

**CONSTRUCTING A CAREER GUIDANCE FRAMEWORK TO ENHANCE
EMPLOYABILITY OF GRADUATES AT A UNIVERSITY OF TECHNOLOGY**

By

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Submitted in fulfilment of the requirements for the degree.

DOCTOR OF PHILOSOPHY

in the subject

PSYCHOLOGY

at the

UNIVERSITY OF SOUTH AFRICA

Supervisor: Prof M Coetzee

DATE: 12 November 2023

ACKNOWLEDGEMENTS

I would like to thank GOD for making it possible for me to complete this project (“humanly speaking, it is impossible but with GOD everything is possible,” Matthew 19:26). My heartfelt appreciation goes to the following people and organisations:

Prof Melinde Coetzee, my supervisor, thank you for your patience, guidance, and willingness to share your impeccable knowledge-you are simply the best.

A very special thanks to the students who participated in the survey and Blessing Lebokollane. Dr’s Nkosinathi Mlambo and Dee Khosa, you have truly inspired me work hard and complete this project. Tshwane University of Technology (Faculty of Humanities, HR department, Directorate for Research & Innovation), Unisa DSF office, Professors Mji, de Jager, Maserumule and Ms Mable Campher, thank you.

Prof Bongazana Dondolo and Mr Andries Masenge thank you for the statistical analysis. Dr Ramolobi Matlala, Jeanne Enslin and Siza Selahle for the prompt and efficient language/technical editing of the thesis. Ms Monica Mothomogolo, thank you my sister.

My loving and supportive husband Mpho you are the best, my daughter Vangile and son Wandile thank you for allowing mommy to complete this project and always telling me that I am loved. My brothers-in-law, Sbu Mashinini, Patrick Mabena, Mateo Kutumela together with my nephews and nieces- a big thank you.

Thank you, mma, Eva, Marema, Maria le Thabo thank you for the support and assisting me with my children when I needed the time to focus on my studies, thank you Bakone ba ntshidikgolo-ke le rata ke sa khutse.

MAY GOD BLESS ALL OF YOU IN ABUNDANCE.

DECLARATION

I, Margaret Mosima NGOPE, student number 32834829, declare that this thesis entitled, CONSTRUCTING A CAREER GUIDANCE FRAMEWORK TO ENHANCE EMPLOYABILITY OF GRADUATES AT A UNIVERSITY OF TECHNOLOGY, is my own work, and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references (the APA 7th edition style for referencing only was applied). This thesis has not, in part or, been previously submitted for any other degree or examination at this or any other university.

I also declare that the study has been carried out in strict adherence with the Policy for Research Ethics of the University of South Africa (Unisa). I took great care that the research was conducted with the highest integrity, taking into account Unisa's Policy for Infringement and Plagiarism. I further declare that I submitted the thesis to originality checking software and that it falls within the accepted requirements for originality.

I further declare that ethical clearance to conduct the research has been obtained from the Department of Industrial and Organisational Psychology, University of South Africa (see Appendix A for certificate). Permission to conduct the research at the Tshwane University of Technology (TUT) was obtained from the Central Research Ethics Committee (see Appendix B). Informed consent to use the data for research purposes was obtained from the individuals who participated in this study.



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ABSTRACT

CONSTRUCTING A CAREER GUIDANCE FRAMEWORK TO ENHANCE EMPLOYABILITY OF GRADUATES AT A UNIVERSITY OF TECHNOLOGY

by

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DEGREE: Doctor of Philosophy in Psychology

SUBJECT: Industrial & Organisational Psychology

SUPERVISOR: Professor M Coetzee

Career guidance is critical at South African universities of technology to ensure that students make well-informed judgments about their career options that will boost their employability and entrepreneurship prospects. This research focused on the construction of a career guidance framework to enhance the prospective employability of students at a South African university of technology. The framework considered the relationship dynamics between the constructs of career agility, world-of-work awareness, and career interests as a set of independent variables, career adaptability as a mediating variable, and employers' employability competency expectations as an outcome variable. The socio-demographic variables (gender, qualification choice based on career interest, demographic origin (urban/rural), and the need for career guidance) were treated as moderators. The study used a cross-sectional quantitative research approach, which involved collecting data from young emerging adults who were African first-year students (n = 369). Correlation results revealed statistical positive and significant associations between the study constructs. Stepwise regression results showed interesting core patterns of prediction that need to be considered in the career guidance of the sample of students. Mediation analysis revealed career adaptability as a significant explanatory mechanism in explaining the link between the antecedents of career agility, world-of-work awareness, career interests, and the outcome of employers' employability competency expectations. Moderated regression analysis revealed that certain links are conditional upon qualification choice based on career interests and the need for career guidance. Tests for significant mean differences indicated significant

differences among male and female participants; qualification choice was strongly or less strongly based on career interest and those having a strong or a low need for career guidance. At a theoretical level, the study extended understanding of the extent to which the theoretical associations among the study constructs inform the career guidance of students. At an empirical level, the study delivered an empirical career guidance framework relevant to the sample. At a practical level, the study recommended practices to be embedded in the curriculum in early career guidance intervention programmes.

KEYWORDS:

Career agility, career anchors, career interests, career adaptability, career guidance, employer/employability competency expectations, employability, young emerging adults, world- of-work awareness, qualification choice.

OPSOMMING

ONTWIKKELING VAN 'N RAAMWERK VIR BEROEPSVOORLIGTING OM DIE INDIENSNEEMBAARHEID VAN GEGRADUEERDES BY 'N TEGNIESE UNIVERSITEIT TE VERHOOG

deur

MARGARET MOSIMA NGOPE

GRAAD: Doktor in Filosofie in Sielkunde

VAKGEBIED: Bedryfs- en Organisasiesielkunde

STUDIELEIER: Professor M Coetzee

Loopbaanleiding is belangrik vir Suid Afrikaanse universiteite van tegnologie om te verseker dat student ingeligte besluite neem omtrent hulle loopbane vir die bevordering van hulle indiensneembaarheid- en entrepreneurskapvooruitsigte . Hierdie navorsing het gefokus op die ontwikkeling van 'n raamwerk vir beroepsvoorligting om die toekomstige indiensneembaarheid van studente aan 'n Suid-Afrikaanse tegniese universiteit te verhoog. Die raamwerk gee 'n uiteensetting van die verhoudingsdinamika tussen die konstruksie van loopbaan-lenigheid, beroepswêreld-bewustheid, loopbaan-belangstellings as 'n reeks onafhanklike veranderlikes, loopbaan-aanpasbaarheid as 'n bemiddelende veranderlike, en werkgewers se verwagtinge ten opsigte van indiensneembaarheid bevoegdheid as 'n uitkomsveranderlike. Die sosio-demografiese veranderlikes (geslag, keuse van kwalifikasie op grond van loopbaan-belangstelling, demografiese herkoms (stedelik/landelik), en die behoefte aan beroepsvoorligting, is as moderators hanteer.

Die studie het 'n deursnee- kwantitatiewe navorsingsbenadering gevolg, bestaande uit die insameling van data van jong, opkomende volwassenes; eerstejaarstudente van Afrika (n = 369). Korrelasie-resultate het statisties positiewe en beduidende assosiasies tussen die studiekonstruksie getoon. Stapsgewyse regressieresultate het interessante kernpatrone van voorspelling getoon wat in ag geneem moet word tydens beroepsvoorligting van die steekproef van studente. Bemiddelingsontleding het getoon dat loopbaan-aanpasbaarheid 'n beduidende verklarende meganisme is vir die verduideliking van die skakel tussen die voorlopers van loopbaan-lenigheid, beroepswêreld-bewustheid, loopbaan-belangstellings, en

die uitkoms van werkgewers se verwagtinge ten opsigte van indiensneembaarheid bevoegdheid. Gemodereerde regressie-ontleding het gewys dat sekere skakels voorwaardelik is volgens keuse van kwalifikasie, op grond van loopbaan-belangstellings en die behoefte aan beroepsvoorligting. Toetse vir beduidende gemiddelde verskille het beduidende verskille tussen manlike en vroulike deelnemers opgelewer; die keuse van kwalifikasie was in 'n meerdere of mindere mate gegrond op loopbaan-belangstelling en diegene wat 'n groot of 'n klein behoefte aan beroepsvoorligting het.

Op 'n teoretiese vlak dien die studie as uitbreiding van die begrip van die mate waarin die teoretiese assosiasies tussen die studie-konstrukte bydra tot studente se beroepsvoorligting. Op 'n empiriese vlak het die studie 'n empiriese beroepsvoorligting-raamwerk gelever wat op die steekproef van toepassing is. Op 'n praktiese vlak het die studie praktyke aanbeveel wat in die kurrikulum ingebed word in intervensieprogramme vir beroepsvoorligting.

SLEUTELWOORDE:

Loopbaan-lenigheid, loopbaan-ankers, loopbaan-belangstellings, loopbaan-aanpasbaarheid, beroepsvoorligting, werkgewers se verwagtinge ten opsigte van indiensneembaarheid/bevoegdheid, indiensneembaarheid, jong, opkomende volwassenes, beroepswêreld-bewustheid, keuse van kwalifikasie

KAKARETŠO

GO TŠWELETŠA FOREIMIWEKE YA TLHAHLO YA MOŠOMO GO KAONAFATŠA GO
THWALWA GA DIALOGA YUNIBESITHING YA THEKNOLOTŠI

ka

MARGARET MOSIMA NGOPE

DIKRRI: Ngaka ya Filosofi ya Saekholotši

THUTO: Saekholotsi ya Mokgatlo & Intasteri

MOHLAHLI: Profesa M Coetzee

Nyakišišo ye e be e šeditše kudu go tšweletšwa ga foreimiweke ya tlhahlo ya mošomo go kaonafatša go thwalwa ga baithuti yunibesithing ya theknolotši ka Afrika Borwa. Foreimiweke e akareditše diphetogo tsša kamano gare ga dikgopolo tša bokgoni bja mošomo, temošo ya lefase la mošomo, dikgahlego tša mošomo bjalo ka sete ya diphetogo tše di ikemetšego, phetogophetogo ya mošomo bjalo ka phetogo ya go tsena gare le ditetelo tša thwalego/bokgoni bja bengmešomo bjalo ka phetogo ya dipoelo. Diphetogo tša leago le palo ya batho (bong, kgetho ya mangwalo a thuto yeo e theilwego godimo ga kgahlego ya mošomo, setlogo sa palo ya batho (ditoropong/dinagamagaeng), le tlhokego ya tlhahlo ya mošomo) di tšeerwe bjalo ka balekanyetši.

Nyakišišo e šomišitše mokgwa wa nyakišišo ya khwanthithethifi ya kakaretšo ya dikarolo, wo o bego o akaretša go kgoboketša datha go tšwa go baswa ba bagolo bao ba golago bao e bego e le baithuti ba ngwaga wa mathomo ba Afrika (n = 369). Dipoelo tša tswalano di utulotše dikamano tše botse le tše bohlokwa tša dipalopalo gare ga dikgopolo tša nyakišišo. Dipoelo tša go boela morago ka dikgato di bontšhitše dipaterone tša motheo tše di kgahlišago tša ponelopele tše di swanetšego go elwa hloko ka tlhahlong ya mošomo ya sampole ya baithuti. Tshekatsheko ya tsenogare e utulotše go fetoga ga mošomo bjalo ka mokgwa wo bohlokwa wa tlhalošo mo go hlalošeng kgokagano gare ga ditiragalo tša pele tša bokgoni bja mošomo, temošo ya lefase la mošomo, dikgahlego tša mošomo, le sephetho sa ditetelo tša thwalego/bokgoni bja bengmešomo. Tshekatsheko ya poelomorago ye e lekanetšego e utulotše gore dikgokagano tše itšego di ithekgile godimo ga kgetho ya mangwalo a thuto yeo e theilwego godimo ga dikgahlego tša mošomo le tlhokego ya tlhahlo ya mošomo. Diteko tša

diphapano tše bohlokwa tša magareng di laeditše diphapano tše bohlokwa gare ga batšwasehlabelo ba banna le ba basadi; kgetho ya mangwalo a thuto e be e theilwe ka maatla goba ka fase ga maatla godimo ga kgahlego ya mošomo le bao ba nago le tlhokego ye kgolo goba ye nnyane ya tlhahlo ya mošomo.

Boemong bja teori, nyakišišo e okeditše kwešišo ya bokgole bjoo mekgatlo ya teori gare ga dikgopolo tša thuto e tsebišago tlhahlo ya baithuti ya mošomo. Boemong bja diphihlelelo, nyakišišo e tlišitše foreimiweke ya tlhahlo ya mošomo ya diphihlelelo ye e lebanego le sampole. Boemong bja tiragatšo, nyakišišo e šišinya mekgwa yeo e swanetšego go tsenywa ka gare ga kharikhulamo mananeong a tsenogare ya tlhahlo ya mošomo ya mathomo.

MANTŠU A BOHLOKWA:

Bokgoni bja mošomo, dienkhara tša mošomo, dikgahlego tša mošomo, phetogopphetogo ya mošomo, tlhahlo ya mošomo, ditetelo tša bokgoni bja mongmošomo/thwalego, thwalego, baswa ba bagolo bao ba golago, temošo ya lefase la mošomo, kgetho ya lengwalo la thuto.

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CHAPTER 1: SCIENTIFIC OVERVIEW OF THE RESEARCH

This research focused on the construction of a career guidance framework aimed at enhancing the prospective employability of graduates at a South African University of Technology. The following constructs are relevant to this research: career agility, world of work awareness, and career interests as a set of independent variables; career adaptability as mediating variable; as well as employer employability competency expectations as an outcome, or a dependent variable. The socio-demographic variables (gender, qualification choice based on career interest, demographic (urban/rural), and need for career guidance) were treated as moderating variables. The relationship dynamics among the variables that empirically emerged from the research informed the construction of a career guidance framework for students at a South African University of Technology.

This chapter outlines the background and motivation for the research that was conducted. The problem statement and research questions were derived from the backdrop and motivation. The chapter further describes the study objectives and paradigm viewpoints, as well as the research design and method, including the phases that contributed to the framework of the research process. Finally, the format in which the chapters are delivered is introduced.

1.1 BACKGROUND AND MOTIVATION FOR THE RESEARCH

The context of this research is the career guidance of University of Technology students for the enhancement of their prospective employability. In the context of this research, the employability of graduates remains a major concern in especially the digital world of work and particularly in South Africa (Coetzee, 2023; Ramnund-Mansingh & Reddy, 2021). Mseleku (2022) states that youth unemployment is one of the major issues facing governments and policymakers worldwide. Even more tragic is the rising graduate unemployment rate, which is a particular problem in emerging nations like South Africa (Coetzee, 2023; Ramnund-Singh & Reddy, 2021). For graduates, unemployment has a severe effect on many aspects of their personal lives, especially for those who borrowed money for their education (Kadir et al., 2020). Statistics show that the rising number of graduates in the job market has caused the graduate unemployment rate to increase over the past ten years (Ramnund-Singh & Reddy, 2021; Shanmugam. 2017). According to Dziedzic (2019), South Africa's unemployment rate grew to 29% in the second quarter of 2019. From 27.6% in the preceding period, with a 3.1% growth rate, this is the greatest unemployment rate since the first quarter of 2003, when the number of unemployed increased by 455 000 to 6.65 million. In the first quarter of 2020, the young adult unemployment rate was 59.0%, while the graduate unemployment rate was

33.1%, compared to 24.6% in the fourth quarter of 2019 (Statistics South Africa [Stats SA], 2020). The official unemployment rate was 34.9% in the third quarter of 2021. According to the results of the Quarterly Labour Force Survey (QLFS) for the third quarter of 2021, the number of employed people fell by 660 000 to 14.3 million. In the second quarter of 2021, the number of unemployed people fell by 183 000 to 7.6 million. Between the two quarters, the number of discouraged job seekers increased by 545 000 (16.4%), while the number of people who were not economically active for reasons other than discouragement increased by 443 000 (3,3%), resulting in a net increase of 988 000 in the not economically active population.

According to the QLFS, employment declined by 22,000 to 16.7 million in Q4 2023, compared to Q3 2023. During the same quarter, the number of unemployed climbed by 46,000 to 7.9 million. In the fourth quarter of 2023, discouraged job seekers declined by 107 000, but those who were not economically active grew by 218 000 to 13.4 million (Statistics South Africa [Stats SA], 2024). This led to a net rise of 111,000 individuals who are not economically active. Gogayi (2022) mentioned that each year, an estimated 250,000 new graduates enter the South African labour force, but only about 30% of them find jobs. Not only are South African graduates much less likely to obtain employment, but even those who do, are underemployed. Career guidance at South African universities of technology has therefore become critical to ensure that students make well-informed judgments about their career options that will boost their employability and entrepreneurship prospects.

According to Lim (2010), the persistence of the graduate unemployment and underemployment problem necessitates the investigation of factors linked with the low employability of graduates. Baldry (2016) noted that the growth in graduate unemployment in South Africa has been linked to inadequate career counselling, skills shortages, or a skills mismatch between higher education supply and subsequent labour market demand. On the other hand, Mseleku (2022) noted that the mismatch hypothesis of graduate unemployment holds that graduates are unemployed because they lack the skills required for the jobs that are in demand in the labour market. According to the mismatch theory, unemployment develops as the number of unemployed people grows, fewer opportunities are present in more locations, and the gap between the supply of skills and the demand for those skills deepens (Mseleku, 2022).

The research findings by Macginty (2024) show that graduate unemployment has doubled in the last sixteen years. According to StatsSA (June 2022), there are approximately 10 million young people in South Africa between the ages of 15 and 24, yet only 2.5 million of them were actively seeking employment. Most of this group of young people 7.7 million, or 75.1 percent

are not part of the labour force (i.e., inactive). Discouragement, or having given up on finding a job that matches their talents or is available in their area, is the main cause of inactivity. According to Mseleku (2022), economic growth is inversely correlated with unemployment. Increased work prospects directly cause economic growth. Similarly, economic growth tends to bolster employment. Therefore, unemployment is a negative effect of weakening economies. Accordingly, weak economies are marked by dwindling employment prospects, which further restrains economic expansion (Sadiku et al., 2015).

According to the European Centre for the Development of Vocational Training (ECDVT, 2009), there is a consensus in Europe that high quality career guidance and counselling services play a vital role in promoting employability, lifelong learning, career management, and personal goal accomplishment. Furthermore, the ECDVT (2020) emphasized the value of career counselling for individuals, families, society, the labour market, and the economy. Effective career counseling enables people to realize their full potential, improves economies, and enhanced equitability in society. Career counselling also offers individuals fast, objective, and personalised information and support. This will in turn enable users to make decisions about their lives. Furthermore, career counseling is a catalyst for growth and nurturing of human talent, which bolsters competition, innovation, and creativity. In essence, career counseling aids individuals to implement active strategies for engaging in the labour market and transitioning, as well as lifelong learning (ECDVT, 2020).

Career counselling, according to Watts and Sultana (2004) can contribute to national lifelong learning policies. Furthermore, the Inter-Agency Working Group on Work-Based Learning (IAG-WBL, 2019) highlighted that career counselling can assist persons of any age in managing their careers and selecting the proper educational, training, and occupations. It aids people in considering their goals, interests, qualifications, abilities, and talents, and it helps them understand their capabilities and their prospects in the job market. Moreover, Rabie et al. (2021) stated that career counselling and guidance are essential to assist adolescents and emerging adults with the career-related choices that they encounter in school and beyond.

According to Pordelan and Hosseinian (2022), the purpose of career service programmes is to improve self-awareness and assist students in developing their career capabilities. Career guidance assists individuals to progress in their learning and work. It thus serves both the individual and social good. Furthermore, public investment in career guidance activities can be justified by acknowledging that career guidance promotes the effective functioning of the labour market and learning markets. It also contributes to a range of social goals like social mobility and equity (Hooley et al., 2018). The South African Department of Higher Education

and Training [DHET] (2012) developed the Framework for Cooperation in the Provision of Career Development Information, Advice, and Guidance Services in South Africa in 2012. The purpose of this framework is to build foundational career management skills; develop intentional career plans; access information on learning and career paths that link for articulation purposes; and cope with and adjust to changes in personal and labour market conditions. Furthermore, this framework attempts to provide a vision for the future delivery of career advice services that are sustainable and meet the needs of a diverse range of users, from youth to adults in work, including those who are out of work or facing career changes due to choose or redundancy.

According to Amirullah (2019), career counselling programmes exhibited an excellent improvement in the employability abilities of students in institutions of higher learning. Career guidance for the development of employable skills is required not only at the level of higher education, but also at the secondary schools, particularly at vocational education institutions such as vocational high schools (Supriatna et al., 2019). In South Africa, most young people come from poor and disadvantaged backgrounds. As a result, these individuals are struggling to find stable employment due to a lack of career guidance and information on the demands relating to the labour market (Xenos, 2019). To have a thriving economy, government must provide effective career guidance to young people, thereby enhancing their employability and enabling those with innovative ideas to start their own businesses (Coetzee, 2023; Xenos et al., 2019).

Monga et al. (2019) claimed that African universities have been producing too many graduates with costly degrees and diplomas, yet they lack mastery of the required skills that are necessitated by the labour market of 21st century. The African Development Bank further revealed that most degrees awarded by African universities lack the academic rigour, relevance and career-focused skills required for graduates to obtain decent jobs (Monga et al., 2019). On the other hand, Singh and Singh (2008) indicated that workplaces require employees who possess high technical skills, coupled with well-developed employability skills and attributes. Whereas Tang (2019) argues that the skills that are required in the workplace have evolved because of advancements in technology. The higher education system should respond appropriately to changes in skill and knowledge demands in the labour market to ensure high employability and economic innovation. The higher education sector must adapt the curriculum, the learning setting, and the learning material to meet the employability expectations of employers (Coetzee, 2023; Tang, 2019).

Majdhoub et.al. (2022) mentioned that the question of whether higher education institutions should adapt to the demands and expectations of the labour market considering the Fourth Industrial Revolution is one that the education sector is worried about. Spöttl and Windelband (2021) noted that technology has numerous implications for users and providers across the entire vocational training system. Majdhoub et.al. (2022) infer from the results of their study that employers are searching for people who can communicate well in any setting, while businesses are on the lookout for candidates with digital abilities. Furthermore, findings from the study conducted by Majdhoub et.al. (2022) are corroborated by several in-depth interviews with top executives who claim that people with great digital and communication skills are in high demand because they can enhance the reputation of a company. The Fourth Industrial Revolution will place a high demand on communication and digital abilities, therefore, cooperation between the education and training sectors is necessary for better results. Career guidance counsellors need to consider these shifts in occupational needs.

Yorke and Knight (2006) described employability as a set of achievement skills, understandings and personal attributes that make graduates more likely to gain employment and be successful in their chosen occupations, and therefore benefit themselves, the workforce, the community, and the economy. Employability is the capacity to find and maintain meaningful job throughout one's life, and it can change over time (Griesel & Parker, 2009; Pitan, 2016). According to Somerville (2019), employability depends, to a great extent, on the ability of agentic and adaptable individuals to be able to establish connections and collaborate with existing societal structures, to find employment, or to create new opportunities that help shape the evolving workspace. Acquiring employment immediately after graduation is a challenge that many graduates in South Africa and around the world are confronting. This can be attributed to the lack of adequate career guidance, employment experience and a lack of adequate employability competencies suitable to the digital-driven industry of the 21st century (Coetzee, 2023; Somerville, 2019).

The goal of the study was to provide deeper insight into the extent to which university of technology students' ability to adapt to the technological-driven environment (career agility), their basic world of work awareness as an element of career decision making, their career interests (measured by Schein's [1990] construct of career anchors), and career self-management resources (as measured by their career adaptability) predict their awareness of employer employability competency expectations. It was assumed that understanding the link between these constructs would enable the construction of a career guidance framework. Such a framework would potentially help to assess how individual characteristics link with environmental requirements for employability (i.e., employer employability competency

expectations). Van Vianen (2018) and Guan et al (2021) reiterated the importance of person-environment (PE) fit in contemporary career decision making because of rapid changes in digital-driven jobs and work and virtualised and hybrid models of workplaces. In today's fast-changing digital era, occupations and jobs are shifting and individuals must rely on their inner capabilities and psychosocial resources to adapt to changing requirements and manage their careers and employability (Coetzee, 2023; Coetzee & Schreuder, 2021). Guan et al. (2021) indicated that PE fit has significant implications. Meta-analyses and reviews have found that congruence in vocational interests facilitates the process of career choice, and leads to higher job/career satisfaction, persistence, and task performance (Hanna & Rounds, 2020). Similarly, organisational research has linked PE fit to a variety of well-being, attitude, and effectiveness outcomes (Guan et al., 2021).

The envisaged career guidance framework further considered the influencing role of individuals' gender, qualification choice based on career interest, demographic (urban/rural) and need for career guidance. The intention was that should the empirical study show significant associations and dynamics among all the variables, a career counselling framework could be constructed to inform the design of career guidance interventions that facilitate the development of students' career-related inner capabilities and psychosocial resources, so they achieve a better match with employer employability competency expectations. The employer employability competency expectations that were measured in this study stem from a study conducted by Coetzee (2018) among postgraduate South African workers who experienced the needs of employers for employability competency. The study revealed that employers' expectations of graduate workers' employability competencies were regarded as an important facet of individuals' sustainable employability (Coetzee et al., 2019).

This research also explored the extent to which students' career adaptability functions as a potential self-regulatory career management intermediary mechanism in explaining the link between the antecedents of career agility, world of work awareness and career interests, and the outcome of fulfilling employer employability competency expectations. The research also explored whether the links between the constructs are conditional upon (moderated by), students' gender, qualification choice based on career interest, demographic (urban/rural), and need for career guidance. Each of the constructs of the study are briefly justified next.

Employability competencies are occasionally referred to as the generic capabilities in a graduate during the hiring process, where employers are looking for a mix of skills, abilities, interests, values, as well as personal expectations (Mehmood & Rahman, 2014). Chiew (2021) mentioned that the term "employability skills" is used interchangeably with "soft skills," "generic

skills," "core skills," and "vital talents," all of which are crucial for human resources in today's demanding workplaces. These abilities are crucial to enable individuals to adjust to the latest developments in the world of work and thus enhance their employment prospects. Employees can make important decisions, solve difficulties, and build skills to improve their performances and the calibre of the work they produce if they possess capabilities such as effective communication, self-management, problem solving, and leadership traits. Employability competencies are regarded as both important to employers for the recruitment of the suitable candidates and to an individual for being able to secure a job, retain employment and move flexibly in the job market through lifelong learning (Coetzee, 2023; Mehmood & Rahman, 2014). Research conducted by Romanova (2022) in Russia offers support on the integration of employability skills into Vocational Education and Training (VET) programmes. According to the study, self-evaluations conducted by VET students on their social and self-learning skills are positively correlated with explicit instruction and the aspiration of students to start their own businesses (Romanova, 2022). Therefore, it is advised for providers of vocational education and training to explicitly include transferable employability-related abilities into their curriculum.

In the current research, the construct of employer employability competency expectations was measured by the employer employability competency expectations scale (EECES: Coetzee, 2018). The EECES (Coetzee, 2018) measures perceptions of employers' expectations of the employability competencies (knowledge, skills, and attributes), that employable graduate workers should possess. The employers' expectations of graduate workers' employability competencies are regarded as an important facet of an individuals' sustainable employability. The first subscale, *graduateness*, includes the ability to apply universal, global knowledge, principles, philosophies, and paradigms to solve job/work challenges. The second subscale, *business/entrepreneurial skills*, consists of having business acumen. The third subscale, *personal employability qualities*, includes the ability to update one's knowledge and skills. The fourth subscale, namely, *autonomy or leadership*, consists of the ability to persuade or influence others (Coetzee et al., 2019). These subscales are discussed in detail in Chapter 2.

Career agility refers to individuals' willingness to adjust to, and proactively respond to changes that influence their future career wellbeing and satisfaction (Coetzee et al., 2020). According to Bester et al. (2020), in the context of the Fourth Industrial Revolution (4IR or Industry 4.0), the capacity of career agility is deemed to be of paramount importance for adapting to new occupations, new industries and fundamentally new ways of work due to the technological innovation. The three facets of career agility that were identified by Coetzee et al. (2020) are technological adaptivity, agile learning and career navigation. These facets describe

individuals' adaptive readiness for proactive career self-management in a technological-driven digital era. Research conducted by Coetzee et al (2019) alludes to associations between students' professional mindset and self-confidence in gaining employment, and their perceptions of employers' employability competency requirements. The construct of career agility and its three facets are discussed in detail in Chapter 2.

Career agile individuals tend to confidently seize and look for new career growth. The said individuals also tend to continuously upskill themselves to improve their prospects for creative self-expression of needs, interests, and values made possible by technological advances (Andela & Van der Doef, 2019; Coetzee, 2021; Coetzee et al., 2021; Hall et al., 2018; Sampaio et al., 2021). Moreover, individuals who are considered career agile exhibit technological adaptivity (i.e., active readiness to take advantage of the new career development opportunities made possible by technological innovation), an agile learning mindset (i.e., intrinsic motivation to actively set and manage goals for capability-expanding learning opportunities), and proactive career navigation of the changing digitally driven employment market (i.e., ideation of new job and career opportunities, and navigation of the changing digitally driven employment market)

The 21st century digital-driven world of work and careers have been drastically changed due to globalisation, competitiveness, demographic changes, political and environmental concerns, and technological changes. Awareness of the digital working world relates to students' understanding of the impact of technology improvements on the working world, the changing nature of employment, occupations, and careers, and the dire need for continuous upskilling and learning (Coetzee, 2022). The information that peoples have regarding the digital world of work may be useful to the educational vocational counsellor, the social worker, the employment agency, as well as social science researchers whose jobs involve the assessment or guidance of career choice. The construct of world of work awareness (Coetzee, 2022) was measured in this study by a scale developed by Coetzee et al. (2021). The world of work awareness scale (WWAS: Coetzee et al., 2021; Coetzee, 2022) measures three awareness facets, namely awareness of the digital nature of work, occupational and job awareness and continuous upskilling and learning awareness (Coetzee et al., 2021). People's knowledge about the world of work affects several aspects of their success in the labour force (Pologeorgis, 2014). The construct is discussed in more detail in Chapter 3.

In the present study, the construct of career interests was measured by Schein's (1990) career anchors as an expression of core interests. Schein's (1978; 1990) theory proposed that a person's dominant career anchor reflects major career-related interests that form an integral

part of individuals' basic self-concept. Career interests in the form of career anchors become an overriding issue at every stage of the person's career and serve as an internal driving force when making career decisions because they encapsulate career-related values, motives, and needs that manifest in career interests (Coetzee, 2022). Schein (1990) revealed that when people's career anchors influence their job and career, they will eventually have a positive impact on career choice and outcomes. Research shows positive links between individuals' career interests and their digital world of work awareness (Coetzee, 2022). The construct is discussed in detail in Chapter 3.

Savickas (1997) proposed the term 'career adaptability' as a psychosocial construct that describes an individual's resources for coping with current and anticipated developmental tasks, occupational transitions, and work trauma. Career adaptability is considered as a highly relevant personal resource that enables individuals to manage impeding career challenges, and to adjust their behaviours to the changing environment (Maggiori et al., 2013). Researchers proposed that career adaptability may serve as career resources that are linked to desired career outcomes via a motivational process within an academic setting (Akkermans et al., 2018). Furthermore, it is mentioned that career adaptability can assist in the advancement of career and vocational career guidance models in the 4IR digital era, which encourages individuals to develop psychosocial resources that anticipate changes in their future, and its context (Savickas et al., 2009). Garcia et al., (2019) indicated that career adaptability is the capacity of an individual to meet current and future career-related problems.

It has been established that career adaptability positively predicts employees' general and professional well-being, and orientations to happiness and quality of life. However, it negatively predicts perceived career barriers and work stress (Johnson et al., 2013). According to Ahmad et al. (2022), career adaptability has been a crucial personal quality for people to achieve in the professional world and can increase a person's chances of success in a certain life path that also transitions from academic to practical job. Furthermore, Ahmad et al. (2022) said that professional flexibility encourages the growth of career goal orientation, career optimism, and a proactive mentality (Tolentino et al., 2014). All the beneficial professional outcomes have been theoretically examined in settings where career management techniques are explicitly valued (Ahmad, et al., 2022).

The career-adaptabilities scale (CAAS: Savickas & Porfeli, 2012) was used in this study to measure the construct of career adaptability. The CAAS was developed to determine a range of career adaptability resources for successful self-regulatory career management. It consists of four subscales that measure career concern, career control, career curiosity and career

confidence as psychosocial resources for managing occupational transitions, developmental tasks, and work traumas (Savickas & Porfeli, 2012). The construct is discussed in detail in Chapter 3.

The research also explored whether students' gender, qualification choice based on career interest, demographic (urban/rural), and need for career guidance act as boundary conditions (or moderators) for the relationship dynamics among the antecedent (independent) variables, outcome variables and mediating variables. Coetzee's (2023) research among South African undergraduate students indicated students' career interests and career guidance needs as important factors impacting their perceptions of employability.

According to Poon (2016), one of the most influential demographic factors on graduate employment affecting early career trajectories, is gender. Further research by University World News (2019) found that male graduates usually have better career prospects when compared to the female graduates. Men and women also seemed to experience disparate career progression dynamics. The employment prospects of men and women also differed, with 92% of men being employed in full-time positions, compared with only 55% of women (University World News, 2019). Furthermore, women seem to outnumber males in part-time employment, with 43% and 2% respectively (Poon, 2016). According to Stats SA (23 August 2022), women around the world find it difficult to secure employment. Since South Africa has greater general unemployment rates than the rest of the world, this phenomenon is more pronounced. In 2022, it was estimated that 47.0% of South African women were not working. This indicates that compared to their male counterparts, who make up 35.6% of the workforce, almost half of South African women of working age are not employed. In comparison to males, who currently make up 72% of the global labour force, women make up around 47% of the workforce (ILO, 2022). Women in South Africa's labour economy have untapped productivity potential.

Demographic factors (i.e., rural/urban settlement background) are associated with graduate employability because they function as multiple forces that can shape the personal and environmental experiences of tertiary students and include various aspects of identity development (Oluwajodu et al., 2015). Whether people reside in an urban or rural area, people from the least developed regions are more likely to be underemployed (Stéphane, 2019). Mncayi and Meyer (2022) discovered that the majority of the underemployed in their study resided in relatively urban provinces that are industrial and economic hubs (Gauteng, Western Cape, and KwaZulu-Natal), and surprisingly have low unemployment rates.

Overall, the central hypothesis for the study was that the empirically manifested relationship dynamics among the socio-demographic, antecedent, mediating and outcome variables would inform the construction of a career guidance framework for enhancing student employability. The literature chapters will elucidate this hypothesis in more detail. Chapter 4 provides deeper level of justification of the specific research hypotheses that were tested toward the construction of the career guidance framework for employability.

1.2 PROBLEM STATEMENT

It is evident from the backdrop that the employability of graduates is a concern in South Africa and around the world. The persistence of the problem of graduate unemployment warrants the need for identifying antecedent factors associated with the employability competency of graduates (Dziedzic, 2019; Lim, 2010; Pheko & Molefhe, 2016; Stats SA, 2020). Coetzee (2012; 2018; 2023) maintained that graduates who enter the world of work face several challenges. These include a decrease in employment opportunities, job security, fast-changing technology and an increasing personal responsibility for continuous upskilling and life-learning, as well as to keep abreast with changes in their fields. Mseleku (2022) mentioned that South Africa's alarmingly high percentage of graduate unemployment continues and without immediate action, this socioeconomic issue could regrettably double in size in the next ten years.

Universities are expected to produce employable graduates who will contribute to the contemporary digital-driven knowledge economy (Potgieter et. al., 2023). However, this responsibility poses many challenges, as there is a disconnection between what universities produce and what employers want, which puts universities under enormous pressure to close the gap (Coetzee, 2023; Ramnund-Singh & Reddy, 2021). The ILO (International Labour Organization; 2020) argues that encouraging young people to attend university will not end the issue of youth unemployment. For young people, the decision to accept substandard employment is fuelled by the growing number of people with university qualifications, which raises the competition for jobs. It is important to ensure that university curricula are of high quality and that there is a sufficient demand for graduates' skills (Ndebele & Ndlovu, 2019). In the South African context, according to Botha and Botha (2022) the highest-rated competencies that work-ready graduates must possess are generic and specific professional competencies including tolerance, appreciating a different point of view, written communication skills, critical thinking, English language proficiency, working in a team, taking responsibility for decisions and the abilities for teamwork and effective communication. Coetzee (2014) mentioned that work-ready graduates possess a certain quality of personal

growth and intellectual development produced by a higher education institution, and the relevance of the graduateness skills and attributes they bring to the workplace should be: interactive skills; problem-solving/decision-making skills, continuous learning orientation, enterprising skills; presenting and applying information skills; goal-directed behaviour; ethical and responsible behaviour, and analytical thinking skills (Coetzee 2014).

Employers have expectations that graduates will have employability competencies (Artes, 2017; Potgieter et al., 2023). As a result, universities must strike a balance between their overarching goal of educating well-rounded citizens and addressing labour-market demands (Archer & Chetty, 2013). Even though the mandate of higher education is to generate work-ready graduates, employers believe they are unprepared for the uncertain labour markets (Hwang, 2017). The Australian Parliament (2022) highlighted that young people usually lack necessary skills and frequently have little to no experience in the labour market.

According to Taylor and Hooley (2014), enhancing employability of students through career guidance should be prioritized. Career guidance is essential because students' future employment prospects depend on studying at universities (Coetzee, 2023). Simultaneously, universities are responding to policy issues, such as explaining the government's massive expenditure in higher education, which is aimed at developing the country's human capital, and accomplishing social-equity goals by boosting access to education for the underprivileged population. Furthermore, universities are required to ensure that graduates realise their social-equity goals, and the knowledge that they acquire from university is anticipated to improve graduates' eventual success in the labour market and in life in general (Pitan & Atiku, 2018). Moreover, Pitan and Atiku (2018) stated that there are indications that even the most capable graduates may struggle in recruitment and selection processes because they are either unaware of the skills and qualities required by industry, or they are unable to adequately demonstrate such skills during their studies at university.

Ramnund-Singh and Reddy (2021) mentioned that the South African higher education (HE) system is not comparable with HE systems in other countries due to the former's unique political landscape and structural narrative. Nonetheless, similar to other countries, COVID-19 has negatively impacted on the higher education sector in South Africa. Mhlanga et.al. (2022) remarked that the pandemic was a major setback to the industry because it abruptly switched classroom instruction from physical to online platforms. Since the change, teaching and learning have been done virtually on platforms backed substantially by digital educational tools (Mahlow & Hediger, 2019). The expansion and supply of global technology-driven higher education delivery, as well as the global economy, have influenced the employer's hiring needs

(Coetzee, 2023; Zakaria et al., 2020). Universities are expected to produce employable graduates who will contribute to the digital era knowledge-based economy (Coetzee, 2023; Ramnund-Singh & Reddy, 2021). Organisations, according to Chigbu and Nekhwevha (2022), are highly dependent on educational institutions to produce graduates who are prepared for employment in the digital age. Universities must strike a balance between their overarching goal of educating well-rounded citizens and addressing labour-market demands (Archer & Chetty, 2013). However, little research has been conducted on the employability of graduates at a South African University of Technology.

This research intends to fill the current knowledge gap and therefore investigated how socio-demographics, antecedent, mediating and outcome variables can inform the construction of a career guidance framework for enhanced student employability. Furthermore, the study aimed to extend the research on employer-employability competency expectations by investigating in a single study the joint relationship dynamic among the study construct variables to inform the construction of a career guidance framework for enhancing students' employability prospects.

A review of the current literature on the antecedents (career agility, digital world of work awareness, career interests), mediating variables (self-regulated career resources of career adaptability), outcome variable (employer-employability competency expectations and the socio-demographic characteristics of gender, qualification choice based on career interest, demographic (urban/rural), and need for career guidance indicated the following research problems:

- A theoretical model that provides clarity on the relationship dynamics between the proposed study's construct variables is non-existent.
- Industrial and organisational psychologists, as well as career guidance practitioners, require knowledge about the nature of the theoretical and observed relationship dynamics between the construct variables of this study. The knowledge gained by the research may potentially bring new insights that could better inform career guidance at universities of technology.
- The relationship dynamics between the study's construct variables have not been well researched and there is the potential that the proposed career guidance model can contribute to graduates' employability and expand career guidance theory.

The problem statement led to the following general research question:

To what extent do the relationship dynamics among students' socio-demographics {gender, qualification choice based on career interest, demographic (urban/rural), and need for career guidance], career agility, world of work awareness, career interests, career adaptability and perceptions of complying with employer employability competency expectations inform the construction of a career guidance framework for enhanced employability competency?

From the general research question stated above, the researcher formulated the following specific research questions in terms of the literature review and the empirical study:

1.2.1 Research questions with regard to the literature review

Research question 1: How are the constructs of career agility, world of work awareness, career interests, career adaptability and perceptions of complying with employer employability competency expectations conceptualised in the research literature?

Research question 2: To what extent does the theoretical relationship among the variables of the study inform the construction of a career guidance framework?

Research question 3: What are the implications for student career guidance practices?

1.2.2 Research questions with regard to the empirical study

In terms of the empirical study, the researcher formulated the following specific research questions:

Research question 1: What is the nature of the statistical inter-relationships between students' career agility, world of work awareness, career interests, career adaptability and perceptions of employer employability competency expectations?

Research question 2: Do students' socio-demographic characteristics [gender, qualification choice based on career interest, demographic (urban/rural), and need for career guidance], career agility, world of work awareness, career interests, and career adaptability positively predict their perceptions of complying with employer employability competency expectations?

Research question 3: To what extent is the link between students' career agility, world of work awareness and career interests and their perceptions of complying with employer employability competency expectations mediated by their career adaptability?

Research question 4: Do students' socio-demographic characteristics [gender, qualification choice based on career interest, demographic (urban/rural), and need for career guidance] act as moderators of the associations between the antecedent, mediating and outcome variables?

Research question 5: Do students from various socio-demographic groups [gender, qualification choice based on career interest, demographic (urban/rural), and need for career guidance] differ significantly in terms of their career agility, world of work awareness, career interests, career adaptability and perceptions of complying with employer employability competency expectations?

Research question 6: What are the elements of the empirically manifested career guidance model?

Research question 7: What conclusions can be drawn and what recommendations can be formulated for student career guidance practices for employability competency and future research?

1.3 AIMS OF THE RESEARCH

From the above research questions, the general and specific aims from the literature and empirical study were formulated.

1.3.1 General aim of the research

The general research aim was to construct a career guidance framework for employability from the observed relationship dynamics among students' socio-demographics [gender, qualification choice based on career interest, demographic (urban/rural), and need for career guidance], career agility, world of work awareness, career interests, career adaptability and perceptions of complying with employer employability competency expectations.

1.3.2 Specific aims from literature reviews

The following were the specific aims of the theoretical study:

Research aim 1: To conceptualise the constructs of career agility, world of work awareness, career interests, career adaptability and perceptions of complying with employer employability competency expectations.

Research aim 2: To construct a theoretical career guidance framework based on the conceptualised theoretical relationship among the study variables.

Research aim 3: To outline the implications for student career guidance for employability practices.

1.3.3 Specific aims from empirical study

The following were the specific aims of the empirical study:

Research aim 1: To explore the nature of the statistical inter-relationships between students' career agility, world of work awareness, career interests, career adaptability and perceptions of employer employability competency expectations.

Research aim 2: To explore the extent to which students' sociodemographic characteristics (gender, qualification choice based on career interest, demographic [urban/rural], and need for career guidance), career agility, world of work awareness, career interests and career adaptability positively predict their perceptions of complying with employer employability competency expectations.

Research aim 3: To explore the extent to which the link between students' career agility, world of work awareness, and career interests (antecedents), and their perceptions of complying with employer employability competency expectations (outcome), is mediated by their career adaptability.

Research aim 4: To assess whether students' socio-demographic characteristics (gender, qualification choice based on career interest, demographic [urban/rural], and need for career guidance), act as moderators of the associations between the antecedent, mediating and outcome variables.

Research aim 5: To assess whether students from various socio-demographic groups (gender, qualification choice based on career interest, demographic [urban/rural], and need for career guidance) differ significantly in terms of their career agility, world of work awareness, career interests, career adaptability and perceptions of complying with employer employability competency expectations.

Research aim 6: To identify the elements of the empirically manifested career guidance model.

Research aim 7: To draw conclusions and formulate recommendations for student career guidance practices for employability competency and future research.

1.4 STATEMENT OF SIGNIFICANCE

The employability of graduates has been well researched globally and in South Africa, but the situation is different and unique in each country. The link between students' career agility, world of work awareness, career interests, career adaptability and perceptions of complying with employer employability competency expectations has not been well researched in the context of a University of Technology in South Africa. Moreover, developing a career guidance framework that will address the gaps identified, appears to be varied and complex, which may endorse or impede the development of such a framework.

1.4.1 Potential contribution on a theoretical level

From a theoretical perspective, this study aimed to identify the theoretical relationships between the study variables. The conceptual analysis of hypothetical links between the study variables was useful in the construction and proposal of a theoretical career guidance framework for the employability of graduates that informed the empirical analysis of the manifested links in the empirical study.

1.4.2 Potential contribution to career guidance and employability at an empirical level

On an empirical level, the study revealed key constructs and associations that informed the construction of a reliable and valid career guidance framework relevant to the sample of participants. In this regard, the study findings added new insight to career guidance for employability competency in the University of Technology space.

1.4.3 Potential contribution to career guidance and employability on a practical level

The empirically manifested career guidance framework may inform the design of interventions that facilitate the development of students' career-related inner capabilities and psychosocial resources, so they achieve a better match with employer employability competency expectations.

The findings of this study may inform both the basic and higher education sector about the importance of providing a suitable career guidance programme to contribute to career guidance practices for student employability. A properly developed career guidance framework that is embedded in the curriculum in early career guidance intervention programmes will assist students advance in their careers and prepare them to deal with employer employability competency expectations they may encounter in their prospective workplaces.

Finally, this study has aimed to ensure that the career guidance framework contributes positively in the industrial and organisational psychology field and that the framework will assist students to develop self-awareness they need to manage their careers and make informed career choices, which will enhance their employability competency in the digital era world of work.

1.5 RESEARCH MODEL

Mershon and Shevtsova (2019) claim that a research model in the social sciences helps to both construct and evaluate explanations because it organizes the logic behind theoretical arguments, tests their validity, creates opportunities for controlled experimentation, and may even generate hypotheses. Furthermore, Mershon and Shevtsova (2019) mention that models also reveal the presumptions and steps in a scholar's theoretical argument, allowing other analysts to replicate it and arrive at equivalent conjectures. In other words, models allow for theoretical replication. Mouton (2001)'s three worlds framework will be utilised for the purposes of this study, particularly World 3 which is the domain of meta-science where concepts, typologies, models, or theories are developed through a process of cognitive logical scientific reasoning. Thus, the realities of World 1 (knowledge is focused on pragmatic interests such as social and physical reality and lay knowledge) and World 2 (knowledge is related to the knowledge, research and disciplines of science) and the knowledge already known about World 2 is conceptualized and critically examined to turn the information gathered into knowledge that could advance science and help solve problems encountered in daily life (Rossman and Rallis 2012).

