape Province and unemployment

The rate of unemployment in the 3rd and 4th quarters of 2018 remained very high and ranged between 20.4% and 19.3%, even though there was a decrease (Neverauskiene & Rakauskiene, 2018:51). Comparing this with other provinces such as Gauteng, the unemployment rate is low in the Western Cape province but still considered high.

According to Statistics South Africa (2019), Cape Town's rate of unemployment in the first quarter increased from 27.6% to 29% in the second quarter of the year. This discouraged workers and economically inactive citizens (Neverauskiene & Rakauskiene, 2018:51). Though the province's unemployment rate is this high, the Western Cape province is home to the lowest number of economically inactive citizens.

Despite the economic challenges in the Western Cape such as the drought crisis, there are economic gains, the government commits to preserving jobs and protecting the interest of the economy while creating opportunities for the people of the Western Cape.

2.7 Chapter Summary

In summary, even though employability has been a focus in both academia and society in general, the links and relationships between education, skills acquisition, employability, and career progression remain unclear. Further investigation remains necessary if the situation is to improve. Higher learning institutions have contributed significantly to the lack of work-ready graduates. This is because of poor curriculum development. Most higher learning institutions seem to focus on job seekers rather than entrepreneurs who can bridge the gap of unemployment. In addition, the unemployment challenge is likely to have implications on curriculum change, redesign, and the emergence of an industry-driven competency-based curriculum. The education system will remain under constant criticism until it effectively prepares graduates who are deemed fit to take up performance responsibilities in industry. While primary and secondary education is founded on the provision of basic and fundamental knowledge and capabilities, it is tertiary education that is seen as the basis for life-long career-based competencies. Within this context, a great need exists to ensure that tertiary education is enriched with skills that ensure employability. Employability should be taken to imply both self-employment and being employed. The arguments above demonstrate the essence of tertiary education providing a skills base for industrial growth and development in post-apartheid South Africa.

The next chapter presents and discusses the methodology applied, including data collection and analysis techniques that were employed to achieve the theoretical objectives of the study.

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

The previous chapter reviewed relevant literature on scarce skills and employment opportunities amongst university graduates. It was noted that increasing the employability of university graduates remains a challenge in the South African context. Various theories of graduate employability and scarce skills were reviewed together with the underlying empirical research that supports the theories propounded. Chapter 2 was critical as it revealed important gaps in the literature which have inhibited the full appreciation of the relationship between critical skills and the employability of graduates. As a result, the present study is essential to ensure a full understanding of graduate employability and scarce skills. E

In this chapter, the methodology used to collect data pertinent to the research objectives, aims and questions are outlined. The chapter commences with an explanation of the philosophy, worldview or paradigm held by the research. This encompasses the ontology and epistemology of the study. In line with the research paradigm, the research design is explained before the approach, data collection methods and sampling procedure are set out. The chapter also explains the ethical considerations applied in the research project. In addition, the chapter explains validity and reliability issues that were observed throughout the study. The chapter concludes by highlighting the key elements underpinning the study as well as indicating the direction of the following chapter, Chapter 4, which presents and analyses the data that were collected.

3.2 Research paradigms

Davies and Fisher (2018:21) state that researchers hold certain philosophical positions about reality (ontology) and how this reality can be known (epistemology). There is general acceptance in literature that all research emanates from certain philosophical positions, described by Kumatongo and Muzata (2021:16) as worldviews. In the same vein, the present study was based on certain ontological and epistemological positions that formed the premise of the research design and methodology. The study emanated from the view that educational institutions and workplaces are key social entities that serve important social roles. This premise made it possible to align the study with sociological assumptions. According to Davies and Fisher (2018:21), three ontological positions relate to social reality, namely (1) realism, which posits that reality exists independent of people's constructions; (2) materialism, which contends that the real world is made up only of material and physical features; and (3) idealism, which is based on the argument that the real world exists in the minds of people and can be understood through interacting with other people.

This study was based on the ontological position of idealism. Consequently, the epistemological assumptions held by the researcher, in line with idealism, were those of both post-positivism and constructivism. Kumatongo and Muzata (2021:16) assert that post-positivism advances that there is an existing reality that can be investigated. Constructivism asserts that knowledge of the world can be acquired through the acquisition and analysis of multiple social realities. This study was founded on the assertion that reality is complex and can only be understood through the adoption of multiple philosophical positions that allow its assessment from varied angles.

When the above imperatives are considered in relation to this study, which sought to investigate the employability and the scarce skills challenge in South Africa, the general position adopted is that the concepts of interest are social elements to be understood through social immersion and interactions. In addition, the assessments required to understand graduate employability and scarce skills require multiple lenses to foster the different perspectives, opinions and experiences of people who play different societal roles. It is believed that this would foster a holistic and comprehensive appreciation of the phenomena under study, thereby promoting the generation of valid and reliable conclusions. This will ensure that the research problem from which the study emanated is simplified and solved.

3.3 Research approach

The term 'research approach' is explained in the work of Kumatongo and Muzata (2021:16-32), who distinguish between quantitative, qualitative and mixed method research approaches. It is generally acknowledged by research methodology scholars that the three research approaches mentioned above represent the central research traditions of our time. These approaches are linked to the research paradigms that have been described in the previous paragraphs. In the view of McGregor (2018:810), constructivism and positivism paradigms have dominated the field of research and have been critical in determining the research approaches to which researchers align themselves. It is generally accepted that quantitative studies follow methodological systems that describe phenomena in numerical ways whereas the qualitative approach is based on detailed descriptions of phenomena in quality terms (McGregor, 2018:810-831; Harrison et al., 2020:473).

In considering the approaches stated above, it should be emphasised that the positivist research design is associated with the quantitative research approach whereas the constructivist paradigm is associated with the qualitative approach. In conformity with the constructivist and post-positivist traditions, the study followed a mixed research design which employs both quantitative and qualitative methods. Harrison et al. (2020:473) contend that the mixed research design calls for the integration of both quantitative and qualitative elements of

research. This essentially implies the blending of paradigms and approaches. It was believed in the current study that such blending would strengthen the results and ensure more valid and meaningful conclusions than if only one research design was followed. Table 3.1 shows some of the main advantages of a mixed research design which substantiate the selection of this design for this study.

Table 3.1: Advantages of mixed research design

Harrison et al. (2020:473)	Improves the validity of the results of a study.
	Data collected in one way can be explained by data collected in the other way.
	One database can lead to the development of research instruments for the collection of further data.
	Allows the alternation of methods.
McGregor (2018:810)	Words, numbers, pictures, and narratives can add meaning to each other.
	Can provide more conclusive research conclusions through data convergence and collaboration.
	Increases the possibility of generalizing the conclusions of a study.

3.4 Research design

Dannels (2018:402) postulates that the appropriateness of a research design is informed by its effectiveness in addressing research questions and addressing the aims of a study. Following this argument, the research design that was adopted for this study arose from the careful consideration of the aim and objectives of the study as stated in Chapter 1. Research methodology literature also emphasises the need to ensure that the research design is valid and reliable. Harrison et al. (2020:473) state that there are three types of research designs, namely experimental, non-experimental, and quasi-experimental, depending on the level of randomness involved. The current study followed the non-experimental design which is often associated with qualitative research. There are many non-experimental or qualitative designs, including case studies, naturalistic observations as well as qualitative survey designs (Bloomfield & Fisher, 2019:27). Sileyew (2019:1) identifies four types of surveys, namely (1) descriptive surveys, (2) analytical surveys, (3) school surveys and (4) genetic surveys. Since the present study sought to describe the influence of scarce skills on the employment of graduates from a selected University in South Africa, the descriptive survey design was deemed appropriate for the study. Descriptive surveys are further classified into questionnaire and interview survey methods. Given the research paradigm and approach that was adopted

for this study, the questionnaire survey method was appropriate to achieve the aims and objectives of the study as well as to answer the research questions. In Table 3.2, Sileyew (2019:6) list 15 characteristics of the survey method which were observed in this study.

Table 3.2: Characteristics of the survey method

<ol style="list-style-type: none">1. It collects data from a relatively large number of cases at a particular time.2. It is essentially cross-sectional.3. It is not concerned with the characteristics of individuals.4. It involves clearly defined problem.5. It requires experts imaginative planning.6. It Involves definite objectives.7. It requires careful analysis and interpretation of the data gathered.8. It requires logical and skilful reporting of the findings.9. Surveys vary greatly in complexity.10. It does not seek to develop an organised body of scientific principles.11. It provides information 'useful to the solution of local problems.12. It contributes to the advancement of knowledge because affords penetrating insight into the nature of what one is dealing with.13. It suggests the course of future developments.14. It determines the present trends and solves current problems.15. It helps in fashioning many tools with which we do the research.

Source: Sileyew (2019:6)

As shown in Table 3.1, the survey design collects data from a large group of units and tends to be cross-sectional to allow for a detailed description of phenomena.

3.4.1 Data collection method

Researchers contend that there are many data collection methods available, but these are determined by the nature of the study and its research design. Qualitative designs often adopt data collection methods that include interviews and open-ended questionnaires whereas quantitative designs are often associated with close-ended questionnaires and experimental observations. Following the dictates of the mixed research design, both qualitative and quantitative data collection methods were used. As stated by Bloomfield and Fisher (2019:27), the questionnaire is appropriate when there is a need to collect the same kind of information from a large group of participants whereas interview guides and schedules are the common data collection instruments associated with the collection of qualitative data through interviews. The design of this study was based on the collection of the same information from a large group of graduates from a selected university in South Africa as well as the opinions of employers. There was a need to collect data on the opinions and issues pertaining to the employment of the graduates. To arrive at the conclusion that responds adequately to the research questions as set out in Chapter 1, it was necessary to involve a large number of participants to be able to generalise the findings.