The research model aims to integrate five dimensions of social science research, namely, sociological, ontological, teleological, epistemological, and methodological. The dimensions are conceptually linked as a single entity into a framework for the research process as follows:

- The sociological dimension emphasizes that researchers within the scientific community must uphold specific mechanisms of control, like ethical standards, reflecting the aims and values of research communities (Mouton,1996).
- The ontological dimension of social research refers to the researcher's perspective on the nature of reality (Mouton 1996).
- The teleological dimension is regarded by Auriacombe, (2011) as the goal-oriented approach to social science.
- Epistemology, according to Schwandt (2007), is split into positivist, anti-positivist, and realist stances and deals with the nature of knowing and how knowledge is created.
- The methodological dimensions emphasize presumptions about how research is conducted (Mouton in Auriacombe 2009).

The model is described as a systems theoretical model with three subsystems which interact with each other and the research domain of a specific discipline, in this case, Industrial and Organisational Psychology. These subsystems include the paradigmatic boundaries (intellectual climate, the market of intellectual resources and the research process itself).

1.6 PARADIGM PERSPECTIVES OF THE RESEARCH

Abudulla-Kamal (2019) mentioned that researchers' worldview, as well as how they define it and interact with it, are represented by their paradigms. The researcher's opinions and attitudes regarding the topics they are investigating would ultimately determine how they conduct their research. In other words, the paradigm chosen guides the researchers' investigation, including their methods for gathering data and analysing it. As a result, as research paradigm has significant implications for every decision made in the research process (Kivunja & Kuyini, 2017).

1.6.1 Intellectual climate

The constructs studied in this research include career agility, world of work awareness and career interests, career adaptability and perceptions of employer employability competency expectations. The literature review is presented from the existential psychology, humanistic paradigm and cognitive behaviouristic approach and the empirical review was conducted within the ambit of the post-positivist research paradigm.

1.6.2 Literature review

In theory, the existential psychology, the humanistic paradigm, and cognitive behaviouristic paradigm all link to career agility, world of work awareness and career interests, career adaptability and perceptions of employer employability competency expectations.

1.6.2.1 Existential approach

The existential approach is focused on understanding people's place in the world and what it means to be alive, and it regards human nature as open-ended, adaptable, and capable of a wide range of experiences (Benner & Peter, 1999). Individuals are accountable for their own plans, outcomes, and future activities. According to Schneider et al. (2014), individuals understand their existence by asking questions about the world in which they live, others, and themselves. The career guidance framework was constructed to incorporate career agility, world of work awareness, career interests, career adaptability and perceptions of employer employability competency expectations which can assist students in asking themselves important questions of where they fit in the digital-driven world of work within the South African context.

1.6.2.2 Humanistic paradigm

Aanstoos (2003) argued that humanistic psychology, as with any paradigm, is defined by its position with respect to matters of content, method, and approach. This paradigm is associated with the holistic vision which is needed most to resolve crucial issues of the next generation, including globalisation, health, ecology, and spirituality. By fulfilling its own potential as holistic psychology, the humanistic paradigm can continue to flourish by providing a timeless vision to a world in timely need of it. In terms of the ontological dimensions of this paradigm, when researching an individual's interactions with external sociocultural forces, researchers focus on the individual as a holistic being (Pheko, 2008). The variables of the

study encouraged a holistic, positive building relationship from the humanistic approach point of view, which informed the successful construction of a career guidance framework for self-regulated employability.

1.6.2.3 Cognitive-behaviouristic paradigm

Behaviourism and cognitivism are the two dominant theoretical positions. In other words, the cognitive-behaviouristic paradigm describes how individuals' perceptions and thoughts impact on their lives. Therefore, this paradigm proposes that individuals' thoughts and perceptions are interrelated (Ertmer & Newby, 2013). The constructs of the study are aligned to the cognitive-behaviourism paradigm in a sense that they are influenced by the way in which individuals perceive themselves within the career context (Ertmer & Newby, 2013).

1.6.3 Empirical research

The empirical research is presented from the post-positivistic research paradigm. The post-positivist approach views a research inquiry as a series of logically related steps and believes in multiple related steps and perspectives, rather than a single reality. This approach has elements of being reductionist, logical and an emphasis on empirical data collection, is cause-and-effect oriented and is deterministic based on a priori theories (Adame & Bisel, 2017). Post-positivism is said to be reductionist, which implies that it reduces ideas into a hypothesis and research questions. According to Ryan (2006), post-positivist research principles emphasise the meaning and creation of new knowledge and are able to support committed social movements – that is, movements that aspire to change the world and contribute towards social justice. This study empirically analysed the relationship dynamics of these constructs: career agility, world of work awareness, career interests, career adaptability and perceptions of employer employability competency expectations that were used to construct a career guidance framework of graduates, while taking into account individuals' socio-demographic characteristics.

1.6.4 Market of intellectual resources

Market of intellectual resources is the collection of beliefs that have a direct bearing on the epistemic states of scientific statements (Marais & Mouton, 1996). For the purpose of this study, the sections below describe the theoretical models, meta-theoretical statements, and conceptual descriptions about the study constructs, as well as the central hypothesis, theoretical and methodological assumptions.

In this study, the meta-theoretical context was focused on industrial and organisational psychology. According to the American Psychological Association (May 2022), industrial-organisational psychology (commonly known as I/O psychology) is the scientific study of human behaviour in organisations and the workplace. The speciality focuses on extracting principles of individual, group, and organisational behaviour and applying this knowledge to provide problem-solving in the workplace.

1.6.5 Conceptual descriptions

The following conceptual descriptions are discussed for the purpose of this study:

1.6.5.1 Career agility

Career agility, according to Coetzee et al. (2020), represents individuals' adaptive readiness, or willingness to adjust to and proactively respond to changes that influence their career welfare, career success, and career satisfaction. The broaden-and-build theory (Frederickson, 2004) model was used as theoretical lens for the purpose of this study. Coetzee et al. (2020c) describes three career agility facets: (1) technological adaptivity, (2) agile learning, and (3) career navigation, which represent efficiency in adapting to the technological-driven career environment. These facets function as motivational energizers of adaptivity to promote the efficient building of personal resources needed to achieve career goals (Coetzee et al., 2020c). The study applied the career agility scale (Coetzee et al., 2020) to measure career agility and its three facets.

1.6.5.2 World of work awareness

According to Coetzee et al., (2021), world of work awareness refers to the awareness of the impact of technological advancements in the world of work, the changing nature of jobs and occupations and careers, and the need for continuous upskilling and learning. Research literature on the changing technological-driven world of work informed the understanding of this construct. The world of work awareness construct was measured by means of the 15-item world of work awareness scale (Coetzee et al., 2021). The scale measures three awareness facets, namely awareness of the digital nature of work, occupational and job awareness, and continuous upskilling and learning awareness (Coetzee, 2022; Coetzee et al., 2021).

1.6.5.3 *Career interests*

In the context of the present study, career interests relate to individuals' career anchors that are defined as a pattern of self-perceived qualities and abilities, fundamental personal values, and an evolved sense of reasons and needs (as they relate to the career) that signal work interests that impact a person's career-related decisions (Schein, 1978). The career orientations inventory (Schein, 1990) identifies individuals' dominant and secondary career anchors that reflect individuals' career interests as manifested in their career-related values, motives and needs. Schein (1990) further observed that individuals, based on their career interests, showed consistent patterns in their career choices and their feelings toward the choices they made. These patterns were shaped by the educational, career and life experiences of individuals, and therefore guided individuals during their career decision making. Schein's (1990) career anchor theory was used in this study as theoretical lens in understanding the eight career anchors (technical and functional competence, general managerial competence, autonomy and independence, security and stability, entrepreneurial creativity, service and dedication to a cause, pure challenge and lifestyle).

1.6.5.4 *Career adaptability*

Career adaptability is a psychosocial construct that denotes individuals' psychosocial career resources for coping with current and anticipated tasks, transitions and traumas in their occupational roles that alter their social integration to either a large or small degree (Savickas & Porfeli, 2012). In this study the career construction theory (Savickas, 2013) was applied as theoretical lens in understanding the construct. The career adapt-abilities scale of Savickas and Porfeli (2012) was used to measure the construct and its four dimensions of career concern, career control, career curiosity and career confidence.

1.6.5.5 *Employer employability competency expectations*

Employability is the ability to gain and maintain employment and being able to manage the employment transitions between organisations, jobs, or even roles within the same organisation to meet ever-changing job requirements (Hillage & Pollard, 1999). For this research, the employer employability competency expectations scale (EECES: Coetzee, 2018; Coetzee et al., 2019) was applied to assess the construct and its dimensions of graduateness, business/entrepreneurial skills, personal employability qualities and autonomy/leadership.

Table 1.1 presents a summary of the core aspects, measuring instruments and theoretical models that were applicable in studying the key constructs.

Table 1.1

Constructs, Core Aspects, Measuring Instruments and Theoretical Models of the Research

Construct	Measured Core Aspects	Measuring Instrument	Core Theory
Career agility	Technological adaptivity Agile learning Career navigation	Career agility scale (CAS) (Coetzee et al., 2020)	Theoretical underpinnings of the CAS (Coetzee et al., 2020)
World of work awareness	Awareness of the digital nature of work Occupational and job awareness Continuous upskilling and learning awareness	World of work awareness scale (WWAS) developed by Coetzee et al. (2021).	Theoretical underpinnings of the WWAS (Coetzee et al., 2021)
Career interests	Technical and functional competence, general managerial competence, autonomy and independence, security and stability, entrepreneurial creativity, service and dedication to a cause, pure challenge &lifestyle.	Careers orientations inventory (COI: Schein, 1990)	Theoretical underpinnings of Schein's (1978; 1990) construct of career anchors
Career adaptability	Career concern, career control, career curiosity and career confidence	Careers adapt-abilities scale developed by Savickas and Porfeli (2012)	Career construction theory (Savickas,2013)
Employer employability competency expectations	Graduateness, Business/entrepreneurial skills Personal employability qualities Autonomy/leadership	The employer employability competency expectations scale (EECES: Coetzee et.al., 2019)	Theoretical underpinnings of the EECES (Coetzee et al., 2019)

Source: Author's own work

1.6.4 Central hypothesis

The central hypothesis of the research was formulated as follows:

The empirically manifested relationship dynamics among the socio-demographic characteristics (gender, qualification choice based on career interest, demographic [urban/rural], and need for career guidance), antecedents (career agility, world of work awareness and career interests), mediating (career adaptability) and outcome variables

(employer employability competency expectations) inform the construction of a career guidance framework for enhancing student self-regulated employability.

1.6.5 Theoretical assumptions

Based on the literature review, the following theoretical assumptions were addressed in this research:

- There is a need for basic research that seeks to isolate employer employability competency expectations career agility, world of work awareness, career interests and career adaptability.
- The constructs of career agility, world of work awareness, career interests and career adaptability will influence the self-regulated employability of students.
- The constructs of career agility, world of work awareness, career interests, career adaptability, and employer employability competency expectations can be influenced by person factors such as gender, qualification choice based on career interest, demographic [urban/rural], and need for career guidance.
- The various variables constitute a career guidance framework that can be empirically tested and may potentially inform the self-regulated employability of students.

1.6.6 Methodological assumptions

Brynard et al. (2014) maintained that research methodology (i.e., a group or body of methods) of collecting data necessitates a reflection on the planning, structuring and execution of the research in order to comply with the demands of truth, objectivity and validity. To ensure that a structured, well-rounded approach was followed in this study, the following research dimensions (sociological, ontological, teleological, epistemological, and methodological) of the research domain were considered.

(a) Sociological dimension

This research comprised a human endeavour conducted by an individual, which is supported by Marais and Mouton (1996) who denoted that the sociological perspective is interested in

highlighting the social nature of research as a typical human activity. This research was non-experimental in nature and focused on the quantitative analysis of variables and concepts that are described in the empirical research and resultant chapters.

(b) Ontological dimension

The ontological dimension of research in the social sciences is the reality being investigated in research within the social sciences (Marais & Mouton, 1996). The research domain of the social sciences is regarded as humankind in all its diversity, which includes human activities. This research studied various aspects of career agility, world of work awareness, career interests, career adaptability and employer employability competency requirements.

(c) Teleological dimension

Marais and Mouton (1996) described the teleological dimension as the dimension that takes account of the researcher's meta-theoretical assumptions. This means that the researcher adopts the approach of an unbiased observer who is merely reporting on the social phenomenon being observed (Mouton & Marais, 1990).

(d) Epistemological dimension

The epistemological dimension of social research may be regarded as the key dimension to social science practice (Marais & Mouton, 1990). The primary aim of the social sciences is to generate valid findings and this study aimed to achieve the truth through a research design.

(e) Methodological dimension

The methodological dimensions concern how research should be designed, structured, and carried out in accordance with scientific norms. The term methodology can be defined as the logic of applying scientific approaches to the examination of reality (Mouton & Marais, 1990). This study undertook quantitative (descriptive and explanatory) research in the form of empirical research and exploratory research in the form of a literature review.

1.7 RESEARCH DESIGN

The research design intends to provide an appropriate framework for a study. A significant decision in the research design process is the choice to be made regarding the research approach, since it determines how relevant information for a study will be obtained. However, the research design process involves many interrelated decisions (Sileyew, 2019). This section discusses the research design and the types of research that were conducted, as well as the validity and reliability of the research.

1.7.1 Exploratory research

This research is exploratory in that it compares different theoretical perspectives on the constructs of career agility, world of work awareness, career interests, career adaptability and employer employability competency expectations.

1.7.2 Descriptive research

In the literature review, descriptive research applies to the conceptualisation of the constructs of career agility, world of work awareness and career interests, career adaptability and employer employability competency expectations. In terms of the empirical review, descriptive research was used in relation to the socio-demographic characteristics of the sample, as well as the means, standard deviations, and internal consistency reliability coefficients of the study constructs.

1.7.3 Explanatory research

According to Babbie and Mouton (2013), the major purpose of explanatory research is to provide answers for why a certain phenomenon occurred by building on both exploratory and descriptive research. The researcher must clearly indicate or point in the direction of the relationship between the research variables. Creswell (2014) indicated that explanatory research attempts to understand, distinguish, and explain a significant and meaningful causal connotation between variables. This study sought to understand and draw conclusions on the relationship between socio-demographic characteristics and career agility, world of work awareness, career interests, career adaptability and employer employability competency expectations.

1.7.4 Validity

External validity is described as the generalisability of results to or across target populations, places, times, and so on (Shadish et al., 2002). Internal validity, on the other hand, is the validity of results drawn within the framework of a certain study. Because general conclusions are almost always a goal in research, external validity is an important property of any study (Onwuegbuzie, 2000). Fredericks et al. (2019) alluded that a balance between internal and external validity is essential to promote enrolment in the study and confidence in attributing its outcomes to an intervention, as well as to provide answers to clinically relevant questions such as who benefits most from which intervention. Foxcroft and Roodt (2007) indicated that there are four forms of validity, namely: content, face, criterion, and construct validity. These types of validity are important to understand, as they predict the suitability and significance of the research study.

1.7.4.1 Validity regarding the literature

The research validity of the literature is recent, relevant, and applicable to the research and variables that were investigated for the purposes of this study.

1.7.4.2 Validity regarding the empirical research

Both internal and external validity are imperative for a good research design. Internal validity examines whether the study design, conduct and analysis answer the research questions without bias. External validity examines whether the study findings can be generalised to other contexts (Andrade, 2018). Internal validity ensures that the researcher reports observed results that are true in the population being investigated and are free of methodological mistakes. Once the study's internal validity is established, the researcher assesses its external validity by determining whether the study's findings apply to a similar sample in a different situation (Patino & Ferreira, 2018).

1.7.5 Reliability

The extent to which results are consistent over time represents an accurate representation of the overall population under study. The instrument is considered dependable when the results of a study can be replicated using a similar methodology (Golafshani, 2003). Reliability can

be estimated through comparison of different versions of the same measurements (Middleton, 2019). For this research, the reliability of the literature review was ensured by utilising credible literature sources such as published journal articles and books relevant to the constructs within this study. The study further ensured that instruments used to collect data complied with stringent validity and reliability requirements. Cronbach alpha coefficients and composite reliability were used to establish internal consistency and resultant unidimensional reliability of the instruments used to collect data.

1.7.6 The unit of research

According to Rubin and Babbie (2014), the unit of analysis differentiates between the features of persons, groups, organisations, social actions, and social artefacts. This research concentrated on the concepts of career agility, world of work knowledge, career interests, career adaptability, and employer employability competency expectations. This research analysed the individual results of each measuring instrument (individual level), the overall results of the measuring tool (group level), as well as socio-demographic characteristics (sub-group level). The purpose was to determine the relationship dynamics between the study constructs to develop a career guidance framework that will enhance the self-regulated employability of graduates.

1.7.7 Variables

As previously indicated, the purpose of this study was to determine the relationship dynamics between career agility, world of work awareness career interests, career adaptability and employer employability competency expectations to develop a career guidance framework that can enhance the self-regulated employability of graduates. Mediating variables were described by Creswell (2009) as intervening variables between independent and dependent variables; they act as intervening (explanatory) mechanisms between the two variables (independent and dependent). The study analysed the influence of the mediating variables (career adaptability) on the relationship between the independent variables (career agility, world of work awareness and career interests) and dependent variables (perceptions of employer employability competency expectations).

It is important to note that the cross-sectional nature of the current research did not aim to assess true causal effects, but rather the direction and magnitude of links between variables. In this regard, it is important to emphasise that the research design employed mediation analysis for explanatory purposes and not mediation for design (i.e., true causal effects over

time) purposes. The focus was to probe career adaptability as underlying mechanism for why a relation exists between a predictor (i.e., career agility, world of work awareness, career interests) and an outcome (perceptions of employer employability competency expectations). Mitchell and Maxwell (2013) posited that cross-sectional mediation analysis for explanation lends insight into the probable reason for outcomes (i.e., perceptions of employer employability competency expectations), and as such helps generate ideas for future longitudinal (true causal) mediational designs.

The study further analysed the moderating effect of socio-demographic characteristics (gender, qualification choice based on career interest, demographic [urban/rural], and need for career guidance). A moderating variable is defined as a variable that can strengthen, diminish, negate, or otherwise alter the association between independent and dependent variables (Bauman et al., 2002). These variables can also change the direction of the relationship and can either be categorical (e.g., gender) or continuous (e.g., need for career guidance) and are used in quantitative, rather than qualitative research. These variables are useful, as they explain probable boundary (moderating) conditions for the links between independent and dependent variables and provide additional information regarding the association between two variables in quantitative research by explaining what features can make that association stronger, weaker, or even disappear (Van der Ven & Huber, 1990). Bhandari (2022) indicates that the strength, direction, or existence of a relationship between variables is affected by a moderator. It reveals who a relationship will work for, when it will happen, and under what conditions. By pointing out the conditions under which the association between the variables can persist, moderators typically assist a researcher in evaluating the external validity of a study.

1.7.8 Delimitations

This research had a specific focus limited to studying the dynamics of the relationship between the independent variables (career agility, world of work awareness and career interests), mediating variable (career adaptability) and dependent variables (employer employability competency expectations). For this study the exploratory, cross-sectional design approach was used, which means that the researcher studied at a group of individuals who share common statistical traits, characteristics, or experiences within a defined period (Privitera, 2014). According to Privitera (2014), cross-sectional design has a disadvantage in the possibility of cohort effects, which occur when differences between members of a cohort which occurred before can explain the observed result. Furthermore, true causal effects cannot be tested in cross-sectional mediational research designs (Mitchell & Maxwell, 2013). However,

the advantage of using this design is that participants are observed one time in each cohort. The study further analysed the moderating effect of socio-demographic characteristics. The study was not influenced, changed, or manipulated based on religion, personal perspectives, political affiliations or the opinions of the researcher.

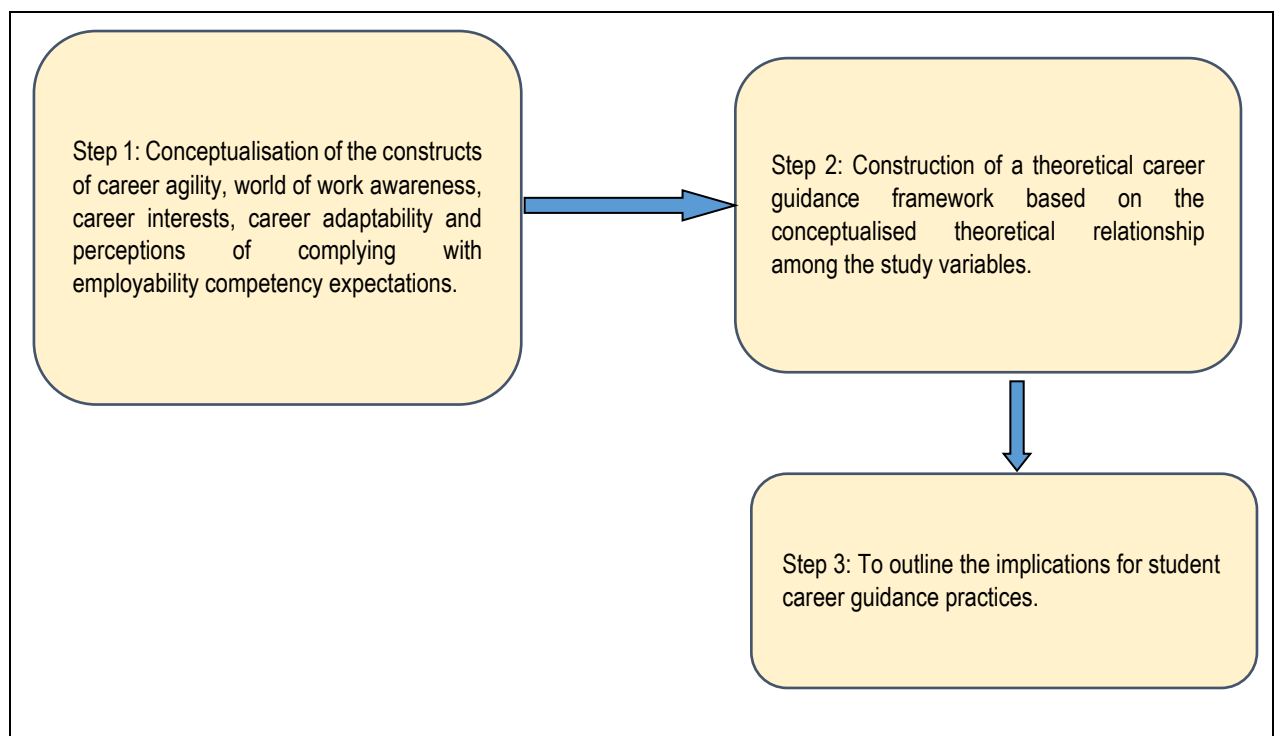
The focus of this study was based on the relationship dynamics between the independent variables, mediating variables, dependent variables, and the socio-demographic characteristics as moderating variables that may be used in future research to analyse other issues relating to these variables.

1.8 RESEARCH METHODOLOGY

The research was conducted in two stages, each of which included distinct steps that are covered in the section below. The phases of the literature review are outlined in Figure 1.1 and a summary of the research methodology steps is shown in Figure 1.2.

Figure 1.1

Overview of Literature Review



Source: Author's own work

1.8.1 Phase 1: Literature review

The literature review comprised the review of the determinants/antecedents' variables (career agility, world of work awareness, career interests), the mediating variables (career adaptability) and the independent/outcome variables (employability competency expectations).

Step 1: This step was to address the first research aim, to conceptualise the constructs of career agility, world of work awareness, career interests, career adaptability and perceptions of complying with employer employability competency expectations.

Step 2: This step was to address the second research aim, the construction of a theoretical career guidance framework based on the conceptualised theoretical relationship among the study variables will be explored.

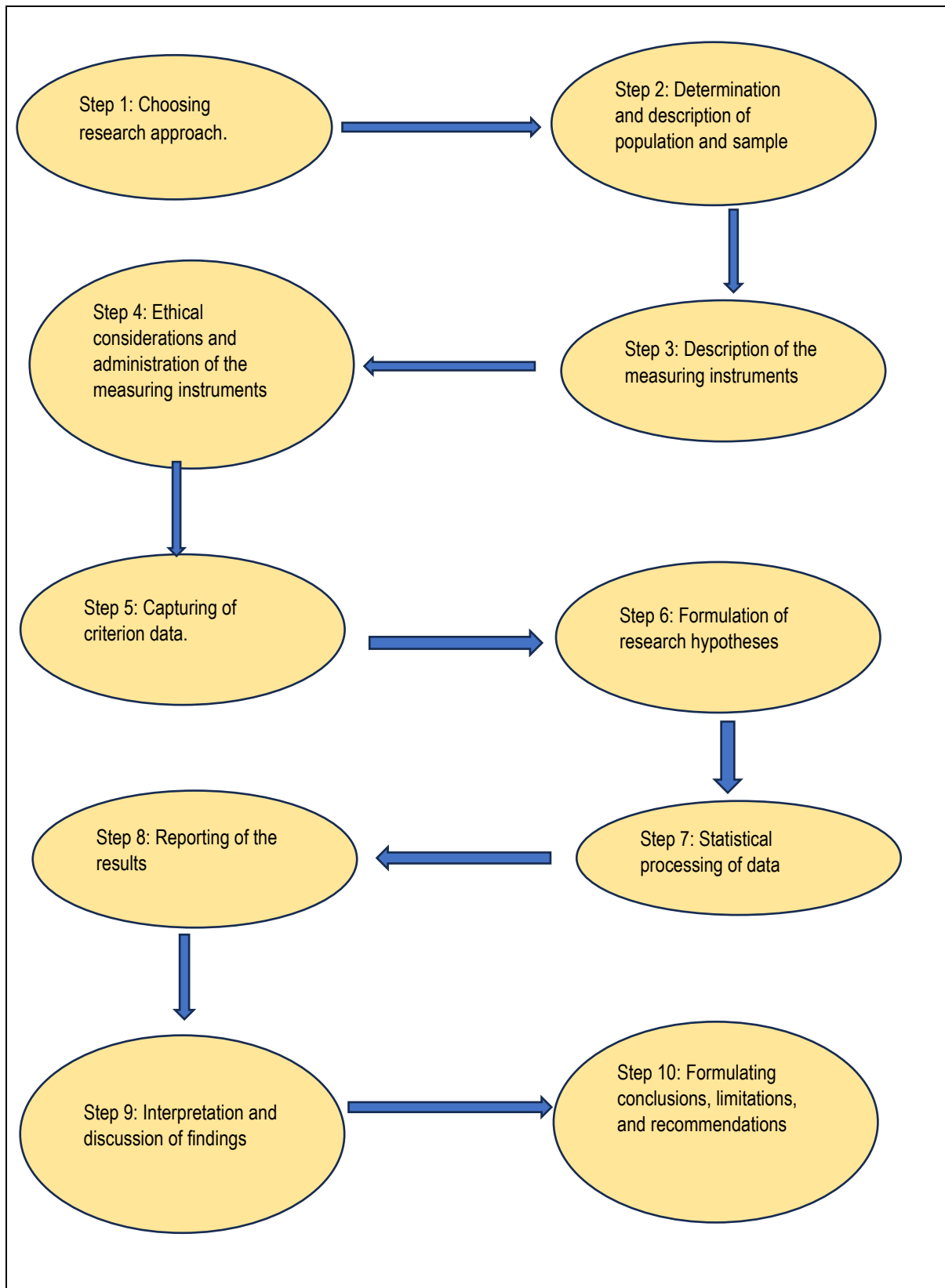
Step 3: This step was to address the third research aim, to outline the implications for student career guidance practices.

1.8.2 Phase 2: The empirical study

The empirical study was conducted at a South African University of Technology and included the steps as illustrated in Figure 1.2 below.

Figure 1.2

Overview of the Empirical Study



Source: Author's own work

Step 1: Choosing the research approach.

A cross-sectional quantitative research approach was applied in this research. Chapter 5 discusses the research design in detail.

Step 2: Determination and description of the population and sample

Chapter 5 discusses the population, sampling method and sample characteristics in more detail.

Step 3: Description of the measuring instruments

The psychometric properties of the measuring instruments are discussed in chapter 5.

Step 4: Ethical considerations and administration of the measuring instruments

Chapter 5 (Research method) discusses the ethical considerations in administering the psychometric battery.

Step 5: Capturing of criterion data.

Each of the items in the questionnaires that were completed by the respondents were captured in an Excel spreadsheet and thereafter, converted to a Statistical Package for the Social Sciences (SPSS) file.

Step 6: Formulation of research hypotheses

Research hypotheses are the deductions and inductions from theories, other empirical theories and real-world observations based on logical reasoning and prediction of the outcome of the study (Thomas et al., 2015). Chapter 4 and chapter 5 provide an overview of the research hypotheses formulated to achieve the objectives of the research in chapter 6.

Step 7: Statistical processing of data

The various stages for testing the research hypotheses are discussed in Chapter 5 (Research method).

Step 8: Reporting of results

The results of the statistical data analysis are reported in chapter 6.

Step 9: Interpretation and discussion of findings

The findings of the results are interpreted and discussed in chapter 7.

Step 10: Formulating conclusions, limitations, and recommendations

This final step (see Chapter 7) is achieved in chapter 7. Apart from core conclusions, the limitations of the study are discussed and the recommendations in terms of the construction of the career guidance framework are presented.

1.9 CHAPTER DIVISION

The study is divided into seven chapters:

Chapter 1: Scientific overview of the study

Chapter 2: Meta-theoretical context: Career guidance for graduate employability

Chapter 3: Career agility, career interests and career adaptability

Chapter 4: Integration: Toward constructing a career guidance framework for employability.

Chapter 5: Research method

Chapter 6: Research results

Chapter 7: Discussion, conclusions, limitations, and recommendations.

1.10 CHAPTER SUMMARY

This chapter discussed the scientific orientation to the research, it described the background and motivation for the research, the aim of the study, the research model and paradigm perspectives, the theoretical research, the research design, and methodology, as well as the central hypothesis and research method. This research critically evaluated pertinent literature to investigate the relationship dynamics of the independent variables (career agility, world of work awareness and career interests), mediating variable (career adaptability) and dependent variables (employer employability competency expectations). The study further analysed the moderating effect of socio-demographic characteristics (gender, qualification choice based on career interest, demographic [urban/rural], and need for career guidance). This research may inform industrial and organisational psychologists, career guidance practitioners, as well as human resource professionals on career guidance for enhancing employability competency.

Chapter 2 will address the first part of the literature review, which is to "conceptualise the constructs of career agility, world of work awareness, career interests, career adaptability, and perceptions of complying with employer employability competency expectations."

CHAPTER 2: META-THEORETICAL CONTEXT: CAREER GUIDANCE FOR GRADUATE EMPLOYABILITY

The general research aim was to construct a career guidance framework for employability competency from the observed relationship dynamics among students' socio-demographics (gender, qualification choice based on career interest, demographic [urban/rural], and need for career guidance), career agility, world of work awareness, career interests, career adaptability and perceptions of complying with employer employability competency expectations.

Chapter 2 addresses part of the first literature review research aim, namely, "to conceptualise the constructs of career agility, world of work awareness career interests, career adaptability and perceptions of complying with employer employability competency expectations".

Chapter 2 critically reviews the changing awareness of the world of work and resultant employer expectations for graduates and workers' employability competency from a career guidance perspective.

2.1 CONTEXTUAL FACTORS IMPACTING CAREER GUIDANCE FOR GRADUATE EMPLOYABILITY

This section focuses on the digital post-pandemic world of work, its impact on career guidance for graduate employability for university of technology students, and finally the socio-demographic factors that influence career guidance for employability.

2.1.1 The post-pandemic world of work

The COVID-19 pandemic was yet another threat to mankind. Several countries, including South Africa have experienced substantial increases in their rate of unemployment because of the pandemic. It is estimated that between 2.2 and 2.8 million individuals in the country lost their jobs because of the lockdown and a halt of economic activities from February to April in 2020 (Poseli et al., 2021). Furthermore, Poseli et al. (2021) indicated that the COVID-19 lockdown had unusual labour market implications because most economic activities were halted in the expectation that (at least some) of the activities would resume once the lockdown was lifted. As a result, some people were able to keep their employment, although they were unable to work or generate an income during the lockdown. According to the World Bank report South Africa (July 2021), job losses as a result of COVID-19 were disproportionately

concentrated among low-income earners, worsening the already severe inequalities despite the decisive and pro-poor response that were introduced by the South African government, particularly the implementation transfer programmes that were intended to partially cushioned the negative impact of the pandemic. However, the number of jobs lost by the low-wage earners were nearly four times more than those lost by high-wage counterparts.

For the past two decades, the higher education sector struggled with ideas about employability competencies and what attributes graduates should bring to the workplace (Moore & Morton, 2017). This has resulted in a greater emphasis on practical skills and professional purpose in the higher education curriculum (Bates et al., 2019). A work placement (internship or professional placement) provides undergraduate students with a real-world work experience in which they can develop skills in professional communication, time management, teamwork, and networking (Shoenfelt et al., 2013). Internships and professional placements are frequently used by students to "bridge the gap" between campus curriculum and real-world practice (Andrews & Higson, 2008; Rowe & Zegwaard, 2017). Due to restrictions imposed by the COVID-19 pandemic, many students completing professional placements and internships were forced to leave their physical place of employment. Some students participating in professional experiences lost their placements, while others accepted work arrangements that required them to work remotely online (Gill, 2021). Cook (2020) discovered that because of social distancing caused by the pandemic, graduates' employability characteristics appear to have evolved to fit the remote working purpose and students who completed professional projects and placements in remote working environments were exposed to a set of employability skills that may well represent the professional office environment in the future.

Higher education institutions in South Africa, like those in other countries, were compelled to devise and implement several initiatives to help continue academic activity. They included, but were not limited to, emergency remote learning and teaching, staff working from home arrangements, alternate student assistance techniques, and reallocating funding to meet developing demands (du Plessis, et al., 2022). The COVID-19 epidemic impacted students' life in a variety of ways, including being forced to leave their homes and universities, struggling with money, losing internships, and having to learn new technologies in addition to their subject matter (Govindarajan & Srivastava, 2020). According to Wangenge and Kupe (2020), the spread of the COVID-19 pandemic in South Africa was "interwoven into an existing socioeconomic milieu stricken with poverty and significant, unsustainable inequities". As a result, HEIs had to consider numerous variables in an attempt to respond to the epidemic and establish long-term preparations (du Plessis, et al., 2022).

The COVID-19 pandemic has highlighted a significant lack of digital infrastructure in South Africa. Nonetheless, this problem is currently being addressed because the African Union (AU) has developed a comprehensive 50-year master plan that focuses on smart city infrastructure which is aligned with digital transformation for critical 4IR progression (Ramlachan et al., 2021). While countries in the global north were ready to implement online teaching and learning as the COVID-19 lockdown protocol was implemented, the scarcity of resources and inadequate digital infrastructure hampered the delivery on online teaching and learning in the global south countries such as South Africa during pandemic.

The effect of the pandemic on business and higher education will have far reaching implications for years to come (Ramnund-Mansingh & Reddy, 2021). The workplace is becoming a technological hub. As a result, graduates who lack these advanced skills are disadvantaged not only in the South African job market, but also in the global job market. The global pandemic has also provided an opportunity for thousands of students to gain technological knowledge. The impact is far-reaching because it establishes a basic framework for online work opportunities both globally and within the country. COVID-19's transformed online teaching pedagogies have paved the way for post-graduation employability (Byron et al., 2021). Autin et al. (2020) mentioned that the COVID-19 crisis has not only created significant challenges, but it has also created an opportunity to build on previous work to reinvent resources, practices, and policies to positively change the labour market landscape.

2.1.1.1 Unemployment

Posel et al. (2021) indicated that loss of employment had a significant impact on people's access to economic resources. It might be possible that unemployment is one of the reasons why adults reported higher levels of depressive symptoms in the early months of the pandemic.

2.1.1.2 Worker mental health

Autin et al. (2020) stated that the pandemic poses several threats to the mental health of those who are currently employed. Workers who had a relative sense of job security prior to the pandemic may now face uncertainty about the stability of their jobs as employers look to cut costs. Even workers who are not at risk of total unemployment may face underemployment as a result of reduced hours and pay. Previous research indicates that job insecurity is just as bad for mental health as unemployment and is consistently associated with increases in depression and anxiety disorders. Posel et al. (2021) added that in the South African context

the source of unemployment is very likely to have been exogenous or beyond the individual's control, the COVID-19 pandemic provides a unique opportunity to examine the implications of job loss for mental health. There is a large body of research on how job loss affects depression or anxiety, with studies comparing the mental health of employed and unemployed people. Although the fact that South Africa has had persistently high unemployment rates since its democratic transition, few studies have investigated how this unemployment affects the population's levels of depression and anxiety (Posel et al., 2021).

2.1.1.3 *Work–family interface*

According to De' et al., (2020) another emerging effect of the pandemic is the blurring of the line between work and home. This phenomenon is inextricably linked to the role that technology is now playing, as many workers shift the entirety of their work to tech platforms that they can access 24 hours a day, seven days a week. There are undoubtedly advantages to this increased use of technology. The ability to work remotely, for example, adds a layer of job security, and for those who are unemployed, technology provides a critical means of obtaining unemployment benefits and seeking employment (De' et al., 2020).

On the other hand, working (or looking for work) from home, has resulted in increasingly blurred boundaries between work and leisure time. Parenting and other care-giving responsibilities become more difficult when people are not working, are engaged in essential work, or work from home (Autin et al., 2020). Due to the COVID-19 pandemic, employees around the world have experienced significant changes in their work and family roles. Nonetheless, applied psychologists have a limited understanding of how this event has affected employee experiences of work-family conflict and enrichment, as well as what organisations can do to ensure that employee's function better during such societal crises (Vaziri et al.,2020).

2.1.1.4 *Employment disparities*

Nwosi et al. (2021) mentioned that physical distancing regulations aimed at preventing infections have necessitated work-from-home arrangements because of the coronavirus pandemic. The blurring of work and family roles, for example, may be more burdensome for women workers, who tend to carry most of the unpaid care work, and low-income families living in smaller spaces (World Bank, 2021).

According to Maree (2021), the pandemic has had a significant impact on emotional-social health and well-being of youth. Individually and collectively, young people have experienced and continue to experience an existential crisis, and they are struggling to adapt to the 'new normal.' Their health, socioeconomic situation, anxiety and stress levels, motivation, and sense of purpose and hope have all suffered as a result (Centers for Disease Control and Prevention, 2020). Maree (2020) further mentioned that there has been little research into the impact of COVID-19 on career counselling, particularly the contextualisation of career counselling to address the changing career counselling needs of young people during the pandemic (disadvantaged students in particular).

Career counselling researchers, practitioners, and policymakers should be concerned about the situation in low- and middle-income countries. During the pandemic, online career counselling became more common in more affluent communities, but not in less affluent, disadvantaged communities (Maree, 2020). The need for guidance has risen dramatically because of the COVID-19 pandemic. The crisis has wreaked havoc on the labour market, hastening automation patterns that are fundamentally altering the nature of work and increasing unemployment risks, particularly for young people (Ettetal & Aggans, 2020).

According to the International Labour Organisation (2021), social, economic, gender, racial, and health disparities have been highlighted by the COVID-19 outbreak and containment efforts, and these disparities were escalating quickly. Certain population groups have been linked to increased rates of illness and mortality due to accumulated disparities in the socioeconomic determinants of health (SDH). In addition, despite helping to lower infection and mortality, the necessary COVID-19 response measures implemented have disproportionately burdened more vulnerable groups, resulting in wider health disparities (International Labour Organisation, 2021). The socio-economic impact of the epidemic has not been spared in South Africa (Affinity business network, 2021). Since the country went into a strict lockdown as the primary public health response to stop the spread of the virus on 26 March 2020, its economy has been in decline. Governments, policymakers, employees, and employers had to understand that the effects of the worldwide pandemic on employment, both at the aggregate and sectoral levels. The safety of citizens had to be protected and the viability of businesses and jobs had to be safeguarded, while simultaneously minimising the long-term repercussions of the pandemic (Affinity business network, 2021).

In his research on how the COVID-19 epidemic has affected the working environment in South Africa, Matli (2020) noted that the pandemic has increased the proportion of remote employees in the labour market. As a result of the COVID-19 lockdown, most employees were

compelled to work from home, which has changed the typical office atmosphere. Furthermore, Matli (2020) held that the social structural changes that are taking place have been driven by technological advancements. This has in turn influenced the rapid expansion of remote working and changes in the workplace. Social systems in South Africa make the resource gap for most of the employees who are working remotely even more pronounced. In their study that involved establishing radiology consultants to report remotely, Dick et al. (2020) discovered that most of the radiology consultants are working very long hours to keep up with their workload and maintain constant, as well as excellent communication.

The findings by Matli (2020) have both practical and policy ramifications which required organisations (employers) to evaluate the difficulties that confront employees faced when they are working from home during the COVID-19 pandemic lockdown. Although the opinions of most respondents indicate that there is a perception of working more productively at home in comparison to the conventional office setting, there is currently no tangible data to support this.

2.1.2 Technological innovation and its impact on jobs and work

According to Penprase (2018), industrialisation has become firmly entrenched within the global economy because of previous industrial revolutions. Computers were introduced as machinery during the third industrial revolution. By efficiently channeling information, this revolutionized work and communication. The Fourth Industrial Revolution (4IR) is supported by means of digital technology that extends beyond computers and e-materials (Penprase, 2018). According to Naude and Nagler (2015), unlike machines designed to reduce physical labour, modern digital technologies have the potential to replace cognitive labour. Robots and artificial intelligence (AI) are only a few examples of the rapidly emerging technology and applications that go under the umbrella term "digitalization" in the workplace. From platform employment to the gig economy to algorithmic management and digital surveillance, these technologies have a diverse impact on labour (Konle-Seidl & Danesi, 2022). It is argued that this new wave of the technological revolution has the potential to change the relationship between labour and capital in unprecedented ways. This is thus compatible with a learner-centered approach to effectively improving students' learning journey experiences (Naude & Nagler, 2015).

Goos et al. (2019) mentioned that popular fears that upcoming technologies will render labour redundant in an increasing number of occupations have recently been fuelled by studies claiming that up to half of all jobs in the United States will be automatable within the next two

decades. According to Frey and Osborne (2016), 47% of workers in the United States (US) are “at risk,” which means that the typical tasks of those jobs could be performed by new machines. However, McGuinness et al. (2021) mentioned that regardless of the evidence that technological change contributes to job deskilling, technological advancements and automation have also been identified as the primary drivers of labour market polarisation, which is characterised by faster job growth at the top and bottom of the wage distribution compared to the middle. Their skills-displacing technological change is associated with dynamic upskilling of workers McGuinness et al. (2021).

According to Le Roux (2018), technological displacement refers to situations in which the need for human labour in certain occupations is reduced or eliminated because of technological advances. The technological displacement effect, according to Su et al., (2022), occurs after an innovative initiative. High-tech replacement of human resources would almost certainly result in a phenomenon in which machines eventually crowd out workers, a scenario that would have a negative impact on employment. Su et al. (2022) went on to say that innovation tends to have a compensatory effect. That is, when newer technologies encourage the creation of new jobs, the labour market for skilled jobs will eventually see an increase in demand.

According to Goulart et al. (2021), the technology-related job market has changed dramatically in recent years, owing primarily to technological advances that have pushed industry toward new demands for skilled professionals. Technology advancement has heightened the importance of innovation in organisations, reinforcing competition and cooperation as competing needs. In this context, the increasing complexity of new high-tech solutions and innovations is driving employer demand for novel ways of thinking and new skill sets (Goulart et al., 2021). This shift in the required skills and competencies has resulted in a mismatch between what companies require and the professional profiles available in the job market. Furthermore, technology firms are frequently unable to find an employee who meets the required profile, resulting in financial loss and additional training costs (Goulart et al., 2021). Hecklau et al. (2016) mentioned that organisational skills for the new technological paradigm can be divided into technical, methodological, social, and personal.

According to Le Roux (2018), certain types of jobs are eliminated but the introduction of technology also results in new labour requirements with new employment opportunities. It is important to note that another important aspect of technological progress is that it is skill biased, meaning it raises the demand for some skills while decreasing the demand for others in the labour market. Konle-Seidl & Danesi (2022) make the interesting claim that the use of

digital technology won't lead to the elimination of current jobs. One reason why new technology does not lead to more apparent shifts in employment is the range of tasks within professions (and the variety of jobs within occupations), which are not all equally susceptible to technological substitution.

Technology has a big impact on how many high-skill and low-skill workers are needed in the labour market, say Saba et al. in 2022. Thus, the demand for highly skilled individuals who can run machinery rises because of technology. It serves as a supplement to highly skilled workers as well (Saba et al., 2022). Technology also causes unskilled human labour to be replaced by equipment in some crucial sectors of an economy, which reduces employment despite the beneficial effects on the need for skilled people in South Africa (IMF, 2014).

For Kinkel et al. (2017), the ability to build networks or solve highly complex problems related to innovation is a consequence of the application and development of organisational skills with a focus on the management of human resources. However, Erol (2016) mentioned that interdisciplinary guidance is critical in supporting out-of-the-box thinking in a complex and changing environment such as that of a technology-related industry. The educational lag in the higher education curriculum regarding the new technologies and innovations has made it impossible for new generation of the Fourth Industrial Revolution (4IR) managers to engage in complex processes of creating fundamentally new technologies and markets, as well as modernizing the decision making of existing industries (Gitelman & Kozhevnikov, 2018).

Marks and Thomas (2022) conducted a study on the adoption of virtual and augmented reality (VAR) technology. The (VAR) technology as a teaching platform in higher education in Australia is still in its infancy. Using 3D models and interactive 360° movies, technology can enable immersive learning in settings that are typically inaccessible to students physically. VAR technology adoption rates for teaching have not yet been thoroughly characterised among higher education institutions. Additionally, data on the best VAR laboratory designs and cost per student are lacking.

Grivokostopoulou et al. (2020) noted that a teacher's readiness to integrate VAR technology into their instruction is directly related to their ability to have first-hand experience with the technology. This is crucial since VAR technology can be utilized with a wide variety of instructional methods. Professionals are expected to be responsible for a broader range of processes and will need to understand process relationships, information connections, potential disruptions, and potential solutions (Gitelman & Kozhevnikov, 2018). Such expanded scope and complexity will necessitate a mindset geared toward establishing and maintaining

networks of experts who can collaborate ad hoc to find appropriate solutions to specific problems (Erol et al., 2016).

Human tasks will concentrate on the boundaries of knowledge-intensive tasks, where problem-solving flexibility and creativity will be critical to competitiveness (Goulart et al., 2021). According to Goulart et al. (2021), digital transformation is driving change in higher education, not only in terms of teaching techniques, but also in terms of the new skills that must be taught, which include technical, managerial, and non-cognitive abilities that were not previously regarded as essential. Non-cognitive skills, also known as soft skills, have become critical skills for professionals in the age of digital transformation, who may now have a less significant operational role and a more prominent role in decision making, problem solving, and management (Dolce et al., 2020).

Young managers, engineers, and information technology (IT) students require innovative tools and techniques to develop soft skills and thus increase their employability (Rao, 2014). According to an article published by MacDonald (07 December 2020- IT Works), it has never been more crucial to acquire digital skills, especially for the next generation. Even though young people are well renowned for their digital enculturation, they still require rigorous educational support to fully comprehend the technology around them and acquire the skills they will need to succeed in the future.

Globalisation is accelerating the creation of new technologies and scientific discoveries daily (Joensuu-Salo et al. 2018; Oladimeji, Ebodaghe, and Shobayo 2017). According to the digital Marketing Institute published (12 November 2021) companies from a variety of industries have digitalized their processes and operations during the past ten years. Businesses are already using artificial intelligence (AI) to simplify supply chains and workflows. As a result, to stand out from the competition, today's job searchers need specialised talents. Entrepreneurs are unsure of whether they want to update or replace their outdated technology due to the rapid nature of these developments (Kaplan 2014; Roos and Shroff 2017). Utilising Information and communication technologies (ICT) is a novel strategy for creating modern jobs, with networking platforms allowing people to collaborate and innovate (Chege, Wang, and Suntu 2019; Roztocky and Weistroffer Roland 2011). The digital prospects provided by ICT are crucial for emerging economies to advance all facets of their economy and their entry into new international markets (Apulu and Latham 2010; Azadnia, Zahedi, and Pourabedy 2017).

In summary, Table 2.1 illustrates the core factors impacting career guidance in the digital post-pandemic world of work.

Table 2.1

Core Factors Impacting Career Guidance in the Digital Post-Pandemic World of Work

Core Factors	Description	Impact on career guidance
Covid-19 Pandemic	Defined by the World Health Organisation as SARS-CoV-2 in its ability to infect human cells, epidemiology, clinical pathological & laboratory findings, molecular & serological diagnosis, and safety issues.	Forced unemployment, forced online career counselling sessions, students from poor backgrounds cannot access online sessions, low-middle income countries are a source of concern for career counsellors (Maree, 2020).
Technological Innovation	Refers to situations in which the need for human labour in certain occupations is reduced or eliminated because of technological advances (Le Roux, 2018).	4th industrial revolution, new technological revolution has the potential to change the relationship between labour and capital which can result in a negative/positive impact on career guidance, the use of online sessions for career counselling.
Employer Graduate Skills Requirements	Refers quality of graduates and their soft/transferable skills, essential in today's labour market and necessary to increase individual employability	Technology firms are frequently unable to find an employee who meets the required profile, resulting in financial loss and additional training costs (Goulart et. al., 2021)

Source: Author's own work

Considering the issues relating to the changing world of work, it is important to take note that the COVID-19 outbreak threatened mankind and increased the levels of unemployment across the globe. The pandemic has cost millions of jobs worldwide as projected by the Labour Organisation (2020). The pandemic further posed worker mental health, work-family interface which resulted in people working from home and a rapid increase in more multi-modal ways of doing things. The pandemic also caused a significant impact on career guidance and counselling, online counselling most common in affluent communities and disadvantaged the less fortunate/affluent. The Fourth Industrial Revolution (4IR) has caused a major shift and

drastically new innovative systems and careers that are forcing middle-skilled jobs (such as office administration and machine operation) to shrink, while lower-skilled service jobs (such as personal care, cleaning, and security) and high-skilled jobs (such as technical, education, and management) are growing at an unsustainable rate. This happens because people with middle-skilled jobs are frequently pushed into lower-paying, lower-skilled jobs (Coetzee et al., 2020). Middle-skilled jobs (such as office administration and machine operation) are being forced to shrink because of the 4IR, while low-skilled service jobs (such as personal care, cleaning, and security) and high-skilled jobs (such as technical, education, and management) are growing at an unsustainable rate.

2.2 EMPLOYER EMPLOYABILITY COMPETENCY EXPECTATIONS

The conceptualisation of graduate employability and relevant theories and models of graduate employability will be discussed in this section.

2.2.1 Conceptualisation of employability

Graduate employability is defined by Hillage and Pollard (1998) as the knowledge, skills, and attitudes that graduates are expected to demonstrate they have acquired in higher education. Tomlinson (2012) connected the theme of graduate employability to the shifting dynamic in the relationship between higher education and the labour market, as well as the changing role of higher education in regulating graduate-level work. Cotton (1993) defined graduate employability as a collection of basic, higher order and effective employability skills required by employers. Coetzee (2012) described graduate employability as a sub-element of students' graduateness and their achievement of discipline, subject-specific or specialised knowledge; methodological expertise or skills in a particular field of learning as a basis for entry into the labour market; further professional training; and postgraduate studies aimed at developing research capacity that contributes to the development of new knowledge or professional employment in a wide range of careers.

The definition that is most relevant to the study is by Coetzee (2012) because the author includes graduateness and described it as the quality of personal growth and intellectual development of the graduates produced by a higher education institution, and the relevance of the graduateness skills and attributes they bring to the workplace (Coetzee, 2012). Graduate employability also refers to alumni's ability to effectively transfer their theoretical knowledge and skills acquired at institutions of higher learning into practical innovative

solutions that employers require to transform an organisation to achieve the desired goals (Tomilson & Nghia, 2020).

2.2.2 Meta-theories of employability

Kristian (2024) mentioned that theories assist the researcher to organise relevant empirical facts to create a context for understanding a phenomenon, it is also important in research because it provides a logical explanation of events, directs research questions, aids in data interpretation, analysis, and explains phenomena of interest. Finally, theory simplifies and streamlines study results, ensuring that variables are related and understandable (Kristian, 2024). The overall goal of this study was to develop a career guidance framework to enhance the employability competency of graduates. The three unpinning theories for employability were applied to understand the theoretical premises of graduate employability, namely human capital theory (e.g., Becker, 1993), dual labour market theory (e.g., Doeringer & Piore, 1971) and consensus theory by (Kerr, 1978). Human capital theory highlights how education promotes worker productivity and efficiency by increasing the amount of cognitive stock of economically productive human capability, which is a product of intrinsic abilities and investment in humans (Almendarez, L, 2011).

According to the dual labour market theory, jobs are roughly divided into two categories: those with low wages, poor working conditions, unstable employment, and little opportunity for advancement, and those with relatively high wages, good working conditions, and opportunities for advancement (Dickens & Lang, 1985). Lastly, the consensus theory emphasises that the knowledge economy or knowledge workers are regarded as more important and powerful than natural resources.

2.2.2.1 Human capital theory

According to research Judge et al. (1995), one's human capital can increase from job experience and formal education, as well as competency advancement (Judge et al., 1995). Becker (1993) claimed that by investing in one's own or, for that matter, the nation's education, the investment will be repaid to the organisation. Higher pay, more efficient production, or improved health could all be examples of a positive return on investment (Becker, 1993). Because it is impossible to separate information from the individual, these investments produce human capital rather than financial capital. The wage disparities between college and high school graduates are one of the most visible instances of how this type of investment pays off. Such discrepancies are common; however, they are more pronounced in developing

nations (Becker, 1993). Sources of this study refer to the association between education investment and income also exists in Sweden (Statistics Sweden, 2002).

Furthermore, obtaining a higher degree may make it easier for a person to get work (Becker, 1993; Sicherman & Galor, 1990). According to Wolla and Sullivan (2017), there is a significant correlation between income and education. A common phrase used to describe education is "an investment in human capital." Like how individuals invest in financial assets, including to produce money, they also invest in human capital. In general, people who have more education make more money. The "college wage premium" refers to the increased income that comes with a college education. According to research, this premium has increased over time. Additionally, persons are often more employable the more talents they possess. Therefore, the average unemployment rate is lower for people with higher education than for those with less education.

Employability, according to the logic of the human capital theory, is a way for an individual to improve their attractiveness to the labour market (Judge et al., 1995). Formal education, competence development, and work duration are all important characteristics of an individual's perceived employability, and according to the human capital hypothesis, individuals' investments in human capital in these areas would result in major variables in shaping their judgments of the employment opportunities available (Judge & Bretz, 1994; Judge et al., 1995). Work experience or seniority in a job or occupation can increase human capital. According to research, tenure is a human capital factor associated with promotion opportunities, extrinsic success such as higher pay, and higher status (Judge & Bretz, 1994; Judge et al., 1995).

According to Souto-Otero and Bialowoski (2021), most of the human capital research conducted today still use the number of years spent in formal education or the greatest level of education attained to quantify HC (Lauder, Brown, and Cheung 2018) rather than skills (Hanushek 2015; Barone & Warhurst 2011). Jamil (2004) emphasized the ambiguity around the idea of human capital theory that education should be viewed as a direct investment in one's financial future. Furthermore, Jamil (2004) suggested that considering educational qualifications as the single determinant is incorrect and should be replaced with other determinants such as network power, sociodemographic factors such as race, ethnicity, gender, school attended, family background, economic climate, and so on. Mutumba (2016) argued that human capital theory analysis overlooks the importance of factors other than individuals in determining the value of education and training.

2.2.2.2 *Dual labour market theory*

Dissatisfaction with the pace of reform in explaining the persistence of poverty and unemployment (despite efforts by politicians and programs to combat poverty), as well as low economic participation by minorities, including women, led to the development of the classical dual labour market theory (Gain,1975). This theory proposed the existence of two distinct labour markets, the primary and secondary market segments. The primary sector employs the most advantaged members of the labour force whereas the secondary sector consists of jobs that do not possess much skill specificity (Gain, 1975).

According to Gain (1975), the dual labour market theory, both possibilities and constraints in the labour market are important in determining an individual's employability. Doeringer and Piore (2020) coined the phrase "dual labour market" in their book *Internal Labour Markets and Manpower Analysis* (1971). The dual labour market is divided into two segments. High salaries, good working conditions, employment stability, opportunities for advancement, equity, and due process in the administration of work rules describe the primary segment (Doeringer & Piore, 1971). On the other hand, the secondary segment is characterised by a lack of job security, bad working conditions, and low earnings. This line of work is also marked by high expectations for flexibility and bad health (Albrecht & Vroman, 1992; Doeringer & Piore, 1971; Piore, 1986; Quinlan et al., 2001). Because employees are employed on a temporary basis, workers in the periphery have less stable working circumstances (Atkinson, 1984; Parks et al., 1998).

Employers prefer core workers, which are full-time or part-time employees with a long-term contract. As a result, employees are chosen first when hiring or retaining their staff. Therefore, secondary, or peripheral workers find it difficult to transition from the secondary to the principal segment. Being locked in the secondary sector may come with a stigma, making it even more difficult to get access to the privileged sector. According to Pförtner et. al., (2022), the major and secondary sectors of the labour market are segregated, with few opportunities to shift between them, according to the dual labour market idea. The insider-outsider idea, which holds that insiders enjoy more privileged positions than outsiders, is another foundation for dual labour market theory (Rueda, 2005).

According to the logic of dual labour market theory (Aronsson et al., 2000), the perceived employability of an individual is influenced by their employment contract. However, because work environments fluctuate within segments of the labour market, work environment circumstances and quality of work may be relevant in addition to contract status (Aronsson et al., 2000). Another major factor in the labour market is the location of the individual's residence and workplace. In comparison to sparsely populated places, metropolitan cities have a more diverse labour market. Less densely populated locations in Sweden, as well as other countries, have higher unemployment rates. As a result, it appears that there is a trend toward labour market segmentation due to regional effects for structural reasons (Kazamaki-Ottersten, 1998).

Van der Berg (1992) confirmed that dualism as the major economic challenge in a developing country such as South Africa, is overcoming crippling modern sectors and low-productivity subsistence sectors. Van der Berg (1992) further indicated that the South African labour market is divided into three sectors, namely, (i) workers in the well-paid formal sector of the economy, such as the manufacturing, public, and other industries, and services (excluding domestic workers) that are part of this core sector, (ii) the modern marginal sectors, which represent the part of the economy that pays low wages or is dominated by migrating labourers. (iii) domestic workers, commercial agriculture, and the mining industry are examples of these and lastly the large proportion of workers are employed in either the core or the periphery of the economy. According to the dual labour market theory, the South African labour market is clearly divided into those who work in the core sector (i.e., insiders) and those who do not (i.e., outsiders) (Van der Berg, 1992).

The Growth, Employment, and Redistribution (GEAR, 2002) report highlighted the fact that the South African labour market is highly fragmented. After the 1970s, unregulated, low-wage employment increased significantly, and "irregular, subcontracted, outsourced, or part-time employment on semi-formal contractual terms" became the preferred source of labour for many employers (Natrass, 1998). According to Fourie and Van Staden (2022), economies of the Southern African Development Community (SADC) are significantly segmented on the labour market, both between and within the formal and informal economies, as well as between the unemployed and the employed in both the informal and formal economies.

According to the labour market intelligence programme published in 2022 (Khuluvhe et.al., 2022), the South African market segmentation has significant racial, ethnic, and gender features. 32.8 percent of black employees, 23.5 percent of "Coloured" workers, and 13.3

percent of Asian/Indian workers are unemployed in South Africa. Compared to this, only 7.4 percent of white workers are unemployed.

2.2.2.3 *Consensus theory*

Unlike human capital theory and dual labour market theory, the most relevant theory for this study, consensus theory (Kerr et al., 1973) is more concerned with technological innovation as the driving force of social change. The 'stage' of technical development defines a society (Bell, 1973). The view that the recent focus on employability reflects the rising demand for technical, scientific, and professional workers who require lifelong learning, as the share of semi-skilled and unskilled occupations continues to fall, is consistent with the consensus theory approach (Lewis & Hayes, 2020). The consensus theory of Kerr et al. (1973) has a lot in common with human capital theory (Judge et al., 1995) which underpins the official discourse on employability. Employability is presented as both a problem and a solution in policy terms. The issue is that in a global information economy, income disparities and unemployment grow increasingly prominent (Reich, 1991).

As the value of their human capital is no longer constrained by domestic pay agreements, those with value added knowledge, skills, and ideas have seen their earnings grow. In the global marketplace, remuneration packages reflect productive contributions. Therefore, low-skilled employees' market position has deteriorated, as low-skilled occupations have gone to low-wage workers in less developed economies. Nations can attract a larger share of the global supply of high-skilled, high-wage jobs by boosting educational standards for everybody to worldwide criteria of excellence (Brown & Lauder, 1996, 2001).

Bakhshi et al. (2017) mentioned that with increased commercial and public investment in human capital, higher education is considered as a societal response to the growing demand for knowledge workers. Concerns regarding employability also reflect issues related to evolving technological demands on workers' skills and capabilities, as individuals' initiative, social skills, and creative abilities become more important (Bakhshi et al., 2017). This broadening of the definition of what makes someone viable and productive has been noted as a key issue for employers, who frequently complain that university graduates lack business knowledge and are unprepared for work. Indeed, sinecures are no longer an option in a more technologically advanced global economy, therefore the quest for 'talent' becomes even more vital (Berntson et al., 2006).

According to Brown et al. (2004), employability in a knowledge-driven economy is important. Because the differential value supplied by the best talented knowledge workers is significant, having more knowledge employees means that recruiting outstanding people is even more important (Brown et al., 2004). For example, the top software engineers can create ten times as many useable lines of code as typical developers, and their products earn five times as much money. The transition to the Information Age is still ongoing. The differential value of highly talented people continues to rise as the economy becomes increasingly knowledge based (Michaels et al., 2001). As a result, technological advancement leads to an increase in the number of knowledge workers in management, professional, and research positions that were formerly limited to a small elite, as well as a greater emphasis on recruiting 'talent' regardless of class, gender, colour, or nationality.

Employability, according to the consensus theory (Lewis & Hayes, 2020) also demonstrates capitalism's democratisation power and control were virtually entirely in the hands of employers in the preceding era (Brown et al., 2004). The bosses controlled the flow of information, owned the facility, and stored knowledge. Some went into white-collar jobs in large private or public companies that offered opportunities for advancement based on time served and sponsorship by senior executives (Brown et al., 2004). This assured a high level of reliance on the corporation, as professional advancement was contingent on long-term devotion. Because organisations can no longer control intellectual capital, employability now signifies a power shift. This has resulted in a considerable growth in knowledge professionals' economic power. As a result, the knowledge-driven economy alters not just the nature of work but also the essence of capitalism (Burton-Jones 1999, Cortada, 1998).

In summary, three meta-theories of employability were discussed, and it is evident that high salaries, good working conditions, employment stability were regarded as the most significant factors for employees but all of that has changed drastically due to the evolution to a more digital/technological-driven society and more especially in the workplace (Brown et al., 2003). Brown et al. (2003) mentioned that according to the consensus theory, concerns regarding employability also reflect issues related to increasing technological demands on workers' skills and capabilities, as more emphasis is placed on individual initiative, social skills, and creative abilities. Table 2.2 provides a synopsis of the key premises of the three theories of employability.

Table 2.2*Key Premises of the Meta-Theories of Employability*

Theories	Description	Core Focus/Aspects
Human capital theory (Becker, 1993)	Seeks to explain the gains of education and training as a form of investment in human resources (Aliaga 2001), and the main proposition is that people are considered a form of capital for development.	Formal education Competency Advancement/experience Job experience
Dual labour market theory Doeringer & Piore (1971)	Refers to situations in which the need for human labour in certain occupations is reduced or eliminated because of technological advances (Le Roux, 2018).	Dual labour market theory in the South African context primary and secondary market segments.
Consensus Theory (Kerr et al., 1978)	Concerned with technological innovation seen to be the driving force of social change and employability.	Technology and Innovation

Source: Author's own work

2.2.3 Theory of employability relevant to career guidance

This section reviews theory of employability relevant to career guidance.

2.2.3.1 The USEM model of employability

Knight and Yorke (2002) established the Understanding, Skilled Practice, Personal Qualities, Efficacy benefits and Metacognition (USEM) employability model which included skills as a subset of the component of assets. Stephenson's (1998) concept of capability, which is distinctive to an individual's confidence, was influential in the development of the USEM model. Understanding, skills (both subject-specific and generic), efficacy belief (and self-theories in general), and metacognition (including reflection) form the parts of the USEM acronym. Knight and Yorke (2002) described their employability model as one in which self-theories, and by extension, personal traits, influence everything the student (and, by extension, the graduate) performs. Personal traits encompass not only interpersonal abilities, but also how people tackle various activities and problems to succeed. While personal characteristics influence an individual's ability to gain subject understanding and skill development, which leads to metacognition, efficacy beliefs, an individual's capacity to exercise control over potential threats (Bandura 1988), and self-theories, individuals' beliefs

about themselves (Dweck, 2000), shape qualities such as persistence, error tolerance, and problem-solving ability (Knight & Yorke 2002).

Dacre Pool and Sewell (2007) claim that the USEM approach is excessively scholarly and difficult for children and their parents to understand. As a result, they created their own conceptual model of graduate employability, the CareerEDGE model, which was based on both the DOTS and USEM models.

2.2.3.2 *The Career EDGE model of employability*

The CareerEDGE model by Pitan (2016), like the USEM model, incorporates topics of understanding and competencies such as generic skills, self-efficacy, and reflection (Pitan, 2016). The CareerEDGE model adds job and life experience, emotional intelligence, and evaluation to the prior models. The CareerEDGE model indicates that once students have addressed the bottom five components of employability through reflection and evaluation, as well as some 'self' abilities (self-efficacy, self-esteem, and self-confidence), a better path to employability is possible. Reflection and appraisal are essential for employability, a view also supported by Knight and Yorke (2002).

The concept of interpersonal qualities, on the other hand, is conspicuously lacking from the CareerEDGE paradigm (Pitan, 2016). According to research, interpersonal skills are one of the most essential selection criteria for hiring graduates (Lindsay, 2014, 2015; Matthews et al., 2016). Other studies have found that social/interpersonal compatibility and organisational fit are important predictors of a graduate's employability and career success (Hogan, et.al. 2013). Emotional intelligence was included as a higher order component of employability in the CareerEDGE model because it encompasses many of the personal attributes and some of the process skills described in the USEM model (Dacre Pool & Sewell, 2007).

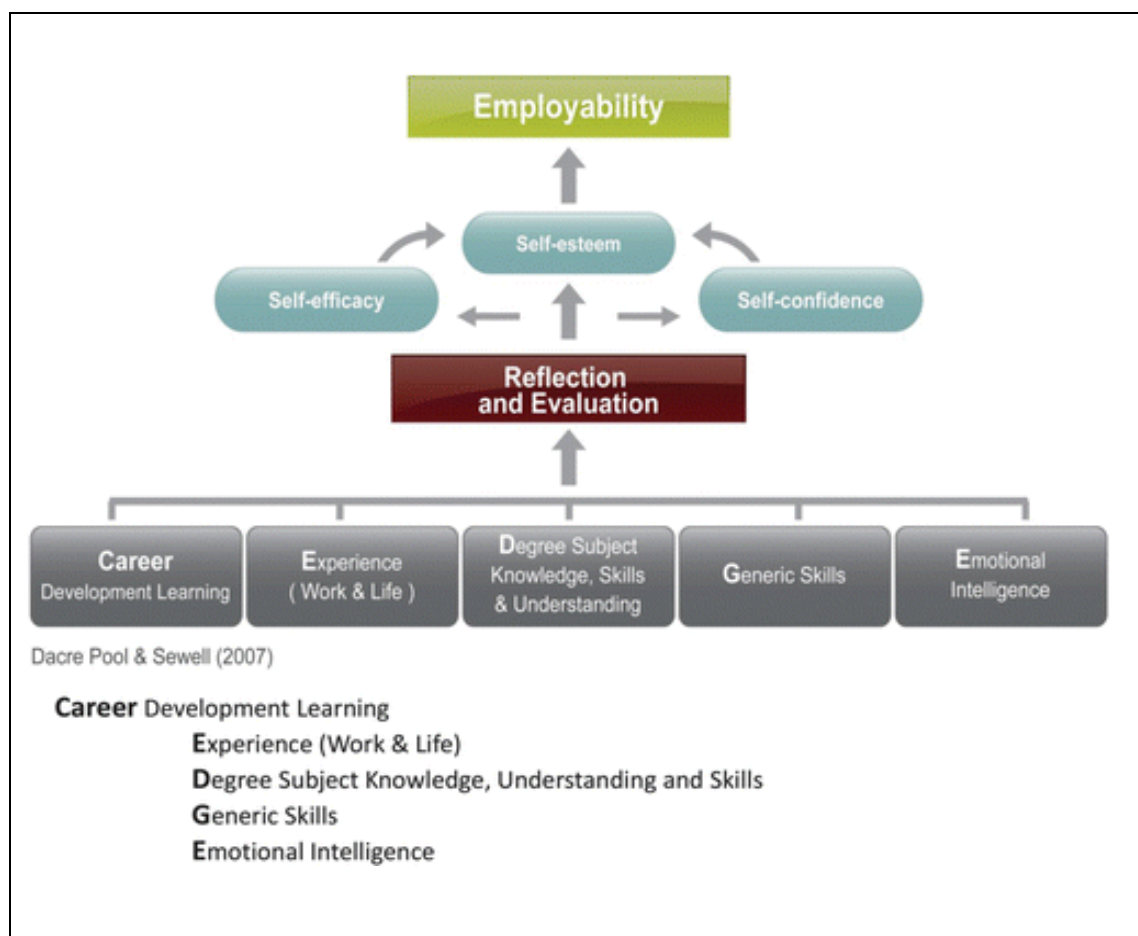
However, because of its importance, integrating interpersonal traits as a stand-alone component in models of graduate employability may be advantageous. Younger or less experienced students, for example, who have yet to develop emotional intelligence, may benefit from being able to add interpersonal aspects while assessing their work-readiness abilities and employability attributes. As a result, interpersonal skills should be included in a comprehensive model of graduate employability (Small et.,al., 2018). Small et al. (2018) concluded that there are several models of employability, with the CareerEDGE model appearing to be the most comprehensive. Even so, interpersonal qualities should be introduced as a component to that model. However, even for individuals who match all the

employability criteria, there is no assurance of work when examining the components of the various models and putting them into effect. Some people have obstacles that make it difficult for them to get work, regardless of their skill set or other appealing aspects of employability.

Figure 2.1 depicts that emotional Intelligence as a key component was the first to be given such prominence by CareerEDGE model and emotional intelligence has the potential to have both a direct and indirect impact on graduate employability through other aspects of employability development.

Figure 2.1

The CareerEDGE Model of Employability



Source: “The key to employability: developing a practical model of graduate employability” *Education & Training* Vol. 49 No. 4, 2007 pp. 277-289, adopted from (Pool and Sewell 2007)

In summary, both the USEM and the career edge model for employability were discussed and the USEM employability model is one in which the student's (and, by extension, the graduate's) self-theories, and consequently, personal qualities, influence all their performance, according to Knight and Yorke (2002). Pitan (2016) developed the CareerEDGE model, which

improves upon earlier models by including evaluation, emotional intelligence, and work and life experience.

2.2.3.3 *Theoretical underpinnings of employer employability competency expectations*

The employer employability competency expectations scale (EECES) was created by Coetzee et al., (2019) to assess adult graduate workers' perceptions of employers' expectations of the employability competencies (knowledge, skills, and traits) that employable graduate workers should possess. The underpinning theory of the EECES (Coetzee et al., 2019) posits that employers' expectations of graduate workers' employability competencies are a critical aspect of people' long-term employability. Coetzee et al (2019) purport four sets of competency requirements that should inform career guidance for employability: gradueness; business/entrepreneurial competencies; personal employability attributes; and attributes of autonomy/leadership.

Graduateness refers to employers' assessment of the quality of personal growth and intellectual development achieved by employees because of their graduate academic studies (Barrie, 2004; Coetzee, 2012). Coetzee (2012) defined the term "student graduateness" as the standard of the graduates generated by the higher education institution as well as the applicability of the graduates' abilities and qualities to the workforce as judged by employers, educators, and students (Coetzee, 2009; Griesel & Parker, 2009). Graduateness suggests that graduates can demonstrate a set of generic transferable meta-skills and personal attributes that employers view as critically important to their businesses and that they therefore expect graduates to have when they enter the workplace, in addition to their discipline-specific knowledge, skills, and values (Coetzee, 2011; Griesel & Parker, 2009; Raftopoulos et al., 2009).

Various authors (Franham, 2017; Moolman, 2016; Sin & Amaral, 2017; Tomlinson & Holmes, 2017) alluded that the ability of a worker to find, use, and become a valuable employee is enhanced by their graduateness. Coetzee (2012, 2018) mentioned that some of the characteristics that employers consider important as indicators of graduateness include the ability to quickly acquire new knowledge; being educated, trained, and proficient in the relevant occupational field; having job-specific knowledge and skills; the ability to apply universal, global knowledge, principles, philosophies, and paradigms to solve job or work challenges; and the ability to work in teams with people from culturally different backgrounds.

The component of business/entrepreneurial skills assesses graduate workers' capacity to use abilities that indicate business acumen and entrepreneurial thought, which leads to innovative ideas and solutions to business challenges (Coetzee et al., 2019).

The personal employability qualities facet assesses personal characteristics and talents that give an individual a competitive advantage in the labour market and are significant for long-term employability (Coetzee et al., 2019).

Lastly the autonomy/leadership dimension assesses graduate workers' ability to display autonomous/independent thinking in self-empowering behaviours, network building, taking leadership, and convincing and influencing others (Coetzee et al., 2019).

The table 2.3 summarises the core elements of employer employability competency expectations.

Table 2.3

Overview of the Elements of Employer Employability Competency Expectations

Dimension	Description	Relevance to career guidance for employability competency
Graduateness Barrie (2004) Coetzee (2012)	Employers' assessment of the quality of personal growth and intellectual development achieved by employees because of their graduate academic studies.	Quickly acquire new knowledge; being educated, trained, and proficient in the relevant occupational field; having job-specific knowledge and skills; the ability to apply universal, global knowledge, principles, philosophies, and paradigms to solve job or work challenges; and the ability to in teams with people from culturally different backgrounds
Business/entrepreneurial skills (Coetzee et al, 2019)	Assesses graduate workers' capacity to use abilities that indicate business acumen and entrepreneurial thought, which leads to innovative ideas and solutions to business challenges	Demonstrate business acumen and entrepreneurial thought that brings new ideas and solutions to business problems

Dimension	Description	Relevance to career guidance for employability competency
Autonomy/leadership (Bates et al., 2019 Coetzee et al., 2019)	Assesses graduate workers' ability to display autonomous/independent thinking in self-empowering behaviours, network building, taking leadership, and convincing and influencing others.	Self-empowering behaviours, building networks with others, taking leadership, and persuading and influencing others
Business/entrepreneurial skills (Coetzee et al., 2019)	Assess graduate workers' capacity to use abilities that indicate business acumen and entrepreneurial thought ideas and solutions to business challenges.	Demonstrate business acumen and entrepreneurial thought that brings new ideas and solutions to business problems.

Source: *EECES (Coetzee, 2018; Coetzee et al., 2019)*

2.2.4 Trends in employability research in the higher education context

Given the pressures on Higher Education Institutions to meet stakeholder expectations and differentiate their products from a crowded market, they are under pressure to generate employable graduates (Pitan & Muller, 2020). In this current environment, it is important to analyse how universities, in general, and South African institutions, are responding to these issues. Pitan and Muller (2020) investigated how engaged and supportive SA universities are of their students through six employability development opportunities (EDOs): curriculum, personal development planning, career development learning, work experience, real-world activities, and extra curricula activities.

Curriculum, according to Donald et al. (2019), refers to the employability development opportunities that provide students with academic or discipline-specific abilities. This is sometimes referred to as "human" or "scholastic capital," and it is classified as "employability as possession" by Okay-Somerville and Scholarios (2017). These abilities, in terms of employability, are those that lay the groundwork for obtaining, keeping, and progressing in a job. While it appears that academic talents have lost their significance in the job market, it is important to remember that the degree class is still generally recognised as a screening tool, a basic requirement, and the first available method of assessing graduates by employers (Jorre de St Jorre & Oliver, 2017; Okay-Somerville & Scholar iOS, 2017, Tomlinson, 2008).

Students must understand, however, that while subject-specific knowledge and academic success are important, employability encompasses much more. Students must combine academic skills with their acquired generic skills and be able to establish linkages between subject-specific skills and practical knowledge in order to differentiate themselves in the labour market and translate their skills and knowledge into future performance (Jorre de St Jorre & Oliver, 2017; Teng et al., 2019, Pitan, 2016b; Tomlinson, 2017). Evidence shows that students in South Africa, as in other Sub-Saharan African countries, are generally engaged with the curriculum. Walker and Fongwa (2017) stated that 94% of the companies they interviewed testified about their graduate employees being well educated and anchored in theoretical knowledge (although from different universities than those examined by Pitan and Muller, 2020).

Students' exposure to work experience is a component of learning that focuses on the application of theory in a real-world setting, and it is a critical mechanism for students to develop a clear link between theory and practice. Work placements, internships, fieldwork, job shadowing, vacation work, self-employment, freelancing, and volunteer and community work activities are all examples of work experience (Jackson et al., 2019, Pitan, 2016b; Pitan & Atiku, 2017;). Finch et al. (2013) and Qenani et al. (2014) found that the work experience gained as an undergraduate has a large and beneficial impact on students' perceptions of employability. According to Qenani et al. (2014), who studied the association between students' expectations of finding work after graduation and other characteristics, getting work experience through internships raised students' exposure to work experience by 250%. This is because professional confidence, which has significant linkages to employability, is fostered by work experience (Finch et al., 2013). Work experience, according to Tomlinson (2017) and Clarke (2018), allows students to form professional networks that can help pave the way for direct access to future employment.

Anand et al. (2016) found that in South Africa, graduates with no work experience are 46% less likely to obtain work than graduates with prior work experience. Practically in all degree programmes, however, there is no synergy between theory and possibilities for knowledge application through work experience among SA undergraduates (Walker, 2015; Ohei & Brink, 2019). Many of the students who took part in Walker's study criticized the curriculum's emphasis on theory, claiming that there were few possibilities for work experience. This supports the sentiments of 85% of employers and graduates polled in Perspectives on employability development by Ohei and Brink (2019), who expressed concern that a lack of work experience is hurting their chances of being hired.

Pitan and Muller (2020) described personal growth planning/a personal development plan (PDP) as the significance of exposing and training students in methods related to taking stock and keeping record of their personal development and achievements to enhance their employability. Furthermore, Ward and Watts (2009) defined personal growth planning as a structured and supported process undertaken by students to reflect and evaluate themselves on their learning experiences and achievements to plan for their personal, academic and career development. Although the person is responsible for their own PDP, the 'structured and supported' components of this definition suggest that universities must provide the structure and support required for successful personal growth planning (Pitan & Muller, 2020).

A personal development plan (PDP) encourages students in responding to and learning from their experiences, identifying areas for growth, and providing evidence of their accomplishments as they progress. As a result, institutions must provide chances for students to reflect on and evaluate their learning experiences (Pitan & Muller, 2020). A PDP is an employability component that is crucial to the development of self-awareness, self-efficacy, self-confidence, and self-esteem, all of which are essential ties to students' better employability (Leong, 2012; Pitan, 2016b). Moon (2004) described in great depth how a PDP can be implemented into a university programme. To date, no research has been conducted to determine the extent to which SA university students are involved in personal growth planning (Pitan & Muller, 2020).

Career development learning refers to career development activities that provide students with required career information, advice, and guidance (Pitan & Muller, 2020). Training on CV preparation, job search, job applications, and interview preparation, as well as self-presentation, communication skills, and work etiquette, are examples of such activities (Pitan & Atiku, 2017; Donald et al., 2019). These activities are critical for employability because they provide students with the skills and competencies, they need to attain their career goals (Pitan & Atiku, 2017; Donald et al., 2019).

According to studies conducted among South African students on their involvement in career development learning, many students are unaware of the presence of student support offices that provide these services, or if they are aware, the support programmes conflict with their lecture schedules (Walker, 2015). Within the South African context, Walker (2015) concluded that the placement office in the sampled universities had not been a major source of support for students, with less than 51% of students believing career development learning (through careers services at their university) was supportive and informative, compared to 36% who

were neutral. This could explain why businesses are concerned about students' interview presentation skills (Walker, 2015).

Real-world activities are all forms of activities that enable students to create links between theoretical academic-based learning and to apply and transfer this knowledge and skills into the workplace (Pitan & Atiku, 2017). Students' visits to local employers, career fairs, official recruitment training, alumni visits to schools to offer presentations about their career pathways and prospects in their companies, and interactive and simulation-based learning are just a few examples of such events. Employers place a premium on graduates who were exposed to these activities as undergraduates because they believe they have practical working expertise and can connect theory to the reality of the job (Pitan & Atiku, 2017).

Employers place a premium on graduates who were exposed to these activities as undergraduates because they believe they have practical working expertise and can connect theory to the reality of the job. Students, like employers, place a high value on real-world activities (Mason et al., 2009; Pitan, 2016a; Jorre de St Jorre & Oliver, 2017; Ehiyazaryan & Barraclough, 2009; Mason et al., 2009; Pitan, 2016a; Jorre de St Jorre & Oliver, 2017). Real-world activities ensure that students feel involved, contribute to increased confidence and a variety of other general abilities, as well as the opportunity to reflect on and evaluate their theoretical talents. Okay-Somerville and Scholarios (2017) and Tomlinson (2017) elaborated on the positive impact of real-world activities on employability by stating that these activities help students develop cultural capital (for example, work culture in terms of values and behavioural standards) and social capital (such as a professional network).

Employers favour graduates who participated in extracurricular activities such as student union activities (if properly controlled by the institution's authorities), sports, religious, charity, arts, and music societies, while at university, according to empirical surveys. This arose from the realisation that involvement in such activities fosters the development of several generic abilities (leadership, communication, and interpersonal connection skills, to name a few) (Lau et al., 2014; Pitan, 2016b). Participation in extracurricular activities helps students build self-awareness, self-confidence, and self-esteem, all of which are important components of improved employability.

Employers may prefer students with an average level of academic achievement if there is evidence of their active participation in extracurricular activities such as debate clubs, student leadership, civic society, or community engagement, according to Walker and Fongwa (2017), who confirmed that students' participation in extracurricular activities is essential. Pinto and

Ramalheira (2017), on the other hand, discovered that involvement in extracurricular activities only results in high students' perceived employability (SPE) when accompanied with excellent academic performance. Despite evidence that involvement in extracurricular activities improves students' employment chances, Walker and Fongwa (2017) found that not all students participate in extracurricular activities or understand the importance of doing so for their career and personal development as well-rounded graduates. Furthermore, extracurricular activities are a distraction that students who are academically weak cannot afford, and for those who live off-campus, transportation and safety may be a burden (Walker & Fongwa, 2017). Students at the University of Technology, especially from the Faculty of Humanities in 2019, felt that the courses that they had enrolled for were not fulfilling to the extent that they would not be able to achieve their intended purpose or desired outcome to be employed after graduation.

Sanders and De Grip (2004) defined employability as the capacity and the willingness to be and to remain attractive in the labour market, by anticipating changes in tasks and work environment and reacting to those changes in a proactive way. According to Coetzee et al. (2019), personal characteristics or features that characterise a person, whether innate or developed, but not normally taught at university, are referred to as employability qualities. Finch et al. (2016), and McArthur et al. (2017) mentioned that these 'soft talents' are frequently in more demand than occupational abilities, giving the individual a competitive edge in the labour market. Employability qualities that employers value include being able to work under pressure, managing and using time efficiently or productively, adapting to changing conditions, following through, delivering results, keeping one's knowledge and skills relevant and up to date, being client or customer service oriented, and managing one's own vehicle (Coetzee, 2018).

The need for a highly skilled workforce to deal with current and future global technology-driven business market challenges is attributed to factors such as the changing economy, increased globalisation, and the need for a highly skilled workforce to deal with the current and future global technology-driven business market challenges (Bates et al., 2019). Coetzee et al. (2019) alluded that employability is seen as part of a new sort of psychological contract, and companies continue to value the necessity of investing in and improving employees' academic qualifications and graduateness, as well as their employability traits, through education, training, and development.

New insights were offered to the employability study literature by Coetzee et al.'s (2019) findings. They addressed the influential role of professional purposeful mindsets such

entrepreneurial orientation and marketability in increasing intrinsic self confidence in acquiring employment. The findings revealed that these two mindsets are psychosocial factors that may promote extrinsic self-confidence in employability in the relationship between graduate requirements and employability traits. Furthermore, Coetzee et al. (2019) mentioned that in order for these motivational conditions to function effectively in raising self-confidence in employability, graduate workers also need to understand employers' requirements for graduateness and desirable employability qualities.

Various researchers around the globe have addressed the need for institutions of higher education to expose students to work integrated learning and Pitan and Muller (2020) mentioned the six employability developmental opportunities (EDOs), namely curriculum, personal development planning, career development learning, work experience, real-world activities, and extra curricula activities. However, the need for proper career guidance advice and psychometric test taking prior to student enrolment is not addressed. Additionally, the needs analysis of the South African labour market and what universities produce must be properly addressed and attended to (Ngema, 2016).

The employer employability competency expectations scale (Coetzee et al., 2019) was chosen for the current study, which aims to investigate the extent to which the relationship between students' career agility, awareness of the world of work, and career interests (antecedents) and their perceptions of complying with employer employability competency expectations (outcome) is mediated by career adaptability.

2.3 WORLD OF WORK AWARENESS

According to Thite (2022), the world of work has advanced significantly over the centuries, from the master artisans of the nineteenth century to the industrial employees of the twentieth, to the digital workers and robots of the twenty-first. Digital innovations, in conjunction with globalization and demographic shifts, have fundamentally changed how we live, work, conduct business, and communicate (Thite, 2022). Coetzee (2022) mentioned that the work environment of the digital age provides more chances to investigate novel and alternative career paths, jobs, and occupations made available by technological advancement (Brown et al., 2018; Coetzee, Ferreira, & Potgieter, 2021a; Deloitte, 2021; Lent, 2018).

Coetzee (2022) defined world of work awareness as the intentional extrinsic career exploration behaviours and cognitions that provide access to knowledge about how work is changing, new jobs and career options, and how well these align with individual career objectives and

interests (Coetzee, et.al., 2021b; Jiang et al., 2019). The pursuit of a personally fulfilling work-life career, as well as the management of career-life transitions and transformations, are all made easier by the (extrinsic) career exploration that is possible in the digital age of work (Jiang et al., 2019). According to Hegedűs (2020), employees should be more diversified, more self-sufficient, and more qualified than ever before to compete in the globalized world's race.

An individual's awareness of the changing nature of work enables them to learn more about potential new digitally driven employment prospects in their field of interest and the new types of skills and knowledge required to be eligible for new jobs and occupations (Brown et al., 2018; Coetzee et al., 2021b; Deloitte, 2021). It makes sense that people's beliefs and emotions about their ideal career paths would be positively correlated with their extrinsic job exploration beliefs about the realities of the workforce.

Coetzee (2022) further alluded that the individual's understanding of the workplace in the digital era provided extra context for the career agility mentality. The positive associations highlighted participants' propensity for epistemic curiosity about how the workplace is changing, leading to career agility external career exploration, self-efficacious career goal setting, and intentional and upbeat career navigation of new chance career and development opportunities provided by technological advancement (Coetzee, 2021a).

2.3.1 Awareness of digital nature of work

Coetzee et al. (2021) described the awareness of digital nature of work as a measure of students' awareness of the impact of the 4IR, technological advancement on job and employment opportunities, and nature of work, including the need for reskilling and upskilling that the digital work sphere requires. According to Coetzee (2022), the term "world work awareness" refers to a person's conscious, intentional thoughts that give them access to knowledge about the nature of work, occupations, and jobs in the modern labour market. Such knowledge includes an understanding of how technological innovation has affected employment and job possibilities as well as the evolving nature of labour (Brown et al., 2018; Deloitte, 2021; Deloitte Insights, 2019; McKinsey Global Institute, 2015, 2016)

Hecker and Loprest (2019) alluded that, because jobs are becoming more technological in nature, digital skills are becoming increasingly important for workers to thrive in the modern workplace. Even jobs that have traditionally not required technology are increasingly requiring it. Much emphasis is placed on specialised digital skills such as programming and information

technology (IT) work, but less specialised (or foundational) digital skills—the ability to use digital tools to complete tasks in a variety of settings—deserve attention given their importance in nearly all aspects of work. However, research shows that many workers and job seekers lack fundamental digital skills and closing this gap will necessitate digital training, particularly for adult learners and workers who have been displaced from their jobs (Hecker & Loprest, 2019).

Training and education, including career guidance, providers must create programmes that teach job seekers and employees the fundamentals of digital literacy (Hecker & Loprest, 2019). Within the South African context, President Cyril Ramaphosa, speaking at a conference (12 April 2021) at the University of Johannesburg where business, academia, and civil society reflected on the past and the next 25 years of democracy, warned South Africans to brace themselves for mass job losses due to technology with the implementation of the 4IR. More jobs will be automated as technology advances, reducing the need for human input. It is not surprising that recent unemployment rate released by Statistics South Africa shows that it rose to 29.1% in the third quarter, the highest level since the Quarterly Labour Force Survey was launched 11 years ago (Tshwari, 2019).

2.3.2 Occupation and job awareness

Occupation and job awareness is described by Coetzee et al. (2021) as the measure of students' awareness of their current state of knowledge about current and potential new digital-driven occupational opportunities in their field of study, and the skills and knowledge they need to qualify for jobs in the digital era work sphere. The rapid adoption of digital technologies around the world is boosting economic growth and expanding opportunities in many cases, but the advantages of technological advancements are not distributed equally among workers globally, according to the World Bank Development Report on Digital Dividends (2016).

Thihe (2022) mentioned that ICT (information and communication technology) and globalisation have brought the world closer together than before. Due to this, talent, capital, and production are being distributed and moved around the world at an ever-increasing rate. As a result, national and business competitive advantages which are largely based on innovation and creative skills have directly increased due to an increase in global economic competition. Technology typically enhances the talents of highly skilled individuals, boosts productivity, and frequently results in increased pay. For low-skilled and middle-skilled

workers, rewards depend on how much technology complements or replaces workers in certain job activities (Thihe, 2022).

According to the Digital Economy for Africa Initiative (Fall, 2022), technologies have the potential to change the current pattern of (incremental pace of economic and social advancement) in Africa by opening new avenues for rapid economic growth, innovation, job creation, and access to services that were previously unthinkable. However, there is also a widening digital divide and more serious cyberthreats, which must be addressed. Most people still lack access to the internet. Too few people have digital IDs or transaction accounts, preventing them from using essential services and participating in online commerce. To increase efficiency and sales, conventional enterprises are only slowly adopting digital technology and platforms. Digital entrepreneurs find it difficult to secure investment. Few governments are purposefully and methodically funding the growth of digital services, entrepreneurship, infrastructure, and skills (Digital Economy for Africa Initiative Fall, 2022).

According to the digital transformation strategy for Africa (2020-2030) presented at the 32nd African Union Assembly of Heads of State and Government (February 2019), Africa's youth need to be equipped with the digital skills, access to markets, and technology necessary to survive in an increasingly digitalized global economy if they are to become today's innovators, entrepreneurs, and leaders. Governments must come up with more nimble and efficient ways to provide services and communicate with the public. To engage with the hundreds of millions of customers who were previously out of reach due to geography or low income, businesses must use digitally centered business strategies.

2.3.3 Continuous upskilling and learning awareness.

According to the World Economic Forum's (WEF, 2019) report on 'the Future of Jobs', work and jobs as we knew them are rapidly changing. The impact of technological and other changes is rapidly reducing the shelf-life of workers' skill sets. The usefulness of work skills and knowledge is dwindling all the time. This phenomenon creates significant challenges for employees as well as industries and there is a growing realisation that we must all continue to 'learn to earn' to maintain employability and the financial means to live our lives (Bersin, 2015).

The focus for the 2022 World Economic Forum (WEF, 2022) was the future of work, jobs and skills. CEO of Adecco Group Alain Dehaze stated that the pandemic hastened the transition to digital, and the Great Resignation or Great Re-evaluation has exacerbated the skills deficit. Additionally, the CEO of technology consulting firm Capgemini SE, Aiman Ezzat (WEF, 2022),

stated that businesses must do more to "massively reskill the digital economy" to keep up with demand. Finally, Aiman Ezzat, CEO of technology consulting firm Capgemini SE (WEF, 2022) indicated that when we discuss electric vehicles, that's digital; when we discuss the transition to a sustainable economy, that's digital; and when we discuss the energy transition, that's digital. Not only are procedures being automated, but new platforms and businesses are also being developed, which has boosted the demand for technologies.