3.4.2 Population

This study investigated the graduates of a selected university, the university, as well as the employers. Dannels (2018:402) explains that the entire field involving all the cases of interest is called the population. In determining the population for the study, it was held that graduates of the selected university who had sought employment but failed were more suited to answer the research questions than those who graduated and became employed or did not look for employment. Therefore, the population of the study was restricted to graduates who had sought employment but failed and decided to pursue further studies or those who got employed but decided to further their education.

Students who graduated from universities in the previous years but decided to pursue higher degrees such as Master and Doctorate degrees were likely to provide important information for the study. The population of the study comprised all students who had graduated from the selected university and were currently registered and studying for higher degrees (Masters and Doctorates). However, since this was too broad to be manageable, it was important to place limitations on it and therefore the study focused on students who had graduated from the selected university in 2018 and 2019 and were studying for higher degrees.

The decision to select those who had graduated in 2018 and 2019 was made on the assumption that such students would have experienced all the major challenges and opportunities in the labour market and would be able to provide useful information relevant to the aims and objectives of this study. Furthermore, it was also assumed that employers who were likely to have been approached by graduates from the university would also provide useful data relevant to the research objectives and questions.

3.4.3 Sampling and sampling procedure

Sampling is the selection of a subset of a whole population (Dannels, 2018:402). There were two levels of sampling that were followed in this study. Due to certain restraints, the study could not include all educational institutions in the country so there was a need to select one. The list of alumni from the selected university was too long so participants were limited to the 2018 and 2019 groups. Abutabenjeh and Jaradat (2018:237) distinguish between two types of sampling techniques, namely (1) probability and (2) non-probability sampling.

The literature recognises that probability techniques are random as opposed to non-probability sampling methods which are subjective and dependent on the insights and decisions or choices of the researcher. As shown in Figure 3.1, the first step followed in the sampling procedure was to clearly define the target population. The sampling frame was the list of alumni of a selected university. In selecting a university on which to base the study, the researcher relied on the convenience sampling strategy. Convenience sampling is described by

researchers as the selection of participants because they are easily and readily available (Abutabenjeh & Jaradat, 2018:237). This strategy offered the researcher a method that is inexpensive and easier to conduct than many other sampling methods shown in Figure 3.2. In addition, it allowed the selection of a university that would conveniently allow the collection of the required data.

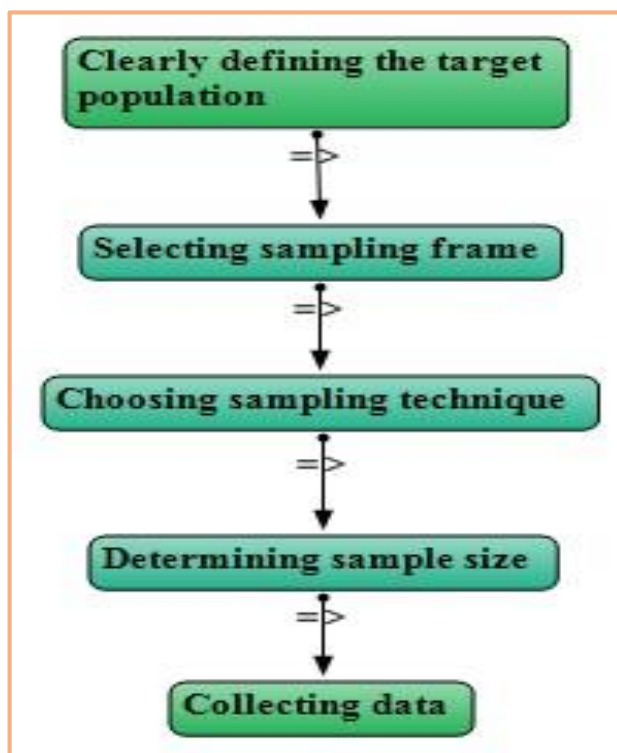


Figure 3.1: Sampling and sampling procedure

Source: Dannels (2018:402).

As highlighted earlier, the study sought to establish the employability of graduates of the selected university and how the scarce skills dimension enhanced or inhibited their employment. The selected university had an alumni list of all former students at the university. In addition, the university had an online social platform for alumni students where former students interact and share social, economic, and political matters. Therefore, the sampling frame of interest for the study was the alumni students.

3.4.4 Sample size

As mentioned, the researcher could not collect data from all the former students at the university, therefore, there was a need to follow an appropriate sampling strategy to obtain a manageable set of respondents for the study. Abutabenjeh and Jaradat (2018:237) stress the need for the determination of an appropriate sample size that allows the collection of data relevant to the research aims although the sample size should not be burdensome. As such,

it is often argued that sample sizes should not be too large or too small. Whereas large sample sizes are often favoured in reducing sample error, some scholars argue that the law of diminishing returns causes sample sizes to become too large. Similarly, sample sizes cannot be too small as this may affect the representativeness of the data. Therefore, in conducting the present study, it was essential that the researcher applied the right techniques and selected an appropriately representative sample size that would ensure the achievement of the research objectives and answer the research questions.

The calculation of the appropriate sample size was done using a formula suggested by Abutabenjeh and Jaradat (2018:237). Whereas there are many formulas and methods for the determination of sample sizes, the selected formula below is recognised to be suitable in management sciences where the study is associated with the collection of categorical data.

$$n = \frac{P(100-P)Z^2}{E^2}$$

In the formula above, n represents the sample size, P represents the proportion of respondents possessing the required characteristics, Z denotes the confidence level (a 95% confidence level is often considered appropriate), and E denotes the error (often taken as 5%).

Based on the above, Bloomfield and Fisher (2019:27) provide a table showing the respective sample sizes that will be found using the formula based on population sizes. An extract of the table is provided in Table 3.3. From the list of alumni students (that is students who graduated from the selected university in 2018 and 2019), the population size was found to be slightly above 2,000. Using a 95% confidence level and a margin error of 5% within the 95% confidence level, the sample size selected was determined as 350.

Table 3.3: Extract of table for sample size determination. Variance of the population P= 50%

Population size	Confidence level = 95% Margin of error			Confidence level = 99% Margin of error		
	5	3	1	5	3	1
2000	322	696	1655	497	957	1784

Source: Bloomfield and Fisher (2019:27)

Therefore, a sample size of 350 former students at the selected university who graduated in 2018 was deemed suitable for the study. The same number was also to be selected for the 2019 class. Following the nature of the study that sought to restrict participants of the study to those who had registered for higher degrees, a purposive sampling technique was further required.

3.4.5 Sampling participants

As shown in Figure 3.2, there are many sampling techniques that help researchers select the participants to provide data for a study. Each of the sampling techniques has advantages and disadvantages; the sampling techniques are related to the various study designs. In selecting the sampling technique for this study, the nature of the population and the research design was considered. Since there was a clear sampling frame where all participants were listed, the use of simple random sampling was deemed appropriate.

Asenahabi (2019:76) explains that simple random sampling is important in eliminating bias in the selection of respondents as well as allowing all members of a sampling frame an equal probability to be selected for the study.

In conducting the present study, all members of the population had an equal probability of being selected. Each graduate on the alumni list could provide the required data for the study. In addition, the study needed to ensure a true reflection of the research problem and it was assumed that this was only possible through reliance on a random sample where a rich and comprehensive amount of information could be obtained. Therefore, the simple random sampling technique was deemed suitable for the collection of the data that was required to respond to the research questions of the study.

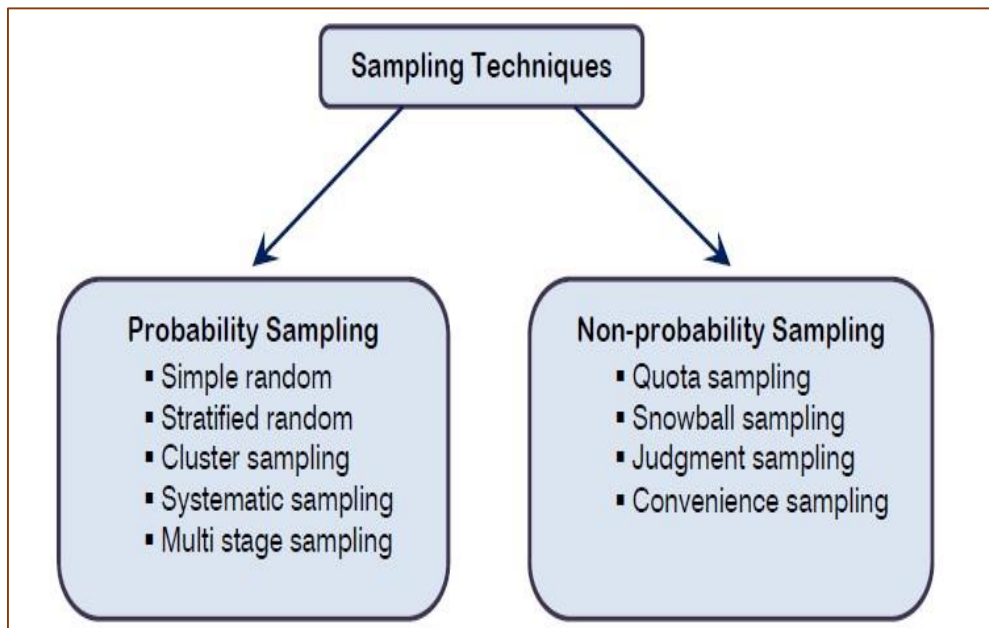


Figure 3.2: Sampling techniques

Source: Asenahabi (2019:76).