As shifting to a digital economy is one of the future drivers of economic growth, it is slowing down the transition because of a lack of skilled workers in the area, which could hinder the green transition and help the global economic recovery, (Thomsen et al., 2022). According to Zainab Shamsuna Ahmed, the Nigerian Minister of Finance, Budget, and National Planning of (insert date), unemployment in their country generally high. The minister further indicated that 60% of the population is under 35. The said young people are utilising ICT tools to create jobs for themselves in the digital economy with assistance from government.

Siemens AG's Chief People and Sustainability Officer, Judith Wiese, stated at the World Economic Forum (WEF, 2022) that they are attempting to determine what skills are genuinely required. How much of that talent truly resides on either the inside or outside of the company? How competitive is the work market here? What are some of the upcoming demographic changes? Once they have that information, will be translated into learning routes for specific people in an effort to translate the big news of talent shortage and upskilling requirements into practical road maps for the various job profiles.

Steel (2019) mentioned that with continuous advancements in automation, robotics, machine learning, globalisation, and disruptive business models, the skills, behaviours, and knowledge required of employees are rapidly evolving and becoming more complex and multi-disciplinary. Continuous upskilling of workforce capabilities is increasingly recognised as critical to workforce agility and value. As a result, the abilities that determine employability are constantly changing over time. An organisation reskilling or upskilling of its workforce results in a fully developed, well-trained workforce and improves the capabilities of its employees. It not only increases the organizations' revenue, but it also improves retention. At a time when technology is constantly improving and pushing for change in the workplace, it is more important than ever for employees to ensure that their current skills are relevant (Chakma & Chaijinda, 2020).

According to McKinsey Global Institute report (18 February 2021), businesses have typically managed costs and reduced risk during recessions by implementing automation and revamping work processes, which lower the proportion of workers engaging primarily regular

tasks. Two-thirds of the 800 senior executives we surveyed globally in July 2020 who were involved in business stated they were increasing their investment in automation and AI either somewhat or significantly. By June 2020, China's robots' production had surpassed pre-pandemic levels. Many businesses installed automation and AI in warehouses, supermarkets, call centers, and industrial facilities to minimize labour congestion and handle demand spikes. According to research, work environments with high degrees of human connection are anticipated to have the highest acceleration in the adoption of automation and AI. These automations use cases all share the correlation with high scores on physical closeness (McKinsey Global Institute report 18 February 2021).

According to McKinsey Global Institute report (28 November 2017), more than 375 million workers may be required to completely change their skill sets by 2030. This would occur because of newer technologies such as digitization, artificial intelligence (AI), and automation disrupting the work environment. As a result, many employees are focusing their efforts on obtaining additional degrees and certifications in these technologies, either through self-financing or by taking out loans for short-term courses (Chakma & Chaijinda, 2020). The (Future of Jobs) states that the nature of work and jobs as we once knew them are changing quickly. The usefulness of workers' skill sets is being quickly diminished by the effects of technological and other changes.

2.4 CAREER GUIDANCE FOR THE DIGITAL ERA WORK WORLD

Coetzee (2007) proposed the career invention model, stating that the contemporary career is circular, and individuals can change the nature of their career paths. Career guidance for students' digital world of work awareness can be enhanced by applying the career invention model introduced by Coetzee (2007). The career invention model proposes that individuals no longer rely on the environment or organisations to provide them with jobs; rather, they are the ones who co-create new alternative forms of work or employment through their creativity and talents. The cycle of career invention constitutes three steps, namely: 1. Self-exploration; 2. Exploration of career possibilities; and 3. Experimentation with various career possibilities (Coetzee & Schreuder, 2021). Therefore, based on the career invention model (Coetzee & Schreuder, 2021), students can be guided to raise their awareness of the digital era world of work through the following:

- By ensuring proper self-discovery, students can become more fully aware of their potential future selves, talents, needs, desires, skills and aptitudes, and career interests.
- Students can gain insight into their career values and career interests and explore possibilities and the options available in the marketplace.
- Students should also start thinking about how they can make a career for themselves by exploring various options, such as starting their own business.

Finally, students must understand the requirements of various career paths and what they still need in terms of skills, knowledge, education, and experience to meet those requirements. A greater understanding of themselves and the opportunities that the work environment provides can assist them in prioritizing options and setting specific career goals in terms of what they want to pursue in the short and long term.

Siddiky and Akter (2021) mentioned that one of the most difficult problems that a student faces after graduation is deciding on a suitable career, which is defined as the sequence of a person's various roles and work experiences over time. For example, most public and private universities do not have career guidance programmes that could link students to the labour market and as a result, students frequently choose careers without adequate knowledge of career information and labour market conditions. A successful career is largely dependent on careful career planning, which entails rationally selecting a career path and job from among the available alternatives and implementing appropriate career readiness strategies (Siddiky et al., 2021). Career guidance and counselling can be used to inform individual and organisational decision-making processes (Hoff et al., 2022). Typically, career guidance and counselling can be used to assist people in selecting educational and work environments in which they can express their interests and achieve a good fit.

Gibbons et al. (2020) conducted a study in the United States of America and mentioned that career readiness and college readiness are essential components of school experience, and school, career, and academic counsellors play an important role in postsecondary success. The American School Counselor Association (ASCA, 2012), for example, recommended that school counsellors address college and career readiness as part of a comprehensive school counselling programme. Using core curriculum instruction allows for the presentation of

information about postsecondary options to all students, as well as the development of skills and awareness to increase success.

Gibbons et al. (2020) further mentioned that rural students from underrepresented groups in higher education frequently require specialised assistance throughout their career and college planning. According to Pollard and Jacobsen (2017), students from rural regions face greater socioeconomic disadvantages than the rest of the country because in their educational and vocational pursuits they generally face challenges such as being from a low socioeconomic status, long travel times to school, inadequate education, and unemployed parents, putting students in these regions at a disadvantage for achieving educational goals (Pollard & Jacobsen, 2017).

However, a study by Ali and Saunders (2009) discovered that career self-efficacy and outcome expectations predicted career aspirations and that individuals will stop depending on their surroundings or organisations to give them work; instead, they take the initiative to use their creativity and talents to jointly develop new alternative kinds of work or employment. For the TUT (Tshwane University of Technology) students it implies that the digital world of work requires them be more innovative and they should also start thinking about how they can make a career for themselves by exploring various options, such as starting their own businesses.

2.4.1 Career theories informing career guidance in the digital world of work.

The social cognitive career theory (Lent et al., 1994) and the planned happenstance learning theory (Krumboltz, 2009) are two theories that deepen understanding of career guidance in the digital era work world.

2.4.1.1 The social cognitive career theory (SCCT)

The social cognitive career theory (SCCT: Lent et al., 1994) is one of the most extensively studied theories of how people develop career-related interests and goals. Specifically, barriers and supports in the immediate environment predict interest in and intentions to pursue various career paths, as do beliefs that the individual can successfully pursue those paths and that doing so will have benefits. According to Gibbons et al. (2020), the SCCT theory predicts that students who are exposed to college-going role models, have opportunities to learn about postsecondary educational options, and are given tools to overcome barriers to postsecondary education will have greater confidence in their abilities to pursue postsecondary education,

greater beliefs in the value of postsecondary education, and thus more interest in attending colleges.

Lent and Brown (2017) mentioned the relevance of SCCT to the career development of a diverse range of people (e.g., students of colour; those facing economic challenges; lesbian, gay, bisexual, and transgender [LGBT] workers; international students and workers) and to social justice issues (e.g., including underrepresented people in STEM fields); including understanding the career needs of the unemployed; management of roles in the service of gender equity. In addition, the SCCT looks at gender, race/ethnicity, sexual orientation, culture, and socioeconomic status in the context of work, academic and career interest, choice, and performance (Lent & Brown, 2017). Lastly, the SCCT theory was created to better understand satisfaction and well-being in school and at work (Lent & Brown, 2006, 2008). The SCCT model looks at how people manage a variety of adaptive career behaviours throughout their lives (e.g., decision making, job searching, role transitioning: Lent & Brown, 2013).

The SCCT theory (Lent et al., 1994) emphasizes that students who are exposed to college-going role models, have the chance to learn about postsecondary educational options, and are given resources to get over postsecondary education barriers will have greater confidence in their capacity to pursue postsecondary education, greater beliefs in the value of postsecondary education, and consequently more interest in going to college.

2.4.1.2 Planned happenstance learning theory in the context of the digital world of work

Principles of the planned happenstance learning theory (Krumboltz, 2009; Mitchell et al., 1999) can be used as a way of raising awareness of pursuing careers in a turbulent, uncertain world of work. The theory is an evolution of social learning theory (Krumboltz, Mitchell & Jones, 1976), which holds that career choice is influenced by genetic and environmental factors, as well as learning experiences in the environment. In other words, happenstance refers to how people learn about careers and develop career interests because of planned and unplanned events. The notion of planned happenstance teaches students to embrace unplanned events as desirable and necessary. It is critical for today's careers to assist students in developing and capitalising on this unpredictable ability—they must learn how to make decisions and act throughout careers that may be constantly changing due to rapid technological evolution (Valickas et al., 2019).

Planned happenstance theory further emphasizes that while exploring values, interests, personality, and skills can help individuals understand their options, it should not be used to

match people to specific careers. (Krumboltz, 2009). Career centres and practitioners can use happenstance as a career guidance principle in a variety of ways. According to Dey and Cruzvergara (2014), networks and communities, in addition to traditional career centre activities such as networking, career events, and informational interviews, can help with happenstance learning in career guidance. For students, the concepts of chance and taking action to advance their careers can be both challenging and exciting. Students frequently accept this idea only after discussing their experiences or after achieving new career success as a result of an apparently unplanned event (Dey & Cruzvergara, 2014). Research revealed that individuals with high levels of planned happenstance attributes also exhibited high levels of career ready behaviour, which was associated with high levels of self-belief that they could successfully complete tasks connected to making successful career decisions (Cha-young, 2015).

It is important to note that in this study principles of planned happenstance learning theory deepened the understanding of career guidance in the digital era of work. The philosophy of planned happenstance theory introduced in this section encourages a process-centered perspective that emphasizes an individual's proactive behaviour to seize chances from unexpected circumstances rather than just accepting these happenings as always favourable. Unexpected events, according to Mitchell et al. (1999), are opportunities that turn out to be advantageous even though they were first undesired or unexpected (Son, 2009).

2.5 CAREER GUIDANCE SERVICES FOR UNIVERSITY STUDENTS

According to the 2021 revised edition of Careers Net (<https://careersnet.co.za/>), a South African job portal, effective career guidance can assist students to reach their full potential, economies to becoming more efficient, and societies in being more equitable. Career guidance offers individualised, unbiased, and timely information and support to help students make important life decisions (UNESCO digital library, 2021). According to the Organization for Economic Cooperation and Development (OECD, 2016), career guidance serves as a catalyst for the development and nurturing of human talent to drive innovation, creativity, and competitiveness. It allows for the smooth navigation of digital and green transitions, as well as the turmoil of post-COVID economies. Lastly career guidance can aid the implementation of lifelong learning techniques and active approaches to labour market participation (OECD, 2016). This section reviews some of the typical type of career guidance services offered by universities.

2.5.1 Career services provided by Tshwane University of Technology

The Directorate of Student Development Services at Tshwane University of Technology (TUT) does offer career counselling; however, it is not mandatory for students to consult or even to attend any career guidance workshops. Career information consultations are freely available; however, they are a one-hour information session where career possibilities are discussed, and no testing is involved in the discussions. The prospective students choose courses for the sake of studying and receiving the National Student Aid Funds and when they make qualification choices nobody guides or even counsels them prior to their decision. If their intended qualification choice is full, they choose whatever comes their way. However, the two departments of Integrated Communication and Journalism based at the North campus do evaluate successful and accepted students as to whether they are fit to study the selected qualification, but this is not practiced in the entire faculty/university (Student Development Directorate, TUT website, 2020).

2.5.3 Career services offered the Cape Peninsula University of Technology

The academic support services and career development activities are offered in the form of workshops and webinars, through the course of students' studies at CPUT. These are aimed at assisting students in the development of important skills to support their academic performance and integration into their professional career life. Workshop themes offered include academic enhancement. Topics include balancing personal and academic life, dealing with family expectations and setting boundaries for studying, dealing with distractions and effective management of time and personal resources, dealing with stress and procrastination, maintaining motivation and momentum in your studies. Career preparation, topics include CV writing, job search skills, preparing for an interview, how to identify and display their strengths through their CVs in the interview. Like all the other universities of technology it is not mandatory for students to consult or even to attend any career guidance workshops. They can book an appointment for a counselling session via email or follow any of their social media pages on Facebook and YouTube (Academic Support & Career Development, Cape Peninsula University of Technology, 2024).

2.5.3 Career services provided by the Durban University of Technology

The Career Resource Centre houses up-to-date and relevant career-related material. Its principal duty is to assist registered and prospective students in their job search. They also include services like specialised career information on national and international courses and qualifications, bursary and scholarship information, work skills information, company

information, economic and job market information, computer access for CV writing, email and internal access for job information and applications. however, it is not mandatory for students to consult or even to attend any career guidance workshops and there is no need to book an appointment they just pop-in and use the services on a need basis (Career Resource Centre, Durban University of Technology, 2024).

2.5.4 Career services provided by Wits University

A career counselling session is a face-to-face counselling session with a career practitioner. The aim of the career counselling session is to help individuals identify strengths and areas for development to explore areas of self-awareness, career decision making and career development. Client interests and possible career paths are explored during the career counselling session. Career counselling sessions are available to Wits students, prospective students as well as individuals dealing with mid-career change. Career counselling sessions are offered by appointment. Appointments can be booked at the counselling & career development Unit (CCDU) Reception. There is also a career questionnaire that prospective students must take but the researcher is not sure whether it assists students to make well-informed career decisions (CCDU, Wits University, 2021). This questionnaire was developed to assist prospective students to identify career fields suited for them. They must first complete the questionnaire by selecting a tick to statements they like, and a cross to statements that they don't like or not sure about. Once the questionnaire is completed the results will be displayed showing their fields of interest. They will then select these fields to explore occupations and study opportunities. The results will be saved automatically in their profile (CCDU, Wits University, 2021).

2.5.5 Career services provided by the University of South Africa

The Directorate of student counselling and development at the University of South Africa provide E-guidance and career and employability counselling services to prospective and current undergraduate and postgraduate students regarding career decisions, qualification and subject choices and orientation to studies at Unisa. The students can see a counsellor or academic literacies facilitator in person. Career and academic-related workshops are offered at each centre. Career- and academic-related workshops are offered at each centre. Contact the centre closest to students to find out about the programme. They can also speak to a counsellor telephonically (DSCD, Unisa, 2021)

In conclusion, based on the different approaches followed or practiced by the above-mentioned universities globally and locally, it is evident that it is not mandatory for universities to advise, guide and counsel students on qualification choices and whether qualification choices are linked to personal career interests prior to their enrolment in various study disciplines.

Table 2.5 summarizes the core career guidance services offered by the universities discussed in this section.

Table 2.4

Career Guidance Services for Students

	Typical career guidance services	Core Aspects	Limitations	Advantages
Tshwane University of Technology	Full comprehensive Career counselling Assessment Evaluation of the Accepted/successful Students	Biographical questionnaire Aptitude test Interest assessment Personality assessment Detailed feedback session A written report	Optional and not applied & given the attention it deserves to reach the desired goals. Does not apply to all the departments within the faculty/university.	Career information is freely available. Career counsellors are available by appointment
	Typical career guidance services	Core Aspects	Limitations	Advantages

<p>Cape peninsula University of Technology</p>	<p>Offers career advice. Individual counselling Wellness Programmes Peer helper services Online Resources for students</p>	<p>Suitable careers and related courses of study, based on information about their personality, values, interest and abilities. Explore different courses and career options if they are considering a course or career change or want to enrol for further or postgraduate studies.</p>	<p>Students must take the initiative</p>	<p>Students are allowed to utilise the resources to help support their search and encourage them to connect with the unit. Career information is freely available. Make use of the official social media pages.</p>
<p>Durban University of Technology</p>	<p>Services are available to registered students. Prospective students Learners from school communities Graduates and Alumni</p>	<p>career counselling and in-depth career assessments These assessments assess ability, personality, interests, values, and study habits. Information gained from these assessments is integrated and used to assist students in making informed career decisions. Career assessments are free to all DUT students and are also offered at a reasonable price to nonregistered or prospective students. Self-report questionnaires The centre utilizes questionnaires such as the PACE assessments that simply ask students questions about what they like to do (abilities/ interests) and match their</p>	<p>Students must take the initiative</p>	<p>Just pop-in and use the services on a need basis</p>

results to relevant careers and study opportunities.

Work readiness workshops.

CV writing workshops.

Economic and job market information

National and international courses and qualifications

Scholarships and bursary information

As well as subject choice for grade 9 learners

	Typical career guidance services	Core Aspects	Limitations	Advantages
Wits University	Face-to-face counselling session with a Career Practitioner Career counselling sessions are available to students, prospective students as well as individuals dealing with mid-career change	Support individual students to identify areas of strengths and areas for development, self-awareness, career decision making and career development. Client interests and possible career paths are explored during the career counselling session.	Career counselling sessions are offered by appointment. It is not mandatory for to advise, guide and counsel students prior to their enrolment in various disciplines.	Sessions are available to Wits students, prospective students as well as individuals dealing with mid-career change for free of charge. After completing the questionnaire, the students' profile will be created and saved for future use. Counsellors are available in person, online and telephonically. Workshops are offered at most of the Unisa campuses worldwide.

	Typical career guidance services	Core Aspects	Limitations	Advantages
University of South Africa	Can visit a counsellor or academic literacies facilitator in person. Career and academic-related workshops are offered at each centre workshops.	Offers E-guidance and counselling service to prospective and current undergraduate and postgraduate students regarding career decisions, qualification, and subject choices and orientation to studies at Unisa	It is not mandatory for to advise, guide and counsel students prior to their enrolment in various disciplines.	Counsellors are available in person, online and telephonically. Workshops are offered at most of the Unisa campuses worldwide.

Source: Author's own work

2.6 SOCIO-DEMOGRAPHIC FACTORS INFLUENCING CAREER GUIDANCE FOR EMPLOYABILITY

This section reviews some of the socio-demographic factors that may influence the construction of a career guidance framework for employability competency.

2.6.1 Age

Generally, University of Technology students are young emerging adults. Arnett (2000) mentioned that for most young people in industrialised countries, the years from late adolescence to early adulthood (17 to 28/30 years) are years of significant change and significance. During this time, many young people, as emerging adults, obtain the level of education and training that will serve as the foundation for their future earnings and professional accomplishments. Arnett (2000) further indicated that the late teens to mid-twenties are the most volitional years of life for most people. Cultural influences, on the other hand, structure and sometimes limit the extent to which adult commitments and responsibilities are postponed while role experimentation, which began in adolescence, continues, and intensifies. The novice phase of development, according to Levinson (1978), is defined as ages 17 to 33, with the overarching goal of moving into the adult world and establishing a stable life structure. According to Levinson (1978), the young person goes through a lot of change and instability while trying to figure out what kind of love and work they want in the process of establishing a life structure.

Mitra and Arnett (2021) conducted, for example, a study among young emerging adults from India and in their findings as an adult in most civilizations, one is expected to take responsibility for achieving goals by successfully navigating society and culture. Family responsibilities have long been acknowledged as a major expectation for people in collectivist cultures like India (Bejanyan, Marshall & Ferenczi, 2014). Furthermore, Mitra and Arnett (2021) indicated that responsibility toward family has the most important perceived effect on people from collectivist cultures' life choices. This reflects the strong attachment that collectivist young adults have to their parents. It demonstrates that an individual's personal life choices will not interfere with their ability to care for their parents. Being responsible toward family members entails being accountable for one's parents' well-being and financially, as well as maintaining whatever assets they may possess.

2.6.2 Gender

Bimrose et al. (2014) mentioned that women's labour force participation patterns in labour markets around the world are well-documented. They are noticeably different and unequal to men. It is argued here that effective career guidance and counselling for women requires an understanding of their labour market experiences, including the impact of structural factors (such as gender, age, and ethnicity) on learning and work pathways over the course of life (Bimrose et al., 2014). According to Yellen (2020), previously, due to social conventions and the types of occupations that were available to them, many women had to stop working after getting married. She made the point that it is still important to consider whether structural problems, such as the difficulty of balancing work and family obligations, may be impeding women's career advancement.

Swanepoel (2022) noted that despite advancements in desegregation and patriarchal attitudes toward gender differences, women are frequently still marginalised and unable to fully access resources and training that would enable them to pursue their career goals and work in fields that have historically benefited or been more favourable to their male counterparts. A significant finding by Bimrose et al. (2014) was women's lack of formal career support and guidance throughout their careers, particularly during transition periods. These women received almost entirely informal career support from friends, colleagues, and family. In conclusion, Bimrose et al. (2014) mentioned that there are, of course, a variety of explanations. At the outset, there is a schism between the women's stories and the philosophical position underpinning many of the dominant psychological theories in practice, which emphasise agency, autonomy, and choice. Rather, these stories show how they are

embedded in complex contexts, emphasizing the usefulness of holistic and narrative approaches to career guidance (Brimrose et al., 2014).

2.6.3 Qualification choice based upon career interest.

Career interests are a strong predictor of student decision-making in terms of choice of qualification studies (Curran, 2019). According to Kurtis (2021), lack of early career guidance leads to students making the wrong career decisions including choice of qualification studies, which is one of the main reasons they do not finish their selected degree. A crucial determining element in a student's prospects of success at university and in their later employment is choosing a study programme that is in line with their career interests, career values and needs, passion, purpose, and academic competence. To choose the right course of study, it is crucial for students to get a sufficient level of self-awareness as well as knowledge of the present state of the job market (Tekkol & Demiriel, 2018).

According to Wong et al. (2011), career interests are defined as patterns of likes, dislikes, and indifferences regarding career-relevant activities and vocational choices. Interests should not be rewarded with extraneous benefits, even if they are not stated directly. Interests, then, refer to the amount to which one can find delight merely by partaking in the relevant activities, regardless of the associated benefits. As a result, prior research has shown that when people have jobs that involve activities that align with their interests, the subsequent job outcomes, such as job satisfaction, are more positive (e.g., Holland, 1997, Wong & Wong, 2002).

Holland (1978) discovered that individuals in need of guidance with job decisions can be helped by being aware of how much they resemble the following six ideal vocational personality types: Realistic (R), Investigative (I), Artistic (A), Social (S), Enterprising (E), and Conventional (C). Work settings can also be grouped based on how closely they resemble six model work environments. People with similar occupational personality types tend to occupy workplaces because people look for surroundings that allow them to exhibit their interests, talents, attitudes, and beliefs as well as take on fascinating problems and agreeable positions (Holland, 1978). According to Jüttler et al (2020), it is considered that each person has varying degrees of interest in all six Holland theory aspects, which when combined provide a specific interest profile. The second assumption is that the environments of individuals may be represented in terms of the six interest kinds. The activities and duties that are prevalent and usual for a certain occupation, firm, field of labour, or school type, as well as the individuals who work and act in them, define environments.

2.6.4 Demographic (urban/rural) and need for career guidance.

Pillay (2020) mentioned that services for career advice and development must be prioritised, especially considering Africa's history of colonisation and poverty, where people of colour were mostly considered to be manual laborers. The effects of poorly informed career decisions are a concern given decolonization attempts and opening greater possibilities. Young individuals and their families who are harmed by poor or non-existent career planning endure economic and psychological hardships. For example, although Sweden is wealthy, unequal resource distributions continue to affect students' access to higher education and job choices, with some of these variances tied to rural/urban inequalities. Career advice services must recognise the altered workplace to encompass the informal employment sector considering the local and global economic trends, job markets, and youth unemployment. Most essential, career advisory services must be accessible to everyone, not just those who qualify (Pillay, 2020).

Matjie and Coetzee (2018) investigated the socio-ecological (i.e., gender and geographical location) influences on the career orientations of emerging adults, and the findings revealed that geographical location predicted interest in entrepreneurial, general management, and service-type occupations for those from rural rather than urban areas. Interest in technical and functional career anchors was predicted by urban location. Occupational preferences among South African emerging adults appeared to be gendered and geographically linked, implying social context socialisation implications.

It has been noted that various demographic factors do have an impact on career guidance in the South African context and around the world. As noted by Pillay (2020) even post the apartheid era, children of colour had no access within the school system to direction and guidance regarding choice of careers and secondary school preparation. For example, when it was time to select subjects in the secondary school years, most black children had little or no guidance on the choices to make in relation to career preferences or how these would benefit or hinder their career goals. This was compounded by the fact that most black parents were not equipped to adequately advise their children on career planning.

It must be acknowledged that, particularly in rural and urban areas, most South African schools continue to lack adequate career guidance and counseling services (Pillay, 2020). Additionally, Pillay (2020) noted that despite the country's transition to democracy a little over 25 years ago, the general state of many schools, especially those in non-urban communities, is extremely poor. Considering other challenges confronting the youth, such as the youth labour market's

contraction and rising education costs, the need for career guidance in the nation is greater than ever.

2.7 CHAPTER SUMMARY

Chapter 2 critically reviewed the changing world of work and resultant employer employability expectations for graduates from a theoretical and career guidance perspective. The changing awareness of the world of work and resultant employer expectations for graduates and workers' employability competency from a career guidance perspective were also reviewed. Furthermore, the researcher focused on the digital post-pandemic world of work, its impact on career guidance for graduate employability for university of technology students, and finally the socio-demographic factors that influence career guidance for employability.

Chapter 3 will critically review recent research literature on the constructs of career agility, career interests and career adaptability.

CHAPTER 3: CAREER AGILITY, CAREER INTERESTS AND CAREER ADAPTABILITY

Chapter 3 discusses the three research variables, namely, career agility, career interest and career adaptability. These variables are regarded as antecedents of employer employability competency expectations and the related research theories.

3.1 CAREER AGILITY

The conceptualisation of the career agility construct, as well as the underlying theory relevant to this research, will be discussed in this section.

3.1.1 Construct conceptualisation

Career agility has become a popular media construct for assessing individual's adaptive readiness or willingness to adapt and respond to change (Konstant, 2020; UBC, 2020). Career agility, according to Coetzee et al. (2022), defines individuals' evolving psychological career development demands as a result of their adaptability to the changes that quick technological innovations bring to the nature of work and careers. Coetzee et al. (2020) describe career agility as the willingness or adaptive readiness to proactively adapt to technological change and engage in continuous learning, which may help to trigger the use of career adaptability resources.

The career behaviour and needs of individuals are profoundly affected by the currently more turbulent workplace conditions. Individuals have become more career agile, questioning the permanence of their positions within a company (Coetzee et al., 2021; Ferreira et al., 2022). Career agility considers the propensity of individuals to adapt to changes in work and careers brought about by rapid technological advancements to explain why their psychological career development needs change over time (Coetzee et al., 2021; Konstant, 2020).

Career agility alludes to an individual's psychological need to maintain career success and employability by adapting to a rapidly changing career environment in a responsive, self-regulated manner (Andela & Van der Doef, 2019; Coetzee et al., 2021; Hall et al., 2018; Sampaio et al., 2021). Individuals who are career agile confidently take advantage of and seek out new career development and upskilling opportunities. These in turn, enable meaningful outlets for creative self-expression of needs, interests, and values that have been enabled by technological advancement (Andela & Van der Doef, 2019; Coetzee, 2021, Hall et al., 2018; Sampaio et al., 2021).

The positive affective state associated with career agility, according to popular media, improves the career fitness and motivation that is required for an individual to succeed (Andersen, 2020). Popular media also claim that career agility boosts motivation, confidence, and resilience. Individuals with high levels of career agility tend to be more confident in their career decisions; they are eager to develop career action plans, gain new perspectives on the job search process, and they are able to identify a wide range of professional options and possibilities that they aspire to pursue (Konstant, 2020; UBC, 2020). In their findings, Coetzee et al (2022) suggested that individuals who have a strong psychological need to adapt to and navigate changing work contexts for new career opportunities (i.e., career navigation), as well as a desire to actively set career goals for continuous upskilling, learning, and growth (i.e., agile learning), are likely to be obliged display a hardworking attitude and commitment to the brand of their organisation, to be engaged, to participate meaningfully, and to make a positive contribution in pursuance of the purpose, vision and success of their organisations.

The career agility construct can be regarded as a potentially important career construct for TUT (Tshwane University of Technology) students because, according to Coetzee (2021), career agile individuals possess several characteristics. These are technological adaptivity (i.e. active readiness to capitalise on new career development opportunities enabled by technological innovation), an agile learning mindset (i.e. intrinsic motivation to actively set and manage goals for capability-expanding learning opportunities), and proactive career navigation of the changing digital-driven employment market (i.e. ideation of new job and career opportunities and navigating a changing digital-driven employment market).

Career agility reduces job insecurity in uncertain work environments, boosts self-efficacy in managing one's own identity, and sets new standards for one's own career (Coetzee et al., 2021; Guan et al., 2021). In the context of the Fourth Industrial Revolution (Industry 4.0), career agility is valued because of technological innovation. Industry 4.0 is said to bring new occupations, new industries and fundamentally new ways of working that require career agile behaviour (Hirschi, 2018).

Based on the various views of career agility discussed in this section, the core definition used in the current study was derive from Coetzee et al. (2021). This construct career agility explains individuals' shifting psychological career development needs in the light of their adaptation to the changes that accelerated technological developments introduce to the nature of work and careers.

3.1.2 Theory on career agility

In this section the broaden-and-build theory, the planned happenstance learning theory and the theoretical underpinnings of career agility (Coetzee, et al., 2021) are discussed to further elucidate the construct of career agility.

3.1.2.1 *Broaden-and-build theory.*

According to the broaden-and-build theory of Fredrickson (2004), individuals have the capacity to broaden their mindsets. This has an indirect and a long-term adaptive benefit to facilitate the building of enduring psychosocial resources for adaptation purposes. Theoretically, the facets of career agility are thought to act as motivational energisers of adaptivity, thus promoting the development of personal resources needed to achieve career goals (Coetzee et al., 2020). Furthermore, the broaden-and-build theory (Fredrickson, 2004) proposes that positive emotions trigger environmental engagement and an intrinsic motivational drive to actively participate in activities that are often adaptive for the individual in evolutionary terms. Adaptive readiness provides the offset to willingly exhibit the adaptive bias to approach and explore novel objects, people, or situations because of the positive affective states embedded in it (Fredrickson, 2004). High levels of positive affect, according to the broaden and build theory, lead to a broadening of perspective, which in turn causes higher engagement with opportunities and relationships, ultimately leading to the development of favourable cognitive and behavioural resources and skills. These abilities and resources could show up as the kind of positive qualities that the positive psychology approach explores and articulates (Stanley & Schutte, 2023).

According to popular media, the positive affective states associated with career agility improve individuals' career fitness, adaptive readiness, and motivation to succeed (Andersen, 2020). Coetzee et al. (2022) indicated that career agile individuals have a repertoire of positive emotions and psychological resources enabling them to confidently capitalise on and seek new career growth, and upskilling options to find meaningful outlets for creative self-expression of needs, interests, and values enabled by technological advances.

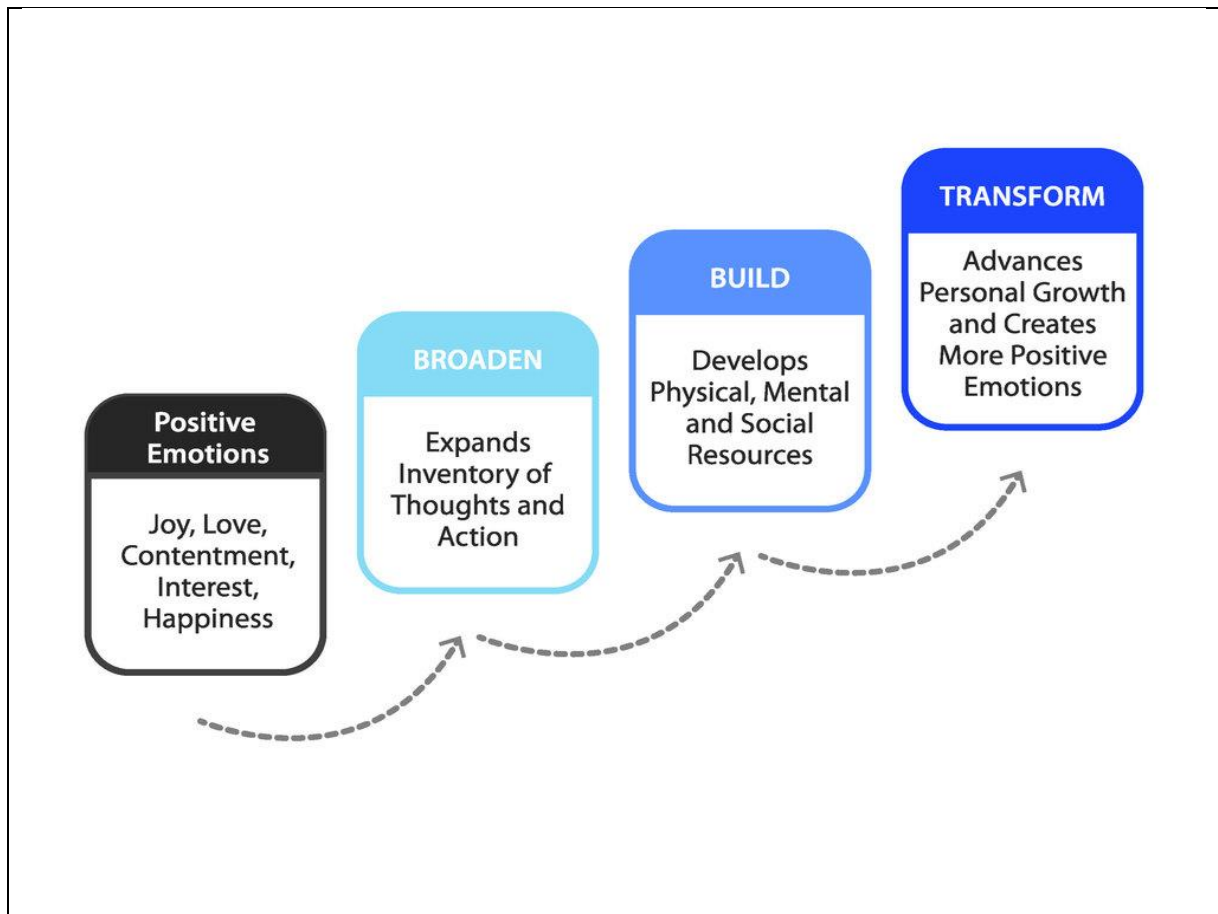
The broaden-and-build framework of positive emotions (Fredrickson, 2004; Otake et al., 2006) emphasizes that positive emotions broaden people's thought-action repertoires. This in turn build their enduring personal resources, including physical, intellectual, social, and psychological assets. Being happy is not the only positive emotion, but it is in-depth view at how individuals experience life. Positivity is one aspect of optimism. Fredrickson (2009)

identified ten types of positivity, namely, joy, gratitude, serenity, interest, hope, pride, amusement, inspiration, awe and love. A positive attitude also affects how the mind functions. Positive thinking broadens an individual's horizons and builds personal resources over time (Fredrickson, 2009). When positive emotions arise in response to diffuse opportunities rather than narrowly perceived threats, they can help broaden an individual's thinking, allowing them to draw on higher level connections and broader ranges of possibilities or ideas (Frederickson, 2004). Cognitive, psychological, social, and physical resources are all possibilities. Individuals who effectively use these resources are more likely to seize opportunities and effectively address challenges (Kashdan & Rottenberg, 2010). Positive emotions broaden people's perspectives in ways that gradually reshape who they are (Fredrickson et al., 2008). Pipe et al. (2011) mentioned that individuals who are highly optimistic report being more receptive, creative, making better decisions, communicating better, making new connections, experiencing new ways of being, and discovering new learning opportunities. Over time, repeated positive experiences build multiple personal resources, leading to resilience. A generally positive attitude can have a positive impact on interpersonal relationships and contributions. Individuals who thrive not only have a better quality of life, but they also contribute positively to the world around them (Fredrickson, 2004; Fredrickson & Losada, 2005).

Positive emotions can broaden awareness and response to events, as well as build resiliency and coping mechanisms (Frederickson, 2004). Figure 3.1 below depicts the broaden-and-build theory function of positive emotions in building resiliency.

Figure 3.1

Broaden-and-Build Theory of Positive Emotions



Source: Adapted from Major S (02 December 2017, LinkedIn)

3.1.2.2 *Planned happenstance learning theory in the context of career agility*

Krumboltz (2009) described the planned happenstance learning theory (PHLT) as an attempt to explain how and why people take different paths through life, as well as how counsellors can help them to achieve this. The planned happenstance learning theory (PHLT) (Krumboltz, 2009; 2015; Krumboltz et al., 2013) offers a supportive paradigm for purpose-enhancing career development counselling that endorses the career agile mindset of the digital-era work world (Coetzee, 2022). Human behaviour is the result of a plethora of learning opportunities provided by both planned and unplanned situations in which people find themselves (Greenleaf, 2021). Skills, interests, knowledge, beliefs, preferences, sensitivity, emotions, and future actions are all examples of learning outcomes (Greenleaf, 2021). According to Krumboltz et al. (2013), the PHLT proposes a career counselling model that assists clients in creating more fulfilling personal and professional lives. Krumboltz et al. (2013) further emphasised that the PHLT is an action-oriented approach to help clients to create and benefit

from unplanned events. Success is determined by the experiences of clients in the real world during and after counselling, not by what happens during the counselling interview.

Today's world of work is unstable and unpredictable events have a constant impact on people's career development (Krumboltz, 2009; 2015; Krumboltz et al., 2013). Unplanned events, according to Vo et al. (2021), can have a profound impact on career advancement, especially in this digital era of the workplace. As a result, the PHLT approach promotes the development of career agility and adaptability traits as resources for purposefully navigating a successful and fulfilling life-career in unknown and uncertain career conditions (Krumboltz, 2009; 2015; Krumboltz et al., 2013). Extrinsic career exploration teaches people how to manage unplanned and chance career or employment events confidently and actively as the new normal (Krumboltz, 2009; Valickas et al., 2019). Exploring and researching alternative (unplanned and chance) career options, establishing career-supportive networks, and navigating new, unplanned for, and shifting occupational opportunities resulting from the changing digital-era work environment are examples of extrinsic career exploration actions (Krumboltz, 2009).

Krumboltz (2009) proposed that PHLT is based on four fundamental propositions:

- (i) The first proposition is that the goal of career counseling is to help clients learn to take actions to achieve more satisfying career and personal lives, not to make a single career decision. This strategy is well-suited to the modern workplace's fast-paced change. Career counsellors should teach their clients how to adapt creatively to changing conditions and new opportunities even in meetings aimed at assisting students in choosing their first job or college major. This may encourage individuals to stay engaged with their own career management by setting the expectation that the workplace will change (Krumboltz et al., 2013). McKee-Ryan et al. (2005) and Noer (2009) mentioned that HLT advocates that individuals are more resilient in the face of downsizing and rapid change when their identities include multiple life dimensions.
- (ii) The second proposition is that career assessments should be used to stimulate learning rather than to match personal characteristics to occupational characteristics (Krumboltz, 2009). Comparing an individual's current characteristics to the average characteristics of employed adults can help clients identify types of work in which they might be comfortable and successful. An over-reliance on trait measurement overlooks the fact that interests, abilities, beliefs, and personal preferences change and mature over time. HLT encourages clients to use assessments as thought starters and

conversation starters, as well as to be open to life changes that may necessitate reassessment on a regular basis (Krumboltz et al., 2013).

- (iii) Instead of simply talking about feelings and desires, the third proposition emphasizes action, stating that individuals should learn to engage in exploratory actions as a way of generating beneficial unplanned events (Krumboltz, 2009). The best way to learn a new skill is to practice it and, if necessary, with the help of a supportive coach. This aspect of PHLT is supported by social cognitive career theory (Lent et al., 1994), which states that providing success experiences that boost a client's self-efficacy can broaden the range of activities available to them. A good counsellor can be extremely beneficial to individuals as they try to maintain their equilibrium while mastering and evaluating each new challenge, especially if their confidence has been shaken by a recent or threatened unplanned events (Krumboltz et al., 2013).

- (iv) The final proposition of PHLT states the need for assessment to focus still more on client behaviour. The success of counselling is assessed by what an individual accomplishes in the real world outside the counselling session (Krumboltz, 2009). Thus, research on the outcomes of counselling should go beyond observing the counsellor-individual interaction or asking an individual to complete a paper-and-pencil instrument. Although standard counselling outcomes measures like self-efficacy and intentions to act can be useful, the ultimate standard is actual individual behaviour in the real world. Actual outcomes are recorded for both the individual and the counsellor's benefit. Simply asking individuals to email their counsellors brief stories about their adventures in the outside world could be the most cost-effective way of collecting outcome data (Krumboltz, et.al.2013). Individuals could be asked to keep written or audio-recorded journals of their actions and results between counselling sessions, and to keep this journal for several months after the counselling session has ended. One or two follow-up sessions for the express purpose of reviewing these journals with the counsellor can help to reinforce progress (Krumboltz et.al.2013).

According to Brown et al. (2018) and Kohl and Swartz (2019), individuals with a career agile mindset can rapidly learn, unlearn, relearn, and adjust their personal worldviews, beliefs, career goals, interests, and behaviour to re-achieve optimal person-environment congruence. In conclusion, the PHLT approach transforms anxiety about planning for an uncertain future into a mindset of purposefully engaging in a lifelong learning adventure of confidently constructing unexpected career opportunities and a more satisfying life in a complex digital-driven world of work. Clients do not plan their entire future in advance; instead, they learn to

recognise, craft, and benefit from future planned and unplanned events and opportunities one step at a time in a career agile manner (Krumboltz, 2009).

3.1.2.3 *Theoretical underpinnings of career agility*

Coetzee et al. (2020) identified three facets of career agility (i.e., technological adaptivity, agile learning, and career navigation) relevant to the technologically driven digital era. The three facets of career agility describe individuals' adaptive readiness for proactive career self-management. Distinguishing between the three aspects of career agility may also offer conceptual clarity on malleable traits that either strengthen or weaken an individual's career agility as a characteristic of the digital era career-related adaptive readiness. Coetzee et al. (2020b) developed the Career Agility Scale as illustrated in figure 3.2 that measures the three facets of career agility. The Career Agility Scale (CAS) is based on Savickas' (2013) career adaptation model (Coetzee et al., 2020a, 2020b).

(a) *Technological adaptivity*

Technological adaptivity refers to a positive attitude toward rapid technological advancement and the potential for new and exciting job and career opportunities that it brings (Andersen, 2020; Konstant, 2020). In general, such people believe that their creativity, growth, and happiness are enhanced by technologically evolving job roles. They appear to be eager to look for job roles that evolve with changing technological conditions because of the opportunities for advancement they provide (Andersen, 2020; Konstant, 2020). Individuals with high levels of technological adaptivity believe it is critical to keep their knowledge and skills up to date to take advantage of new job opportunities created by technological advancements (Andersen, 2020; Konstant, 2020). Coetzee et al. (2020) further indicated that technological adaptivity also ensures that employees are confident in their ability to market their unique brand of values and skill set across digital networks. According to popular belief, career agility is based on the coordination of personal strengths and resources that can be used to achieve professional success. In uncertain, changing contexts, building a diverse network of professional relationships can often aid in the creation of meaningful new career paths (Andersen, 2020; Konstant, 2020).

(b) *Agile learning*

Coetzee et al. (2020) mentioned that the willingness to set and manage career goals is referred to as agile learning. Individuals with high levels of agile learning feel alive and energized, and they are eager to seek out new opportunities to learn new skills that will help them advance in their careers and jobs (Coetzee et al., 2020). Career agile individuals exhibit an adaptive readiness that is marked by a positive emotional disposition and a learning orientation that positively predicts their adaptability (Coetzee, et al., 2021). The investment in learning is viewed as an important aspect of career self-management by the popular media, as it enables people to acquire intelligent know-how that accelerates their career development. People with an agile learning mindset are more likely to consider projects and opportunities that will help them build, leverage, and maximize their knowledge, skills, and learning styles (Andersen, 2020; Konstant, 2020). Agile learning denotes to a sense of mastery goal adoption and self-development that has been shown to improve people's career adaptability, cause them to see obstacles as brand-new learning opportunities, and encourage them to actively put effort and energy into activities that prepare them for adversity (Furness, 2020; Van Yperen et al., 2014).

(c) *Career navigation*

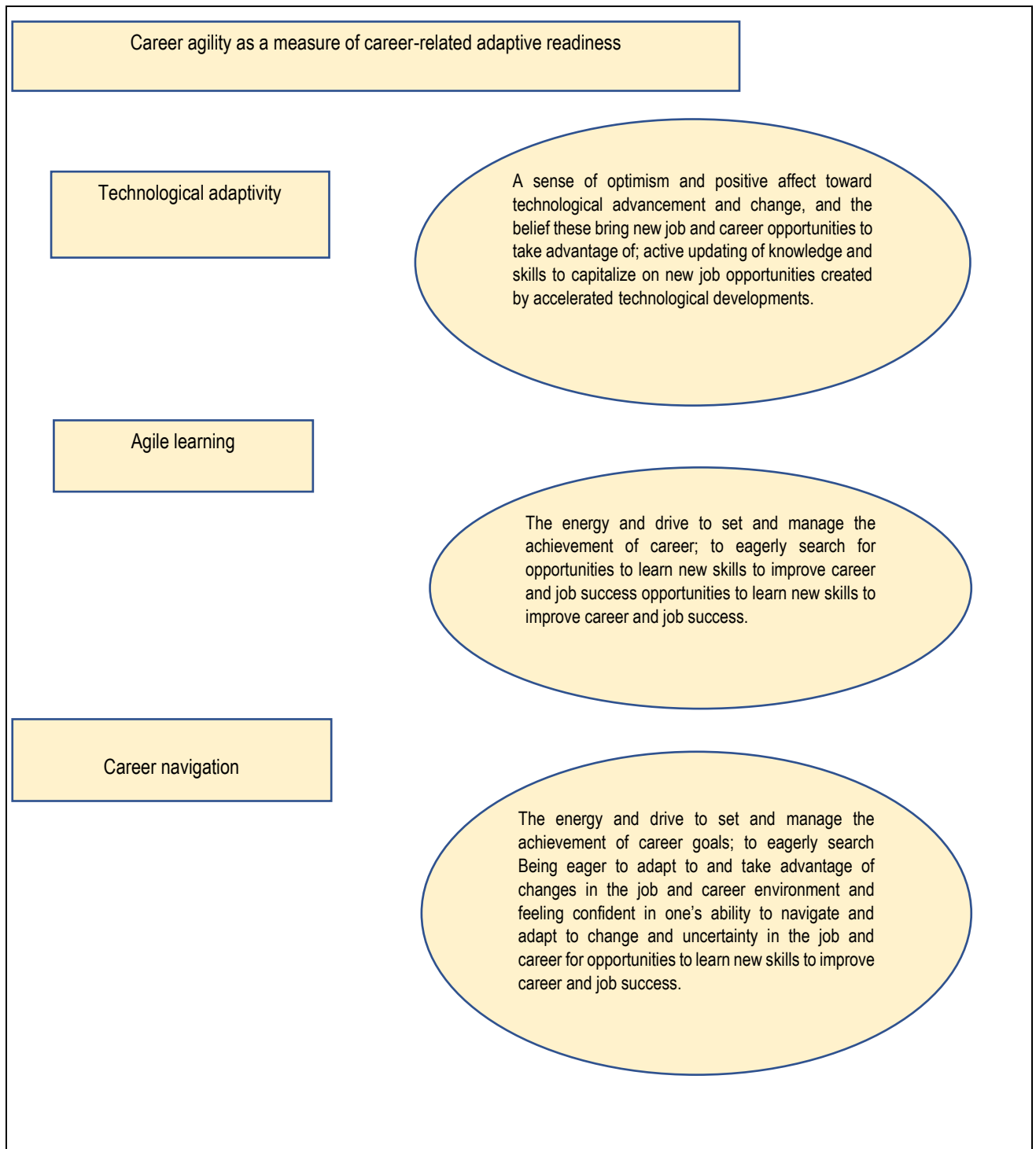
According to Coetzee et al. (2020), individuals' willingness to navigate and adapt to change and uncertainty in their job and career environment is reflected in career navigation. Individuals who have a high level of career navigation are willing to look around for new job opportunities and take advantage of changes in the job and career environment. Individuals with this trait have a high capacity for adapting to change (Coetzee et al., 2020). Coetzee et al. (2021) mentioned that career navigation is a desire to embrace change in the workplace and career environment, a sense of assurance in one's capacity to do so, and a sense of readiness to benefit from changes in those environments are all desirable qualities. Andersen (2020) considers career navigation to be an important mindset for staying informed about market changes and opportunities. Career navigation promotes environmental awareness, which allows people to leverage and apply changes to their own careers and jobs with confidence. Furthermore, the evidence of interpersonal career needs-supply fit dynamics can be reflected by the relationship between career navigation and agile learning and organisational outcomes such as career development opportunities, meaningful and challenging job characteristics, teamwork opportunities, and fair/attractive compensation and benefits (Coetzee, 2021).

Coetzee et al. (2020) mentioned that the three facets of career agility represent positive affective states that serve as internal adaptivity signals for approaching or continuing in the face of technological change. However, there is little research on the concept of career agility, and it is unclear as to what extent it predicts employability of graduates and their success in the digital markets in terms of their careers and jobs.

Rethinking career counselling models should also relate to and tease out the development and application of critical skills (Cs) such as critical thinking, curiosity, creativity, collaboration, communication, and career agility (Andersen, 2017; Lozanov, 2018; Wolfe, 2017), which are currently beyond the capability of robots and artificial intelligence. Most 21st century workers will work for multiple employers throughout their careers. They will face numerous challenges, including combining work and personal roles, maintaining employability (Savickas & Porfeli, 2012), becoming resilient (Maree, 2017), becoming career agile (Coetzee, 2021), and remaining relevant in a rapidly changing workplace. This will necessitate numerous contract changes between employees and their employers. Current occupational trends, such as the gig economy and digital nomads (Krapivin, 2018), demonstrate how these changes (which occur in occupational contexts) will increase workers' feelings of insecurity. Doyle (2017) argued that upgrading one's employment status has become an ongoing process and that people should develop skills that cannot easily be automated or performed by robots.

Figure 3.2

Facets of Career Agility



Source: Author's own work based on Coetzee et.al. (2021)

In the view of the preceding discussion, the three components of career agility are each valuable for the growth of distinctive but complementary psychological qualities that are thought to improve digital-era career adaptivity or adaptive readiness for individuals (Coetzee et al., 2020). It is hypothesized that individuals' adaptability resources of career concern, career control, career curiosity, and career confidence are positively explained by their adaptive readiness to change, as reflected in the three facets of career agility (i.e., technological adaptivity, agile learning, and career navigation). The only study to create an empirically tested and psychometrically sound measure of career agility was the study conducted by Coetzee and colleagues (Coetzee et al., 2021). Each of the three facets of career agility offers unique benefits for the development of distinctive but supportive psychological qualities that are proposed to improve people's digital-era career adaptivity or adaptive readiness (Coetzee, 2021).

In conclusion, the concept of career agility first appeared on the widely used web media as a characteristic of adaptivity that indicates suitable and prompt adaptability to changes in the workplace. Furthermore, career agility can enable individuals to use their personal competencies to take advantage of new career opportunities, sustain their careers and employability while also growing and learning continuously (Coetzee et al., 2021).

The career interest construct is discussed in the following section.

3.2 CAREER INTERESTS

In this section the conceptualisation of career interests and the theoretical models are discussed.

3.2.1 Construct conceptualisation

In the present study, the construct of career interests was measured by Schein's (1990) career anchors as an expression of core interests that motivate career choices. Schein's (1978; 1990) theory proposed that a person's dominant career anchor reflects major career-related interests of individuals that form an integral part of their basic career self-concept. Career interests in the form of career anchors become an overriding issue at every stage of the person's career and serve as an internal driving force when making career decisions because they encapsulate career-related preferences, values, motives, and needs (Coetzee, 2022). Schein (1990) revealed that when people's career interests, as explained by their career anchors,

influence their job and career, they will eventually have a positive impact on career choice and outcomes. Career interests embedded within individuals' career anchors are thus an important component of people's internal career (or subjective sense of where they are going in their working lives) and represent non-monetary or psychological factors in the career decision-making process (Custodio, 2004). Research shows positive links between individuals' career interests and their digital world of work awareness (Coetzee, 2022).

Holland (1973) explained career interests as an expression of personality that guide vocational choices and behaviours. According to Holland's (1997) description, certain interests would either inhibit or facilitate exploration of oneself or one's environment. Cabot and Cagnot (2021) indicated that the concept of career anchors provides a compelling framework for understanding the career dynamics of individuals because it provides valuable insight into the career interests that facilitate employee motivation and career development.

Next, a discussion follows several theoretical models and theories.

3.2.2 Theory on career interests

The person-environment fit theory by Holland (1985) and the theoretical underpinnings of Schein's (1978) career anchor concept are discussed in this section to elucidate the usefulness of the construct of career interests in career guidance.

3.2.2.1 *Person-environment fit theory*

Hartman et al. (2021) mentioned that the classical person-environment (PE) fit theory of vocational choice proposed by John L. Holland (1985) is a major career theory and one of the most well-known and widely used approaches in vocational psychology. Both researchers and practitioners have used the theory extensively around the world. The classical PE fit theory of John L. Holland (1985) is based on the interaction between individual and environmental characteristics, in which the individual not only influences but is also influenced by their environment. The adequacy of this fit between a person and their environment can have an impact on their motivation, behaviour, and overall mental and physical health; in other words, if the fit is optimal, the individual's optimal functioning may be facilitated; if the fit is insufficient, the individual may experience maladaptation (Holbeck & Zurenda, 2008). Holbeck and Zurenda (2008) mentioned that within a developmental framework, the PE fit paradigm has been successfully integrated. The PE fit theory (Holland, 1985) postulates that an individual's

career developmental stage and the surrounding environment produce an adaptive change within the individual.

Individuals and their work-related preferences, according to Holland (1985), can be best described using six broad interest dimensions. These dimensions are known as the RIASEC model, which stands for Realistic (R), Investigative (I), Artistic (A), Social (S), Enterprising (E), and Conventional (C), (Hartman et al., 2021). Usslepp et. al. (2020) mentioned that the RIASEC model was created as a classification system for occupational personalities and work environments, and as such, it is assumed to cover the entire occupational world. Additionally, the RIASEC dimensions reflect competence beliefs, values, and life goals in addition to the trait complexes that include preferences for activities and contexts (Holland, 1997; Stoll & Trautwein, 2017; Su, et al., 2019). The RIASEC model's applicability as an integrative framework for individual differences in a motivational domain is further supported by empirical associations between the model's interests and other motivational constructs like values, needs, and goals (Armstrong, et al., 2008; Rounds & Armstrong, 2014; Stoll et al., 2020). This could help to explain why career interests are such strong predictors of educational and career decisions (Campbell, 1971; Kuder, 1977; Lent et al., 1994; Strong, 1943), as well as why they predict outcomes in other spheres of life (e.g., having children; Stoll et al., 2017).

According to Hartman et al. (2021), every RIASEC dimension includes an individual's desire to participate in specific activities. The Realistic dimension corresponds to a preference for using tools and machines to produce concrete and visible things; the Investigative dimension to a preference for using science to solve complex problems; the Artistic dimension to a fondness for unstructured activities that require creativity; the social dimension to teaching, helping, or caring for others; the Enterprising dimension to persuading and leading others; and the Conventional dimension to persuading and leading others.

One of Holland's (1985) most important assumptions is that the same six RIASEC dimensions can be used to characterize both people and their (potential) work environments. A Realistic occupation, for example, would necessitate Realistic interests, such as a preference for working with tools and machines, and would reward those who exhibited those interests (Hartman et al., 2021). The six interest dimensions are not orthogonal to each other, according to Holland's calculus hypothesis, but can be arranged as a regular hexagon in a two-dimensional space, with the spatial distance between the RIASEC dimensions reflecting their psychological similarity. The Investigative dimension, for example, resembles the Artistic dimension more than the social dimension and is diametrically opposed to the Enterprising dimension. According to another central assumption of the theory, people seek work

environments that match their interests and allow them to act in accordance with their personal preferences. A person with enterprising interests, for example, is drawn to enterprising work environments, and vice versa. This means that people who are interested in leading other people and whose preferences are best described by the Enterprising interest dimension are sought after in an Enterprising environment (Martinez & Shaker, 2022).

The occupational behaviour of Individuals is generally determined by their interactions with their surroundings. For example, if a person's interests do not match their current job, they should leave and look for another job that is more suitable (Hartman et al., 2021). In conclusion, Hartman et al. (2021) mentioned that congruence is a key concept in Holland's theory. Congruence is a well-studied concept that can also be considered the primary goal of career counselling that takes a person-environment fit approach.

Durr and Tracey (2009) conducted a study on the PE fit-career outcome relationship by looking at personal factors like career interests, self-efficacy, and parental support, as well as major and occupational choice as separate environmental indicators. Durr and Tracey (2009) looked at career interest-environment fit and how it relates to career outcomes. Their study showed that the fit indices (interest-environment, self-efficacy-environment, and parent-support-environment) were moderately related, which was true for the study major as well as the occupation. For both major and occupation, interest environment fit was moderately related to the other PE fit predictors, whereas self-efficacy and parental support PE fit indicators were less related. As a result, the connection between self-efficacy and parental PE fit measures was strengthened by career interest PE fit. As a result of the increased similarity between career interests and work type, the similarity between competence beliefs and work type, as well as parental support and work type, increased. This finding supports previous research (Betz & Rottinghaus, 2006; Tracey, 2002), which found that career interests are strongly related to both contextual and personal variables, and that as one's competence in performing certain tasks improves, so does one's interest in that area (Durr & Tracey, 2009).

Based on their findings, Durr and Tracey (2009) mentioned that career counsellors might be better off assisting clients in focusing on developing their career interests in tandem with what they are good at, while also assisting clients in exploring how to accept support from peers and family in a productive manner. Moving beyond simply measuring interests and matching an occupation to that interest type and taking cultural considerations into account in the meaning prescribed to various PE fit measures, could improve the career counselling process. Furthermore, because ethnicity moderated the self-efficacy-environment fit relation to career

certainty in the study sample (Durr & Tracey, 2009), career practitioners may want to consider ethnic differences in the importance given to finding a job that clients are "good at".

More recent conceptualisation of PE fit theory (Guan et al., 2021; Van Vianen, 2018) propose that individuals' careers take shape at the intersection of the social environment (e.g., organisation) that provides career and work opportunities in exchange for their talents and capabilities that contribute to the organization's performance and sustainability (Coetzee & Schreuder, 2021). Guan et al.'s (2021) modern PE fit theory sees PE fit as a process of career identity management (i.e. supplementary fit: individuals' evaluation of the match between self-defining career identity-related career values, abilities, interests, and job roles) and social exchanges (i.e. complementary fit) in the workplace. Guan et al. (2021) further mentioned that individuals expect the environment to provide them with favourable conditions and rewards (Needs–Supply [N-S] fit) in exchange for the capabilities (knowledge, skills, abilities. The N-S fit means the degree in which the environment meets the person's needs (Coetzee et al., 2022; Darrow & Behrend, 2017; Jiang, 2017; Xu & Tracey, 2014). The N-S fit may guide promotional opportunities and career development supportive relations and conditions to TUT students (Coetzee, et al., 2022). The Demands–Abilities [D-A] fit means the degree to which the person's abilities meets the demands of the environment (Darrow & Behrend, 2017; Jiang, 2017; Xu & Tracey, 2014 & Coetzee et.al., 2022) and the psychological need for the D-A fit for TUT (Tshwane University of Technology) students is the need for upskilling and continuous learning opportunities (Coetzee, et.al., 2022).

Research findings indicate that career interests influence occupational decisions and behaviours, and some interests either discourage or encourage self- or environment-exploration (Holland,1978). Because they include values, motives, and needs specific to a person's career, career interests in the form of career anchors become the most important consideration at every stage of the person's career and act as an internal driving force when making career decisions (Coetzee, 2022). According to Schein (1990), when a person's career interests, as described by their career anchors, influence their job and career, they will eventually have a positive impact on career choice and outcomes. In conclusion, research shows that people's career interests and awareness of the digital workplace are positively correlated (Coetzee, 2022).

3.2.2.2 *Theoretical underpinnings of the career anchor construct*

For this study, Schein's (1978; 1990) concept and measure of career anchors have been adopted to study the role of career interests in guidance for employability competency. According to Schein (1990), values underpin career interests and serve as a guiding mechanism that steer and guide individuals to specific locations within life spaces – locations that can be the focal point of career preferences and interests. Because values indicate qualities or goals sought, they are more fundamental than preferences and interests. According to Judge and Bretz (1992), individuals were more likely to choose jobs with value content that was like their own value orientation. An individual's career self-concept or identity acts as a stabilizing force in such a way that when a major life or career decision must be made, there are certain concerns, interests, or values that the individual will not give up (Schein, 1978). Cao and Hamori (2022) distinguished between three categories of anchors: needs-based (security and lifestyle), talent-based (technical-functional, managerial, and entrepreneurial), and value-based (service-dedication).

Although Schein (1978) argued that an individual can only have one dominant career anchor, his empirical evidence suggested that individuals can have multiple strong career anchors. Given that the career anchor consists of needs, values, interests, and talents that rise to the top of a person's career self-concept, DeLong (1982) and Feldman and Bolino (1996) discovered that one to three anchors tend to cluster together to form an individual's career interests and work preferences.

Feldman and Bolino (1996) reorganised Schein's eight career anchors into three distinct groups, as well as the underlying motivations for the various career anchors. These anchors are classified as talent-based, needs-based, and value-based. The 'talent-based' anchors are managerial competence (willingness to solve complex, whole-of-organisation problems and make subsequent decisions), technical/functional competence (achieving expert status among peers), and entrepreneurial creativity (opportunity for creativity and identification of new businesses, products or services). Security and stability (long-term employment for health benefits and retirement options), autonomy and independence (personal freedom in job content and settings), and lifestyle motivations (balancing one's personal and family welfare with work commitments) are the 'needs-based' anchors. Finally, the 'value-based' anchors are pure challenge (putting one's personal endurance to the test through risky projects or physically demanding work) and service or dedication to a cause (working for the greater good of organisations or communities (Coetzee & Schreuder, 2014). Figure 3.3 depicts an overview of the concept of career anchors.

Figure 3.3

Edgar Schein Career Anchors



Source: Adapted from Schein, 1990.

- **Technical/functional competence:** Values attaining expert status among peers and receiving recognition for skills. Career interests relate to the desire for specialisation as well as additional learning and development in one's field.
- **General managerial competence:** Values the willingness to solve complex problems affecting the entire organisation and make subsequent decisions; advancement and higher levels of responsibility. Power, influence, and advancement up the corporate ladder are all desired career interests.
- **Entrepreneurial creativity:** Values income, the organisation's profitability, the opportunity for creativity, and the identification of new businesses, products, or services. Career interests relate to the desire for power and freedom to amass wealth, personal prominence, and public recognition.

- **Autonomy/Independence:** Places a premium on increased autonomy and personal freedom in job content and settings. Career interests relate to the desire the ability to achieve and demonstrate one's abilities.
- **Security/stability:** Values loyalty, long-term employment for health benefits, and retirement options. Predictability and being rewarded for length of service are important career interests.
- **Lifestyle:** Values flextime and balancing personal and family well-being with work obligations. Career interests relate to the desire for the flexibility and freedom to balance work and family life.
- **Service/dedication to a cause:** Values people helping people, organisational missions, and working for the greater good of organisations or communities. Career interests relate to the desire power and the freedom to act independently in the pursuit of personal values or a higher life purpose/goal.
- **Pure challenge:** Values novel or challenging work and putting one's personal endurance to the test through risky projects or physically demanding work. Career interests relate to the desire power and influence to compete and win (Coetzee & Schreuder, 2014).

In conclusion, through the Schein (1978, 1990) career anchor concept, he explores the dynamics of the internal career, which has interesting implications for career counselling and guidance in the modern career paradigm. Individuals' subjective measures of career success are typically driven by a desire for meaningful work that aligns with their personal motivations, career interests, abilities, motives, and values (internal career anchors) (Coetzee & Schreuder, 2014). Career anchors are the motivating forces that guide people's career choices and preferences for work and work environments (Schein, 1990). Coetzee et.al. (2010) argued that achieving a harmonious fit between one's internal career needs and interests, and the characteristics of one's external occupational environment leads to higher levels of career well-being and career and life. The notion of career anchors emphasizes that career practitioners should also be aware of the changing world of work and how an increasingly knowledge- and digitally driven workplace will affect individuals' self-perceived talents and abilities, career motives, interests and needs, and career attitudes and values (Vermeulen, 2015).

Cao and Hamori (2022) conducted a study which revealed that one reason for the lack of scholarly attention to the antecedents of career orientations is that researchers felt that career orientations were largely stable. However, Hirschi and Koen (2021) stated that recent investigations have called the notion of stability into question. While there has been no quantitative empirical research on these topics, conceptual work (Bravo et al., 2017; Feldman & Bolino, 1996) and qualitative evidence (Rodrigues et al., 2013) revealed that discrete events at work and in the family, such as being laid off or having children, may influence employees' career orientations.

According to Cao and Hamori (2022), career orientations and the underpinning interests emerge over time and were stable as individuals aged; any shift was dependent on longer employment experiences and systematic feedback, rather than transient or external limitations. Rodrigues et al. (2013), in his study mentioned that to advance career orientation research is by proposing and empirically exploring a set of research questions that would serve as the foundation for a modern theory of career preferences or interests. Furthermore, career orientations were recently characterized by Abessolo et al. (2021) as rather constant profession preferences towards specific career-related opportunities, conditions, and career types.

Schein (1990) views career anchors as crucial components of an individual's job self-concept, including concerns, needs, and values, and when faced with a difficult career option, individuals' will not compromise their career anchors (Coetzee and Schreuder, 2009). Researchers (e.g., Feldman & Bolino, 1996; Martineau et al., 2005) have proposed the existence of multiple dominant career anchors that emerge independently from needs, values, or talents, and that new career anchors, such as the internationalism career anchor, may emerge from changes in contemporary workers' needs and preferences (Lazarova et al., 2014; Suutari & Taka, 2004). According to Schenk (2003), career anchor studies often discover a broad distribution of anchors in every occupation, even though some occupations may have a bias for a specific anchor. Furthermore, Coetzee and Schreuder (2014) mentioned that given that the career anchor is a result of the interaction between the individual and the workplace (Wils et al., 2010), career practitioners should be aware of how the increasingly knowledge- and digitally driven workplace will influence individuals' self-perceived talents and abilities, career motives, needs, career attitudes and values. Research suggests that people's career interests or preferences are rooted in a larger social and family context, as well as being flexible and adaptable to their work and life situations (Rodrigues et al., 2013).

Abessolo et al. (2017) conducted a study to empirically investigate the relationships and structural correspondences among basic values, career orientations, and career anchors using Schwartz's (1992) model of structural values. The findings revealed that both career orientations and career anchors could be meaningfully placed in Schwartz's (1992) values structure. Schwartz's (1992) basic values, which emphasized openness to change, were positively related to protean and boundaryless career orientations, and career anchors meaningfully followed the motivational continuum of these basic values. Abessolo et al.'s (2017) findings further show that Schwartz's (1992) values emphasizing openness to change share similarities and a common variance with the autonomy/independence, international, entrepreneurial, creativity, and pure challenge career anchors, as well as the protean and boundaryless career sub-dimensions, which are consistent with other recent studies (Wils et al., 2010; 2016). Finally, it shows that the former has similarities and differences with managerial and technical/functional competence career anchors, implying that people who prefer the management and technical functional career anchors are more likely to express their personal interests and pursue values of power and achievement, and would rather work in well-structured and organised environments with little room for error (Abessolo et.al., 2017).

In conclusion, the theoretical underpinning of career anchors (as an expression of core values-driven career interests) and person-environment fit explain the value of the construct of career interests in career guidance for employability competency. PE fit theory of John L. Holland (1985) is based on the interaction between individual and environmental characteristics, in which the individual not only influences but is also influenced by their environment. The PE fit theory (Holland, 1985) suggests that an individual undergoes an adaptive change because of their career development stage and their immediate environment.

Hartman et.al. (2021) mentioned that in this digital age, how people interact with their environment influences how they behave at work. For instance, if a person's current job does not align with their interests, they should look for one that does. Guan et al. (2021) and Van Viane (2018) proposed that people's careers are shaped by their social environment (such as an organisation), which offers them opportunities for employment in exchange for their skills and abilities that improve the effectiveness and sustainability of the organisation.

Schein's (1978) empirical evidence suggested that individuals can have multiple career anchors which has interesting implications for career counselling and guidance in the modern career paradigm. Individuals' subjective measures of career success are typically driven by a desire for meaningful work that aligns with their personal motivations, career interests, abilities, motives, and values (internal career anchors) (Coetzee & Schreuder, 2014; 2021)

In the next section, the career adaptability construct is discussed.

3.3 CAREER ADAPTABILITY

Career adaptability is defined, and the theoretical underpinning of the construct is discussed.

3.3.1 Construct conceptualisation

Career adaptability is defined by Savickas (1997) as readiness to cope with the predictable tasks of preparing for and participating in the work role, as well as the unpredictable adjustments prompted by changes in work and work conditions. The psychosocial resources to cope with changing work and working conditions are referred to as career adaptability (Savickas & Savickas, 2017). Savickas and Savickas (2017) further mentioned that career adaptability entails the ability to adjust to changing tasks, engage in ongoing self-education, and control one's career path. According to Glavin and Berger (2013), career adaptability has become a central concept in vocational psychology to help people manage their careers and navigate workplace changes. Bimrose et al. (2011) define career adaptability as a person's capacity for making a series of successful transitions where the labour market, workplace structure, and underlying occupation change. Hall (2002) and Maree (2013b) view career adaptability as a meta competency to indicate people's ability to identify for themselves those qualities that are critical for future performance and to make personal changes necessary to meet these needs,

Savickas (2008) further explains career adaptability as psychosocial strengths or capacities for solving unfamiliar, complex, and ill-defined problems presented by developmental vocational tasks, occupational transitions, and work traumas. Identity and adaptability, when combined, tell a person when and how to change in a fast-paced workplace. Maree et.al. (2019) mentioned that career adaptability involves the career self-identity and (coping) resources to deal with change and transition. Furthermore, career adaptability seems to be the result of the narrative of individuals who developed and improved their probability to thrive. Koen (2013) described career adaptability as "preparation" or "preparedness" for employability.

The ability to adjust, adapt, or display adaptability has become desirable considering economic, social, and technological changes (Chen et al., 2020). Career adaptability has been shown to aid employees in overcoming obstacles, and a proactive personality is a key

factor in the development of career adaptability (Chen et al., 2020). According to Heath (2020), career adaptability can help people see the opportunities in unexpected changes, capitalise on those changes, and recover from unexpected outcomes. Career adaptability has also been shown to be a significant predictor of a variety of positive career outcomes, such as promotability (Tolentino et al., 2013), employment status (Guan et al., 2014), career satisfaction (Zacher, 2014), successful career transitions and counselling (Brown et al., 2012), reduced career anxiety and work stress (Maggiori et al., 2013), and higher job satisfaction and work engagement (Rossier et al., 2020).

Career adaptability is regarded as an important construct for career guidance for TUT students because it has been proven that career adaptability is a significant predictor of a variety of career outcomes such as successful career transitions and adaptation to turbulent career environments (Brown et al., 2012; Rudolph et al., 2017). Furthermore, individuals with career adaptability may be able to see the opportunities in unexpected changes, capitalise on those changes, and recover from unexpected outcomes (Rudolph et al., 2017). Career adaptability may also assist people in responding to career changes in a calm and composed manner (Tripathy, 2020) and stimulate more career options in a difficult situation (Ginevra et al., 2018).

3.3.2 Career construction theory

The present study adopted the career construction theory by Savickas (2013) to elucidate the notion of career adaptability.

3.3.2.1 *Savickas career construction theory*

According to Glavin and Berger (2013), career construction theory was developed to become a central concept in vocational psychology to help people manage their careers and navigate workplace changes. The career construction theory (Savickas, 2013) explains the interpretive and interpersonal processes by which individuals construct themselves, impose direction on their vocational behaviour, and make sense of their careers. Rudolph et.al. (2017) mentioned that the model of adaptation within career construction theory proposes that people take charge of their careers by gradually adapting a set of psychosocial resources that help manage these expectations (and, consequently, the integration of the self at work).

Savickas and Porfeli (2012) indicated that the career construction theory also acknowledges that there are numerous individual differences (such as personality and interests) that influence how successfully people integrate their self-concepts with their work roles (the

results of which are referred to as "adaptation results"). The career construction model of adaptation specifically asserts that people vary in their willingness (or "adaptivity" or "adaptive readiness") and ability (or "adaptability resources" or "career adaptability") to take actions that address their changing environmental conditions (or "adapting responses"). The model of adaptation therefore proposes that adaptivity influences career adaptability, which, in turn, influences adapting responses, and, ultimately, adaptation results (Rudolph et al., 2017).

Career construction theory adopts a narrative perspective that focuses on the dynamic processes through which people's important life themes inform their subjective meanings of their working experiences through a process of construction, deconstruction, reconstruction, and co-construction of life stories (Rudolph et al., 2017). To accomplish its goals, the career construction theory addresses how individuals build careers through personal constructivism and social constructivism (Savickas, 2013). The theory asserts that people create representations of reality but do not create reality itself. The theory approaches careers from a contextualist standpoint, viewing development as driven by adaptation to an environment rather than maturation of inner structures (Savickas, 2013). Savickas (2013) further mentioned that with self-construction central to the theory, he had to firstly consider how people make themselves into who they are, then described the three contemporary perspectives on careers, namely self as actor, self as agent and self as an author.

The various premises of career construction theory (Savickas, 2013) will be discussed next.

3.3.2.1.1 Self-making

The study by Mc Adams and Olson (2010) found that making a self and building a career are lifelong projects that evolve in complex phases and multi-layered processes. Individuals create a sense of self and a career by reflecting on their experiences, utilising the uniquely human ability to be conscious of consciousness (Savickas, 2013). Neuman and Nave (2009) alluded to the fact that this self-conscious reflection employs language to both construct and constitute social realities, and that people live, in a sense, inside language. Words provide a resource for living that allows for thought and meaning making and do not come to adhere to an essential pre-existing self; however, language provides the words for the reflective projects of creating a self, shaping an identity, and building a career (Neuman & Nave, 2009).

During childhood, adolescence, and adulthood, the processes of self-formation and career development differ (Savickas, 2013). Mc Adams and Olson (2010) explained that individuals begin their self-construction as actors, progressing to become agents who direct the action,

and finally to authors who explain the action. Putting emphasis on each of these three layers of self-construction has resulted in theories that favour different perspectives on vocational behaviour and career development. Social constructionism was used as a metatheory which asserts that reality does not exist independent of us, but that reality is constructed social processes and interpersonal relationships.

3.3.2.1.2 *Self as object*

According to Savickas (2013), the self as an object dominates the objective view of person-environment fit, which matches people to jobs. This is the first and most fundamental view of a vocational self that emerged in the early 20th century and reached its apex in Holland's (1997) RIASEC model of vocational choices and work environments. It is useful in industrial societies where workers must be matched to occupations.

3.3.2.1.3 *Self as subject*

Humanistic beliefs about self-discovery and self-actualisation gave rise to a subjective view of the self as agent (Savickas, 2013). This subjective view of striving toward self-determined goals in his developmental theory of career stages and tasks was applied by Super (1951).

3.3.2.1.4 *Self as project*

Concurrent with the digital revolution, a new perspective has emerged on the self as a project (Savickas, 2011). The corporate structure that supported career ladders has dissipated with the transition to an information society and a global economy. Savickas (2013) suggested that people can no longer expect to work for one company for 30 years and then retire with a pension and health care. Although full-time employment remains the most common type of employment, temporary assignments and part-time positions are increasingly taking the place of permanent, full-time jobs.

Only a small percentage of workers have long-term careers. For many people, work takes the form of a project, with a beginning assignment and an end-product (Savickas, 2013). In South Africa employers often hire casual/part-time employees to avoid strict labour legislation, bargaining council agreements, labour laws which only cover permanent workers (Leibbrandt et al. 2010). Mullins (2009) mentioned that half of workers have been with their current employer for less than five years and a quarter of workers have been employed for less than a year. Rather than establishing a secure life through secure employment, today's insecure

workers must be adaptable to maintain employability through lifelong learning and occupational transitions. Individuals must prepare for possibilities rather than making plans (Savickas, 2013).

3.3.2.1.5 Foundations of career construction: Actor, agent, and author

According to the career construction theory, individuals construct a social role as an actor through their actions in the family, adapt this role for use in the theatres of the school and community, and eventually author an autobiographical story that explains the community and coherence in occupational experiences (Savickas, 2013). This progression corresponds to McAdams and Olson's (2010) finding that psychological individuality is rooted in three developmental layers of acting, agency, and authoring.

Career construction theory (Savickas, 2013) attends to individuals' behaviour as an actor, striving as an agent and explanation as an author. Kaloko (2020) applied Savickas (2013) layers to provide a career perspective on the graduate student perspective. Graduate students are actors seeking to gain understanding of their unique skills and characteristics as developing scholars. They are seeking advice on experiences that will enable them to extend their distinctive selves into the professional world. Finally, graduate students may look to lecturers as authors to help them understand how their academic experiences will affect the course of their lives (Kaloko, 2020).

3.3.2.1.6 Self as actor: Constructing reputation and person types.

According to the self as an actor, the individual forms social factors at the beginning of infancy and in conjunction with their families and social interactions, they craft characters or reputations and then elaborate these distinctive characteristics in the neighbourhood and school. The foundation of the character that is constructed in the individual's family of origin will eventually help to shape the individual's career theme (Savickas, 2013). Craig (2009) mentioned that the career construction theory views reputation as residing in a person's social network.

3.2.2.1.7 Person types as social categories

Similarly, vocational psychologists and career counsellors recognise and discuss personalities using categories provided by their professions (Savickas, 2013). According to the career construction perspective, a self is constructed from the outside in, rather than the inside out,

as personality trait theories would have it (Savickas, 2013). This perspective is supported by what Vygotsky (1978) noted as there is nothing in mind that is first in society. According to McAdams and Olson (2010), a second layer of the self begins to emerge with the development of an internal sense of agency in middle childhood. After adapting to the family of origin by becoming a recognisable actor in the family drama, the individual must extend the self into the community and school through agency. This self-expansion necessitates the development of goals to strive for, followed by projects and eventually a career (Savickas, 2013).

Agency is concerned with the movement of people into and out of educational and vocational positions, each of which serves as a social integration mechanism. Savickas (2013) mentioned that as a preferred strategy for sustaining the self in society; people's goals direct their occupational choices. The actor manifests the self by choosing an occupation and participating in a social niche. Savickas (2013) further mentioned that at some point most people change occupations and the move from one position to another is called the period of transition during which an individual must leave one place, revise goals, choose another place, enter, and establish themselves in that unfamiliar space, and according to the career construction theory this movement/transition is called career adaptability.

3.3.2.2 *Career construction theory of adaptation and its dimensions*

According to the career construction theory (Savickas, 2013), adaptivity is a constant, universal, and trait-like psychological quality that affects the creation and use of career adaptability resources and involves being ready and willing to adapt to a career change (Savickas, 2013). The words "adapt," "adaptability," "adapting," and "adaptivity" have all been coined from the word "adapt," which means "fit or change," according to Savickas and Porfeli (2012). Savickas and Porfeli (2012) argued that there are many ways to gauge an individual's adaptability, such as using measures of their proactivity, cognitive flexibility, and the Big Five personality traits. Tolentino et al. (2014), for instance, operationalised adaptability as a learning goal orientation, proactive personality, and career optimism and discovered that adaptivity was positively related to career adaptability among undergraduate university students.

3.3.2.2.1 *Adaptivity*

Adaptivity is a stable, context-general, trait-like psychological characteristic that involves the readiness and willingness to adapt to career changes, according to career construction theory. It has an impact on the development and application of career adaptability resources (Savickas, 2013). Adaptivity, according to Savickas and Porfeli (2012), can be measured in a

variety of ways, including indicators of cognitive flexibility, proactivity, and the big five personality traits. Tolentino et al. (2014), for example, defined adaptivity as a combination of learning goal orientation, proactive personality, and career optimism, and found that adaptivity was linked to career adaptability among undergraduate university students (Hirschi et al., 2015). Rudolph et al. (2017) mentioned that they used two sets of individual differences, cognitive ability, and personality traits, as indicators of adaptivity and thus as antecedents of career adaptability in their meta-analysis. Coetzee et al. (2020) found career agility as a mindset of adaptivity to predict the active use of career adaptability resources.

3.3.2.2.2 *Cognitive ability*

Rudolph et al. (2017) indicated that while cognitive ability can be viewed as a measure of cognitive flexibility (e.g., Schmidt & Hunter, 2004) and thus as a predictor of people's willingness to adapt to career changes (i.e., adaptivity), previous research has been mixed. On the one hand, researchers have argued that there is a weak and non-significant link between cognitive ability and career adaptability, based on the assumption that cognitive ability is largely unrelated to self-regulation processes like goal setting and pursuit (van Vianen, et al., 2012). Other researchers, on the other hand, have claimed that cognitive ability has a positive impact on the acquisition of knowledge and skills (and thus human capital) in new and changing work contexts (Schmidt, et.al., 1986), which should improve workers' career adaptability.

3.3.2.2.3 *Personality traits*

Rudolph et al. (2017) examined the relationships between adaptability in the workplace, as well as four clusters of personality traits (the big five: extraversion, conscientiousness, emotional stability, agreeableness, and openness to experience) that can be used as indicators of adaptability. While Zacher (2014, 2016) argued that conscientiousness and openness should be positively related to career adaptability, other research has found links between all five personality traits and career adaptability. Second, Rudolph et al. (2017) proposed that self-esteem and the higher-order construct of core self-evaluations (Judge, et.al., 2002) are indicators of adaptivity that positively relate to career adaptability because they increase workers' confidence in their ability to successfully manage job-related tasks and challenges (Judge et.al., 2002). A proactive personality and future orientation as well as two forms of psychological capital, hope and optimism are indicators of adaptivity and should thus be related to career adaptability positively (Rudolph et al., 2017).

3.3.2.2.4 *Adaptive responses*

People use adapting responses to deal with career development tasks and changing work and career conditions by using adaptive behaviours and beliefs (Hirschi et al., 2015; Savickas, 2013; Savickas & Porfeli, 2012). The career construction model of adaptation assumes that career adaptability is positively related to such adapting responses, and that the relationship between adaptivity and adapting responses is mediated by career adaptability. Hirschi et al. (2015) found that career adaptability was linked to, but not the same as, measures of career planning, career exploration, decision-making difficulties, and occupational self-efficacy beliefs. Furthermore, career adaptability was found to partially mediate the effects of two adaptivity indicators (core self-evaluations and proactive personality) on adapting responses.

The career construction theory proposes that people's career development results from integrating their personal needs with social expectations and, as a result, their adaptation to the environment (Savickas, 2002, 2005). People differ in their willingness and ability to adopt beliefs and exhibit behaviours that address shifting environmental conditions and, as a result, result in a positive integration and fit with their work role. These traits are referred to as adaptivity and adaptive readiness, respectively (i.e., adaptation results; Savickas, 2013; Savickas & Porfeli, 2012). Additionally, the career construction theory proposes that individuals' adaptability affects their career adaptability, which in turn affects adapting behaviours and outcomes (Savickas, 2013; Savickas & Porfeli, 2012; see also Hirschi et al., 2015; Tolentino et al., 2014).

3.4 Career adaptability in the career guidance context

Coetzee et al. (2020) mentioned employees' career adaptability as a valuable self-regulatory personal resource that aids in proactive adaptation to changing work environments. Modern work conditions necessitate enhanced career adaptation capabilities, such as more frequent transitions between jobs, organisations, and occupations (Rudolph, Lavigne, Katz, & Zacher, 2017). To deal nimbly with the unprecedented economic and technological forces that are reshaping work opportunities and conditions in the digital era, the ability to adjust and display adaptability has become desirable (Johnston, 2018; Lent, 2018). Individuals' career adaptability enables adapting responses, which are reflected in proactive career management. Career planning and decision making are examples of such behaviours. In general, proactive career behaviours lead to positive outcomes such as job satisfaction, life satisfaction, and career satisfaction (Johnston, 2018, Rudolph et al., 2017).

Individuals who are adaptable-ready report significantly higher levels of career adaptability than those who are more resistant to change (Perera & McIlveen, 2017). Adaptability is predicted by positive emotional dispositions, career concerns, learning orientation, and hope, according to research (Johnston, 2018). As a result, it stands to reason that the technological adaptivity, agile learning, and career navigation aspects of career agility will positively predict the activation of individuals' career adaptability, which is embedded in the resources of career concern, career control, career curiosity, and career confidence (Coetzee et al., 2020).

It has been reported that individuals with a high level of career adaptability are more likely to be proactive in goal setting, initiating effort, and achieving psychological success (Hall & Chandler, 2005). According to Guo et al. (2014) and Savickas (2005), individuals with a strong sense of career adaptability, on the other hand, are more likely to deal proactively with difficult environments, develop their career competence, and adapt to the work environment so that the vocational choices they make lead to successful and satisfying careers) and career adaptability plays a positive role in promoting professional competence in the development of individuals' careers (Guo et al., 2014). However, there is a lack of research in the context of career guidance for employability for students in the South African context.

As the importance of career adaptability grows in the digital era, career guidance practitioners must provide individuals and students with multiple career paths, particularly in institutions of higher learning in South Africa (Yang et al., 2019). Providing a sense of security and well-being by improving competence through training and providing a sense of a promising career future (Guest, 2017). Students should focus on self-planning, self-awareness, curiosity, and self-confidence to achieve this goal, as well as specific career plans. Hirsch et al. (2015) reported that career adaptability is linked to career planning, career exploration, and self-efficacy in both occupational and career decision making. As a result, career adaptability resources appear to make it easier to adapt to changing circumstances. The literature reviewed in this study strongly suggested that the career construction theory of adaptability (Savickas, 2013) could be used to demonstrate the relevance of career adaptability for this study and for TUT students in this post pandemic digital era.

Savickas (2002) explained career adaptability as the four dimensions of career concern (planning, being planful), career control (decision making, being decisive), career curiosity (exploring, being inquisitive), and career confidence (problem-solving, being efficacious) that individuals use in fitting themselves to work that suits them. Hirschi et al. (2015) also stated that when investigating career adaptability using Savickas' (2013) model as a guiding framework, researchers typically assessed the proposed dimensions using various attitudinal

or behavioural scales, measuring career planning (concern), career decidedness (control), career exploration (curiosity), and career self-efficacy beliefs (confidence).

To measure the four constructs of career adaptability in people, Savickas and Porfeli (2012) developed the Career Adapt-Abilities Scale (CAAS). Maree et.al. (2019) discussed the four Cs of career adaptability as follows:

- Concern for one's career (career concern) indicates that person is actively considering and planning their career. A person is more likely to think and act pro-actively about their work and careers if they are worried about their future.
- Career control is a measure of how seriously people take managing and advancing their careers.
- Career curiosity is a measure of how deeply people delve into their own interests and values as well as how deeply they delve into the evolving nature of the workplace.
- Career confidence examines a person's assurance in their ability to make wise career decisions (Glavin & Berger, 2013).

According to Hartung (2015) and Savickas (2005, 2015a), each of the four Cs of career adaptability (i.e., concern, control, curiosity, and confidence) can be associated with idiosyncratic questions as well as certain beliefs and attitudes in career decision-making and adaptation. Table 3.1 summarises the dimensions of career adaptability.

Table 3.1*Career Adaptability Dimensions*

Adaptability Dimensions	Attitudes & Beliefs	Competence	Coping Behaviours	Career Problem	Coping Behaviours	Competence	Coping Behaviours	Career Problem
Concern	Planful	Planning	Aware	Indifference	Aware	Planning	Aware	Indifference
			Involved		Involved		Involved	
			Preparing		Preparing		Preparing	
Control	Decisive	Decision Making	Assertive	Indecision	Assertive	Decision making	Assertive	Indecision
			Disciplined		Disciplined		Disciplined	
			Willful		Willful		Willful	
Curiosity	Inquisitive	Exploring	Experimenting	Unrealism	Experimenting	Exploring	Experimenting	Unrealism
			Risk Taking		Risk-Taking		Risk-Taking	
			Inquiring		Inquiring		Inquiring	
Confidence	Efficacious	Problem Solving	Persistent	Inhibition	Persistent	Problem solving	Persistent	Inhibition
			Striving		Striving		Striving	
			Industrious		Industrious		Industrious	

Source: Ester Mujajati (October 2016, p. 71).

- Career concern, the first and most crucial aspect of career adaptability is concern for one's own future career. Career concern essentially refers to a future orientation, or the belief that it is crucial to plan for the future. The disposition to become aware of the professional tasks, occupational transitions, and decisions that must be made in the near and far future is facilitated by attitudes of planning and optimism. Individuals can see how today's effort creates tomorrow's success because of this sense of continuity. Individuals are more likely to engage in activities and experiences that foster planning and preparation skills if they have a plan-oriented attitude and a sense of continuity. Apathy, pessimism, and lack of direction are all symptoms of career indifference, which is a lack of career concern (Savickas, 2013).
- Career control is an aspect of intrapersonal processes that promote self-regulation rather than interpersonal processes affecting self-control (Fitzsimons & Finkel, 2010). Control requires conscientiousness, deliberateness, organisation, and decisiveness in carrying out tasks related to career development. Control encourages people to pursue their professional development rather than avoiding them, negotiate tasks and occupational transitions. People who, for whatever reason, are presented with a more limited selection of options, explore the few options available to exercise career control and make them personally meaningful by adjusting the options available to make them their own (Savickas, 2013).
- Career curiosity, from a sense of self-control, emerges from the initiative to learn about the types of work that one might want to do and the occupational opportunities to do it. The fundamental function of curiosity in constructing careers is reflected by the extensive coverage given to it by prominent theories of vocational development under the rubrics of exploration and information-seeking behaviour, as well as in their direct products of self-knowledge and occupational information. Career curiosity refers to inquisitiveness about and exploration of the fit between oneself and the work world. When acted upon, curiosity produces a fund of knowledge with which to make choices that fit self to situation (Savickas, 2013). Lastly Savickas (2013) mentioned that lack of career curiosity can lead to unrealism about the work world and inaccurate images of the self.

- Career confidence implies that individuals need self-assurance to pursue their interests. Self-confidence is the belief that one will succeed in overcoming difficulties and challenges (Rosenberg, 1989; Savickas, 2013). According to career construction theory, confidence refers to feelings of self-efficacy about one's capacity to carry out a course of action required to choose and put into practice appropriate educational and vocational options. Complex problems must be solved in career choices. The extensive literature on self-esteem, self-efficacy, and encouragement in theories of vocational development reflects the fundamental role of confidence in creating careers. The ability to solve problems in daily tasks like homework, housework, and hobbies leads to career confidence. A person's feelings of self-acceptance are also boosted by realizing that they can be successful and useful at these tasks (Savickas, 2013). Lack of career confidence can result in career inhibition that thwarts actualizing roles and achieving goals.

In summary, the theory of career construction focuses on helping clients create meaning, set goals, and take purposeful action as they plan their lives, choose careers, navigate career transitions, and deal with challenges at work (Savickas, 2013). Hartung and Vess (2016) mentioned that career construction theory translates to practice in the form of a counseling model and methods for helping people construct their careers. The career construction theory also emphasizes assisting clients as they make life plans, select careers, navigate career transitions, and deal with difficulties at work by assisting them to find meaning, set goals, and take purposeful action (Savickas, 2013). Therefore, it is strongly suggested that the career construction theory is relevant for the current study to inform career guidance for employability of TUT students in the digital world of work.

Empirical findings based on the career construction theory's hypotheses are crucial to build a career development practice and equip professional career counsellors with knowledge about how to assist their clients in making vocational decisions and building successful and fulfilling work lives, (Taylor, et.al., 2018; Zacher, Rudolph, et.al., 2018). However, research based on the career construction theory has mainly concentrated on the measurement and correlates of career adaptability (see Rudolph, et al., 2017 for a meta-analysis) and has not adequately addressed other important ideas and claims of this theory. As a result, while career construction theory offers a rich accounting of the process of proactive and adaptive career development over time, research has not yet fully explored the nuances that this richness affords (Rudolph et al., 2017).

In conclusion, Maree (2019) mentioned that career adaptability can be seen in the way that people obtain self-knowledge and career-related information to enter (fit into) the occupational digital world of work. The development of career adaptability supports and encourages individuals to be independent and ready to take charge of their own career development (Bimrose et al., 2011). Research also indicated that individuals with higher career adaptability are more successful in their career transition (Koen, 2012). Similarly, exploring the influence of career adaptability of graduates particularly in the South African context is key because the growth in graduate unemployment in South Africa has been linked to inadequate career counselling, skills shortages, or a skills mismatch between higher education supply and subsequent labour market demand as well as the lack of adequate employability competencies suitable to the 21st century digital-driven industry (Somerville, 2019). It is therefore hypothesised that high levels of career adaptability are positively associated with high levels of employability.

3.5 IMPLICATIONS FOR CAREER GUIDANCE

The literature review on the constructs of career agility, career interests and career adaptability highlight the relevance and importance of these constructs as psycho-social career resources that may potentially enhance TUT students' employability competency. It is evident from the review of the research literature that cultivating individuals' self-awareness of the importance of these psycho-social career resources in the management of their employability may add value to the career guidance of TUT students. Table 3.2 summarises suggestions for career guidance practice pertaining to the assessment of TUT students' career agility, career interests and career adaptability.