Simple random sampling often relies on the use of random numbers (Asenahabi, 2019:76). For this study, the random numbers were computer generated and were used to select 350 participants for the study.

3.4.6 Data collection instrument

An unstructured questionnaire comprising open-ended questions was the main data collection instrument used for this study. The main advantage of an unstructured questionnaire is that it allows the collection of rich information that maintains the phraseology of the respondents as they describe phenomena and provide their opinions (Asenahabi, 2019:76). In addition, the study also wanted to analyse the verbatim responses of the respondents to the research questions that the study sought to address.

3.4.7 Questionnaire design procedure

According to Hwang and Fu (2019:567), questionnaires for use in survey designs can be either standard instruments that were developed by previous researchers and have been used before or they can be new instruments constructed by the researcher. For this study, a new questionnaire was developed following the suggestions for questionnaire designs that are found in Hwang and Fu (2019:567). The first stage in the preparation of the questionnaire was the selection of questionnaire items, which was done by a careful analysis of the research questions, aims and objectives of the study. In addition, consideration was given to the literature to seek further items for inclusion in the questionnaire. Since the questions that were included in the questionnaire were open-ended, the most critical aspects were to ensure that

they were relevant to the study and that the questioning matched the level of the respondents. It was also essential to follow a validation and reliability test procedure to ensure the appropriateness of the questionnaire.

The questionnaire was divided into four sections as outlined in Table 3.4. Section A gathered the demographic information of participants, Section B addressed the scarce skills that the graduates required for the market and Section C asked respondents to indicate their employability given the scarce skills requirements in the labour market. Lastly, Section D sought their opinions on how possession of scarce skills affected their employment.

Table 3.4: Questionnaire design

Section A	Demographical details of respondents
Section B	Scarce skills required in the labour market
Section C	Employability of graduates
Section D	The influence of scarce skills on employability

3.5 Validity and reliability

Validity and reliability are two critical notions that are associated with research instruments and demand consideration in any research. For the present study, these aspects were honoured throughout the study as detailed in the paragraphs below.

Harrison et al. (2020:473) emphasize that research is formulated to generate conclusions that relate to the specific problem, research questions as well as variables of a study. Echoing the same view, Hwang and Fu (2019:567) stress that validity considers the degree to which a study accurately measures what it intends to measure. The concept of validity scrutinises the accuracy of a study to ensure that it responds to the research questions, objectives, and variables of the study. In this regard, Harrison et al. (2020:473) have identified four types of validity, namely (1) internal validity, (2) external validity, (3) construct validity and (4) statistical conclusion validity. Similarly, Hwang and Fu (2019:567) mention that validity is considered in terms of three measures which are content validity, criterion-related validity, and construct validity. Harrison et al. (2020:473) recognise that the concepts of validity and reliability are interpreted differently among quantitative and qualitative researchers as shown in Table 3.5 below. Table 3.5 explains the key constructs of validity that were considered in this study.

Table 3.5: Techniques for quantitative validity

Validity Types	Description
Statistical conclusion validity	Validity of the inference made about whether the independent and dependent variables covary.
Construct validity	Validity of the inference about the higher-order constructs from the operations used to represent them.
Internal validity	Validity of the inference that the independent and dependent variables are causally related.
External validity	Validity of the inference about whether the causal relationship holds over people, settings, treatment variables, measurement variables, and time.

Source: Harrison et al. (2020:473)

Harrison et al. (2020:473) mention that many qualitative researchers postulate that validity in qualitative research considers certain measures of trustworthiness, authenticity and credibility that make a study valid. The current study followed a qualitative design, therefore qualitative validity and reliability techniques were used. In conducting this study, all four forms of validity were taken into consideration and generally accepted methods were adopted to ensure that validity is enhanced throughout the study and to ensure that the final results of the study are valid and scientific.

The paragraphs that follow Table 3.6 provide explanations of how the validity concerns were considered in the study.

Table 3.6: Elements of trustworthiness of qualitative studies

Elements of the trustworthiness of a study	
Transferability	This relates to the need for the results of the study to reflect similar findings in other contexts.
Credibility	This is often taken as the level to which a study reflects reality (Hayashi Jr et al., 2019:98).
Conformability	Conformability considers the degree to which a study and its findings have not been diluted by the researcher's own views and opinion (Hayashi Jr. et al, 2019:98).

When considering the above, various strategies suggested in the literature were followed in this study for ensuring trustworthiness, validity, and reliability. Hayashi Jr. et al. (2019:98) stress that reliability considers the accuracy of a measurement. Scholars agree that the reliability of a measure also implies that if the measurement is repeated by other researchers, it should yield the same results as observed in a particular study.

The design of the data collection instrument was formulated to ensure that valid and reliable data were collected for the study. Firstly, a close study of the research questions and the literature led to the design of a preliminary draft of the data collection instrument. This first draft was then subjected to further consideration by referring to the data collection instruments used in related studies that were found in the literature, which led to further refinement of the data collection instrument. The second draft was then subjected to a panel of researchers from an institution of higher learning which was accessible to the researcher. The panel of researchers analysed the instrument and subjected it to discussion and further improvement. As a result of this process, certain items were removed while others were added to the questionnaire. Thereafter, it was returned to the panel of research experts to verify the amendments that were done following their recommendations. After this process, the data collection instrument was considered appropriate for data collection. Before the fieldwork was undertaken, it was deemed necessary to pilot the questionnaire. The next section discusses the pilot testing procedure that was followed in the study.

3.5.1 Pilot testing the questionnaire

After the validity and reliability test, the questionnaire was deemed appropriate by the researcher. It was now required to be tested to ensure that respondents would be comfortable in responding to it and understood the questions. The pilot test was conducted at a university in a different province from the selected university of the study and the alumni list was used to select graduates who could participate in the pilot test, of which 20 former students were available. Participants in the pilot test were briefed on the essence of the study and were required to complete the questionnaire, identifying areas of difficulty, including items that were unclear, confusing, or inappropriate. After analysing the results of the pilot test, follow-up interviews were conducted with the participants to seek more in-depth information relating to how the questionnaire could be improved. The participants provided some information that led to further improvement of the questionnaire. After the pilot test, the questionnaire was considered ready for use to collect data that would respond to the research problem, aim and research questions of the study.

3.6 Ethical considerations

Hwang and Fu (2019:567) contend that ethical guidelines define what the researcher can do and cannot do throughout the research process to ensure the integrity and social acceptance of the research undertaking. Researchers have noted that the research process in the social sciences is a social process that is characterised by interactions that can turn towards varied dimensions of social life. As a result, all research undertakings honour generally accepted ethical principles during fieldwork. Owing to some unethical studies that have been reported in the past, a set of ethical codes of research conduct have been formulated to guide researchers. The present study adhered to the ethical principles which are described in the paragraphs below.

3.6.1 Voluntary participation

The general principle of voluntary participation encapsulates the idea of informed consent. Hwang and Fu (2019:567) explain that participants in a research project should not be physically or psychologically coerced to participate in a study. The general principle is that participation in a study should flow from informed consent and participants have freewill to participate or not. For purposes of this study, all participants were informed about the nature of the study, its aims and how the findings would be used, after which they were given the option to choose to participate or not in the study.

3.6.2 Protection of research participants

The study observed the ethical principle that the study should not harm, prejudice, or disadvantage participants in any way. Hwang and Fu (2019:567) opine that participants in a study may not know the consequences or harm that they could face, and it is the responsibility of the researcher to inform the participants of the possible negative consequences of participating in the study and to discuss the strategies to avoid harm to participants. In this study, the researcher ensured no harm would be suffered by the participants.

3.6.3 Confidentiality and anonymity

Confidentiality and anonymity are generally accepted ethical principles of research conduct. It protects the identities and privacy of the participants. Confidentiality and anonymity of respondents prevent harm to participants.

3.7 Chapter conclusion

This chapter discussed the methodology applied in the study, explaining how data were collected, the instrument used and its design.

The next chapter discusses data collection and analysis.

CHAPTER 4

DATA PRESENTATION AND ANALYSIS

4.1 Introduction

This study investigated scarce skills in South Africa with a focus on how skills affect the employability of graduates. The literature review that was conducted in Chapter 2 demonstrated that scarce skills remain a topical issue in the South African labour market. The skills problem in the South African labour market can be traced back to the history of South Africa under apartheid which was characterized by the exclusion of blacks from the labour force, resulting in the skewed provision of skills among races. As pointed out in the literature review, the new government resorted to the equalization of skills through various initiatives. Despite the initiatives, the issue of scarce skills has remained problematic with many graduates failing to get employment. This is evidenced by the persisting high unemployment rate in South Africa. This study explored the problem of skills in South Africa and how this relates to graduate unemployment. Chapter 1 introduced the study and outlined the research problem, while Chapter 2 reviewed relevant literature.

In the previous chapter, the basics of this empirical study were enunciated. The research design, research approach, methodology and data collection were described and considered in detail. This chapter presents the data that were collected and the analysis thereof. The purpose of this chapter is to deduce meaning from the collected data to gain a deeper understanding of the research problem and explore the research questions to achieve the research objectives developed for the study. Factor analysis was adopted for the analysis of quantitative data while the qualitative analysis was analysed following quantitative content analysis of interview data.

4.2 Biographical information

4.2.1 Gender distribution

There is general acceptance that biographical details are an essential component in organizational behaviour as they form the foundational independent variables for enquiries. Kleine et al. (2019:973) opine that biographical variables such as gender, age and personality form the basis of individual-level variables for analysis in organizational behaviour. Given this background, it was essential to collect biographical data of the respondents in case they play a critical mediation role in the skills problem in South Africa. Table 4.1 shows the gender distribution of the respondents. The table shows that the majority (53%) of the respondents were females while 47% of the 60 respondents were males. The results suggest that females are more likely to face challenges in securing employment than males.

Table 4.1: Gender distribution of respondents

	Frequency	Percent	Valid percent	Cumulative percent
Valid male	28	46.7	46.7	
Female	32	53.3	53.3	
Total	60	100	100	100

4.2.2 Age distribution of respondents

The age distribution of the respondent of respondents was also considered. Kleine et al. (2019:973) confirm that research on the variations associated with older and younger age groups in the labour market have been of interest over the years. Generational cohort studies imply that certain generations share experiences, attitudes and beliefs which make them subject to certain similar interpretations of reality (Childers & Boatwright, 2021:425). Borrowing from these assumptions, the current study held that the generation of today tends to experience fundamental scarce skills problems. As such, there was a need to collect information on the gender distribution of respondents. Table 4.2 shows the age distribution of the participants in the study. The majority (42%) of the respondents were in the 20 to 30 age group. This is not surprising as most job seekers are often in the middle age group. On the other hand, 33% of the respondents were within the 30 to 40 age group, while the above 40 age group was the least with only 8%. These results suggest that the 20 to 40 age group represents the majority of the individuals facing the scarce skills challenge in the South African labour market. Most of these individuals are those who have just completed their tertiary education. These arguments support the concerns highlighted by Childers and Boatwright (2021:425).

Table 4.2: Age distribution of respondents

Valid	Frequency	Percent	Valid percent	Cumulative percent
Less than 20 years	10	16.7	16.7	16.7
20 years to 30 years	25	41.7	41.7	58.3
30 years to 40 years	20	33.3	33.3	91.7
Above 40 years	5	8.3	8.3	100.0
Total	60	100.0	100.0	

4.2.3 Qualification of respondents

A key biographical element that is likely to influence employment and that is related to the concept of scarce skills is the educational qualifications and level of education of job seekers in the labour market. As such, it was important to consider the qualifications of the respondents who participated in this study. Table 4.3 shows the qualifications of the respondents. As shown, the majority (31%) of the 60 participants of the study held degrees in various fields while 24% had diplomas. This suggests that the education system in South Africa seems to be inadequate in producing graduates who can solve the socio-economic problems facing the country. Reporting for the WEF in its Global Competitiveness Report, Klaus Schwab (Flejterski & Majchrzak, 2018:99) supports the literature in asserting that South Africa has suffered from an inadequate education system that has failed to accommodate graduates and ensure their absorption into the system. In their report on the state of entrepreneurship in South Africa, Bowmaker-Falconer and Herrington (2020:22) confirm earlier assertions in the literature that there is a need to reconsider the preparedness of university graduates to suit the labour market. While these lamentations are ongoing, they are clear observations that the prevailing socio-economic environment has become highly dynamic. The advent of technology has been chiefly responsible for making many traditional skills obsolete.

Table 4.3: Highest qualification of respondents

Valid	Frequency	Percent	Valid percent	Cumulative percent
Degree	31	51.7	51.7	51.7
Diploma	24	40.0	40.0	91.7
Certificate	4	6.7	6.7	98.3
Other	1	1.7	1.7	100.0
Total	60	100.0	100.0	

4.2.4 Employment status of respondents

The employment status of respondents is depicted in Table 4.4. The table shows that most (24%) of the respondents were unemployed or employed on a contract basis, while 21% were employed in permanent positions. These findings confirm the argument that South Africa faces a serious problem of unemployment. Bowmaker-Falconer and Herrington (2020:22) report the unemployment rate as 29.1%, which is higher than other countries in Brazil, Russia, India, China, and South Africa (BRICS) block. This study, therefore, becomes a critical enquiry to explain the notion of skills as an important element in employment opportunities.

Table 4.4: Employment status of respondents

Valid	Frequency	Percent	Valid percent	Cumulative percent
Employed	21	35.0	35.0	35.0
Unemployed/Employed on contract/ Part time	24	40.0	40.0	75.0
Other	11	18.3	18.3	
4	3	5.0	5.0	93.3
5	1	1.7	1.7	98.3
Total	60	100.0	100.0	100.0

4.2.5 Industry or sector

Respondents were also required to indicate the sectors or industries in which they felt their skills were most suited or in which they would prefer to find employment. This was to establish if the skills problem was sector/industry specific or if it was a generalized labour market problem that cuts across sectors and industries. Table 4.5 below shows the responses provided on the industry/sector preferences of the respondents. When these results are considered, it can be observed that the majority (30%) were interested in the IT sector while 22% were interested in the Education sector. This observation is in line with the progression of the world to the Fourth Industrial Revolution (Industry 4.0) which is characterised by the widespread use of technologies (Maisiri & van Dyk, 2021:1416).

Table 4.5: Industry/sector preferences

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Manufacturing	6.5	10.0	10.0	10.0
Mining	13	8.3	8.3	18.3
Education		21.7	21.7	40.0
Finance & banking	8	13.3	13.3	53.3
Agriculture	3	5.0	5.0	58.3
Tourism and hospitality	4	6.7	6.7	
Food processing	3	5.0	5.0	65.0
Information Technology	18	30.0	30.0	70.0
Total	60	100.0	100.0	100.0

4.2.6 Quantitative data analysis

4.2.6.1 Factors for the employability of graduates

The main objective of the study was to explore the employability of graduates and to assess the skills factor as a critical component of the unemployment challenge in South Africa. The main research question was what the factors for graduate unemployment in the South African labour market are. The main question was linked to sub-questions which were analysed both quantitatively and qualitatively in this study. The data analysis strategy adopted was that of analysing quantitative data first followed by the qualitative analysis of data. Graduates were required to indicate their level of agreement with statements in the questionnaire, which were assessed on a 5-point Likert scale of strongly agree (1), agree (2), neutral (3), disagree (4) and strongly disagree (5). In addition, qualitative items on the data collection instrument allowed quantitative data to be triangulated with qualitative data.

To guide the analysis of the Likert elements of the data collection instrument, it was necessary to perform a normality test on the level of the agreeableness of respondents with the Likert terms. The analysis was done using the Statistical Package for the Social Sciences (SPSS) software. The results of the test for normality are indicated in Table 4.6 and in Table 4.7. Table 4.6 shows the descriptive statistics for the normality test while Table 4.7 shows a summary of the test statistics to establish whether the data was significant or not significant to be analysed following normally distributed data procedures. The significance of the test statistics to establish whether the level of agreeableness with the statements followed a normal bell-shaped distribution as shown in Table 4.6.

Table 4.6: Descriptive statistics for the normality test

				Statistic Std. Error
Level of Mean agreeableness	95% Confidence Interval Lower for Mean Bound		2.4217 2.2920	.06479
		Upper Bound	2.5513	
	5% Trimmed Mean		2.4093	
	Median		2.4000	
	Variance		.252	
	Std. Deviation		.50189	
	Minimum		1.60	
	Maximum		3.60	
	Range		2.00	
	Interquartile Range		.80	
	Skewness		.366	.309
	Kurtosis		-.798	.608

The Kolmorov-Smirnov test is applicable in cases where there are more than 100 respondents, as a result, the Shapiro-Wilk normality test which applies to a data set of less than 100 respondents was used. Table 4.7 shows a significance value (0.047) which is less than 0.5 demonstrating that the level of agreeableness was not normally distributed.

Table 4.7: Decision statistics for the normality test

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		Sig.
	Statistic	df	Sig.	Statistic	df	
SF	.104	60	.170	.960	60	.047

a. Lilliefors Significance Correction

Further consideration of the histogram to show the mean level of agreement is indicated in Figure 4.1. The histogram also shows that the level of agreement did not conform to the normal distribution.

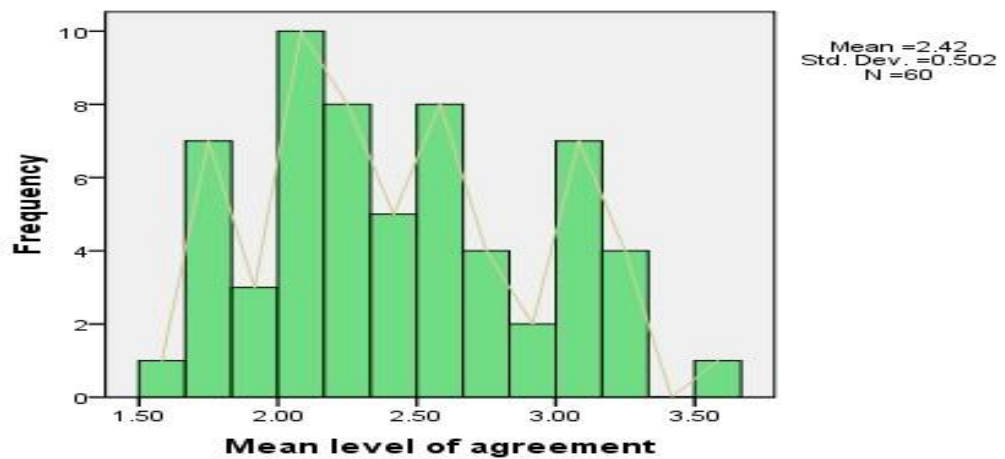


Figure 4.1: The mean level of agreement with the statements

Having noted that the data set did not reflect a normal distribution of the level of agreeableness on the questionnaire items, it was necessary to assess whether certain factors stated in the questionnaire were more influential than others or to establish if the responses were clustered on certain key factors. This was considered in line with factor analysis. As a result, factor analysis was conducted to establish if the level of agreeableness was scattered on certain factors or if the level of agreeableness demonstrated the significant influence of certain factors as distinct from others.