Table 3.2*Implications for Career Guidance Practice*

Construct	Description of potential role in career guidance	Potential value-add to TUT students' career guidance for employability
Career agility	Assessment and guidance on career agility may enhance the TUT student's self-awareness in terms of their technological adaptivity, agile learning & career navigation.	Self-assessment of self-regulatory processes and talents in navigating student's employability. Students evaluate their employability agency by assessing and developing positive psychological career qualities (Coetzee,2019)
Career interests	Assessment and guidance on career interests may enhance the TUT student's self-awareness in terms of their technical/functional competence, general managerial competence, entrepreneurial creativity, autonomy/Independence, security/stability, lifestyle, service/dedication to a cause and pure challenge	As universities are increasingly required to provide employability services, it is critical to understand how to assist TUT students in exploring, developing, integrating, and pursuing their academic and vocational interests. However, responsibility for encouraging students' interest growth frequently lies outside the purview of both career services and academics (Quinlan & Renninger, 2021).

Construct	Description of potential role in career guidance	Potential value-add to TUT students' career guidance for employability
Career adaptability	Assessment and guidance on career adaptability may enhance the TUT student's self-awareness in terms of their career concern, career control, career curiosity and career confidence.	Career adaptability is required throughout the transition phase from the world of education to the world of work, and the transition is the most critical factor in determining future vocational outcomes and successful careers for students (Tandiayuk, et.al., 2022),

Source: Author's own work

3.6 CHAPTER SUMMARY

The conceptual foundations and related theoretical underpinnings of career agility, career interests, and career adaptability as antecedents of perceptions of employer employability competency expectations were discussed in this chapter.

Chapter 3 concluded the achievement of the first literature research aim: To conceptualise the constructs of career agility, world of work awareness, career interests, career adaptability and perceptions of complying with employer employability competency expectations.

Chapter 4 presents a discussion of the theoretical integration toward constructing a career guidance framework for employability.

CHAPTER 4: INTEGRATION: TOWARD CONSTRUCTING A CAREER GUIDANCE FRAMEWORK FOR EMPLOYABILITY

Chapter 4 addresses the literature review research aims 3 and 4:

Research aim 3: To construct a theoretical career guidance framework based on the conceptualised theoretical relationship among the study variables.

Research aim 4: To outline the implications for student career guidance for employability practices.

The aim of this chapter is to provide a theoretical integration and to discuss the underpinnings of the proposed theoretical career guidance framework for enhancing employability.

4.1 A CAREER GUIDANCE FRAMEWORK FOR EMPLOYABILITY

One of the most significant decisions young people make is regarding their education and career. In this regard, career guidance assists individuals in moving forward in their education and employment (Musset & Kurokova, 2018). Weng et. al., (2022) state that while the value of career guidance has been recognized globally, far too many student guidance support practices are still inadequate apparently due to a lack of resources and weak government policy enforcement. Musset and Kurokova (2018) mention that according to empirical data, career guidance services, both inside and outside of universities, can frequently enhance educational, social, and economic outcomes for young people by influencing how they view themselves and the world of work. The need for career guidance is growing as young people complete their education and training for longer periods of time and as the labour market and employability become more complicated in this digital era. Furthermore, Weng et.al (2022) state that career guidance is far more crucial now than ever before, given the dynamic character of today's digital-driven work environment in which secure employment is rapidly disappearing. It has become imperative that career guidance for employability start early in schools and universities to expose students to the rapidly changing working world (Musset & Kurokova, 2018).

Hooley (2019) addressed the need for a reformed education system which must include career guidance. Education in general and specifically for career guidance plays a crucial role in creating workers with the necessary skills, in promoting a positive orientation toward change and a willingness to adapt and take part in reskilling and transition learning.

Against this backdrop, it is evident that TUT students who are confronted with a rapid and fast evolutionary changing technological driven work world, will be in dire need of context-relevant career guidance services to ensure their sustained employability competency. In the present study, the career guidance framework is conceptualised as entailing the relationship dynamics among the study constructs and the role that these constructs play in career exploration by TUT students as an emerging young adult.

4.1.1 Student career exploration: career development theory

According to psychologist Arnett (2007), emerging adulthood (17 to 28/30 years of age) is a new developmental stage that occurs between adolescence and young adulthood. It is defined as a period of self-discovery that occurs before people make long-term adult commitments. It has been argued that in many industrialised countries, the transition from adolescence to adulthood has been prolonged, with many young adults pursuing a higher education degree (Arnett, 2004). Grosemans et al. (2020) mentioned that adolescents' transition into adulthood has been significantly accelerated because of demographic changes (e.g., globalisation, economic restructuring, and technological changes). Finding a stable job takes longer, studies take longer, and young adults change jobs frequently (Arnett, 2000; 2004). The growing percentage of young people in industrialised countries who choose to pursue a higher education degree exemplifies this prolonged transition into adulthood.

Adolescents often leave home and undergo a lot of changes in habitation when they go to higher education, according to Arnett (2004), with some of them returning home after graduating. This time is spent pondering a transition to the next stage of their lives (Arnett, 2004). This allows them to experiment with various options in all aspects of life, gradually leading to more permanent decisions. Arnett (2000) identified a new developmental phase to appoint this extended phase of adolescence: the phase of emerging adulthood, in the context of these described changes. This stage lasts from late teens to late twenties (i.e., 17-29/30 years), and it is during this time that several important life decisions are made (Arnett, 2016). NG et al. (2024) state that although

emerging adults no longer see themselves as children, they nevertheless do not always assume all the obligations of maturity; self-focus: Many of the constraints of youth, when people can pick their own course in life and are not yet shaped by a career, marriage, or children, are not applicable to developing adults. Emerging adults make the transition from a structured higher education environment to a work environment with new expectations and responsibilities (Lindfors, Hultell, Rudman, & Gustavsson, 2014). Despite its importance, previous research on the transition from school to work has been fragmented, with a variety of approaches.

Arnett's (2004) theory of emerging adulthood has five main features. Emerging adulthood is a phase of identity explorations, which is the first and most important feature (Arnett, 2004). Individuals learn about themselves during this phase by exploring various options in love and work. The process of developing one's identity begins in adolescence and intensifies as one enters adulthood. Because these young adults do not have the responsibilities of a typical adult, they have the freedom to experiment with various lifestyles. The second feature is a continuation of the first. Because young adults are still exploring their options and frequently switch between them, this can be a very insecure time (Arnett, 2004). The age of self-focus is the third feature (Arnett, 2004). Before they can properly engage in relationships with others, young people need a time to focus solely on themselves. Fourth, emerging adulthood is known as the "in-between" age (Arnett, 2004), implying that it entails a sense of "being in-between" adolescence and adulthood. Finally, emerging adulthood is a period of possibilities, which means that emerging adults can have big dreams and expectations for their lives because their future isn't fixed yet (Arnett, 2004).

According to Grosemans et al. (2020), during and after higher education, emerging adults have a period of freedom to try out different jobs: Several teenagers have had their first job experience by the time they graduate from high school and/or work part-time during their college years (Arnett, 2004). During this time, their main goal is usually to make money rather than to lay a foundation for the future (Arnett, 2004). Their transition into a stable job takes longer, which allows them to re-enter the labour market if their first attempts are unsuccessful (Hartmann & Swartz, 2006). Most emerging adults eventually find a satisfying job, according to Arnett (2004), though the chances of finding a job are higher in late emerging adulthood. The 2016 labour force statistics from the Organisation for Economic Co-operation and Development (OECD) support this assertion: While 88.06% of 20- to 24-year-old adults in the labour force found work, the rate for

25- to 29-year-old adults in the labour force in OECD countries (91.64%; Organization for Economic Co-operation and Development, 2017) is even higher (91.64%).

Students' qualifications generally equip them with the knowledge and skills they need for entering the world of work (Super, 1996). However, helping students with their career exploration is essential to support them in effectively directing their efforts in career decision-making and job search (Budi et al., 2022). Career exploration is an activity that increases self-knowledge and self-awareness to improve one's job (Purwanta, 2012), Budi et al. (2022) also highlighted that a lack of information confounds career-related qualification selection.

As summarised in Table 4.1, Super's (1973, 1990, 1992, 1996) lifespan, life-space theory serves as a valuable theoretical lens in understanding TUT students' need for career guidance at different stages of their lives and the need for intentional efforts toward career development.

Table 4.1

Super's Life Stages

Stage	Age	Characteristics
Exploration stage	15 to early 20's	Individuals gain a more detailed understanding of their identities and workplaces. Preconceptions formed throughout the growth phase are honed when teenagers and young people learn more about the job and certain vocations. Individuals look for occupations that match their interests and abilities after gaining this knowledge in order to put it into practice. They also try to apply their self-concept to other areas of their lives.
Establishment stage	Ages 25-44	Individuals are concerned about advancing their careers in their preferred sectors. They hope to find a stable work environment with prospects for growth

Source: Super (1990, 1996)

Drawing from the basic premises from Super's (1990, 1996) theory, career exploration (generally from ages 15 to early 20's) is inherent to the process of acquiring knowledge of how one's qualification choice, interests and abilities align with the requirements of occupations in the world

of work. It stands to reason that the typical TUT student is generally in the career exploration phase as they prepare themselves for entering the world of work.

Career exploration involves the career development tasks of career self-concept crystallization, specification, and implementation (Coetzee et al., 2022; Kosine & Lewis, 2008). Crystallisation refers to the effort to translate one's self-concept into a preference for a group of occupations, engaging in work and educational experiences, and gaining knowledge about the world of work. Specification is the task of reducing a group of preferences to an occupational choice. Implementation is the task of searching for work most congruent with one's career interests, values and career self-concept (Coetzee et al., 2022).

Career guidance services for TUT students should offer help with the career development tasks involved in career exploration. During the exploratory stage, individuals engage in experiences that support the development of a vocational identity. Students are guided to investigate careers in a changing world of work, engage in for example, educational training and practical work experiences (e.g., volunteering). Students typically have a specific field of interest when it comes to their career development. The student's mind is constantly preoccupied with the realities of life after school (Sumari et al., 2015). Career guidance furthers the development of individuals' career self-concepts by helping them to learn about themselves, their career interests, and abilities, matching their interests and abilities to occupations and applying their self-concepts to both work and life roles (Kosine & Lewis, 2008; Super, 1990, 1996). In this regard, the present research expands on the career exploration process by contemplating a career guidance framework that considers individuals' career agility, career interests, career adaptability, world of work awareness and perceptions of employer employability competency expectations.

Super (1990, 1996) views the career development process as being unique to every person. Super (1990, 1996) also recognises the role of influencing factors like gender, ethnicity, ability, personality, socioeconomic status, family, geography, and opportunity, including social learning experiences, personality development, and one's needs, interests, values, and abilities that play a part in the development of individuals' career path development (Coetzee & Schreuder, 2021; Kosine & Lewis, 2008). In this regard, the present research also considers the influencing role of students' demographic characteristics (gender, qualification choice based on career interests, demographic [urban/rural]), and need for career guidance) in the envisaged career guidance framework.

Suriri (2020) mentioned that one of the advancements brought about by the Industrial Revolution 4.0 is the transformation of the workplace of the future. Students will therefore be significantly impacted and bear a heavy burden in terms of adapting to and surviving the changes. Students must therefore possess the required career self-management capabilities such as career agility and career adaptability during the career exploration phase of their lives (Coetzee et al., 2022).

It is during the crystallisation phase that TUT students may need clarification for their future career goals (Suriri, 2020). Students learn about entry-level jobs that might be a good fit for them as well as the qualifications needed for those positions. The recognition of skills, interests, and values is relevant at this stage. The individual's options are made more limited by their prior work experience and job knowledge. When a person switches fields, which an adult cannot do at any time, they are likely to go through this stage again to re-evaluate their interests, skills, and values (Sharf, 2016). According to Super (1963), the crystallisation phase is regarded as the most significant career development process which involves the following attitudes, behaviours, and traits:

- Awareness of the need to crystallise the self-concept (awareness of dominant career interests).
- Use of psychosocial career self-management resources
- Awareness of the factors to consider in career planning.
- Awareness of contingencies that may affect goals.
- Differentiation and clarification of interests and values
- Awareness of present-future relationships
- Formulation of general career preferences
- Consistency of preference or career interest(s)
- Possession of information about career preferences
- Planning for the preferred career
- Wisdom of the preference

Once students have completed their studies and graduate from the university, the main objective is to find employment and to start a career. But not all students are certain of the career path they want to take, with some having greater career uncertainty than others (Gutman & Schoon, 2012; Komarraju, et al., 2013; Welsh & Schmitt-Wilson, 2013). For example, Lin et al. (2015) conducted a study in Taiwan and reported that undergraduate students did not know what to do after

graduation (Peng, 2004). In another national survey of Taiwanese college juniors conducted by the same organisation in October 2005, 60% of juniors reported that they did not know what to do after graduation (Peng, 2005). These findings reveal that career uncertainty is an important issue facing college students in Taiwan (Lin et al., 2015). Career uncertainty is harmful to personal growth and career development and frequently has a negative impact on psychological and physical adjustment (Daniels, Stewart, Stupnisky, Perry & LoVerso, 2011).

4.1.2 Career indecision in career exploration

TUT students frequently lack confidence in their choice of future careers. Uncertainty in selecting a career can result in a poor decision, which can have an impact on a person's quality of life in both the short and long term (De Raaf, et al., 2009). Career uncertainty consequently causes career indecision, which affects how people approach and perceive their future careers (Elaydi 2006; Jordaan, et al., 2009). Career uncertainty can result in additional years of study, a delayed university graduation (Feldman, 2003; Gati & Amir, 2010), and a requirement for more resources (such as financial costs) to complete a student's qualifications (Essig, 2010). Botha and Mostert (2013) mentioned that career indecision and uncertainty are closely related. According to Jordaan et al. (2009), career uncertainty is a factor that contributes to career indecision. The difficulty a person has in making decisions and their inability to make a single decision regarding their career are both considered signs of career indecision (Gati and Saka 2001). On the other hand, career uncertainty is viewed by Tien, et al., (2005) as factors that make an individual feel uncertain about their career future. Since students who experience career uncertainty later develop career indecision, which in turn affects their ability to make career decisions, career uncertainty is therefore seen as a causative variable of career indecision (Elaydi, 2006).

4.1.3 Career adaptability in career exploration

According to research, a high career adaptability level also indicates a person's psychological readiness and willingness to actively use career adaptability resources to solve problems and achieve career goals (Savickas & Porfeli, 2012). As indicated previously, TUT students often lack confidence in their choices of future careers and several researchers believe that career adaptability through education and training can help individuals cope with workplace and unemployment challenges during difficult times (Lee et.al., 2021). According to Heath (2020), career adaptability could aid TUT students in seeing the opportunities in unexpected changes,

taking advantage of them, and recovering from unexpected outcomes. Furthermore, career adaptability could enable TUT students to handle challenges in their careers (Lee et al., 2021). Students who possess high career adaptability can adjust and successfully navigate tasks, transitions, and traumas in their careers as they have more significant transactional competencies and psychosocial resources (Savickas, 1997).

TUT students can improve their own career adaptability to strengthen their ability to handle changes in this technologically advanced world (Savickas & Porfeli, 2012). Existing research has demonstrated a positive correlation between career adaptability and success, job performance, and employee well-being (Ohme & Zacher, 2015; Yu & Zheng, 2013). Furthermore, it has been demonstrated to be a strong indicator of several favourable career outcomes, such as promotability (Tolentino et al., 2013), employment status (Guan et al., 2014), career satisfaction (Zacher, 2014), successful career transitions (Brown et al., 2012), decreased career anxiety and work stress (Maggiori et al., 2013), and result in higher job satisfaction and work engagement (Rossier et al., 2012). Career adaptability may enable TUT students to see the opportunities in unexpected changes, take advantage of those changes, and bounce back from unexpected outcomes (Rudolph et al., 2017). Career adaptability might also encourage more possibilities in challenging circumstances and assist them in responding to changes in a composed and calm manner (Tripathy, 2020). (Ginevra et al., 2018).

Savickas et al. (2009) identified the four resources of adaptability, namely career concern which is a feeling of apprehension about the future and allows people to plan and anticipate what will occur next. Career control allows individuals to be responsible for shaping themselves and the environment to meet what will happen next using self-discipline, effort, and persistence. Career curiosity encourages one to think of oneself in different situations and roles. The experience of career exploration and information-seeking activity generates aspirations and builds confidence that the person can actualise the choice to apply their life design. When it comes to vocational tasks, work transitions, or work traumas, adaptable people are thought to be (a) concerned about the future of their vocation, (b) in control of trying to prepare for the future of their vocation, (c) curious about themselves and future scenarios, and (d) strengthening self-confidence to pursue their goals (Porfeli & Savickas, 2012).

Career guidance can assist TUT students to increase their career adaptability to enhance their fit with the changing digital world and effectively manage their career changes and challenges (Zacher et al., 2015). Career adaptation resources can be utilised by TUT students to strengthen or capacitate themselves to solve unfamiliar, complex, and unclear problems posed by vocational or job assignments, job transitions, and job traumas.

- Concern involves planning for the future,
- Control implies a personal responsibility to shape the future,
- Curiosity leads to exploring possible roles, and
- Confidence is the belief in one's ability to achieve goals and implement choices (Savickas & Porfeli, 2012).

4.1.4 Career agility in career exploration

TUT students are required to be proactive and adapt to Industry 4.0, which brings new jobs, industries, and fundamentally new ways of working because of technological innovation (Hirschi, 2018). Nyamwenge (2019) mentioned that, generally, the only support students get is from career counsellors/ coaches within the universities. To address this lack, students' must be career agile, which implies that they confidently capitalise on and search for new career development and upskilling opportunities that facilitate meaningful outlets for creative self-expression of needs, interests, and values (Sampaio et al., 2021). Coetzee et al. (2021) mentioned that individuals who have career agility exhibit technological adaptivity (active readiness to take advantage of new career development opportunities made possible by technological innovation), an agile learning mindset (intrinsic motivation to actively set and manage goals for capability-expanding learning opportunities), and proactive career navigation of the changing digitally-driven employment market (i.e. ideation of new job and career opportunities, and navigation). Career agility, which functions as a psychological adaptation mechanism, lowers career insecurity in ambiguous employment contexts, boosts people's self-efficacy in actively using their career adaptability resources to manage their professional identities and employability (Alisic & Wiese, 2020; Coetzee et al., 2021; Guan et al., 2021).

- *Technological adaptivity*

Being able to adapt to technology will promote favourable attitude towards accelerated technological development and the potential for new and interesting job and career prospects. The agile mentality will also improve students' creativity, progress, and enjoyment. Furthermore, they will be willing to look for employment roles that develop with changing technology conditions because of the prospects for growth that these provide. Finally, students with high degrees of technological adaptivity believe it is critical to refresh their knowledge and abilities in order to capitalize on new career opportunities generated by technological advancements. They are confident in marketing their distinct brand of values and skill set across digital networks (Coetzee, et al., 2020).

- *Agile learning*

TUT students will be able to set and manage their professional goals if they become agile learners. Students that have high levels of agile learning are frequently vivacious and full of energy; they are eager to learn new abilities that will help them develop in their jobs and achieve success at work (Coetzee et al., 2020). An agile learning mindset encourages students to consider activities and opportunities that will assist them in developing, utilizing, and optimizing their knowledge, skills, and learning preferences (Andersen, 2020; Konstant, 2020).

- *Career navigation*

TUT students will be more willing to negotiate and adjust to change and uncertainty in their employment and career environments if they engage in career navigation. Students with great career navigation abilities are keen to look for new professional opportunities and to capitalize on changes in the work and career environment. Such students will be extremely adaptive in terms of their ability to change (Coetzee et al., 2020). Andersen (2020) views career navigation as a critical mindset for staying informed of market changes and possibilities, as well as promoting environmental awareness, which enables individuals to confidently exploit and apply changes to their own professions and occupations. TUT students must ensure that they are lifelong learners and look out for opportunities to acquire more skills aligned to the digital world of work.

According to Chalkiadaki (2018), upskilling opportunities requires students to possess creativity, divergent thinking, critical thinking, team working (especially in heterogeneous groups), work autonomy, developed cognitive and interpersonal skills, social and civic competences, responsible national and global citizenship, consciousness of interdependence, acceptance and understanding of diversity, recognition and development of personal attributes, interactive use of tools, communication in mother tongue and foreign languages, mathematical and science competence, digital competence, sense of initiative and entrepreneurship, accountability, leadership, cultural awareness and expression and physical well-being. According to research, most students have inadequate information regarding the upskilling opportunities or 21st century digital skills (Joyness, 2019).

4.1.5 Career interests in career exploration

The unpredictable, volatile, and worldwide market-sensitive setting in which individuals' careers unfold characterizes the world of work (Coetzee & Schreuder, 2014). TUT students must utilize their own resources and capacities (i.e., strengths, intrinsic motivation, values, aspirations, and coping capacities) to become more resilient and flexible in negotiating the person-environment fit harmonics in a more chaotic job context (Ferreira, 2012). According to Schein (1990; 1996), a person's career anchor is their self-concept or internal identity of career interests, which evolves only as they gather occupational and life experience. TUT students will have to rely on internal definitions and measurements of job success in the creation of their careers, according to the career anchors theory (Savickas, 2011; Schreuder & Coetzee, 2011).

TUT students may uncover a dominant career anchor (often supported by two supplementary career anchors) that drives their career interests as their careers and lifestyle preferences grow with life and work experiences that contribute to the crystallisation of the career self-concept (Schein, 1996). The dominant career anchor with its two supplementary career anchor interests will reflect their long-term preferences for their work and work environment (Schein, 1990; 1996). Schein (1990) identified eight categories of career anchors that may assist TUT students to structure their career choices according to their basic career interests and personal values:

- *Technical/functional competence*

TUT students with this career interest can get expert guidance from their peers and others who have studied similar courses and built successful professions. They can also become lifelong learners by furthering their studies in their areas of specialisation. The examples of occupations could be computer programming, computer science, database management, data science, data visualization, information systems, network security, software engineering.

- *General managerial competence*

TUT students with this career interest typically exhibit the willingness to tackle complicated challenges that affect their careers to make more informed future decisions, raise their levels of responsibilities, power, and influence to ensure that they advance up the corporate ladder. Occupations may include becoming a general manager, project manager as well as others and ultimately reaching CEO levels.

- *Entrepreneurial creativity*

Students with this career interest generally are creative in identifying new innovative businesses, products, goods, and services and building profitable organisations. They have the desire to create wealth, power, and freedom as well as high personal exposure and public acknowledgment. The occupations may include, establishing own businesses and empires.

- *Autonomy/independence*

TUT students with this career interest generally value their independence and personal freedom to demonstrate their abilities in any context. The various fields that can be included are tax consulting/auditing, human resources/staffing and recruiting, information technology and services/network security, consulting, internet/media, arts/culture/entertainment, purchasing, research and development/sciences.

- *Security/stability*

Students with this career interest may be more prone to recognize and comprehend that the 4.0 IR world of work is no longer defined by long-term employment for health benefits, retirement, predictability, and being rewarded for lengthy service. They recognise the importance to possess the skills that will make them marketable while also building their own wealth and security/stability. Therefore, Schein's (1990) theory on the categories of career anchors (security/stability) may be less relevant or become a challenging career interest.

- *Lifestyle*

Students with this career interest may generally exhibit a desire to combine personal and family well-being with work obligations. They may prefer flexible working conditions and the freedom to balance career and family life.

- *Service/dedication to a cause*

TUT students with this career interest tend to value assisting others and strive for the greater good of organisations or communities. Furthermore, they may desire power and autonomy in the pursuit of personal values or a greater life purpose/goal.

- *Pure challenge*

Students with this career interest generally value challenging and unique assignments/projects, become innovative and be willing to take risks, as well as testing personal endurance through risk-inducing ventures or physically demanding tasks and influence to compete and win.

4.1.6 World of work awareness in career exploration

Government, academic, and business leaders must work together to provide the workforce with the evolving digital skills that will support every job of the future to promote equitable employment opportunities. According to research published by Microsoft Data Science (30 June 2020), using LinkedIn data, 149 million new technology-related jobs are expected to be added to the global workforce over the next five years, with fields like data analytics, software development, and

cybersecurity expected to experience rapid growth. In a Pew Research Center survey of American workers, 85% of those polled rated having strong digital skills as "extremely important" or "very important" for success in the workplace of the present (Digital skills gap, 2021). However, according to the Digital Skills Gap Index (DSGI), only 4.2% of survey participants reported total satisfaction with the quantity and quality of digital skills (i.e., "Significantly Matched" demand and supply of digital skills). Economies that have only recently begun to invest in digital skills will have to move quickly to catch up (Digital skills gap, 2021),

Principles of planned happenstance theory (Krumboltz, 2013) can help TUT students create, recognise, and incorporate unexpected work world events into their professional development. Students must be guided to plan for and be open to unforeseen opportunities and learn to anticipate potential new, unforeseen possibilities. Students should not simply meander through events started by others; they must learn to act to generate and identify opportunities (Michell et.al, 2011).

Another factor affecting most TUT students is a lack of early career guidance, which leads to students making inappropriate career decisions, which often is one of the main reasons they do not complete their chosen degree (McGee, 2012). Choosing a study path that is in line with a student's passion, purpose, and academic ability is a significant determining factor in their chances of success at university and finding employment in their subsequent careers. It is critical for students to gain a sufficient level of self-awareness as well as knowledge of the current job market to choose the right course of study (Nyamwenge, 2016).

TUT career counsellors can help students learn to embrace ambiguity and create an adventurous mindset toward the world of work. Students can develop an open and non-rigid attitude toward the work world by enabling themselves to encounter new events and changes in a way that promotes growth and greater self-definition. TUT career counsellors can assist students to develop five skills to recognize, create, and use chance as career opportunities, namely (Nyamwenge, 2016):

- *Curiosity*

Curiosity can assist students by exploring new learning opportunities instead of being rigid and stereotyped they can look and venture into other related career opportunities which align with the digital world of work.

- *Persistence*

Students must possess the abilities to persevere regardless of setbacks that they might face.

- *Flexibility*

Students must be able to adapt and be flexible enough to change to new and innovative ways of doing things.

- *Optimism*

TUT students must view new opportunities as possible/ feasible and attainable regardless of how challenging the circumstances may be.

- *Risk Taking*

Students should be able to take necessary actions in the face of adversity and not waiting for others to solve their problems. They must learn to take the initiative to solve problems.

4.1.7 Employer employability competency expectations in career exploration

TUT students must accept that advances in information and communication technologies, global financial market integration, corporate restructuring, and the importance of multinational corporations in global financial market integration, signal new employability competency expectations by employers. Igbal et al. (2022) assert that the labour market trends, work practices, and industrial employment patterns have been impacted by the constant change in socioeconomic conditions, new political and strategic drivers, organisational shifts and enterprises, diversification, globalisation, quickly advancing technological advancements like

automation, business re-engineering, and the pressures resulting from business re-modelling in post-COVID times. Table 4.2 summarises the core role of the study constructs in career exploration for employability competency.

Table 4.2

Study Constructs and Their Role in Career Exploration for Employability Competency

Construct	Core role in career exploration and planning for employability competency
Career adaptability	Active and confident use of psychosocial career resources of adaptability (career concern, control, curiosity, confidence) for career exploration in changing work contexts. Work of world awareness and adaptivity
Career agility	Insight into adaptive readiness and willingness to engage in career and upskilling exploration (technological adaptivity, agile learning, career navigation) and tapping into career adaptability resources for career planning and exploration. Work of world awareness and adaptivity
Career Interests	Awareness of dominant career concerns, needs, and values which are crucial components of an individual's career self-concept when faced with an important and difficult job choice. Individuals possess at least one dominant career anchor (autonomy/independence, pure challenge, service/dedication to a cause, security/stability, lifestyle, technical/functional competence, general managerial competence & entrepreneurial creativity).
World of work awareness	Person-Environment fit review in job search and employability expectations: Exploration of digital nature of work world and job/career opportunities and need for continuous upskilling, reskilling; exploration between match between TUT studies and skills gained versus type of jobs/occupations offered in digital work world.
Employer-employability competency expectations	PE fit review in job search and employability expectations: Skills and knowledge gained by TUT studies and complying with employer employability competency expectations (graduateness, business/entrepreneurial skills, personal employability qualities and autonomy/leadership)

Source: Author's own work

4.2 INTEGRATION: CONCEPTUAL RESEARCH MODEL

The overall central hypothesis of the study (see chapter 1, section 1.6.4) was that the empirically manifested relationship dynamics among the independent (career agility, career interests, world of work awareness), mediating (career adaptability), and dependent variable (employer employability competency expectations) would inform the development of a career guidance framework for improving student employability competency.

The review of the literature on the constructs emphasizes the relevance and importance of these constructs in career exploration (see Table 4.1) for employability competency. Several theories were reviewed in chapter 2 and chapter 3 to elucidate the study constructs and their role in career guidance for employability competency. According to a review of the research literature, cultivating individuals' self-awareness of the importance of these psycho-social career resources in managing their employability may add value to TUT students' career guidance.

Despite prior research conducted on career guidance and its significance in improving graduates' employability, there has never been any study focusing on these career exploration constructs jointly in the South African TUT context. The present study aims to contribute new evidence-based (empirical) knowledge on the extent to which the independent variables (career agility, world of work awareness, career interests) and the mediating variable (career adaptability) inform the construction of a career guidance framework that might improve the employability competency perceptions of students from the University of Technology. The empirical goals of the study endeavoured to help achieve the general research aim of the study:

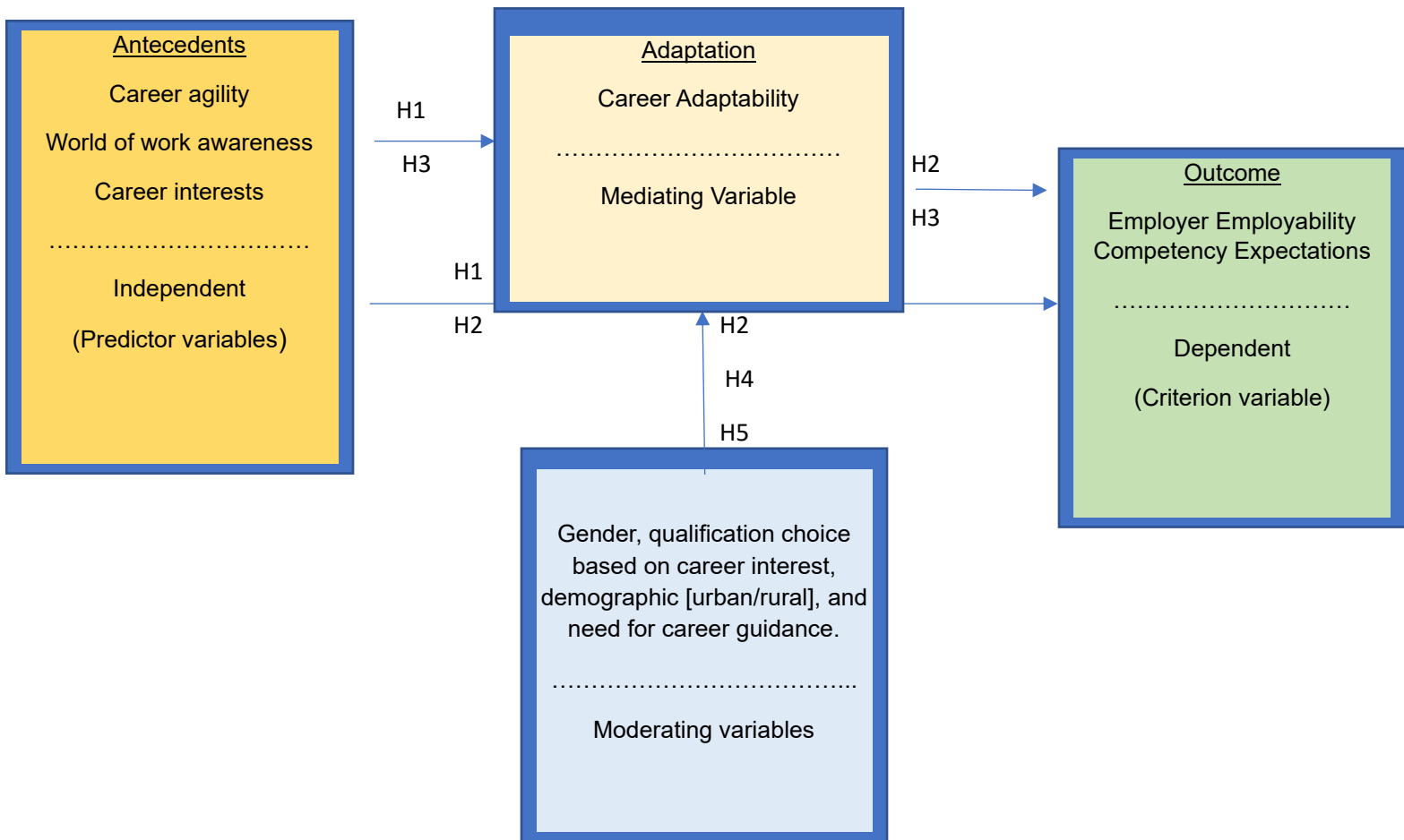
General research aim:

The general research aim was to construct a career guidance framework for employability from the observed relationship dynamics among students' socio-demographics (gender, qualification choice based on career interests, demographic [urban/rural], and need for career guidance), career agility, world of work awareness career interests, career adaptability and perceptions of complying with employer employability competency expectations.

Figure 4.1 illustrates the conceptual framework of the research model.

Figure 4.1

Conceptual Framework of the Research Model



To achieve the empirical goals of the study's general research aim, five overarching research hypotheses were formulated:

H1: Significant statistical inter-relationships exist between students' career agility, world of work awareness, career interests, career adaptability and perceptions of employer employability competency expectations.

H2: Students' characteristics (gender, qualification choice based on career interest, demographic [urban/rural], and need for career guidance), career agility, digital world of work awareness, career interests and career adaptability positively predict their perceptions of complying with employer employability competency expectations.

H3: The link between students' career agility, world of work awareness, and career interests (antecedents), and their perceptions of complying with employer employability competency expectations (outcome), is mediated by their career adaptability.

H4: Students' socio-demographic characteristics (gender, qualification choice based on career interest, demographic [urban/rural], and need for career guidance), act as moderators of the associations between the antecedent, mediating and outcome variables.

H5: Students from various socio-demographic groups (gender, qualification choice based on career interest, demographic [urban/rural], and need for career guidance) differ significantly in terms of their career agility, world of work awareness, career interests, career adaptability and perceptions of complying with employer employability competency expectations.

Coetzee et al. (2020) investigated career agility as a predictor of career adaptability. The findings supported their hypothesis that the three components of career agility, namely technological adaptivity, agile learning, and career navigation, would predict the active use of individuals' career adaptability. Furthermore, popular media indicated that people with high degrees of career agility are resourceful in finding and pursuing professional options and possibilities; they succeed in the job search process and can construct meaningful and fulfilling professions (Andersen, 2020; UBC, 2020). The study by Coetzee (2022) further gave crucial insights into the career-anchored interest types technical and functional competence, autonomy and independence, and pure challenge as explanatory antecedents of individuals' understanding of the digital-era world of work. Furthermore, the findings gave an in-depth explanation of the dynamic links among technical and functional competence, pure challenge, and general management, as well as digital-era world of work awareness and individuals' career agility. Career adaptability is also associated with employability (Kwon, 2019). Therefore, significant positive associations among the study construct variables were expected.

Research shows that career adaptability assists individuals in adapting to changes in the work market and job conditions (Ginevra et al., 2016; Savickas & Porfeli, 2012). Furthermore, Johnston, (2018) highlighted research showing that career adaptability and its collection of resources act as intermediary mechanisms that influence people's interactions with the world of work. For the current study it is predicted that career adaptability will mediate the relationships between the independent and dependent variables.

It is further assumed that the present research student's socio-demographic factors such as (gender, qualification choice based on career interest, demographic [urban/rural], and need for career guidance) would positively predict their perceptions of complying with employer employability competency expectations. Based on earlier studies numerous demographic traits have been discovered to have an impact on career counselling both internationally and in the context of South Africa (Oluwajodu et al., 2015). Demographic factors (i.e., rural/urban settlement background) are associated with graduate employability because they function as multiple forces that can shape the personal and environmental experiences of tertiary students and include various aspects of identity development (Oluwajodu et al., 2015).

4.3 IMPLICATIONS FOR CAREER GUIDANCE FOR EMPLOYABILITY COMPETENCY

In the present study, career guidance essentially entails creating self-awareness in TUT students of their career agility, world of work awareness, career interests, career adaptability and their perceptions of employer employability competency requirements. Students at TUT need to understand that career guidance comprises much more than just picking a profession and hope to keep it for the rest of one's life, they must view choosing a career as an effort to discover a method to integrate into society and make a social contribution.

Assessment of TUT students' self-awareness of these construct attributes may help develop their confidence in engaging in career exploration (see Table 4.2). Career guidance may also explore the extent to which age, gender and differing needs for career guidance influence TUT students' strengths regarding the study constructs. Testing the research hypotheses may reveal important relationship dynamics that inform career development interventions aimed at strengthening the study construct attributes for agile career exploration. TUT students may further gain insight into how their qualification choice relates to their career interests, and the degree to which age, gender, qualification choice, their need for career guidance and demographics (living in an urban or rural area) may influence their perceptions of their employability competency.

It has been indicated that career guidance increases people's confidence in their ability to intentionally craft a meaningful, life-improving career future that is in line with their intrinsic career values, interests, and aspirations and goals (Bates, et al., 2019). Although previous research has focused on career guidance and employability, it appears that there is a dearth of study on career

guidance constructs that might enhance students' employability competency in the South African context. Research on the connections between the study construct variables could therefore significantly advance the body of knowledge about career guidance and the employability competency of TUT students in the South African context.

The career guidance process promotes an agile career mindset akin to that of a protean that directs agency in the management of a sustainable career in today's turbulent and complex workplace (Bates et al., 2019; Coetzee et al., 2021a; Hall, Yip, & Doiron, 2018). In the current study, career exploration constructs (career agility, awareness of the world work, career interests and career adaptability) are all related to or mutually dependent on each other to increase students' employability competency. For instance, those who are career-agile show that they are adaptively prepared to deal with the novel and unknown career phenomena and options that the workplace of the digital era presents (Coetzee, 2021a; Hirschi, 2018; Lent, 2018).

According to Coetzee et.al. (2021b), individuals' awareness of the world of work in the digital age alludes to purposeful extrinsic career exploration behaviour and cognitions that allow access to information about the changing nature of work, new occupations, and job opportunities, as well as the fit of these with individual career values and interests. Likewise, the mindset states of technological adaptivity (i.e., optimism and problem-solving orientation toward seeking out new occupational and upskilling opportunities made possible by technological advancement), agile learning (i.e., energetic positivity toward seeking out continuous learning and growth opportunities), and career navigation (i.e., self-efficacy in adapting) are all indicators of an individual's career adaptability (Coetzee et al., 2020; Coetzee, 2021).

Additionally, research findings suggest that career-anchored career interests guide intrinsic career exploration, which awakens a sense of curiosity about the types of employment and careers that would produce the greatest sense of fulfilment and professional success (Schein, 1990; Su, 2020). Career self-awareness and curiosity help individuals learn more about the career options in the digital-era world of work that fit their career orientations (Coetzee et al., 2021a; Grossnickle, 2016). Because they encompass profession-related values, motives, and wants, career interests in the form of career anchors become the primary concern at every stage of the person's career and act as an internal driving force when making career decisions (Coetzee, 2022).

Furthermore, it is proposed in this study that career adaptability is a mediating variable between career interests, career agility, world of work awareness and employability competencies. Research shows that career adaptability aids people in managing their careers and navigating workplace changes so they can adapt to changing duties, engage in continual self-education, and take charge of their career path (Glavin & Berger, 2013; Savickas & Savickas, 2017). According to Maree et al. (2019), career adaptability includes having a strong career self-identity and having the (coping) tools necessary to deal with change and transition. Furthermore, it appears that people's stories of developing and enhancing their chances of success are what lead to professional adaptability.

In conclusion, as depicted in figure 4.1, the empirically demonstrated relationship dynamics among the career exploration variables enabled the researcher to formulate a career guidance framework for enhancing student employability skills.

4.4 CHAPTER SUMMARY

This chapter provided a theoretical integration toward constructing a career guidance framework aimed at enhancing the employability of students.

Thus, following research aims of the literature were accomplished:

Research aim 2: To construct a theoretical career guidance framework for employability based on the conceptualised theoretical relationship among the study variables.

Research aim 3: To outline the implications for student career guidance for employability practices.

CHAPTER 5: RESEARCH METHOD

This chapter addresses the empirical study (see figure 1.2 in chapter 1). The chapter discusses the empirical research method that was applied to critically assess the relationship dynamics among the study variables for the construction of a career guidance framework with the goal to enhance the employability competency of the TUT students. Chapter 1 explained that the empirical phase consists of ten steps aimed at addressing the empirical research aims:

Step 1: Choosing research approach.

Step 2: Determination and description of population and sample

Step 3: Description of the measuring instruments

Step 4: Ethical considerations and administration of the measuring instruments

Step 5: Capturing of criterion data.

Step 6: Formulation of research hypotheses

Step 7: Statistical processing of data

Step 8: Reporting of results

Step 9: Interpretation and discussion of findings

Step 10: Formulating conclusions, limitations and recommendations

Step 1 to step 7 are addressed in this chapter while chapter 6 addresses step 8. Chapter 7 addresses step 9 and step 10.

5.1 STEP 1: RESEARCH APPROACH

The study adopted a cross-sectional quantitative research design which involved gathering initial data from a variety of participants to establish the nature, magnitude and direction of relationships between potential study variables (Thomas, 2022). A cross-sectional survey research design approach has the advantages listed below (Thomas, 2022):

- A cross-sectional study is an affordable and simple way to collect preliminary data and find correlations between variables that can then be explored further in a longitudinal study.

- Cross-sectional studies can be employed for analytical or descriptive purposes. An analytical study aims to explain how or why a particular outcome might take place. Only the said outcome is summarised in a descriptive study using descriptive statistics.
- Cross-sectional studies enable the researcher to gather information from a sizable pool of participants and compare variations between groups.
- Cross sectional quantitative research design can provide useful insights into a population's characteristics and identify correlations for further research.

Some of the limitations of the cross-sectional research design include:

- Research methods using a cross-sectional approach cannot determine the incidence and true cause-effect relationships (Thomas, 2022).
- Since cross-sectional studies only study a single moment in time, they cannot be used to analyse behaviour over a period or establish long-term trends.
- Wang and Cheng (2020) mentioned that identified cross-sectional studies associations might be difficult to interpret and unable to investigate the temporal relation between outcomes and risk factors.

Using quantitative research will emphasize the quantification in the collection and analysis of data (Bryman, 2016). Quantitative research has adopted the procedures and standards of the positivist natural science model and embodies the idea that social reality is an objective external reality. Furthermore, Bryman (2016) mentioned that quantitative research is a deductive approach to the relationship between theory and research, with the emphasis on theories' testing. The quantitative nature of the data enabled the researcher to obtain empirical data that could be transformed into descriptive, inferential, and explanatory (deductive) information that could be used to test the research hypotheses for the achievement of the empirical research aims.

5.2 DETERMINATION AND DESCRIPTION OF THE POPULATION AND SAMPLE

Shukla (2020) defined population as the collection or group of all the units to which the research's conclusions should be applied. A sample is any subset of a population that encompasses all the various population components (Shukla, 2020). The following traits define an ideal sample (Shukla, 2020):

- The sample must contain a proportionate number of units. This means that the sample size must be in the proper ratio to the population's number of units.
- The sample's chosen units must accurately reflect all the traits of the various population units.
- All the research's objectives should be achieved with the aid of the sample.
- The sample units must be chosen fairly and without bias. All population units must have an equal chance of being chosen for the sample, according to this.
- A good sample will enable the researcher to save time, effort, and money.
- The researcher should be able to reach the sample units easily. It implies that the researcher should have access to the units of the sample.
- The researcher should find it easy to collect the data from the sample units.
- By choosing such a sample, the researcher's job is made simple and accurate. Samples are therefore crucial to research.

According to Wang and Cheng (2020), planning the sampling strategy is a crucial part of designing a cross-sectional study. Furthermore, Wang and Cheng (2020) defined sampling as the process of selecting certain members or a subset of the whole population to estimate the characteristics of the population. Due to the significant heterogeneity that is frequently seen in the target population, developing a strong sampling strategy is essential when conducting a cross-sectional study. The two main types of sampling techniques (Wang & Cheng, 2020) are:

- Probability sampling techniques, in which samples are chosen using a strategy based on the theory of probability.
- Nonprobability sampling techniques, where samples are chosen based on judgment.

Probability sampling techniques are generally preferred over nonprobability ones because the former is thought to be more accurate and rigorous.

For this study, the population comprised of students from a university of technology in the South African context. The participants were 1st year students who are registered at Tshwane University of Technology in the Faculty of Humanities, from the North, South and Polokwane campuses. The participants from this faculty were chosen because it was established that students who majored in the Humanities fields experience lower employment prospects than their counterparts in the STEM fields (The conversation by Nombulelo Precious Mncayi, 13 July 2021). The participants

are registered in various departments (i.e., Public Management, Safety & Security Management, Law, Applied Languages, School of Education, and Journalism & Integrated Communication) within the Faculty of Humanities.

This study used probability sampling technique, in which each unit in a population had a specifiable chance of being selected. The motivation behind using probability sampling is to generate a sample that is representative of the population in which it was drawn so that valid conclusions can be drawn from the statistical analyses. The main advantage of probability sampling is its simplicity and lack of bias. Among the disadvantages is the difficulty in obtaining access to a wider population list, the time and money involved, and the fact that bias can still arise under certain conditions (Melissa Horton, April 2023, Investopedia). A total of (N = 2800) 1st year students who were registered in the Faculty of Humanities were invited by means of a randomly chosen sample of (N = 500).

The researcher obtained written ethical clearance and permission to conduct the research from both universities of South Africa (Unisa_ ERC Reference; 2021/CEMS/IOP/012) and Tshwane University of Technology (REC Ref #: REC/2021/06/014). Upon receipt of permission from both universities the researcher shared the survey link via emails and whatsapp with the 1st year lecturers and one student assistant from the department of Student Affairs and Extracurricular Development (SAED) to ensure that they circulate the survey to the broader randomly chosen student community (only 1st year students with the faculty of Humanities) through Brightspace, a platform the university uses to communicate with students. Only 369 out of the initially targeted 500 respondents (N = 500) returned the questionnaires (73.8% response rate). The socio-demographic characteristics of this sample are summarised in Table 5.1.