4.2.6.2 Main factors for the employability of graduates

The correlation table for the assessment of any significant or underlying dimension for the skills required for employability is shown in Table 4.8, which provides an analysis of the significance of the correlation matrix. The 10 factors that were loaded for analysis were coded from F1 to F10.

Table 4.8: Factor analysis correlation matrix

Correlation	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
F1 F2	1.000	-.042	.049	.293	.230	.310	-.006	-.164	.198	-.131
F3 F4				.166						
F5	-.042	1.000	.426		.137	-.145	.241	.084	-.015	.281
F6 F7	.049	.426	1.000	-.027	.167	-.251	.349	.267	.360	.284
F8 F9	.293	.166	-.027	1.000	.032	.207	-.075	-.025	-.011	-.152
F10	.230	.137	.167	.032	1.000	.030	-.003	.117	.272	.030
	.310	-.145	-.251	.207	.030	1.000	-.154	-.228	-.090	-.222
	-.006	.241	.349	-.075	-.003	-.154	1.000	.104	.166	.273
	-.164	.084	.267	-.025	.117	-.228	.104	1.000	.164	.022
	.198	-.015	.360	-.011	.272	-.090	.166	.164	1.000	.342
	-.131	.281	.284	-.152	.030	-.222	.273	.022	.342	1.000
F1 F2		.375	.356	.012	.038	.008	.483	.105	.064	.160
F3 F4				.102						
F5	.375		.000	.418	.148	.135	.032	.261	.455	.015
F6 F7	.356	.000			.102	.026	.003	.020	.002	.014
F8 F9	.012	.102	.418		.403	.056	.285	.425	.467	.123
F10	.038	.148	.102	.403		.409	.492	.187	.018	.411
	.008	.135	.026	.056	.409		.120	.040	.248	.044
	.483	.032	.003	.285	.492	.120		.214	.102	.017
	.105	.261	.020	.425	.187	.040	.214		.105	.435
	.064	.455	.002	.467	.018	.248	.102	.105		.004
	.160	.015	.014	.123	.411	.044	.017	.435	.004	

As shown in Table 4.9, the Bartlett's Test of Sphericity and Kaiser-Meyer-Olkin test show that one or two underlying dimensions significantly correlate with each other. This implies that there were one or more factors that formed clusters for other dimensions.

Table 4.9: KMO and Bartlett's Test^a

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.594
Bartlett's Test of Sphericity	Approx. Chi-Square	86.705
	df	45
	Sig.	.000

a. Based on correlations

Table 4.10 below considers the eigenvalues of the dimensions, and four factors were found to be the main components. As shown in Table 4.10, four factors had an eigenvalue above 1 and these were the underlying dimensions on which all the other dimensions were underlying or clustered.

Table 4.10: Variance explained by dimensions during factor analysis

Component	Initial Eigenvalues			Extraction Loadings	Sums of Squared	
	Total	% of Variance	Cumulative %		Total	% of Variance
1	2.397	23.966	23.966	2.397	23.966	23.966
2	1.680	16.803	40.768	1.680	16.803	40.768
3	1.172	11.722	52.491	1.172	11.722	52.491
4	1.077	10.771	63.262	1.077	10.771	63.262
5	.843	8.428	71.690			
6	.772	7.723	79.413			
7	.662	6.618	86.031			
8	.588	5.878	91.909			
9	.467	4.668	96.577			
10	.342	3.423	100.000			

Extraction Method: Principal Component Analysis.

As seen in Table 4.11, the component matrix shows that four factors were extracted through the principal component matrix. The component matrix indicated that four components had to be treated as the key underlying dimensions for the skills problem in South Africa.

Table 4.11: Component matrix

	Raw				Rescaled			
	Component				Component			
	1	2	3	4	1	2	3	4
The university is addressing the scarce skills requirement among graduates	.063	.987	-.080	.287	.050	.781	-.063	.227
Graduates fail to get employment to get employment because they lack scarce skills	.750	.000	.739	.160	.592	.000	.583	.126
After graduating from this university, I need further education to acquire scarce skills for employability	.886	-.099	.193	.166	.769	-.086	.167	.144
The university is informed of industry requirements	-.014	.860	.787	-.469	-.011	.639	.585	-.348
My qualifications are aligned to scarce skills	.750	.684	-.738	-.138	.525	.479	-.517	-.097
My university is focused on acquisition of scarce skills among graduates	-.378	.549	-.011	.074	-.359	.522	-.010	.071
The university should review its curriculum in line with scarce skills	.459	-.181	.193	.316	.448	-.177	.189	.308
After my initial graduation, I realised that I lacked scarce skills	.596	-.317	-.127	-.943	.470	-.250	-.100	-.743
I knew about scarce skills when I started looking for employment	.584	.173	-.341	.183	.532	.158	-.311	.167
Scarce skills seem to be changing	.417	-.231	.062	.362	.452	-.250	.067	.392

* Extraction Method: Principal Component Analysis

* 4 components extracted

The 4 components were further subjected to Varimax rotations to establish the principal factors for consideration. Table 4.12 shows the rotated matrix.

Table 4.12: Rotated correlation matrix

	Raw				Rescaled			
	Component				Component			
	1	2	3	4	1	2	3	4
Graduates fail to get employment to get employment because they lack scarce skills	.959		.442	.133	.757		.348	.105
After graduating from this university, I need further education to acquire scarce skills for employability	.831	.323		.253	.721	.280		.219
Scarce skills seem to be changing	.548		-.235		.595		-.255	
The university should review its curriculum in line with scarce skills	.608				.593			
My qualifications are aligned to scarce skills		1.252				.877		
I knew about scarce skills when I started looking for employment	.312	.635	-.138		.285	.579	-.126	
The university is informed of industry requirements			1.253				.931	
After my initial graduation, I realised that I lacked scarce skills		.238		1.137		.187		.896
The university is addressing the scarce skills requirement among graduates		.622	.503	-.649		.493	.398	-.513
My university is focused on acquisition of scarce skills among graduates	-.368		.312	-.457	-.349		.296	-.434

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

The four factors that emerged from the factor analysis process described are shown in Table 4.13. As seen in Table 4.13, the factors seem clustered around four underlying themes, namely (1) themes related to the impression that postschool skills acquisition determined employability, (2) themes related to the need for skills-based education, (3) the need for industry-driven skills acquisition as well as (4) labour market failure. Theme 1 found that the possession of post-school qualifications was a key determinant of employability. In other words, the education provided by universities was not enough to ensure employment, there

was a need to acquire post-school competencies to match industry requirements. This related to the third theme which was based on the need for skills-based education that is linked to industry requirements. This means that universities should be closely linked with industry to ensure that they are in a strong position to adapt university curricula to the industry skills requirements and also supports the need for industry skills acquisition. The last underlying factor for the employability of graduates related to labour market failures is characterised by the inability to absorb graduates and the existence of vices and unfair recruitment practices that are based on nepotism and other criteria and not educational qualifications.

































Table 4.13: Underlying factors for the employability of graduates

Post-school skills acquisition	Graduates fail to get employment because they lack scarce skills.
	After graduating from this university, I need further education to acquire scarce skills.
	Scarce skills seem to be changing.
	My university is focused on acquisition of scarce skills among graduates.
Skills-based education	My qualifications are aligned to scarce skills.
	I knew about scarce skills when I started looking for employment.
	After my initial graduation, I realized that I lacked scarce skills.
Industry-driven skills acquisition	The university is informed of industry requirements.
	My university is focused on acquisition of scarce skills among graduates.
Labour market failure	I realized that I lacked scarce skills.
	After graduating from this university, I need further education to acquire scarce skills for employability.
	Graduates fail to get employment because they lack scarce skills.

4.2.6.3 Qualitative data analysis

To understand the findings from the quantitative analysis, it was important to consider the qualitative data and its contribution to forming a holistically balanced analysis of the study. The thematic analysis of qualitative data that was conducted resulted in codes as depicted in Table 4.14. Quantitative content analysis was conducted to infer key contents of the qualitative data. The qualitative analysis of data started with immersion in the data to understand it before creating in Nvivo codes for the data. The in vivo codes were then classified, and their frequencies were considered to establish the strengths of each code.

Table 4.14: Qualitative analysis codes and categories

	Count	% Codes	Cases	% Cases
 Awareness of skill inadequacies				
 Further study	3	2.1%	2	4.0%
 Lack industry skills	4	2.8%	4	8.0%
 Skill based salary systems	2	1.4%	2	4.0%
 Industry skills requirement (missing)				
 Specialised technological (CAMAS)	6	4.2%	6	12.0%
 Skills possessed				
 Managerial (strategic planning)	10	7.0%	7	14.0%
 Payroll	1	0.7%	1	2.0%
 Accounting	1	0.7%	1	2.0%
 socio-cultural skills	9	6.3%	6	12.0%
 Basic technological	7	4.9%	7	14.0%
 Create employment opportunities				
 Experience	13	9.1%	11	22.0%
 Interview skills	6	4.2%	3	6.0%
 Qualifications	2	1.4%	2	4.0%
 In-service learning - industry links	4	2.8%	4	8.0%
 Labour brokers and employment agencies	6	4.2%	6	12.0%
 Skills	5	3.5%	5	10.0%
 Skills Shortage				
 Skills are dynamic	3	2.1%	3	6.0%
 University education inadequate	11	7.7%	11	22.0%
 Demand for scarce skills	3	2.1%	3	6.0%
 Solution to the scarce skills problem				
 Self learning	3	2.1%	3	6.0%
 Cover skills gap - study and work	2	1.4%	2	4.0%
 Scarce skills introduced at university entry level	9	6.3%	9	18.0%
 Create a skills based curriculum in universities	9	6.3%	8	16.0%
 Labour market challenges				
 Unfair recruitment practices (bribery)	16	11.2%	9	18.0%
 Socio-cultural barriers-langauge	6	4.2%	5	10.0%
 Competition in the labour market	2	1.4%	2	4.0%

When the above is considered, it can be seen that unfair labour market practices characterized by bribery has a frequency higher (11.2%) than all other codes. It appears that unfair recruitment practices have been observed by many of the respondents. These results echo the South African Board of People Practice [SABPP] which forecast that significant changes in the world of work will result in mobile phone-based recruitments which are likely to be based on relationships and other criteria which may not necessarily be qualifications (Schutte et al., 2016:230). This suggests that despite the essential need for graduates to possess academic skills and competencies, networking skills and competencies are becoming critical as a key to employment.