Table 5.1*Socio-Demographic Characteristics of the Sample*

Demographic characteristic	Frequency	Percentage (%)
Faculty of Humanities: Department of Studies		
Maths and Business Education	103	27.913
Primary Education	27	7.317
Technology and Vocational Education	21	5.691
Educational Foundation	7	1.897
Integrated Communication	3	0.813
Public Management	92	24.932
Safety and Security Management	54	14.634
Law	2	0.542
Applied Languages	11	2.981
Missing	49	13.279
TOTAL	369	100.00
Ethnicity		
Northern Sotho	81	21.951
Southern Sotho	13	3.523
Tswana	37	10.027
Zulu	117	31.707
Swati	20	5.420
Xhosa	14	3.794
Tsonga	39	10.569
Ndebele	10	2.71
Venda	29	7.859
Missing	9	2.439
TOTAL	369	100.00
Campus		
Soshanguve South	162	43.9
Soshanguve North	168	46
Polokwane	20	5.1
Unknown	19	5.0
TOTAL	369	100.00
Gender		

Demographic characteristic	Frequency	Percentage (%)
Faculty of Humanities: Department of Studies		
Male	130	35.23
Female	239	64.77
TOTAL	369	100.00
Demographic origin		
Urban	112	30.352
Rural	257	69.648
TOTAL	369	100.00

The sample consisted of black African TUT students (N = 369) with a mean age of 20.76 years (SD = 2.47). The present research project focused on the characteristics of age, gender, socio-demographic [urban/rural], qualification choice based on career interest and need for career guidance as boundary conditional variables to consider in the career guidance framework. Table 5.1 shows that the sample consisted of predominantly female participants (64%) and a smaller representation of male participants (35%). Participants were mostly from a rural background (70%) and some were from an urban background (30%).

Table 5.2 summarises the frequencies for qualification choice based on career interest and need for career guidance.

Table 5.2

Frequencies: Qualification Choice Based on Career Interest and Need for Career Guidance

Qualification choice based on career interest	Frequency	Percentage (%)
Qualification choice not strongly based on career interest	101	27
Qualification choice strongly based on career interest	268	73
TOTAL	369	100
Career guidance need	Frequency	Percentage (%)
No or little need for career guidance	160	43
Strong need for career guidance	209	57
TOTAL	369	100

Overall, the participants' qualification choice seemed to be mostly based on their career interests (73%) and most of them had a strong need for career guidance (57%).

5.3 DESCRIPTION OF THE MEASURING INSTRUMENTS

The measuring devices for the current study were selected based on their applicability to the theories and models and the literature review served as a basis for choosing the psychometric instruments. According to Echevarría-Guanilo et al. (2017), the validity and reliability of the instrument are typically the measurement characteristics that are most valued. Validity is concerned with whether the measuring instrument measures the behaviour or quality that it is intended to measure and is a measure of how well the measuring instrument performs its function (Anastasi & Urbina, 1997), whereas reliability is the extent to which an instrument allows for consistent results across applications (Echevarría-Guanilo et al., 2017).

An anonymous web-based survey was used to collect the following self-report data of students on socio-demographic factors, career agility, world of work awareness, career interests, career adaptability, and employer-employability competency expectations to achieve the aims of this study. The construct-related measuring tools were chosen based on their suitability, reliability, and validity as well as how affordable they were to use. Table 5.3 summarises the psychometric properties of the measuring instruments used for achieving the research aims.

The measuring instruments were all self-report devices for collecting data. According to Montag et al. (2022), it is well known that self-report has several flaws. For example, some people have trouble reflecting, therefore they tend to rate themselves poorly. In addition, social desirability may affect how people present themselves on a questionnaire, and some personality test versions may be simpler to grasp and complete than others (Montag, et.al., 2022). According to Demetriou et al. (2015), most self-report surveys generally follow a Likert-style structure where respondents rate items based on their subjective experiences. Self-report tools are required to evaluate individuals' experience even though they may not be adequate to determine their precise diagnosis (Demetriou et al., 2015).

Self-report questionnaires may have another major limitation for giving false information. Respondents may not be honest while replying to the items, especially when it comes to questions that are sensitive. Self-report measures lean toward the possibility that respondents would react in a manner that is socially acceptable (a phenomenon known as social desirability bias: Demetriou et.al., 2015). Furthermore, lack of flexibility, particularly with questions with predetermined choices, might be a drawback. Participants' ability to express themselves and their

sentiments is severely constrained when they are asked to score a statement (Demetriou et al., 2015). The use of self-report surveys may also have issues due to the items' lack of clarity, which increases the chance of receiving conflicting answers (Nikolopoulou, 2022). Furthermore, regarding highly organised questions, the framework may compel respondents to provide answers that do not reflect their ideas. When interpreting the research findings, it is important to take into account the limitations of the measuring devices used in this study (CAS, WWAS, COI, CAAS, & EECI), as the goal in selecting them was to ascertain the strength of the relationships between the independent, dependent, and outcome variables.

Table 5.3 shows that the five measurement scales had acceptable psychometric properties for the purpose of this research.

Table 5.3*Psychometric Properties of the Measuring Instruments*

Construct	Measuring instrument	Scale dimensions, number of, and examples of items	Likert-type scale	Validity and reliability in previous research
Socio-demographics	Biographical questionnaire	Age, race, gender, campus, socio-demographic [urban/rural], study department, qualification choice based on career interest, need for career guidance	N/A	N/A
Career agility	Career Agility Scale (CAS) (Coetzee et al., 2020) 16 items	<p>Technological adaptivity (5 items, e.g. I feel my career growth and success are guided by my response to changing socio-economic conditions)</p> <p>Agile learning (5 items, e.g. I am actively setting career goals and managing the achievement of my career goals)</p> <p>Career navigation (6 items, e.g. I am able to navigate and adapt to change and uncertainty in my job and career environment)</p>	<p>7-point Likert scale</p> <p>1 = strongly disagree</p> <p>7 = strongly agree</p>	Coetzee et al. (2020b) provided evidence of high internal consistency reliability (= 0.90) and convergent validity of the multidimensional (three-factor) CAS.

Construct	Measuring instrument	Scale dimensions, number of, and examples of items	Likert-type scale	Validity and reliability in previous research
World of work awareness	World of work awareness scale (WWAS) developed by Coetzee et al. (2021). 15 items	Digital nature of work (5 -items, e.g. 'I see technological innovation as a major driver of new employment and career opportunities') Occupation and job awareness (3- items, e.g. 'I have a clear picture of jobs and occupational opportunities made possible by new technological advancements in my field of study'). Continuous upskilling and learning awareness (7-items, e.g. 'It is important for me to develop special knowledge and skills that will help me get the job I want in a world of work that is driven by constant technological innovation').	7-point Likert scale 1 = strongly disagree; 7 = strongly agree	Internal reliability coefficients of the subscales ranged between 0.87 and 0.92. Coetzee (2022) confirmed the construct validity of the scale.
Career interests	Careers orientations inventory (COI: Schein, 1990) 40 items	Security and stability (5 items: e.g. "I seek jobs in organisations that will give me a sense of security and stability"); Technical and functional competence (5 items: e.g. "I dream of being so good at what I do that my expert advice will be sought after continually");	6-point Likert scale. 1 = not true at all for me; 6 = always true for me	Custodio, 2004; DeLong, 1982a; 1982b; Wood, Winston & Polkosnik, 1985). Custodio (2004) reported Cronbach alpha reliability coefficients ranging from 0.78 to 0.84,

Construct	Measuring instrument	Scale dimensions, number of, and examples of items	Likert-type scale	Validity and reliability in previous research
		<p>General management (5 items: e.g. “I dream of being in charge of a complex organization and making decisions that affect many people”);</p> <p>Autonomy and independence (5 items: e.g. “I dream of having a career that will allow me the freedom to do a job my own way and on my own schedule”);</p> <p>Entrepreneurial creativity (5 items: e.g. “Building my own business is more important to me than achieving a high-level managerial position in someone else’s organization”);</p> <p>Service and dedication to a cause (5 items: e.g. “I am most fulfilled in my career when I have been able to use my talents in the service of others”);</p> <p>Pure challenge (5 items: e.g. “I dream of a career in which I can solve problems or win out in situations that are extremely challenging”); and</p> <p>Lifestyle (5 items: e.g. “I dream of a career that will permit me to integrate my personal, family, and work needs”).</p>		

Construct	Measuring instrument	Scale dimensions, number of, and examples of items	Likert-type scale	Validity and reliability in previous research
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Career adaptability	Careers adapt-abilities scale developed by Savickas and Porfeli (2012) 24 items	<p>Career concern (6 items, e.g., expecting the future to be good).</p> <p>Career curiosity (6 items, e.g., Becoming curious about new opportunities)</p> <p>Career curiosity ((6 items, e.g., Exploring my surroundings)</p> <p>Career confidence (6 items, e.g., Overcoming obstacles).</p>	5-point scale 1 = not strong; 5 = strongest	Likert	Cronbach's α reliability coefficients for the original instrument developed by Savickas and Porfeli (2012) were .92 respectively, (.83), (.74), (.79) and (.85) for the scales of concern, control, curiosity, and confidence.
Employer employability competency expectations	The employer employability competency expectations scale (EECES: Coetzee, 2018). 28 items	<p>Graduateness: (10 items, e.g. "Having job-specific knowledge and skills")</p> <p>Business/entrepreneurial skills (5 items, e.g., "Ability to apply entrepreneurial and innovative thinking that contribute to business success")</p> <p>Personal employability qualities (8 items, e.g., "Ability to keep your knowledge and skills updated and relevant")</p> <p>Autonomy/leadership: (5 items, e.g., "Ability to establish your own authority/independent thinking")</p>	5-point scale not strong; 5 = strongest.	Likert	The Cronbach's alpha reliability of scores from the EECES: Graduateness (.94), Business/entrepreneurial skills (.90), Personal employability qualities (.94), and Autonomy/leadership (.95) (Ismail, 2023).

Source: Author's work

5.4 ETHICAL CONSIDERATIONS AND ADMINISTRATION OF THE MEASURING INSTRUMENTS

This section describes considerations of ethics and the procedure for data collection.

5.4.1 Ethical considerations

Mustafa (2015) views ethical considerations as the study of morality including careful and systematic reflection on moral decisions and behaviour. According to Mbambe et al. (2021), most research that affects or involves people, animals, or the environment requires ethical clearance. Getting permission will ensure that research is carried out within expected bounds, without harming other people, animals, or the environment. Furthermore, Mbambe et al. (2021) mentioned that ethical clearance for research initiatives guarantees that the intended investigations adhere to local, regional, or global ethical standards. The following ethical guidelines were used to make sure the researcher upheld the ethical norms that apply to study (Vilma, 2018):

- The researcher had to make sure that the work is morally transparent and that the results are trustworthy.
- The three primary ethical principles that were applied included autonomy, beneficence, and justice to ensure that participants understand that they participate in the research at their own free will and that they are not coerced, that they will not be subjected to any harm whatsoever, and that the participants were equitably selected.
- The participants were thoroughly informed about the nature and goal of the study, the procedures to be utilised, the anticipated benefits to them as first year students, the possibility of remotely foreseeable dangers, pressures, and discomforts, and other relevant information.
- The steps taken to guarantee data confidentiality and research participant anonymity were detailed in an information leaflet of the questionnaire. The document specified who to contact with inquiries concerning the research study, research participants' rights, or in the event of any form of infringement.

5.4.2 POPI Act considerations

The Protection of Personal Information Act (often known as the Act or POPIA), No. 4 of 2013, was implemented on the 1st of July 2021. All research activities that entail the gathering, processing, and storing of personal information is affected by the Act. The researcher had to ensure that all the eight (8) conditions of the POPI Act (2021) were followed (Adams et al., 2021).

- **Accountability:** the researcher ensured that all the conditions for the lawful processing of personal information laid out in POPIA are complied with at the time of the determination of the purpose of processing and during processing (Section 8).
- **Process limitation:** the researcher ensured that there is a lawful basis for the processing of personal information; that such processing is necessary for a defined purpose and could not be achieved without processing such personal information; and that the information is collected directly from the data subject and with informed consent (Sections 9–12).
- **Purpose specification:** the collection and processing of personal information will be for a defined purpose; records should not be retained longer than is necessary and must be deleted or destroyed after the purpose for collection and processing has been fulfilled.
- **Further processing limitation:** further processing of personal information is permitted where such information is used for research, and only for research, purposes (Section 15).
- **Information quality:** personal information collected and stored must be accurate, up to date, complete and not misleading (Section 16).
- **Openness:** the researcher must maintain a record of all processing of personal information. The data subject must be informed regarding why the information was collected, who collected it and where it is being held, what rights the data subject has to access and delete/correct the data, and if the data will be transferred to a third party and/or internationally during the processing.

- Security safeguards: the researcher must ensure that personal information is kept secure to maintain confidentiality and integrity, and to prevent data breaches. Any security breaches must be reported to the Information Regulator (Sections 19–22).

Data subject participation: the responsible party must ensure that the data subject is informed of their right to access, correct, and delete their personal information and of the way to do so (Sections 23–25).

5.4.3 Procedure used in data collection.

The questionnaire was distributed via a no-reply to URL link to the lecturers in all the departments within the faculty. The lecturers in turn distributed the questionnaire to various platforms such as like Brightspace (i.e., which is a tool that lecturers use to interact with students). Brightspace is a world class cloud-based Learning Management System (LMS) that contains many tools to enhance module content making it more engaging and empowering and ultimately improving the learning experience for the student. The researcher also used distributed questionnaire to the randomly selected students by sending them emails and whatsapp (social media platform) messages. The web-linked Lime survey that was circulated clearly stipulated the following:

- Details of the research study objectives
- The respondents are under no obligation to complete the survey and they can withdraw from the study prior to submitting the questionnaires to the researcher.
- The survey is developed to be anonymous. This implies that university staff will have no way of connecting the information that is provided to individual students.
- The respondents will not be penalised for not participating in the survey.
- The respondents in the study were informed that they will not benefit from participating as individuals. However, it is envisioned that the findings of this study may assist in informing new module content and career guidance support.

The participants were informed prior that they will not experience any negative consequences by completing the survey, and the researcher(s) undertake to keep any information provided confidential, not to let it out of their possession and to report on the findings from the perspective of the participating group and not from the perspective of an individual.

5.5 CAPTURING OF CRITERION DATA

The data were captured on a password protected Excell spreadsheet as anonymous group-based data. The excel spreadsheet was then converted into a SPSS file for statistical analysis.

5.6 FORMULATION OF RESEARCH HYPOTHESES

According to Barroga and Matanguihan (2022), a research hypothesis is a well-informed prediction of a result. This claim is supported by prior research and current information. According to the International Institute of Health Sciences (2022), the study research hypothesis states in formal terms the anticipated relationship between an independent variable and a dependent variable or makes a particular prediction regarding relationships and provides a tentative response to the research topic to be tested or explored. Good research hypotheses, according to Misra et al. (2021), are empirically testable, supported by preliminary evidence (ethically tested, predicated on original concepts, involve evidence-based logical reasoning, and are predictable).

To achieve the research objectives of the study mentioned in chapter 1, the following research hypotheses were generated. Table 5.4 provides an overview of the research hypotheses formulated for the present study. The research hypotheses are aligned with the empirical research aims.

Table 5.4*Research Hypotheses*

Empirical research aim	Research hypothesis	Statistical procedure
Research aim 1: To explore the nature of the statistical inter-relationships between students' career agility, world of work awareness, career interests, career adaptability and perceptions of employer employability competency expectations	H1: Significant statistical inter-relationships exist between students' career agility, world of work awareness, career interests, career adaptability and perceptions of employer employability competency expectations.	Preliminary statistics (EFA, CFA, testing for common method variance and discriminant validity, and reliability) Bivariate correlation analysis
Research aim 2: To explore the extent to which students' socio-demographic characteristics (gender, qualification choice based on career interest, demographic [urban/rural], and need for career guidance), career agility, world of work awareness, career interests and career adaptability positively predict their perceptions of complying with employer employability competency expectations.	H2: Students' socio-demographic characteristics (gender, qualification choice based on career interest, demographic [urban/rural], and need for career guidance), career agility, world of work awareness, career interests and career adaptability positively predict their perceptions of complying with employer employability competency expectations.	Stepwise hierarchical regression
Research aim 3: To explore the extent to which the link between students' career agility, world of work awareness, and career interests (antecedents), and their perceptions of complying with employer employability competency expectations (outcome), is mediated by their career adaptability.	H3: The link between students' career agility, world of work awareness, and career interests (antecedents), and their perceptions of complying with employer employability competency expectations (outcome), is mediated by their career adaptability.	Mediation analysis

Empirical research aim	Research hypothesis	Statistical procedure
<p>Research aim 4: To assess whether students' socio-demographic characteristics (gender, qualification choice based on career interest, demographic [urban/rural], and need for career guidance), act as moderators of the associations between the antecedent, mediating and outcome variables.</p>	<p>H4: Students' socio-demographic characteristics (gender, qualification choice based on career interest, demographic [urban/rural], and need for career guidance), act as moderators of the associations between the antecedent, mediating and outcome variables.</p>	<p>Moderated regression analysis</p>
<p>Research aim 5: To assess whether students from various socio-demographic groups (gender, qualification choice based on career interest, demographic [urban/rural], and need for career guidance) differ significantly in terms of their career agility, world of work awareness, career interests, career adaptability and perceptions of complying with employer employability competency expectations.</p>	<p>H5: Students from various socio-demographic groups (gender, qualification choice based on career interest, demographic [urban/rural], and need for career guidance) differ significantly in terms of their career agility, world of work awareness, career interests, career adaptability and perceptions of complying with employer employability competency expectations.</p>	<p>Test for significant mean differences.</p>

Source; Author's own work

5.7 STATISTICAL PROCESSING OF THE DATA

The statistical processing of data involved four stages of analysis:

Stage 1: Preliminary statistical analysis of measurement scales

Stage 2: Descriptive statistics

Stage 3: Correlational statistics

Stage 4: Inferential statistics

5.7.1 Preliminary statistical analysis of measurement scales

The preliminary statistical analysis involved:

- Data cleaning and screening
- Conducting exploratory factor analysis (EFA) on each of the measurement scales to ensure the factor structure was relevant to the sample of TUT students.
- Testing for common method variance
- Testing for construct validity
- Testing for convergent validity and reliability

5.7.1.1 Data cleaning and screening

Data cleaning is the process of finding and repairing, or eliminating, erroneous, incorrect, or incomplete records from a database (Sukaran & Bougie, 2013). Cleaning and validating data were done on the excel spreadsheet to prevent errors, inconsistencies, and biases that could skew findings and conclusions. The data outliers/ unengaged which are either repeated or extreme values were removed.

5.7.1.2 Exploratory factor analysis

According to Watkins (2018), exploratory factor analysis (EFA) is a multivariate statistical technique that aims to isolate the fewest possible hypothetical constructs (also known as factors, dimensions, latent variables, synthetic variables, or internal attributes) that can parsimoniously account for the covariation between a set of measured variables (also known as observed variables, manifest variables, effect indicators, reflective indicators, or surface

attributes). Shrestha (2021) indicated that exploratory factor analysis is used to assess dimensionality and is frequently employed in the early stages of research to acquire information regarding interrelationships among a collection of factors.

To ensure the underlying factor structure of each scale was relevant to the sample of TUT students, exploratory factor analysis (EFA) with principal component analysis (PCA) was performed on each scale by means of the SPSS (IBM, 2021) Version 28.0 software program. Varimax with Kaiser Normalisation was used to calculate the rotated component matrix. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy should be .60 or higher (Bartlett's test of sphericity: $p = .000$) for adequate common variance among items in factor analysis (Kaiser, 1970). The rotated component matrix was then inspected to retain item loadings of $\geq .50$.

It is crucial to confirm that the measured variables are sufficiently intercorrelated to support factor analysis, even though the variables and participants may have been chosen with considerable care. The correlation matrix can be examined as a subjective approach. For EFA to be appropriate, most correlations must exceed .30 (Hair et al., 2010). An objective test of the factorability of the correlation matrix is Bartlett's (1954) test of sphericity, which statistically tests the hypothesis that the correlation matrix contains ones on the diagonal and zeros. It was therefore produced using random data. For the application of EFA to be justified, this test must yield a statistically significant chi-square value. The Bartlett test should be supplemented by a measure of sampling adequacy since large sample sizes render them sensitive to even minor departures from randomness.

5.7.1.3 *Testing for common method variance*

The SPSS Version 28.0 (IBM, 2021) and JASP Version 0.16.4 (2022) computer software programs were used to conduct the statistical analyses.

Surveys give information that is used to measure both independent and dependent variables in a data analysis. However, the estimated impact of one variable on another variable is at risk of bias due to the common method variance (Tehseen et.al., 2017). Podsakoff et.al. (2003) defined common method variance (CMV) as systematic error variance caused by rater response styles, item characteristics, and measurement aspects that can jeopardize the validity of study findings when measures are collected using the same or similar methods. CMV is an indication of common method bias (CMB) which happens when estimations of the associations between two or more constructs are skewed due to the use of the same method

(Podsakoff & Organ, 1986). CMB is believed to occur for a variety of reasons. The response tendencies that raters might apply consistently across assessments are one of the key causes (Podsakoff & Organ, 1986).

Based on the guidelines of Podsakoff et al (2003), the Harman's single factor test and a common latent factor test by means of confirmatory factor analysis (CFA) with maximum likelihood estimator were applied to explore for the potential presence of CMV that may indicate CMB. A total variance for a Harman's single factor of less than 50%, and a common latent factor CFA model of poor or unacceptable fit with the data suggest that CMB does not pose a significant threat to the reliability and convergent validity of the data. As such, statistical associations among the construct variables may be analysed and interpreted with greater trustworthiness and valid conclusions can be drawn (Podsakoff et al., 2003).

5.7.1.4 *Confirmatory factor analysis: Construct validity*

A multi-factor confirmatory factor analysis (CFA) was also performed on each scale to test for the construct validity of each measurement scale. Afterwards, CFA was then performed to assess the convergent and discriminant validity of the overall measurement model (all five scales' constructs included in the model) before proceeding with the statistical analysis. Both a single-factor and multi-factor CFA with maximum likelihood estimator comprising of all the measurement scales (CAS, WWAS, revised COI, CAAS and EECES) was then performed with the JASP Version 0.16.4 (2022) computer software program.

Confirmatory factor analysis (CFA) is a more comprehensive and sophisticated collection of research methodologies used to examine specific hypotheses or ideas about the structure underlying a set of data (Shrestha, 2021). CFA is a type of structural equation modeling. As opposed to EFA, where assumptions and expectations are based on prior theory, in CFA, the researcher utilised this approach to evaluate a suggested theory or model and has expectations and assumptions about the number of factors and the best factor theories or models (Baistaman et al., 2020). The adoption of CFA enables researchers to determine the extent to which the strength of indicators and measurement model corresponds to, and so a valid measurement model can assist researchers in making a true interpretation based on the findings.

There are three types of fitness indexes that ensure dependability and validity: absolute, incremental, and parsimonious fit. Hair et al. (1995; 2010) and Holmes- Smith (2006)

advocated using at least three fit indexes, one from each category of model fit. In the present study the following fit indices were used to assess acceptable mode fit for research purposes: chi-square/df ≤ 3 ; RMSEA (Root Mean Square Error Approximation) $\leq .06$ or $\leq .08$; SRMR (Standardised Root Mean Square Residual) $\leq .05$ or $\leq .08$; CFI (Comparative fit index) $\geq .90$ and the AIC (Akaike Information Criterion) index.

Awang (2010) proposed the following information regarding the fitness index category, their level of model acceptance and comments:

Table 5.5
Overview of Fitness Indexes

Name of Category	Index	Level of acceptance	Comments
Absolute fit	Chi-square	$p > 0.05$	Sensitive to sample size > 200
	RMSEA	RMSEA < 0.08	Range 0.05 to 1.00 acceptable
	GFI	GFI > 0.90	GFI = 0.95 is a good fit
Incremental fit	AGFI	AGFI > 0.90	AGFI = 0.95 is a good fit
	CFI	CFI > 0.90	CFI = 0.95 is a good fit
	AIC	AIC > 0.90	AIC= is a good fit
	NFI	NFI > 0.90	NFI = 0.95 is a good fit
Parsimonious fit	Chisq/df	Chisq/df < 5.0	Should be beyond 5.0

Source: Adopted from Awang (2010)

5.7.1.5 Convergent validity and reliability

The SPSS Version 28.0 (IBM, 2021) and JASP Version 0.16.4 (2022) computer software programs were used to conduct the statistical analyses.

The fundamental idea of validity is whether a test or measurement tool measures what it is supposed to measure (Colliver, 2012). Discriminant validity is a subtype of construct validity, it shows you how well a test measures the concept it was designed to measure. Its validity specifically measures whether constructs that theoretically should not be related to each other are, in fact, unrelated. Convergent validity means the opposite, that the constructs that are theoretically related are indeed related (Nikolopoulou, 2022).

According to Dosantos and Cirillo (2021) a variety of indicators, such as the average variance extracted (AVE), are often employed to validate structures. In statistics, AVE is a measure of the amount of variance captured by a construct in comparison to the amount of variance owing to measurement error. As guided by the Fornell-Larcker (1981) criterion, the AVE values of $>.50$, and composite reliability (CR: construct or factor-level reliability) values of $>.70$, indicate convergent validity and reliability of a measurement scale.

Discriminant validity was assessed by applying the guidelines of Rönkkö and Cho (2022). The paired covariances among scale constructs were inspected. Discriminant validity was evident when the CFA model indices showed acceptable model fit and the CFA Upper Limit (UL) confidence interval (95%) values were below the threshold value of $UL <.80$. Evidence of discriminant validity is important to assess for the potential presence of multicollinearity that may threaten the interpretation of findings and drawing valid conclusions.

Testing a measurement scale for internal consistency reliability is important to determine how all factors on the test relate to all other factors, and to evaluate the consistency of results across factors within a test (Hajjar, 2018). Cronbach's alpha is the most used internal consistency measure, which is founded as the mean of all possible split-half coefficients (Cortina, 1993). It is an overall of an earlier procedure of estimating internal consistency.

The purpose of assessing composite reliability (CR) is to examine both the internal consistency and construct-level reliability of a construct when CFA is applied. According to Dash and Paul (2021) the CR measures the internal consistency of indicator variables loading on the latent variable. If the Composite reliability is greater than 0.7 then the indicator variables loading on the latent variable have shared variance among them.

The obtained Cronbach alpha and CR values were interpreted by using a wide variety of distinct descriptors shown below (Hair et.al, 2003).

Table 5.6

Alpha Values

Alpha Coefficient Range	
0.7	Moderate
0.8	Good
0.9	Very Good

Hair et.al (2003); Essential of Business Research Method

5.7.2 Descriptive statistics

The IBM SPSS Version 28.0 (IBM, 2021) computer software program was used for the statistical analyses. Descriptive statistics involved calculating the means, standard deviations, skewness and kurtosis of the measurement scales. Means, standard deviations, skewness and kurtosis descriptives are measures of central tendency that summarise typical tendencies among respondents and help to identify potential deviations from a normal distribution (Tustin et al., 2010).

5.7.2.1 Means, standard deviations, skewness, and kurtosis

A mean value is the mathematical average of a set of data. The mean can be computed by summing the data and dividing by the number of observations (Mishra et al. (2019). One downside of mean is that it is influenced by outliers (Mishra et al., 2019). The standard deviation (SD) is a measure of how far apart values are from their mean. It is called SD because it uses a standard value (mean) to calculate the dispersion.

Skewness is a statistical term that refers to the degree of asymmetry observed in a probability distribution that deviates from the symmetrical normal distribution (bell curve) in a particular collection of data (Gawali, 2023). Furthermore, according to Gawali (2023), skewness is a regularly used descriptive statistics metric that reflects the asymmetry of a data distribution, whereas kurtosis determines the heaviness of the distribution tails.

Understanding the shape of data is critical when working with data. It aids in understanding where the most information is located and analysing outliers in a particular dataset. According to Shukla (2022) the range of skewness is as follows:

- If the skewness values are within **-0.5 to 0.5**, then the distribution can be considered as normally skewed distribution. Within this range, it is also regarded to be approximately normally distributed.
- When the skewness value is between **-0.5 and -1** for negatively skewed distributions and **0.5 and 1** for positively skewed distributions, it indicates moderate skewness within the given distribution.
- If the skewness number is less **than -1** for negatively skewed distributions and greater than **+1** for positively skewed distributions, the distribution is said to be positive skewed. As a result, the data is highly biased.

Kurtosis is a statistical term used to describe the form of a probability distribution. It compares the tails and peakiness of the distribution to that of a normal distribution (Chissom, 1970). According to Chissom (1970), the kurtosis range is as follows:

- **Platykurtic (Kurtosis < 3)**

Platykurtic or short-tailed distribution (kurtosis less than normal). Because Platykurtic has a slender tail and is stretched around the centre, most data points are present near the mean. When compared to the normal distribution, the platykurtic distribution is flatter (less peaked)

- **Mesokurtic (Kurtosis = 3)**

Kurtosis is close to zero because the mesokurtic distribution is the same as the normal distribution. Mesokurtic distributions have a moderate breadth and moderately peaked height curves.

- Leptokurtic or heavy-tailed distribution (**Kurtosis > 3**)

Kurtosis greater than normal distribution) and has unusually long and thick tails, implying that outliers are more likely. Positive kurtosis values suggest that the distribution is peaked and has thick tails. Extremely positive kurtosis suggests a distribution with more numbers in the tails rather than around the mean.

5.7.3 Correlational statistics

Bi-variate correlations were calculated to test research hypothesis H1:

Research hypothesis 1: Significant statistical inter-relationships exist between students' career agility, world of work awareness, career interests, career adaptability and perceptions of employer employability competency expectations.

The IBM SPSS Version 28.0 (IBM, 2021) computer software program was used for the statistical analyses. To determine the strength and direction of each relationship between the variables of each instrument, the Spearman correlation coefficient was employed to calculate the association between the independent, mediating, and dependent variables.

Spearman's rho correlation was calculated because it is more robust to outliers than Pearson product-moment correlation. Xiao et.al. (2018) defined the Spearman rank correlation coefficient (as a nonparametric or distribution-free rank statistical tool used to measure the strength and the direction of the arbitrary monotonic association between two ranked variables or one ranked variable and one measurement variable. In theory, Spearman's correlation coefficient is just a specific instance of Pearson's coefficient when the samples are transformed into rankings before the correlation coefficient computations are performed. However, it is not measured on an interval scale, nor does it necessitate making any assumptions about the frequency distribution or the linear relationship between the two variables (Xiao et.al., (2018).

The Cohen's practical effect criteria for bi-variate correlations ($p < .05$) were applied:

- r larger/equal to .10 to .29 = small practical effect
- r larger/equal to .30 to .49 = moderate practical effect
- r larger than/equal to .50 = large practical effect

Correlation studies of relatively small sample sizes are likely vulnerable to type I (false positives: a statistically significant subsample correlation not observed in larger population) or type II (non-significant sub-sample correlation when correlation was significant in the larger population) statistical errors. As such, the researcher was cautious in interpreting bivariate correlations because of potential type I and II errors that may threaten the validity of conclusions. To this effect, the Cohen's practical effect criteria for bi-variate correlations ($p < .05$; 95% confidence interval) were applied in interpreting bi-variate (zero-order) correlations:

- r larger/equal to .10 to .29 = small practical effect
- r larger/equal to .30 to .49 = moderate practical effect
- r larger than/equal to .50 = large practical effect

5.7.4 Inferential statistics

The inferential statistics involved four substages of multivariate analysis:

Substage 1: Hierarchical stepwise multiple regression analysis

Substage 2: Mediation analysis

Substage 3: Moderated regression analysis

Substage 4: Tests for significant mean differences

5.7.4.1 *Testing the assumptions of multivariate analysis.*

The most significant assumptions underlying multivariate analysis, according to Onofri et al., (2010), are normality, homoscedasticity, linearity, and the lack of correlated errors.

- Normality

According to Oppong and Agdebra (2016), the normalcy assumption is referred to as an omnipresent assumption in statistics literature. This is owing to its widespread application in both univariate and multivariate analysis (Rosner, 2006). The assumption of normality requires that a set of data used in a statistical test of significance or statistical modeling be regularly distributed, either exactly or nearly. This is primarily because practically all these tests and models are based on the normal distribution. Most multivariate data analysis theories assume multivariate normality (Johnson & Wichern, 2007). This is because processes based on normal populations are simpler and more efficient, and hence are commonly used in statistical applications. In the present study, skewness, and kurtosis values and normal probability plots were used to assess univariate normality. Multivariate normality was assessed by assumptions of linearity and homoscedasticity.

- Linearity

Linearity assumes that all linear regression models between a dependent variable and an independent variable are related to a straight line to the right or bottom right. If the linear sig value is $p < 0.05$, a linear relationship is found (Alexopoulos, 2010).

- Homoscedasticity

Homoscedasticity, which essentially means 'same variance,' is an important notion in linear regression. Homoscedasticity describes how the error term (the noise or disturbance between independent and dependent variables) is the same across independent variable values. So, with homoscedasticity, the residual term is constant across observations, i.e., the variance is constant. In other words, while the value of the dependent variable varies, the error term does not change significantly (Taylor, 2022). Furthermore, Taylor (2022) indicated that homoscedasticity also implies that when the variance in a data set is measured, there is no difference between various samples from the same population.

- Multicollinearity and singularity

According to Hair et al. (2010), when two or more predictor/independent variables in a multiple regression are highly associated ($r = .80$), this statistical phenomenon is known as multicollinearity. Determining the sample size, the strength of the association between the

items, and the applicability of the data set for factor analysis are always crucial. There must be proof of the coefficient of correlation > 0.3 in the correlation matrix to assess the strength of the relationship between the items. A sort of disruption that changes the analysis's outcome is the presence of multicollinearity in the data. There are strong connections between the independent variables in this stage. The statistical conclusions regarding the data may not be reliable because of multicollinearity, which causes some of a research study's significant variables to become statistically insignificant, Therefore the determinant score (threshold value) must be used to determine whether multicollinearity exists among the variables. Singularity, or the existence of a perfect linear relationship between independent variables, is the most extreme form of multicollinearity and occurs when the correlation coefficient is either 1.0 or -1.0 (Hair et al., 2010).

5.7.4.2 Substage 1: Hierarchical stepwise multiple regression analysis

Hierarchical stepwise regression analysis was conducted to test research hypothesis 2:

Research hypothesis 2: Students' socio-demographic characteristics (age, gender, qualification choice based on career interest, demographic [urban/rural], and need for career guidance), career agility, world of work awareness, career interests and career adaptability positively predict their perceptions of complying with employer employability competency expectations.

The IBM SPSS Version 28.0 (IBM, 2021) computer software program was used for the statistical analyses.

Stepwise regression is the iterative step-by-step creation of a regression model that includes the selection of independent variables to be utilized in the final model. It entails successively adding and eliminating putative explanatory factors and checking for statistical significance after each iteration (Asghar, et.al., 2023). Stepwise regression is used to design a regression model to introduce only relevant and statistically significant variables. Furthermore, stepwise regression is more appropriate when the researcher is interested in identifying the most important predictors among a large set of variables as was the case for this research.

The F -statistic is used in ANOVA and regression analysis to determine whether the means of two populations are significantly different (Green & Kao, 2008). According to Beers (2023), the p -value can be used instead of rejection points to determine the smallest level of significance at which the null hypothesis is rejected. A lower p -value indicates that there is more evidence supporting the alternative hypothesis. The variance inflation factor (VIF) and tolerance are two statistics used to detect collinearity in multiple regression. They are calculated by regressing a predictor on all of the other predictors in the analysis and calculating the R -squared value (Miles, 2014). Significant predictors were identified at beta coefficients of ($p < .05$, 95% confidence interval).

The Cohen R -squared (R^2) effect size values ($p < .05$, 95% confidence interval) were applied in this research for significant regression models:

- Negligible effect sizes: R^2 = between 0 and .01.
- Small practical effect sizes: R^2 = between .02 and .12.
- Medium practical effect sizes: R^2 = between .13 and .25.
- Large practical effect sizes: R^2 = larger/equal to .26

5.7.4.3 Substage 2: Mediation analysis

The mediation analysis was conducted to test research hypothesis 3:

Research hypothesis 3: The link between students' career agility, world of work awareness, and career interests (antecedents), and their perceptions of complying with employer employability competency expectations (outcome), is mediated by their career adaptability.

The JASP Version 0.16.4 (2022) computer software program was used to conduct mediation analyses. Delta method standard errors, normal theory confidence intervals and maximum likelihood estimator were applied to address potential issues of bias (JASP, 2022). The more stringent bootstrap 95% lower-level confidence interval (LLCI) and upper-level confidence interval (ULCI) range not including zero, was used to assess for significant.

Owing to the cross-sectional research design, the focus of the mediation analysis was not to assess causal effects (which are tested in longitudinal studies), but rather to probe how (i.e., extent to which) career adaptability acts as a psycho-social career mechanism in explaining the effect of the independent variables (career agility, world of work awareness and career

interests) on perceptions of employer employability competency expectations (dependent variable). Only the magnitude and direction of direct and indirect effects were thus examined.

Mediation analysis is used to quantify the causal chain between an antecedent variable, a mediating variable, and a dependent variable. Cai et al. (2022) indicated that traditional mediation analysis primarily looks at the relationships between an intervention, a time-invariant mediator, and a time-invariant outcome variable. Although the intervention may have an overall impact on the result, it is important to understand how it does so (specifically, how the intervention has an indirect impact via the mediator). Cai et al. (2022) defined the direct effects as the influence of the intervention on the outcome that does not travel through the mediator and the indirect effects as the effect of the intervention on the outcome through the mediator. By estimating three regression equations, mediation modeling applies the linear regression assumptions (MacKinnon 2011).

To buffer possible issues of bias (i.e. support of mediation effects when there was no true mediation process), the more rigorous 95% lower and upper levels of confidence intervals range not containing zero was applied as evidence of significant direct and indirect effects (Fairchild & McDaniel, 2017). Complete mediation effects were noted for evidence that the independent variable had no significant direct effect on the dependent variable (i.e., there was evidence of only a significant indirect effect). Partial mediation was evident when an independent variable had both a significant direct and indirect effect on the dependent variable (Hair et al., 2019).

According to Baron (1986), moderation is described as a variable that affects the strength and/or direction of the link between an independent or predictor variable and a dependent or criterion variable, gender, race, class, and quantitative variables like reward level are a few examples of these kinds of variables. A third variable that affects the zero-order correlation between two other variables is known as a moderator, particularly in the context of correlational analysis. Whereas mediation is one of the simplest methods for examining the unique and comprehensive links between research study variables (Cohen, 1988; Hair, Black, Babin, & Anderson, 2010). The main objective of mediation analysis is to investigate and improve upon a more sophisticated comprehension of the relationships that influence research variables to enable significant interpretations of the theories that are currently in place (Song & Lim, 2015).

5.7.4.4 Substage 3: Moderated regression analysis

The moderated regression analysis was conducted to test research hypothesis 4:

Research hypothesis 4: Students' socio-demographic characteristics (gender, qualification choice based on career interest, demographic [urban/rural], and need for career guidance), act as moderators of the associations between the antecedent, mediating and outcome variables.

A moderating variable is assumed to affect the strength and direction of the link between the independent and dependent variables (Hair et al., 2019). Hair (2021) indicated that the term "moderation" refers to a situation where the relationship between two constructs is not linear but instead depends on the values of a third variable, also known as the moderator variable.

A moderator variable (or concept) in a model alters the magnitude or even the direction of a link between two constructs. In the present research, moderated regression analysis thus helped to assess whether the prediction effects of the independent variables (career agility, world of work awareness and career interests) and mediating variable (career adaptability) on employer employability competency expectations (dependent variable) were conditional upon the moderating variables (listed in research aim 4).

The Hayes (2018) PROCESS Procedure for SPSS Version 3.4 was used to perform statistical analysis. A heteroscedasticity consistent standard error and covariance matrix estimator was used. The construct variables were mean centered prior to analysis. The more stringent bootstrap 95% lower-level confidence interval (LLCI) and upper-level confidence interval (ULCI) range not including zero, was used to assess for significant main and interaction effects.

The Cohen f^2 statistic ($R^2/1-R^2$) was applied for assessing the practical effect of significant ($p \leq .05$) interaction (moderating) effects.

- Negligible effect sizes: f^2 = between 0 and .01.
- Small practical effect sizes: f^2 = between .02 and .14.
- Medium practical effect sizes: f^2 = between .15 and .34.
- Large practical effect sizes: f^2 = larger/equal to .35

5.4.7.5 Substage 4: Tests for significant mean differences

Tests for significant mean differences were conducted to test research hypothesis 5:

Research hypothesis 5: Students from various socio-demographic groups (gender, qualification choice based on career interest, demographic [urban/rural], and need for career guidance) differ significantly in terms of their career agility, world of work awareness, career interests, career adaptability and perceptions of complying with employer employability competency expectations

The SPSS Version 28.0 (IBM, 2021) computer software program was used for the statistical analyses. The researcher clustered the characteristics of the students in two subgroups as follows:

- **Gender:** Male (n = 130) and Female (n = 239)
- **Demographic origin:** Rural (n = 257) and Urban (n = 112)
- **Qualification choice based on career interest:** Low qualification choice-career interest (n = 101) and High qualification choice- career interest (n = 268)
- **Need for career guidance:** Low career guidance need (n = 160) and High career guidance need (n = 209).

The Mann-Whitney U Test was utilised for testing for significant mean differences between the various subgroups. The test is often used for nonparametric data (typically, ordinal data). The Mann–Whitney U-Test has many appropriate uses, and it should be considered when using ranked data, data that deviate from acceptable distribution patterns, or for when there are noticeable differences in the number of subjects in the two comparative groups (MacFarland, 2016).

The Cohen *d* statistic was applied for assessing the practical effect of significant ($p \leq .05$) mean differences according to the following ranges (Cohen, 1992; Salkind, 2012):

- Negligible effect sizes: $d =$ between 0 and .19.
- Small practical effect sizes: $d =$ between .20 and .49.
- Medium practical effect sizes: $d =$ between .50 and .79.
- Large practical effect sizes: $d =$ larger/equal to .80

5.8 CHAPTER SUMMARY

This chapter covered the steps of an empirical investigation, including selecting a sample and describing it, selecting a psychometric inventory, administering, and scoring the inventory, developing research hypotheses, and concluding with statistical analysis of the data. Chapter 6 reports the results of the statistical analyses.

CHAPTER 6: RESEARCH RESULTS

This chapter addresses step 8 (Reporting of results) of the empirical phase of the research project. The results of the preliminary statistical analysis, descriptive statistics, correlational and inferential statistics are presented in tables and diagrams. Chapter 7 will address step 9 (Interpretation and discussion of findings) and step 10 (Formulating conclusions, limitations and recommendations) of the empirical study.

6.1 PRELIMINARY STATISTICAL ANALYSIS OF MEASUREMENT SCALES

This section reports on the preliminary statistical analyses of each measurement scale. First, an exploratory factor analysis (EFA) was performed on each of the following measurement scales to assess whether the original factor structures postulated by the test developers manifested for the sample of TUT students:

- Career agility scale (CAS),
- World of work awareness scale (WWAS),
- Career orientations inventory (COI),
- Career adaptability scale (CAAS), and
- Employer employability competency expectations scale (EECES).

The researcher used the SPSS (IBM, 2021) Version 28.0 software program to perform the EFAs. The EFAs on the CAS, WWAS, CAAS and EECES confirmed the original factor structure postulated by the test developers. For parsimony reasons, this section reports only the results of the COI because the EFA yielded a factor structure that differed from the original COI factor structure postulated by Schein (1990).

6.1.1 Exploratory factor analysis of the COI

The IBM (2021) SPSS Statistics version 28.0 software package was used to conduct an exploratory factor analysis (EFA) with principal component analysis (PCA) on the COI data. Varimax with Kaiser Normalisation was applied to calculate the rotated component matrix.

The recommended threshold value for the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was set at $>.60$, as recommended by Kaiser (1970) for adequate common variance among items in factor analysis. The EFA revealed a KMO of $.93$ (Bartlett's test of sphericity: p

= .000). The PCA uncovered eight components with eigenvalues exceeding one. The scree plot revealed a clear break after the fourth component. The first four factor components accounted for 30.33%, 7.79%, 4.01% and 3.79% of the variance respectively, cumulatively 45.92%. The remaining four components accounted cumulatively for only 11.57% (3.24%; 2.98%; 2.81%; 2.54%) of the variance.

Guided by Tabachnick and Fidell (2006) and Lambert et al. (2020), the rotated component matrix was then inspected to retain item loadings of $\geq .50$. Accordingly, only the first four factor components were retained because of item loadings $> .50$ and their interpretability and utility for this research project. Each of the four remaining components had numerous item cross-loadings with the first four components with the loadings being lower than $.50$ and only one or two items with loadings more than $.50$. Table 6.1 reports the item loadings of the first four components that were retained for the purposes of this research.

Table 6.1
Exploratory Factor Analysis: Rotated Component Matrix

Items	Component			
	Factor 1 (EC/PC/TF)	Factor 2 (AU/GM)	Factor 3 (SEC)	Factor 4 (EC)
Specialised creativity and problem solving				
21: I am most fulfilled in my career when I have been able to build something that is entirely the result of my own ideas and efforts (EC)	.58			
23: I have been most fulfilled in my career when I have solved seemingly unsolvable problems or won out over seemingly impossible odds (PC)	.59			
29: I will feel successful in my career only if I have succeeded in crafting or building something that is entirely my own product or idea (EC)	.66			
31: I seek out work opportunities that strongly challenge my problem solving and/or competitive skills (PC)	.59			
33: I am most fulfilled in my work when I have been able to use my special skills and talents (TF)	.63			
General managerial autonomy				
3: I dream of having a career that will allow me the freedom to do a job my own way and on my own schedule (AU)		.56		
18: I will feel successful in my career only if I become a general manager in some organisation (GM)		.72		
19: I will feel successful in my career only if I achieve complete autonomy and freedom (AU)		.60		

26: Becoming a general manager is more attractive to me than becoming a senior functional manager in my current area of expertise (GM)	.64
27: The chance to do a job my own way, free of rules and constraints, is more important to me than security (AU)	.72
Security and stability	
4: Security and stability are more important to me than freedom and autonomy (SEC)	.51
20: I seek jobs in organisations that will give me a sense of security and stability (SEC)	.62
28: I am most fulfilled in my work when I feel that I have complete financial and employment security (SEC)	.50
36: I dream of having a career that will allow me to feel a sense of security and stability (SEC)	.71
Entrepreneurship	
5: I am always on the lookout for ideas that would permit me to start my own enterprise (EC)	.67
13: Building my own business is more important to me than achieving a high-level managerial position in someone else's organization (EC)	.65
37: I dream of starting up and building my own business (EC)	.78

Source: Author's own work

Note: EC: Entrepreneurial creativity. PC: pure challenge. TF: technical and functional competence. AU: autonomy and independence. GM: general management. SEC: security and stability.