Another invivo code with high frequency was the essential role of experience. Respondents indicated that they failed to get employment due to a lack of the required experience even

though most of them had undergone experiential or practical learning. Ismail and Mujuru (2020) point out that employment issues should be analysed from the supply side as well as the demand side, which include the issue of experience. To ensure labour market effectiveness and increase graduate employability, there is a need for both supply side and demand side intervention. The provision of skills required for employability is an issue that requires the cooperation of both demand side and supply side partners (Ismail & Mujuru, 2020). Hence, employers and universities need to ensure that the experience requirement is met. The importance of work-based learning in universities is highlighted by the literature review and previous studies. There is a need for a change in the way work-based learning is being practised in South Africa, given that it is an issue that has failed to provide desirable results over the years (Schutte et al., 2016:230). The qualitative analysis also revealed that the participants felt that they were mainly being equipped with administrative and managerial skills as opposed to the technical skills that employers want. Graduates also generally felt that the skills that they got were inadequate in preparing them for the world of work.

4.2.7 Summary of results

This study was formulated to address the following research objectives:(1) investigate which skills are scarce among university graduates, (2) determine how scarce skills and employment opportunities relate to each other, and (3) determine which skills are prioritised for graduate employment. The study provided evidence that scarce skills are usually industry-driven and comprise specialized and context-specific technologies and knowledge domains. It was observed that scarce skills often require experience. University education alone is not sufficient and there is a need for post-university education that is specifically directed at the acquisition of scarce skills. The nature of scarce skills is shown in Figure 4.2

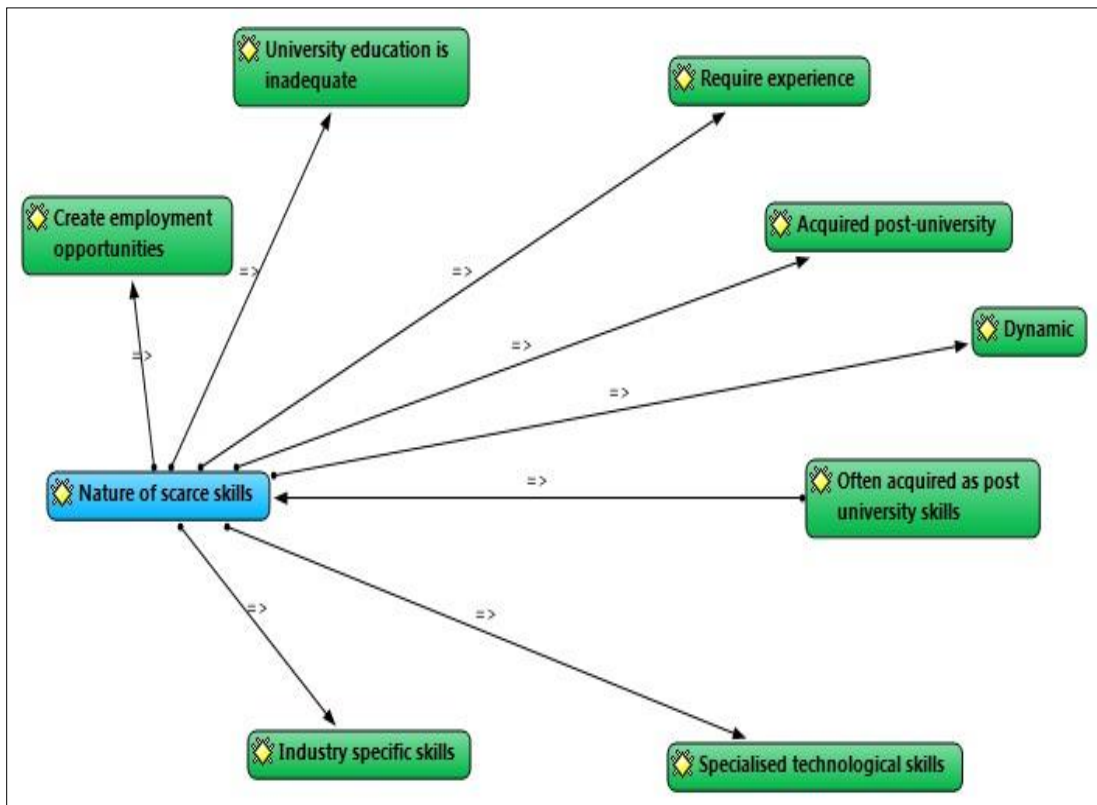


Figure 4.2: The nature of scarce skills

Figure 4.2 shows the nature of scarce skills. Scarce skills are those industry-specific and specialized skills that are sources of competitive advantage for an industry or sector. It appears that university qualifications are generalized and do not relate to specific skills that address the needs and wants of specific industries in which graduates later seek employment. For this reason, the study provided evidence for the need for post-university skills acquisition relevant to the specialized skills required in the industries they wish to work.

The study also found that even though scarce skills are the main factors affecting the employment of graduates in the various industries of their choice, it appears that recruitment and employment processes face serious problems related to unfair labour practices and a high degree of subjectivity that is affecting employment. There was evidence that employment is now also being influenced by other factors such as networking and relationships among graduates and employers. It also appears that some degree of nepotism could be influencing the employment of graduates. Several graduates indicated that they know people who got employed because of their connections with the managers. This demonstrates how desperate the graduate employment situation has become in South Africa. The respondents who participated in this study also provided some possible solutions to the employment predicament that they are facing. Some of these solutions are shown in Figure 4.3. Graduates called upon universities to prioritise the acquisition of scarce skills in higher education through

strong links with industry and addressing labour market failure to ensure recruitment and selection of employment that is based on ability, skills and talent. There is also a need to reformulate the university education curriculum for it to address the need for industry skills.

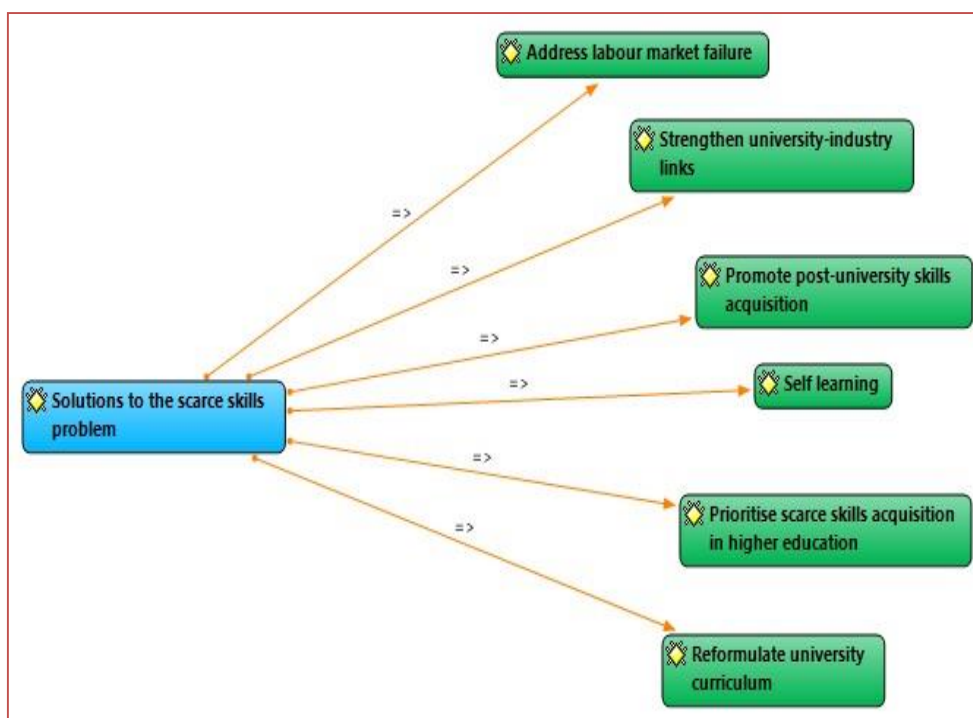


Figure 4.3: Possible solutions to addressing the skills challenge

4.3 Chapter conclusion

This chapter analysed the data collected to address the study’s objectives. Evidence was found that skills are affecting the employability of graduates and that university education is generalized and lacks specificity in addressing industry needs. The study also found evidence that mischief such as nepotism and relationship-based employment is affecting the employability of graduates. Some possible solutions were provided for addressing the graduate skills challenge, which included the need for reformulating university curricula and the creation of strong university-industry links that would ensure the transmission of industry skills to graduates. This study reviewed the scarce skills that affect employment, including skills based on the use of specific technologies that are essential for a sector or skill.

The next chapter summarises the study, draws conclusions and makes recommendations.

CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The previous chapter discussed scarce skills that are affecting employment including skills based on the use of specific technologies that are essential for a sector or skill.

This chapter summarises the study by providing a synopsis of all the chapters and how each of them advanced the study. It seeks to offer snapshots from the previous chapter and arrive at the conclusions before providing recommendations. The chapter also considers the achievement of the study purpose, objectives and aims as well as how research questions have been addressed. The study, like all other scientific enquiries, emerged from a specific research question which was the centrality of the full study. As such, the chapter looks at the study problem and the study objectives before it sums up the literature that was reviewed to obtain a theoretical conception of the study. The latter parts of the chapter cover recommendations emanating from the study findings. The recommendations provided offer guidelines for policy and practice as well as inform researchers, academics, politicians, organisations, and other stakeholders on the issue of scarce skills and employability of graduates. Before close of the chapter, limitations of the study are explained in consideration of geographical, theoretical, and other methodological elements with the potential to limit the strength of the findings and how these were managed. Research products are essential in generally improving present circumstances and the study is concluded in a way that advances societal and national progress and development.

5.2 Summary of previous chapters

The study was formulated to investigate the influence of scarce skills on the employability of graduates in South Africa. In other words, it was formulated to explore the nature of the unemployment challenge in South Africa with specific focus on scarce skills. Unemployment is a contemporary challenge in the South African labour market which greatly strengthens the cycle of poverty and inequality. The research problem stated in Chapter 1 drew attention to the continuation of high unemployment in South Africa over the years. Previous research has provided various factors to the unemployment challenge, including educational inadequacies and skills deficiency among graduates. The specific objectives of the study centred on how scarce skills influence the employability of graduates.

Table 5.1 below summarises the study objectives and questions.

As is indicated in Table 5.1, the study was initiated to enquire into graduate employability, the factors affecting it and how scarce skills influence employability. It was an enquiry that was developed to increase knowledge and appreciate the nature of scarce skills and graduate employability in South Africa.

Table 5.1: Research questions and related objectives

Questions	Objectives
Main research question: What are the factors that contribute to employability?	Main Objective: Determine which factors contribute to unemployment.
Which types of scarce skills are needed among graduates?	Investigate which skills are scarce among university graduates.
What is the relationship between scarce skills and employment opportunity?	Determine how scarce skill relate to opportunities.
Which skills are prioritized for graduate employment?	Determine which skills are prioritized for graduate employment.

Chapter 2 discussed the theoretical underpinnings and empirical basis of the study from the perspective of a literature review. The review of unemployment and other labour market concepts and theories was done in conjunction with empirical research. Current research on relevant literature on scarce skills and employment opportunities amongst university graduates provided insight into the research questions as well as forming the basis for the research paradigm that was adopted as part of the methodology. The literature review established that increasing the employability of university graduates remains a challenge in the South African context. Various theories of graduate employability and scarce skills were reviewed together with the underlying empirical research that supports the theories propounded.

The literature review showed that the scarcity of relevant skills in the South African labour market is linked to the dark history of South Africa where certain racial groups were excluded from educational opportunities. The apartheid system was characterised by the limitation in skills acquisition for some groups. The post-apartheid government targeted equality in employment and skills acquisition. However, this has not been fully achieved and there are still serious skills inadequacies in the labour market. In addition, new skills requirements continue to emerge, and unemployment continues to haunt South Africa. As a result, empirical research on skills has been extensive over the years. Despite the scholarly interest revealed in Chapter

2, major research gaps still exist on the phenomenon. A great need still exists to assess the scarce skills challenge in various settings and using various methodological assumptions. The present study is essential in providing a deeper understanding of the scarce skills challenge and contributing to addressing the skills challenge

Chapter 3 discussed scarce skills and the employability of graduates, which has been of interest to several scholars. This study used a methodology that offered an in-depth appreciation of the study questions and objectives as stated in Chapter 1. The methodology adopted for the study emanated from a sociological paradigm associated with the belief that organisations are social entities and the reality of scarce skills and employability could be established through interaction with graduates and organisational representatives. Since the study sought to investigate the influence of scarce skills on the employment of recent graduates from a selected university in South Africa, a descriptive survey design was deemed appropriate. Descriptive surveys are further classified into questionnaire and interview survey methods. Given the research paradigm and approach for this study, the questionnaire survey method was appropriate to achieve the aims and objectives of the study as well as to answer the research questions.

Chapter 4 discussed the findings and analysis of data collected. The study found that scarce skills are those industry-specific and specialized skills that are the source of competitive advantage for an industry or sector. Evidence from the study suggests that:

- a) Scarce skills are not university qualifications which are generalised, rather, they are industry specific and address the needs and wants of specific industries in which graduates seek employment. For this reason, the study provided evidence for the need for post-university skills acquisition that relates to the specialized skills required in the industries they wish to work.
- b) Even though scarce skills are the main factors affecting the employment of graduates in the various industries of their choice, the study found evidence that recruitment and employment processes are facing serious problems related to unfair labour practices and a high degree of subjectivity that is affecting employment.
- c) Employment is now also being influenced by other factors such as networking and relationships among graduates and employers. In addition, it appears that a degree of nepotism could be influencing the employment of graduates.
- d) There were indications from the study that several graduates know people who got employed because of their links with the managers. This demonstrates how desperate the graduate employment situation has become in South Africa. The respondents who participated in this study provided some possible solutions to the employment

predicament that they are facing. Graduates called upon universities to prioritise the acquisition of scarce skills in higher education through strong links with industry and addressing labour market failure to ensure recruitment and selection of employment that is based on ability, skills, and talent. There is also a need to reformulate the university education curriculum for it to address the need for industry

5.3 Main research question: What are the factors that contribute to graduate employability?

It was found in this study that factors that contribute to graduate employability were mainly the scarce skills and networking skills of graduates. There was also evidence of bad labour market practices and corruption in the market such as nepotism which was affecting graduate absorption into the labour market.

5.4 Scarce skills among graduates

The study found that scarce skills are industry specific despite there being such general skills as communication and other social competencies. The study provided evidence that scarce skills are usually industry-driven and comprise specialized and context-specific technologies and knowledge domains. It was observed that scarce skills often require experience and university education alone is inadequate, hence there is a need for post-university further education that is specifically directed at the acquisition of scarce skills.

5.5 Scarce skills and graduate employability

While graduate employability is largely dependent on scarce skills, it was found that recruitment and employment processes face problems related to unfair labour practices and a high degree of subjectivity that affects employment. Often employers do not employ based on skills but use other criteria. There was evidence that employment is now also being influenced by factors such as networking and relationships among graduates and employers.

5.6 Recommendations

Arising from the information and evidence gathered in this study, the following recommendations are made.

- a) Universities should foster the development of scarce skills for the employability of graduates.

- b) Universities should appoint a scarce skills officer to be responsible for assessing and promoting a skills-based curriculum in universities.
- c) Universities should conduct frequent scarce skills surveys in various industries to establish whether the prevailing skills requirements in organisations are still linked to university curricula.
- d) On-the-job training and induction of new graduates in organisations should focus on improving their scarce skills fit to ensure the acquisition of industry-specific skills and grow the rate of employment.
- e) Future studies should focus on the influence of technological changes on skills and implications of online labour market trends such as the adoption of tele-working, online working, work-from-home and other flexible work arrangements on skills as well as on university curricula.

5.7 Final Conclusion

This study found evidence that skills affect the employability of graduates. It was found that university education is generalized and lacks specificity in addressing industry needs. The study also found evidence that certain corrupt acts such as nepotism and relationship-based employment are affecting the employability of graduates. Some solutions were provided for addressing the graduate skills challenge, including the need for reformulating university curricula and the creation of strong university-industry links that would ensure the transmission of industry skills to graduates.

This study reviewed scarce skills that affect graduate employment, including skills based on the use of specific technologies that are essential for a sector or skill.

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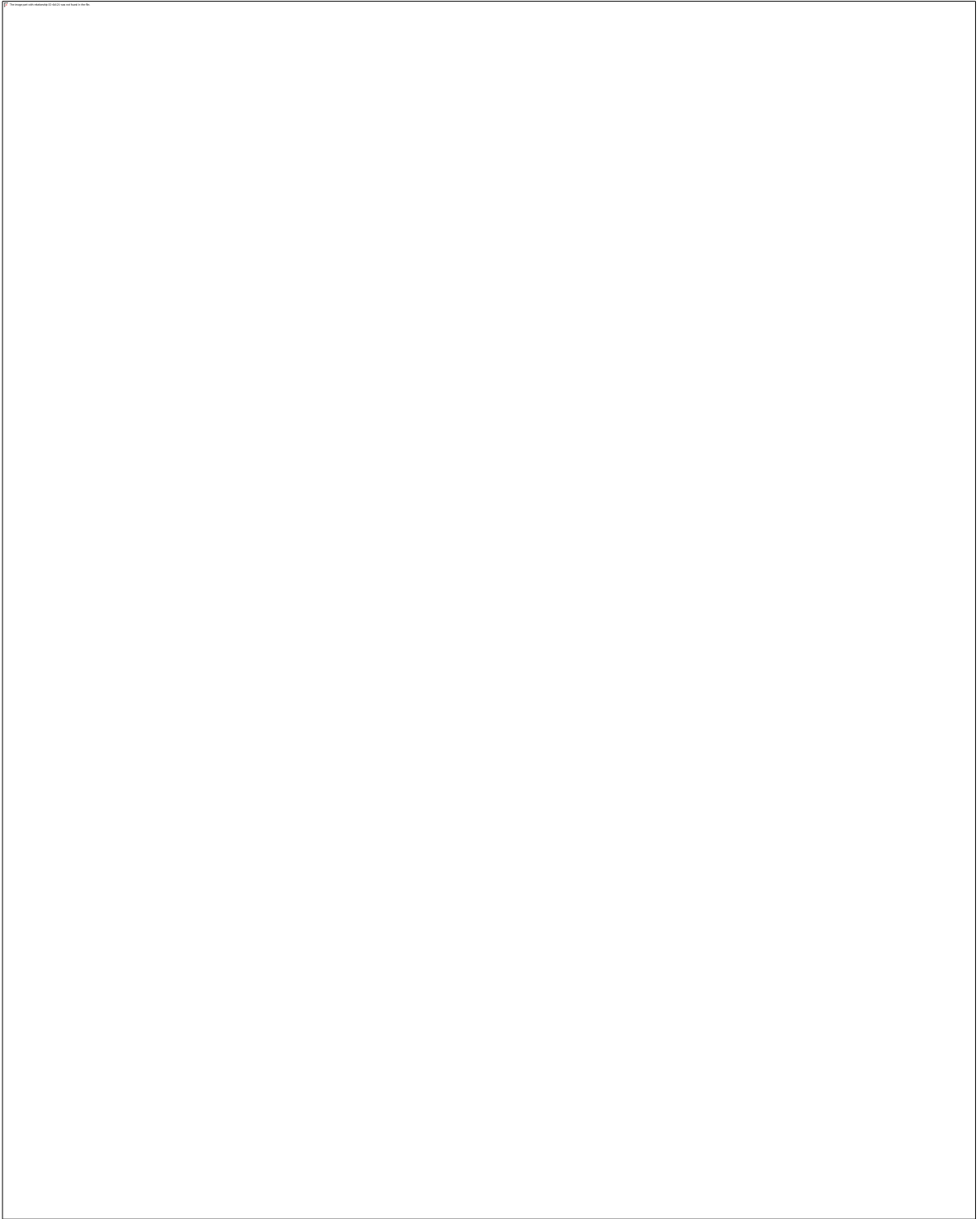
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APPENDICES

APPENDIX A: CPUT ETHICAL CLEARANCE



APPENDIX B: PERMISSION FOR DATA COLLECTION



APPENDIX C: RESEARCH INTERVIEW GUIDE



RESEARCH INTERVIEW GUIDE

THE INFLUENCE OF SCARCE SKILLS ON EMPLOYMENT OPPORTUNITIES AMONG GRADUATES OF A SELECTED UNIVERSITY

Research conducted by Ms N. Fanyana, Cell: 083 772 0190

Email: nancy.fanyana1@gmail.com

Dear Respondent,

You are requested to participate in an academic research study conducted by Ms N. Fanyana, a Masters at the Cape Peninsula University of Technology. The purpose of the study is to scarce skills and the employability of graduates in South Africa. The completion of this interview may enable academics and students in developing job market preparedness. You have been chosen to participate in the study based on your position as a possible employer of graduate student I therefore believe that you will provide relevant information.

Please note the following:

1. This study is an anonymous survey. Your name will not appear on the interview and the answers you give will be treated as strictly confidential. You cannot be identified in person based on the answers you give.
2. Your participation in this study is very important to us. You may, however, choose not to participate and you may also stop participating at any time without any negative consequences.
3. Kindly note we will appreciate completely and honestly as possible. This should not take between 45 minutes to an hour of your time.
4. The results of the study will be used for academic purposes only and may be published in an academic journal. We will provide you with a summary of our findings on request.

5. As a participant in this research, should you have any complaint concerning the manner in which this research is conducted, please do not hesitate to contact the researcher named below. Alternatively, if an independent person is preferred then please do not hesitate to contact The Ethics Officer, Research Ethics Committee on (021) 460 4285 or Email: mbindab@cput.ac.za

Please sign this letter to indicate that:

- a) You have read and understand the information provided above.
- b) You give your consent to participate in the study on a voluntary basis.

Respondent's signature

Date

INTRODUCTION

Kindly receive my appreciation for agreeing to participate in this interview. I guarantee your anonymity and confidentiality. The interview is part of a research study on scarce skills and graduate employability

1. DETAILS OF EMPLOYER

Position in organisation	
Location of organisation	
Industry/sector to which the organisation belongs	
Nature of business	

2. EMPLOYABILITY SKILLS

2.1 What are the general skills that you think every graduate should possess

.....

.....

.....

2.1 Identify the general skills which are missing among recent university graduates

.....

.....

.....

2.2 Do you think universities are effectively equipping graduates with industry scarce skills

.....

.....

2.3 Comment on the scarce skills of graduates and their employability in your industry

Thank you

APPENDIX D: QUESTIONNAIRE



Dear Sir/ Madam

Request for you to participate in a survey on scarce skills and graduate employability

Introduction

I am a registered Masters student at the Cape Peninsula University of Technology. I am conducting research on scarce skills and employability of graduates in South Africa. The primary aim of this study is to explore graduate unemployment and scarce skills in South Africa.

The title of the study is:

THE INFLUENCE OF SCARCE SKILLS ON EMPLOYMENT OPPORTUNITIES AMONG GRADUATES OF A SELECTED UNIVERSITY

Please note that participation in this study is voluntary. You may withdraw at any time. Answering of the interview questions will be accepted as an expression of consent. Cape Peninsula University of Technology conducts research in accordance with an Ethics Code to ensure the protection of welfare and rights of humans, animals and to protect the environment in the course of research.

As a participant in this research, should you have any complaint concerning the manner in which this research is conducted, please do not hesitate to contact the researcher named below. Alternatively, if an independent person is preferred then please do not hesitate to contact The Ethics Officer, Research Ethics Committee on (021) 4604285 or Email: mbindab@cput.ac.za

General instructions

The interview comprises a variety questions. You are kindly requested to respond to every question.

The interview has been designed in such a way as not to take more than 30 minutes of your time. Your first and immediate response is all that is required. Please note there is no right or wrong answer.

All the information you provide will be treated with STRICT CONFIDENTIALITY. Once all interviews have been conducted and analyses conducted, the results of the study will be presented as a whole or in aggregate form (to ensure your anonymity) and written up as a scholarly paper. You are welcome to request a copy from the researcher named below.

Thank you for your participation in this important research project.

Researcher: Nancy Fanyana

Contact No.: 0837720190

SECTION 1: BIOGRAPHICAL DETAILS

1.1 Gender and age

Gender	Male		Age (years)	Below 20	20-30	30-40	Above 40
	Female						

1.2 Employment status

Employed permanently		Unemployed, employed on contractor part time		Other (provide details)	
----------------------	--	--	--	-------------------------	--

1.3 Current highest qualification

Degree		Diploma Holder		Certificate Holder		Other (provide details)	
--------	--	----------------	--	--------------------	--	-------------------------	--

1.4 Industry/sector desired for possible or future employment

Manufacturing	
Mining	
Education	
Finance and banking	
Agriculture	
Tourism and hospitality	
Food processing	
Other (please indicate)	

SECTION 2: FACTORS FOR THE EMPLOYABILITY OF GRADUATES

2.1 Have you applied for a job before

Yes, and I got the job	Provide the reason why you got the job: ----- ----- ----- -----
Yes, and I did not get the job	Provide reasons why you did not get the job: ----- ----- ----- -----
No	Provide reasons for not applying for a job: ----- ----- ----- -----

SECTION 3: SCARCE SKILLS REQUIRED FOR EMPLOYABILITY

3.1 Key labour market skills

Complete the following skills requirements for your desired industry/sector for employment

Key industry skill	I possess the skill	I do not possess the skill

3.2 List the challenges that you face in finding employment

SECTION 4: UNIVERSITIES, SKILLS DEFICIENCY AND GRADUATE UNEMPLOYMENT

Indicate with a cross (x) your level of agreement with the following statements.

Statement		Strongly agree	Agree	Not sure	Disagree	Strongly disagree
4.1	The university is addressing the scarce skills requirement among graduates	1	2	3	4	5
4.2	Graduates fail to get employment because they lack scarce skills qualifications?	1	2	3	4	5
4.3	After graduating from this university, I need further education to acquire scarce skills for employability	1	2	3	4	5
4.4	The university is informed of industry requirements	1	2	3	4	5
4.5	My qualifications are aligned to scarce skills	1	2	3	4	5
4.6	My university is focused on acquisition of scarce skills among graduates	1	2	3	4	5
4.7	The university should review its curriculum in line with scarce skills	1	2	3	4	5
4.8	After my initial graduation, I realised that I lacked scarce skills	1	2	3	4	5
4.9	I knew about scarce skills when I started looking for employment	1	2	3	4	5

4.10	Scarce skills seem to be changing	1	2	3	4	5
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Provide a comment on scarce skills and the employability of graduates from universities in South Africa

THANK YOU FOR YOUR PARTICIPATION

APPENDIX E: GRAMMARIAN LETTER

22 Krag Street
Napier
7270
Overberg
Western Cape

10May 2022

LANGUAGE & TECHNICAL EDITING

Cheryl M. Thomson

THE INFLUENCE OF SCARCE SKILLS ON EMPLOYMENT OPPORTUNITIES AMONGST GRADUATES OF A SELECTED UNIVERSITY.

Supervisor: Dr Stanford Ebrahim Cronje

This is to confirm that I, Cheryl Thomson, executed the language and technical editing of the above-titled Masters dissertation of **Nancy Fanyana, student number, 212202626**, at the CAPE PENINSULA UNIVERSITY OF TECHNOLOGY in preparation for submission of this dissertation for assessment.

Yours faithfully



CHERYL M. THOMSON

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Cell: 0826859545