Table 6.1 revealed the following:

- Factor one (5 items) included two entrepreneurial creativity (EC) items, two pure challenge (PC) items and one technical and functional competence (TF) item from the original COI (Schein, 1990) factor structure. The combination of the items suggested the use of specialised skills (TF) to solve challenging problems (PC) in the building of one's own products or ideas (EC). Factor one was labelled as specialised creativity and problem solving.
- The second factor (labeled as general managerial autonomy: 5 items) included three autonomy and independence (AU) items and two general management (GM) items from the original COI (Schein, 1990) factor structure. The combination of items suggested autonomy and freedom in a general managerial role.

- The third factor retained four items of the original COI (Schein, 1990) factor structure for the security and stability career anchor (SEC). The combination of items suggested a strong focus on financial and employment security and stability.
- The fourth factor (labeled as entrepreneurship) retained three items of the original COI (Schein, 1990) entrepreneurial creativity (EC) anchor. The combination of items suggested a strong focus on creating one's own business or enterprise.

Table 6.2 shows that the internal consistency reliability coefficients (Cronbach's alpha) were, for large group-based research purposes, acceptable (entrepreneurship: .55) to high internal consistency reliability (>.70). In terms of construct or factor-level reliability (composite reliability: CR), all four factors had a coefficient larger than .70. The bivariate correlations among the four factors were positive and significant ($r \geq .39$ to $r \leq .55$). All four factors correlated positively and significantly with the overall career anchors construct ($r \geq .69$ to $r \leq .82$) and thus showed adequate convergent validity.

Table 6.2

COI: Descriptive Statistics and Bivariate Correlations

Career orientation	Number of items	Cronbach alpha (Composite reliability)	Mean	SD	1	2	3	4	5
1 Specialised creativity and problem solving	5	.80 (.86)	4.97	.99	-				
2 General managerial autonomy	5	.78 (.82)	4.20	1.29	.39	-			
3 Security and stability	4	.70 (.78)	4.99	.97	.55	.39	-		
4 Entrepreneurship	3	.55 (.78)	4.60	1.21	.51	.48	.42	-	
5 Overall scale	17	.86 (.90)	4.70	.86	.74	.82	.69	.71	-

Source: Author's own work

The discriminant and convergent validity of the factor structure was further tested with the JASP software version 0.16.3 (JASP, 2022). Table 6.3 reports the average variance extracted (AVE) and squared inter-construct correlations (SIC).

Table 6.3

Average Variance Extracted and Squared Inter-Construct Correlations

	Factors	AVE	SIC			
			1	2	3	4
1	Specialised creativity and problem solving	.55	-			
2	General managerial autonomy	.49	.18	-		
3	Security and stability	.48	.57	.24	-	
4	Entrepreneurship	.55	.38	.21	.25	-

Note: AVE: Average variance extracted. SIC: Squared inter-construct correlations.

Source: Author

Convergent validity was further evident with CR coefficients of $>.70$ (Table 6.2) and the AVE estimates (Table 6.3) either close to $.50$ (general managerial autonomy and security and stability) and $>.50$ (specialised creativity and problem-solving and entrepreneurship). The four-factor COI had also acceptable discriminant validity among the factors (except for security and stability [SIC = $.57$] with the AVE estimates being greater than the squared inter-construct correlations (SIC). Multicollinearity did not pose a threat to the findings because of all the inter-construct correlations being less than $.90$.

In summary, the four-factor COI was deemed acceptable for use in the statistical testing of the research hypotheses.

6.1.2 Testing for common method variance and construct validity of the measurement scales

The preliminary statistics involved testing for the presence of common method variance (CMV) as an indicator of common method bias (CMB). The SPSS Version 28.0 (IBM, 2021) and JASP Version 0.16.4 (2022) computer software programs were used to conduct the statistical analyses. A multi-factor CFA was also performed on each scale to test for the construct validity of each measurement scale. The following rules of thumb (threshold values) were applied for good model fit (Hair et al., 2019): $\chi^2/df \leq 3$; $RMSEA \leq .06$ or $\leq .08$ (90% CI upper bound); $SRMR \leq .05$ or $\leq .08$; $CFI \geq .90$. Table 6.4 summarises the results.

Table 6.4

Testing for Common Method Bias and Construct Validity: Harman's One Factor, CFA Common Latent Factor Solution and CFA Multi-factor Solution

Measurement scale	Harman's single factor	Common latent factor CFA	Multi-factor CFA Model
Career Agility Scale (CAS)	.46 (46%)	Chi-square (test statistic) = 3938.65	Chi-square = 418.02
Subscale factors:		Df = 153	Df = 132
• Technological adaptivity		Chi-square/df = 25.74	Chi-square/df = 3.17
• Agile learning		$p < .001$	$p < .001$
• Career navigation		RMSEA = .12	RMSEA = .08
		SRMR = .06	SRMR = .04
		CFI = .85	CFI = .94
		AIC = 20893.13	AIC = 20610.60
World of work awareness scale (WWAS)	Subscale 1 .45 (45%)	Subscale 1 Chi-square = 3141.55 Df = 120	Subscale 1 Chi-square = 166.73
Subscale 1 (awareness) factors:		Chi-square/df = 26.18	Df = 51
• Digital nature of work world		$p < .001$	Chi-square/df = 3.27
• Occupation/job awareness		RMSEA = .12	$p < .001$
• Continuous upskilling		SRMR = .06	RMSEA = .09
		CFI = .85	SRMR = .05
		AIC = 17902.43	CFI = .94
		Subscale 2	AIC = 13542.63
Subscale 2 (TUT qualification contribution to awareness) factors	Subscale 2 .47 (47%)	Chi-square = 3253.87 Df = 105	Subscale 2
• Job/occupation certitude		Chi-square/df = 30.99	Chi-square = 260.81
• Job/occupation fitness		$p < .001$	Df = 53
		RMSEA = .13	Chi-square/df = 4.92
		SRMR = .07	$p < .001$
		CFI = .84	RMSEA = .11 (lower bound: .09)
		AIC = 17259.65	SRMR = .05
			CFI = .92
			AIC = 13040.23

Measurement scale	Harman's single factor	Common latent factor CFA	Multi-factor CFA Model
Revised EFA-based career orientations inventory (COI)	.28 (28%)	Chi-square = 2207.09 Df = 136	Chi-square = 357.93 Df = 133
Subscale factors:		Chi-square/df = 16.23	Chi-square/df = 2.70
• Specialised creativity and problem solving		$p < .001$ RMSEA = .13	$p < .001$ RMSEA = .08
• General managerial autonomy		SRMR = .10 CFI = .67	SRMR = .07 CFI = .88
• Security and stability		AIC = 21456.45	AIC = 21020.39
• Entrepreneurship			
Career Adapt-Ability Scale (CAAS)	.41 (41%)	Chi-square = 4673.24 Df = 276	Chi-square = 613.46 Df = 246
Subscale factors:		Chi-square/df = 16.93	Chi-square/df = 2.50
• Career concern		$p < .001$ RMSEA = .10	$p < .001$ RMSEA = .07
• Career control		SRMR = .06 CFI = .83	SRMR = .05 CFI = .92
• Career curiosity		AIC = 20412.81	AIC = 19982.37
• Career confidence			
Employer employability competency expectations scale (EECES)	.49 (49%)	Chi-square = 7407.29 Df = 378	Chi-square = 580.41 Df = 183
Subscale factors:		Chi-square/df = 19.60	Chi-square/df = 3.17
• Graduateness		$p < .001$ RMSEA = .10	$p < .001$ RMSEA = .08
• Business/entrepreneurial skills		SRMR = .06 CFI = .82	SRMR = .05 CFI = .92
• Personal employability qualities		AIC = 24858.85	AIC = 18207.89
• Autonomy/leadership			

Note: $N = 369$. Df: difference. RMSEA: Root Mean Square Error of Approximation. SRMR: Standardised Root Mean Square Residual. CFI: Comparative fit index. AIC: Akaike Information Criterion. RMSEA values reported at 90% upper-level confidence interval (CI).

Career Agility Scale

Table 6.4 shows that the Harman's single factor accounted for only 46% (<50%) of the CMV among the subscale variables. When loading the three subscales of the CAS onto a CFA common latent factor, the fit indices showed that the common latent factor model did not have an acceptable fit with the data: chi-square/df = 25.74; $p = <.001$; RMSEA = .12; SRMR = .06; CFI = .85. These results suggest that CMB did not pose a serious threat to the interpretation of the research findings.

The multi-factor CFA model indicated a good fit with the data: chi-square/df = 3.17; $p = <.001$; RMSEA = .08; SRMR = .04; CFI = .92. These results showed that the three subscales converged well onto the career agility construct and have discriminant validity by measuring also unique contributing facets of the overall career agility construct.

World of Work Awareness Scale: Subscale 1 (Awareness)

Table 6.4 demonstrates that Harman's single factor accounted for just 45% (<50%) of the CMV among the subscale variables. The common latent factor CFA fit statistics showed that the data did not fit the model well: chi-square/df= 26.18, $p = <.001$, RMSEA = .12, SRMR = .06, and CFI = .85. These results suggest that CMB did not threaten the reliability and convergent validity of the data. As such, statistical associations among the construct variables may be analysed and interpreted with greater trustworthiness and valid conclusions can be drawn (Podsakoff et al., 2003).

The multi-factor CFA model had an acceptable fit with the data: chi-square/df = 3.27; $p = <.001$; RMSEA = .09; SRMR = .05; CFI = .94. These results showed that the three subscales converged adequately onto the world of work awareness construct and have discriminant validity by measuring also unique contributing facets of the overall construct.

WWAS Subscale 2: TUT qualification contribution to work world awareness

According to Table 6.4, the Harman's single factor accounted for just 47% (<50%) of the CMV among the subscale variables. The common latent factor CFA fit statistics showed that the data did not fit the model well: chi-square/df= 30.99, $p = <.001$, RMSEA = .13, SRMR = .07, and CFI = .84. These results suggest that CMB did not threaten the reliability and convergent validity of the data. As such, statistical associations among the constructs construct variables

may be analysed and interpreted with greater trustworthiness and valid conclusions can be drawn (Podsakoff et al., 2003).

The multi-factor CFA model had an acceptable fit with the data: chi-square/df = 4.92; $p = <.001$; RMSEA = .11 (lower bound CI: .09); SRMR = .05; CFI = .92. These results showed that the two subscales converged adequately onto the overall construct and have discriminant validity by measuring also unique contributing facets of the overall construct.

EFA-based career orientations inventory (COI)

Table 6.4 demonstrates that the Harman's single factor accounted for just 28% (<50%) of the CMV among the subscale variables. The common latent factor CFA fit statistics showed that the data did not fit the model well: chi-square/df= 16.23, $p = <.001$, RMSEA = .13, SRMR = .10, and CFI = .67. These results suggest that CMB did not threaten the reliability and convergent validity of the data. As such, statistical associations among the constructs construct variables may be analysed and interpreted with greater trustworthiness and valid conclusions can be drawn (Podsakoff et al., 2003).

The multi-factor CFA model had an acceptable fit with the data: chi-square/df = 2.70; $p = <.001$; RMSEA = .08; SRMR = .07; CFI = .88 (lower than but close to .90). These results showed that the four subscales converged adequately onto the overall COI construct and have adequate discriminant validity by measuring also unique contributing facets of the overall construct.

Career Adapt-Ability Scale (CAAS)

Table 6.4 demonstrates that the Harman's single factor accounted for just 41% (<50%) of the CMV among the subscale variables. The common latent factor CFA fit statistics showed that the data did not fit the model well: chi-square/df= 16.93, $p = <.001$, RMSEA = .10, SRMR = .06, and CFI = .82. These results suggest that CMB did not threaten the reliability and convergent validity of the data. As such, statistical associations among the constructs construct variables may be analysed and interpreted with greater trustworthiness and valid conclusions can be drawn (Podsakoff et al., 2003).

The multi-factor CFA model had a good fit with the data: chi-square/df = 2.50; $p = <.001$; RMSEA = .07; SRMR = .05; CFI = .92. These results showed that the four CAAS subscales converged adequately onto the overall construct and have adequate discriminant validity by measuring also unique contributing facets of the overall construct.

Employer employability competency expectations scale (EECES)

Table 6.4 demonstrates that the Harman's single factor accounted for 49% (<50%) of the CMV among the subscale variables. The common latent factor CFA fit statistics showed that the data did not fit the model well: chi-square/df= 19.60, $p = <.001$, RMSEA = .10, SRMR = .06, and CFI = .82. These results suggest that CMB did not threaten the reliability and convergent validity of the data. As such, statistical associations among the constructs construct variables may be analysed and interpreted with greater trustworthiness and valid conclusions can be drawn (Podsakoff et al., 2003).

The multi-factor CFA model had a good fit with the data: chi-square/df = 3.17; $p = <.001$; RMSEA = .06; SRMR = .05; CFI = .92. These results showed that the four EECES subscales converged adequately onto the overall construct and have adequate discriminant validity by measuring also unique contributing facets of the overall construct.

In summary, the measurement scales had, for the purposes of this research project, adequate construct validity for testing the research hypotheses. The CMV tests indicated that CMB did not pose a serious threat and that the findings could be interpreted in a reliable and valid manner.

6.1.3 Testing the discriminant validity of the overall measurement model.

The next step was to assess the discriminant validity of the overall measurement model before proceeding with the statistical analysis. A multi-factor CFA with maximum likelihood estimator comprising of all the measurement scales (CAS, WWAS, revised COI, CAAS and EECES) was then performed with the JASP Version 0.16.4 (2022) computer software program. Each of the scales' sub-factors were loaded into the model, with the items of the subscales loading onto their respective factor.

As shown in Table 6.5, the multi-factor CFA overall measurement model (twenty [20] sub-scale factors) indicated an acceptable fit with the data: chi-square/df = 9134.74/5062= 1.80; $p = <.001$; RMSEA = .05; SRMR = .05; CFI = .83. Although the CFI was below the required $>.90$ threshold value, the measurement model had, otherwise, acceptable discriminant validity and was deemed acceptable for research purposes.

Table 6.5

Overall Measurement Model: Multifactor CFA Model Fit Statistics

Chi-square	df	Chi-square/df	p	RMSEA	SRMR	CFI	AIC
9134.74	5062	1.80	$<.001$.05	.05	.83	105288.89

Source: Author's own work

Following the guidelines of Rönkkö and Cho (2022), inspection of the paired factor covariances among the various scales' subscale factors (**Table 6.6 – see Appendix C**) indicated that the CFA Upper Limit (UL) confidence interval (95%) values were below the threshold value of $UL <.80$ for evidence of discriminant validity among the subscales of the measurement model. Evidence of distinctiveness among the twenty (20) construct variables minimized concerns about multicollinearity in the interpretation of the findings. The UL 95% confidence interval among the covariance of technological adaptivity and digital work world awareness was $UL = .95$ indicating only a marginal problem of multicollinearity among the two constructs.

In summary, the overall measurement model had acceptable discriminant validity for testing the research hypotheses and drawing valid conclusions.

6.1.4 Internal consistency reliability and convergent validity of the measurement scales

Table 6.7 reports the Cronbach alpha coefficients and composite reliability (CR) coefficients and average variance extracted (AVE) of each measurement scale. As guided by the Fornell-Larcker (1981) criterion, the AVE values of $>.50$, and CR (construct or factor-level reliability) values of $>.70$, indicate convergent validity and internal consistency reliability of a measurement scale. The researcher used the IBM SPSS Version 28.0 (IBM, 2021) computer software program for the statistical analyses.

Table 6.7*Internal Consistency Reliability and Convergent Validity Results*

Measurement scale	Cronbach alpha coefficient (α)	Composite reliability (CR)	Average variance extracted (AVE)
Overall career agility scale (CAS)	.94	.95	.49
Technological adaptivity	.84	.87	.48
Agile learning	.91	.91	.66
Career navigation	.87	.89	.59
Overall world of work awareness (WWAS)	.93	.94	.51
Digital nature of work world	.77	.82	.53
Occupation/job awareness	.79	.83	.62
Continuous upskilling	.89	.89	.62
TUT qualification contribution to awareness	.91	.94	.54
Job/occupational certitude	.85	.88	.56
Job/occupational fitness	.91	.93	.70
Overall career interests (revised COI)	.86	.91	.48
Specialised creativity and problem solving	.80	.86	.55
General managerial autonomy	.78	.82	.49
Security and stability	.70	.78	.48
Entrepreneurship	.55	.78	.55
Career adaptability	.94	.96	.52
Career concern	.80	.87	.54
Career control	.80	.88	.54
Career curiosity	.87	.91	.63
Career confidence	.90	.94	.71
Employer employability competency expectations	.96	.98	.59
Graduateness	.89	.93	.63
Business/Entrepreneurial Skills	.86	.90	.69
Personal Employability Qualities	.89	.93	.76
Autonomy/Leadership	.88	.92	.69

Note: N = 369

6.1.4.1 *Career agility scale*

Table 6.7 shows that the CAS and its subscales had good internal consistency reliability: Overall CAS $\alpha = .93$; technological adaptivity $\alpha = .84$; agile learning $\alpha = .91$; career navigation $\alpha = .87$. The subscales had AVE values close to and above .50 and CR values of $>.70$, which indicated acceptable convergent validity and high internal consistency reliability of the CAS.

6.1.4.2 *World of work awareness scale: Subscale 1(Awareness)*

Table 6.7 shows that the WWAS and its subscales had good internal consistency reliability: Overall WWAS $\alpha = .93$; digital nature of work world $\alpha = .77$, occupation/job awareness $\alpha = .79$; continuous upskilling $\alpha = .89$. The subscales had AVE values above .50. Furthermore, the CR values of digital nature of work world $>.82$, occupational job awareness $>.83$ and continuous upskilling $>.89$ were all above $>.70$, thus confirming convergent validity.

6.1.4.3 *WWAS Subscale 2 (TUT qualification contribution to world of work awareness)*

As shown in table 6.7, the WWAS subscale (qualification contribution to world of work awareness), had a good internal consistency reliability: overall scale $\alpha = .91$, job/occupational certitude $\alpha = .85$, and job/occupational fitness $\alpha = .91$. The subscales had AVE values above .50 and the CR values were all above $>.70$, thus confirming convergent validity.

6.1.4.4 *Career orientations inventory*

Table 6.7 shows that the revised four-factor COI and its subscales had good internal consistency reliability: Overall COI $\alpha = .86$; specialised creativity and problem solving $\alpha = .80$; general managerial autonomy $\alpha = .78$; security and stability $\alpha = .70$ and entrepreneurship $\alpha = .55$. Although the reliability coefficient of .55 was below .70, it was deemed acceptable for the purposes of large group-based research. The subscales had AVE values close to or above .50 and the CR values were all above $>.70$, thus confirming convergent validity.

6.1.4.5 *Career -adapt-ability scale.*

Table 6.7 shows that the CAAS and its subscales had good internal consistency reliability: Overall CAAS $\alpha = .94$; career concern $\alpha = .80$; career control $\alpha = .80$; career curiosity $\alpha = .87$ and career confidence $\alpha = .90$. The subscales had AVE values above .50 and CR values of $>.70$, which indicated acceptable convergent validity and high internal consistency reliability of the CAAS.

6.1.4.6 *Employer employability competency expectations scale*

Table 6.7 shows that the EECES and its subscales had good internal consistency reliability: Overall EECES $\alpha = .96$; gradueness $\alpha = .84$; business/entrepreneurial skills $\alpha = .86$; personal employability qualities $\alpha = .89$ and autonomy/leadership $\alpha = .88$. The subscales had AVE values above .50 and the CR values were all above $>.70$, thus confirming convergent validity.

In summary, the preliminary statistical analysis provided evidence of the construct validity and internal consistency reliability of the measurement scales, and the discriminant validity of the overall research measurement model.

6.2 DESCRIPTIVE STATISTICS

This section reports the means, standard deviations, skewness and kurtosis results of each measurement scale. The IBM SPSS Version 28.0 (IBM, 2021) computer software program was used for the statistical analyses. The Likert-type scale used for each scale to calculate the means and standard deviations (SDs) was as follows:

- Career agility scale (CAS): 1 = strongly disagree; 7 = strongly agree
- World of work awareness scale (WWAS): 1 = strongly disagree; 7 = strongly agree
- Career orientations inventory (COI): 1 = not true at all for me; 6 = always true for me
- Career adaptability scale (CAAS): 1 = not strong; 5 = strongest
- Employer employability competency expectations scale (EECES): 1 = not strong; 5 = strongest.

Table 6.8 summarises the results.

Table 6.8*Descriptive Statistics*

Measurement scale	Mean	Standard deviation (SD)	Skewness	Kurtosis
Overall career agility scale (CAS)	5.73	1.03	-2.18	5.97
Technological adaptivity	5.61	1.07	-1.43	2.52
Agile learning	6.12	1.18	-2.78	8.59
Career navigation	5.54	1.20	-1.46	2.69
Overall world of work awareness (WWAS)	5.81	.95	-1.84	5.79
Digital nature of work world	5.75	1.15	-1.48	2.85
Occupation/job awareness	5.45	1.24	-.92	.842
Continuous upskilling	6.04	1.04	-2.20	6.58
TUT qualification contribution to awareness	5.71	.99	-1.66	4.34
Job/occupational certitude	5.81	1.07	-1.52	3.18
Job/occupational fitness	6.03	1.12	-2.07	5.41
Overall career interests (revised COI)	4.70	.86	-.710	.265
Specialised creativity and problem solving	4.97	.99	-1.31	1.77
General managerial autonomy	4.20	1.30	-.47	-.71
Security and stability	4.99	.97	-1.14	.85
Entrepreneurship	4.60	1.21	-.76	-.23
Career adaptability	3.74	.98	.46	.36
Career concern	4.40	.61	-1.02	.65
Career control	4.28	.65	-.87	.10
Career curiosity	4.16	.78	-.85	-.08
Career confidence	4.23	.79	-1.13	.71
Employer employability competency expectations	4.00	.75	-.63	-.19
Graduateness	4.08	.78	-.81	.08
Business/Entrepreneurial Skills	3.74	.98	-.46	-.58
Personal Employability Qualities	4.02	.93	-.79	-.14
Autonomy/Leadership	4.11	.82	-.84	-.02

Note: N = 369

6.2.1 Career agility scale (CAS)

The CAS measured participants' responses on a 7-point Likert scale (1 = strongly disagree; 7 = strongly agree). Table 6.8 shows that the participants had a moderately high mean score on the overall career agility scale: overall career agility (mean = 5.73; SD = .1.03). Participants scored the highest on the agile learning subscale (mean = 6.12; SD = 1.18) and the lowest on the career navigation subscale (mean = 5.54; SD = 1.20). Overall, the skewness and kurtosis values were not close to zero, nor within the recommended normality range of -2 and +2 (Bryne, 2010; Hair et al., 2010) for all values which indicated a somewhat non-normal distribution of scores. The data were skewed to the left (negative), thus indicating that relatively few small values were reported.

6.2.2 World of work awareness scale WWAS Subscale 1 (Awareness)

The WWAS measured participants' responses on a 7-point Likert scale 1 = strongly disagree; 7 = strongly agree. Table 6.8 shows that the participants had a moderately high mean score on the overall WWAS (mean = 5.81; SD = .95). Participants scored the highest on the continuous upskilling subscale (mean = 6.04; SD = 1.04) and the lowest on the occupation/job awareness subscale (mean = 5.45; SD = 1.24). Overall, the skewness and kurtosis values were not close to zero, but within the recommended normality range of -2 and +2 (Bryne, 2010; Hair et al., 2010) for all values which indicated a relative normal distribution of scores. The data were skewed to the left (negative), thus indicating that relatively few small values were reported.

6.2.3 World of work awareness scale WWAS Subscale 2 (TUT qualification contribution to work world awareness)

Table 6.8 shows that the participants had a moderately high mean score on the overall subscale 2 (mean = 5.71; SD = .99). Participants scored the highest on the job/occupational fitness subscale (mean = 6.12; SD = 1.12). Overall, the skewness and kurtosis values were not close to zero, but within the recommended normality range of -2 and +2 (Bryne, 2010; Hair et al., 2010) for all values which indicated a relative normal distribution of scores. The data were skewed to the left (negative), thus indicating that relatively few small values were reported.

6.2.4 Career orientations inventory (COI)

The COI measured participants' responses on a 6-point Likert scale (1 = not true at all for me; 6 = always true for me). Table 6.8 shows that the participants had a slightly high mean score on the overall career orientations inventory (mean = 4.70; SD = .86). Participants scored the highest on the security and stability subscale (mean = 4.99; SD = .97) and the lowest on the general managerial autonomy subscale (mean = 4.20; SD = 1.30). Overall, the skewness and kurtosis values were within the recommended normality range of -2 and +2 (Bryne, 2010; Hair et al., 2010) for all values which indicated a relative normal distribution of scores. The data were skewed to the left (negative), thus indicating that relatively few small values were reported.

6.2.5 Career adaptability scale (CAAS)

The CAAS measured participants' responses on a 5-point Likert scale (CAAS) scale: 1 = not strong; 5 = strongest). Table 6.8 shows that the participants had a slightly high score on the overall career adaptability scale (mean = 3.74; SD = .98). Participants scored the highest on the career concern subscale (mean = 4.40; SD = .610) and the lowest on the career curiosity subscale (mean = 4.16; SD = .78). Overall, the skewness and kurtosis values were within the recommended normality range of -2 and +2 (Bryne, 2010; Hair et al., 2010) for all values which indicated a relative normal distribution of scores. The data were skewed to the left (negative), thus indicating that relatively few small values were reported.

6.2.6 Employer employability competency expectations scale (EECES)

The EECES measured participants' responses on a 5-point Likert scale (1 = not strong; 5 = strongest). Table 6.8 shows that the participants had a high mean score on the overall employer employability competency expectations scale (mean = 4.00; SD = .75). Participants scored the highest on the autonomy/leadership subscale (mean = 4.11; SD = .82) and the lowest on business/entrepreneurial skills (mean = 3.74; SD = .98). Overall, the skewness and kurtosis values were within the recommended normality range of -2 and +2 (Bryne, 2010; Hair et al., 2010) for all values which indicated a relative normal distribution of scores. The data were skewed to the left (negative), thus indicating that relatively few small values were reported.

Preliminary analysis 1: Career guidance for employability competency profile of sample

Overall, the mean scores indicated that the participants had relatively high mean scores on agile learning (career agility), continuous upskilling (world of work awareness), and job/occupation fitness (TUT qualification contribution to work world awareness). Their predominant career interests were security and stability (primary interest), specialised creativity and problem-solving skills (secondary interest) and entrepreneurship (tertiary interest). They exhibited a moderately high use of career concern resources (career adaptability). They had relatively high positive perceptions of complying with employers' expectations of autonomy/leadership and graduateness employability competency.

The somewhat lower mean scores further indicated that the participants may potentially need career guidance on how to develop their career navigation (career agility), occupation/job awareness and job/occupation certitude (world of work awareness). The mean scores further suggested that the participants may need career guidance on developing their overall career adaptability and career curiosity. The participants may also need more guidance on developing confidence in their business/entrepreneurial skills and personal employability qualities.

6.3 BI-VARIATE CORRELATION ANALYSIS

This section addresses research aim 1:

Research aim 1: To explore the nature of the statistical inter-relationships between students' career agility, world of work awareness, career interests, career adaptability and perceptions of employer employability competency expectations.

The IBM SPSS Version 28.0 (IBM, 2021) computer software program was used for the statistical analyses. To determine the strength and direction of each relationship between the variables of each instrument, the Spearman correlation coefficient was employed to calculate the association between the independent, mediating, and dependent variables. The Cohen's practical effect criteria for bi-variate correlations ($p < .05$) were applied:

- r larger/equal to .10 to .29 = small practical effect
- r larger/equal to .30 to .49 = moderate practical effect
- r larger than/equal to .50 = large practical effect

6.3.1 Correlations between career agility, world of work awareness, and career interests (antecedents)

Table 6.9 shows that all the bi-variate correlations between the career agility, world of work awareness and career interests were positive and significant at $p = .000$. The correlations ranged between $r \leq .74$ (large practical effect) and $r \geq .14$ (small practical effect).

Table 6.9

Bi-Variate Correlations: Career Agility, World of Work Awareness and Career Interests

Scale variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 Overall career agility (CAS)	-														
2 Technological adaptivity	.84	-													
3 Agile learning	.74	.50	-												
4 Career navigation	.85	.52	.58	-											
5 Overall world of work awareness (WWAS)	.74	.61	.60	.65	-										
6 Digital nature of work world	.64	.59	.45	.53	.64	-									
7 Occupation/job awareness	.57	.45	.47	.52	.57	.54	-								
8 Continuous upskilling	.58	.46	.52	.53	.58	.55	.53	-							
9 Job/occupation certitude	.60	.45	.56	.52	.60	.47	.64	.50	-						
10 Job/occupation fitness	.56	.44	.54	.47	.56	.43	.55	.48	.65	-					
11 Overall career interests (COI)	.40	.31	.27	.39	.40	.41	.49	.36	.43	.40	-				

Scale variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
12 Specialised creativity and problem solving	.44	.33	.32	.41	.44	.37	.41	.45	.35	.40	.74	-			
13 General managerial autonomy	.27	.21	.14	.31	.27	.33	.40	.21	.33	.30	.82	.39	-		
14 Security and stability	.33	.25	.26	.32	.33	.28	.38	.35	.38	.33	.69	.55	.39	-	
15 Entrepreneurship	.27	.20	.22	.26	.27	.28	.32	.22	.25	.25	.71	.51	.48	.42	-

Note: N = 369. Note all correlations significant at ***p = .000.

6.3.2 Correlations between career agility, career adaptability and employer employability competency expectations

Table 6.10 shows that all the bi-variate correlations between the career agility, career adaptability and employer employability competency expectations were positive and significant at $p = .000$. The correlations ranged between $r \leq .77$ (large practical effect) and $r \geq .25$ (small practical effect).

Table 6.10

Bi-Variate Correlations: Career Agility, Career Adaptability and Employer Employability Competency Expectations

Scale variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 Overall career agility (CAS)	-													
2 Technological adaptivity	.84	-												
3 Agile learning	.74	.50	-											
4 Career navigation	.85	.52	.58	-										
5 Overall Career adaptability scale (CAAS)	.43	.30	.33	.43	-									
6 Career concern	.37	.25	.29	.36	.66	-								
7 Career control	.37	.26	.29	.37	.65	.65	-							
8 Career curiosity	.39	.26	.28	.43	.64	.65	.74	-						

Scale variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 Overall career agility (CAS)	-													
2 Technological adaptivity	.84	-												
3 Agile learning	.74	.50	-											
4 Career navigation	.85	.52	.58	-										
5 Overall Career adaptability scale (CAAS)	.43	.30	.33	.43	-									
6 Career concern	.37	.25	.29	.36	.66	-								
7 Career control	.37	.26	.29	.37	.65	.65	-							
8 Career curiosity	.39	.26	.28	.43	.64	.65	.74	-						
9 Career confidence	.38	.26	.32	.36	.82	.84	.89	.89	-					
10 Employer employability competency expectations	.47	.31	.37	.48	.77	.60	.60	.71	.77	-				
11 Graduateness	.41	.27	.31	.41	.58	.56	.68	.69	.73	.89	-			
12 Business/Entrepreneurial Skills	.36	.27	.28	.36	.49	.47	.58	.53	.61	.83	.70	-		
13 Personal Employability Qualities	.45	.28	.34	.46	.53	.51	.63	.67	.69	.89	.73	.66	-	
14 Autonomy/Leadership	.41	.25	.37	.48	.52	.55	.60	.59	.65	.85	.67	.61	.75	-

Note: $N = 369$. Note all correlations significant at $***p = .000$

6.3.3 Correlations between world of work awareness, career adaptability and employer employability competency expectations

Table 6.11 shows that all the bi-variate correlations between the career agility, world of work awareness and career interests were positive and significant at $p = .000$. The correlations ranged between $r \leq .77$ (large practical effect) and $r \geq .25$ (small practical effect).

Table 6.11*Bi-Variate Correlations: World of Work Awareness, Career Adaptability and Employer Employability Competency Expectations*

	Scale variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Overall world of work awareness (WWAS)	-															
2	Digital nature of work world	.64	-														
3	Occupation/job awareness	.57	.54	-													
4	Continuous upskilling	.58	.55	.53	-												
5	Job/occupation certitude	.60	.47	.64	.50	-											
6	Job/occupation fitness	.56	.43	.55	.48	.65	-										
7	Overall Career adaptability scale (CAAS)	.47	.32	.39	.39	.43	.41	-									
8	Career concern	.39	.27	.34	.35	.41	.35	.66	-								
9	Career control	.42	.29	.33	.34	.35	.36	.65	.65	-							
10	Career curiosity	.45	.32	.39	.38	.39	.39	.64	.65	.74	-						
11	Career confidence	.39	.25	.31	.35	.36	.35	.82	.84	.89	.89	-					
12	Employer employability competency expectations	.48	.34	.42	.41	.36	.35	.77	.60	.60	.71	.77	-				
13	Graduateness	.37	.25	.31	.33	.42	.38	.58	.56	.68	.69	.73	.89	-			
14	Business/Entrepreneurial Skills	.39	.29	.37	.43	.35	.28	.49	.47	.58	.53	.61	.83	.70	-		
15	Personal employability qualities	.47	.33	.37	.40	.36	.36	.53	.51	.63	.67	.69	.89	.73	.66	-	
16	Autonomy/Leadership	.46	.33	.36	.41	.37	.37	.52	.55	.60	.59	.65	.85	.67	.61	.75	-

Note: N = 369. Note all correlations significant at *** $p = .000$

6.3.3 Correlations between career interests, career adaptability and employer employability competency expectations

Table 6.12 shows that all the bi-variate correlations between the career interests, career adaptability and employer employability competency expectations were positive and significant at $p = .000$. The correlations ranged between $r \leq .77$ (large practical effect) and $r \geq .22$ (small practical effect).

Table 6.12

Bi-Variate Correlations: Career Interests, Career Adaptability and Employer Employability Competency Expectations

	Scale variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Overall career interests (COI)	-														
2	Specialised creativity and problem solving	.74	-													
3	General managerial autonomy	.82	.39	-												
4	Security and stability	.69	.55	.39	-											
5	Entrepreneurship	.71	.51	.48	.42	-										
6	Overall Career adaptability scale (CAAS)	.44	.45	.28	.41	.30	-									
7	Career concern	.40	.25	.34	.22	.39	.66	-								
8	Career control	.40	.25	.36	.27	.39	.65	.65	-							
9	Career curiosity	.43	.31	.40	.33	.46	.64	.65	.74	-						
10	Career confidence	.36	.16	.32	.21	.30	.82	.84	.89	.89	-					
11	Employer employability competency expectations	.45	.42	.33	.36	.32	.77	.60	.60	.71	.77	-				
12	Graduateness	.38	.33	.29	.35	.46	.58	.56	.68	.69	.73	.89	-			
13	Business/Entrepreneurial Skills	.46	.34	.38	.29	.35	.49	.47	.58	.53	.61	.83	.70	-		
14	Personal Employability Qualities	.37	.40	.24	.33	.22	.53	.51	.63	.67	.69	.89	.73	.66	-	
15	Autonomy/Leadership	.40	.42	.25	.34	.25	.52	.55	.60	.59	.65	.85	.67	.61	.75	-

Note: N = 369. Note all correlations significant at $***p = .000$

In summary, the bi-variate correlations provided evidence in support of research hypothesis 1:

Research hypothesis 1: Significant statistical inter-relationships exist between students' career agility, world of work awareness, career interests, career adaptability and perceptions of employer employability competency expectations.

Preliminary analysis 2: Career guidance for employability competency

Overall, the positive and significant associations between the antecedent (career agility, world of work awareness, career interests), mediating (career adaptability) and outcome (employer employability competency expectations) variables supported the notion that the constructs may contribute to the construction of a career guidance framework for enhancing employability competency. The bi-variate correlations also suggested that the antecedent (career agility, world of work awareness, career interests), mediating (career adaptability) are likely to enhance participants' confidence in them having the employability competency expected by employers. Thus, by enhancing participants' career agility, world of work awareness, clarity on career interests and career adaptability resources through career guidance interventions, their perceptions of having the needed employer employability competency may likely be strengthened. In this regard, the positive associations suggest interesting malleable dynamics between the study constructs that warrant further inferential statistical analysis.

6.4 INFERENCE STATISTICS

The inferential statistics involved four substages of analysis:

Substage 1: Hierarchical stepwise multiple regression analysis

Substage 2: Mediation analysis

Substage 3: Moderated regression analysis

Substage 4: Tests for significant mean differences

6.4.1 Hierarchical stepwise regression analysis

This section addresses research aim 2:

Research aim 2: To explore the extent to which students' socio-demographic characteristics (age, gender, qualification choice based on career interest, demographic [urban/rural], and need for career guidance), career agility, world of work awareness, career interests and career adaptability positively predict their perceptions of complying with employer employability competency expectations.

The IBM SPSS Version 28.0 (IBM, 2021) computer software program was used for the statistical analyses. For parsimony reasons only the final step in the hierarchical regression model is reported. The stepwise regression procedure helped to identify the best predictors of the employer employability competency expectations.

6.4.1.1 Employer employability competency expectations: Graduateness

Ten stepwise regression models were conducted for the variable graduateness. Each of the models added in a hierarchical manner the independent variables (see research aim 1) and identified the best significant predictors in the final model. The results of model 10 (final step) is reported in Table 6.13.

Table 6.13

Final Model (Best Predictors): Hierarchical Stepwise Regression onto Graduateness

Variable	Unstandardised coefficients		Standardised coefficients			Collinearity statistics	
	β	SE	β	t	p	Tolerance	VIF
Constant	.29	.24		1.21	.23		
Career guidance needs: May be useful	-.11	.06	-.07	-1.93	.05	.97	1.03
Qualification choice based on career interests: Strong	.21	.10	.12	2.06	.04	.36	2.81
Qualification choice based on career interests: Definitely	.19	.10	.12	1.95	.05	.32	3.16

Variable	Unstandardised coefficients		Standardised coefficients		Collinearity statistics		
	β	SE	β	t	p	Tolerance	VIF
Qualification choice based on career interests: To a degree	.23	.11	.11	2.17	.03	.43	2.33
Career confidence	.39	.05	.39	7.28	<.001	.42	2.41
Career curiosity	.23	.06	.23	3.97	<.001	.37	2.72
Career navigation	.13	.04	.20	3.67	<.001	.39	2.59
Agile learning	-.08	.03	-.12	-2.29	.02	.43	2.30
Career control	.12	.06	.10	2.05	.04	.48	2.08
Security and stability	.06	.03	.08	2.01	.04	.80	1.26

Note: N = 369. $F = 49.19$. $p = <.001$. Adjusted $R^2 = .57$

The F -statistic was $F = 49.19$ ($p <.001$). The model explained a large percentage (57%) of the variance in graduateness (Adjusted $R^2 = .57$; large practical effect). In terms of checking for potential issues of multicollinearity, Table 6.13 shows that the Variance Inflation Factor (VIF) values were all below 4 and the tolerance values were above .25. The VIF and tolerance values indicated that multicollinearity was not a threat in interpreting the findings.

High levels of career confidence, career curiosity and career navigation positively predicted higher levels of complying with the employability competency expectation of graduateness. Table 6.13 shows that career confidence had the highest beta-value ($\beta = .39$; $p = <.001$), followed by career curiosity ($\beta = .23$; $p = <.001$) and career navigation ($\beta = .20$; $p = <.001$). Career control ($\beta = .10$; $p = .04$) and the career interest of security and stability ($\beta = .08$; $p = .04$) also positively predicted a sense of graduateness, including qualification choice based on career interests (strongly; definitely; to a degree). Agile learning ($\beta = -.12$; $p = .02$) and a low need for career guidance ($\beta = -.07$; $p = .05$) predicted a lower sense of graduateness.

6.4.1.2 *Employer employability competency expectations: Business/entrepreneurial skills*

Five stepwise regression models were conducted for the variable business/entrepreneurial skills. Each of the models added in a hierarchical manner the independent variables (see research aim 1) and identified the best significant predictors in the final model. The results of model 5 (final step) is reported in Table 6.14.

Table 6.14

Final Model (Best Predictors): Hierarchical Stepwise Regression onto Business/Entrepreneurial Skills

Variable	Unstandardised coefficients		Standardised coefficients			Collinearity statistics	
	β	SE	β	t	p	Tolerance	VIF
Constant	.08	.27		.30	.77		
Gender: Female	-.20	.08	-.10	-2.43	.02	.97	1.03
Career curiosity	.35	.08	.28	4.50	<.001	.42	2.39
Entrepreneurship	.12	.04	.15	3.24	.001	.73	1.36
Career confidence	.31	.07	.25	4.20	<.001	.46	2.16
General managerial autonomy	.11	.04	.15	3.13	.002	.76	1.32

Note: N = 369. F = 49.08 p = <.001. Adjusted R² = .40.

The *F*-statistic was $F = 49.08$ ($p < .001$). The model explained percentage of (40%) of the variance in graduateness (Adjusted $R^2 = .40$, large practical effect). In terms of checking for potential issues of multicollinearity, Table 6.14 shows that the Variance Inflation Factor (VIF) values were all below 4 and the tolerance values were above .25. The VIF and tolerance values indicated that multicollinearity was not a threat in interpreting the findings.

High levels of career curiosity ($\beta = .28$; $p = <.001$), career confidence ($\beta = .25$; $p = <.001$), career interests' entrepreneurship ($\beta = .15$; $p = .001$) and general managerial autonomy ($\beta = .15$; $p = .002$) positively predicted higher levels of complying with the employability competency expectation of business/entrepreneurial skills. Gender (female) was also a significant predictor and had a negative beta value ($\beta = -.10$; $p = .02$) suggesting lower perceptions of having business/entrepreneurial skills.

6.4.1.3 Employer employability competency expectations: Personal employability qualities

Six stepwise regression models were conducted for the variable personal employability qualities. Each of the models added in a hierarchical manner the independent variables (see research aim 1) and identified the best significant predictors in the final model. The results of model 6 (final step) is reported in Table 6.15.

Table 6.15

Final Model (Best Predictors): Hierarchical Stepwise Regression onto Personal Employability Qualities

Variable	Unstandardised coefficients		Standardised coefficients			Collinearity statistics	
	β	SE	β	t	p	Tolerance	VIF
Constant	-.46	.34		-1.35	.178		
Career guidance need: strong	.24	.09	.10	2.76	.006	.99	1.004
Age	.00	.01	.01	.23	<.001	.97	1.03
Career confidence	.45	.06	.38	7.29	<.001	.47	2.13
Career curiosity	.30	.07	.26	4.68	<.001	.43	2.35
Specialised creativity and problem solving	.14	.04	.15	3.65	<.001	.75	1.33
Career navigation	.94	.03	.12	3.14	.002	.83	1.02

Note: N = 369. F = 70.16 p = <.001. Adjusted R² = .53

The F-statistic was F = 70.16 (p <.001). The model explained 53% of the variance in personal employability qualities (Adjusted R² = .53; large practical effect). In terms of checking for potential issues of multicollinearity, Table 6.15 shows that the Variance Inflation Factor (VIF) values were all below 4 and the tolerance values were above .25. The VIF and tolerance values indicated that multicollinearity was not a threat in interpreting the findings.

All the variables in the final model (Table 6.15) positively predicted personal employability qualities. Career confidence ($\beta = .38$; p = <.001; highest beta) and career curiosity ($\beta = .26$; p = <.001) had the highest beta values, followed by the career interest specialised creativity and problem solving ($\beta = .15$; p = <.001) and career navigation ($\beta = .12$; p = .002). Strong career guidance needs ($\beta = .10$; p = .006) and to a negligible extent age ($\beta = .01$; p = <.001) also predicted positive perceptions of having personal employability qualities.

6.4.1.4 Employer employability competency expectations: Autonomy/leadership

Seven stepwise regression models were conducted for the variable Autonomy/leadership. Each of the models added in a hierarchical manner the independent variables (see research aim 1) and identified the best significant predictors in the final model. The results of model 7 (final step) is reported in Table 6.16.

Table 6.16

Final Model (Best Predictors): Hierarchical Stepwise Regression onto Autonomy/Leadership

Variable	Unstandardised coefficients		Standardised coefficients			Collinearity statistics	
	β	SE	β	t	p	Tolerance	VIF
Constant	.08	.25		.32	.75		
Career curiosity	.27	.06	.25	4.23	<.001	.39	2.57
Specialised creativity and problem solving	.15	.04	.18	3.98	<.001	.70	1.44
Career confidence	.27	.06	.26	4.42	<.001	.42	2.39
Digital nature of work world	.07	.03	.10	2.31	.02	.82	1.22
Career control	.15	.07	.12	2.23	.03	.48	2.08

Note: $N = 369$. $F = 49.99$. $p = <.001$. Adjusted $R^2 = .48$

The F -statistic was $F = 49.99$ ($p <.001$). The model explained 48% of the variance in autonomy/leadership (Adjusted $R^2 = .48$, large practical effect). In terms of checking for potential issues of multicollinearity, Table 6.16 shows that the Variance Inflation Factor (VIF) values were all below 4 and the tolerance values were above .25. The VIF and tolerance values indicated that multicollinearity was not a threat in interpreting the findings.

High levels of career confidence ($\beta = .26$; $p = <.001$; highest beta), career curiosity ($\beta = .25$; $p = <.001$), career control ($\beta = .12$; $p = .03$), career interest specialised creativity and problem-solving ($\beta = .18$; $p = <.001$), and awareness of the digital nature of work ($\beta = .10$; $p = .02$) positively predicted higher levels of complying with the employability competency expectation of autonomy/leadership.

In summary, the hierarchical stepwise regression analysis results provided evidence in support of research hypothesis 2:

Research hypothesis 2: Students' characteristics (age, gender, qualification choice based on career interest, demographic [urban/rural], and need for career guidance), career agility, world of work awareness, career interests and career adaptability positively predict their perceptions of complying with employer employability competency expectations.

Preliminary analysis 3: Career guidance for employability competency

The stepwise regression results revealed core interesting patterns of prediction that need to be considered in the career guidance of the sample of TUT students. Generally, guidance on the development of career adaptability resources was especially highlighted by the results. The career adaptability resources of career confidence and career curiosity positively predicted higher levels of all four the employer employability competencies of: graduateness, business/entrepreneurial skills, personal employability qualities and autonomy/leadership. A career guidance framework thus needs to consider students' strengths in these career adaptability resources because of their likelihood to increase TUT students' employability competency.

- The career adaptability resource of career control is also an important attribute that is likely to enhance individual's graduateness and autonomy/leadership competency.
- In terms of career agility, career navigation is likely to enhance the perceived employability competencies of graduateness and personal employability qualities, while agile learning is likely to further enhance a sense of graduateness.
- Awareness of the digital nature of work may likely enhance a sense of having autonomy and leadership attributes.
- In terms of the career interests, a preference for careers that offer security and stability is likely to enhance a sense of graduateness. A preference for careers that offer opportunities for entrepreneurship and general managerial autonomy is likely to enhance a sense of having business/entrepreneurial skills. A preference for careers that offer opportunities for applying specialised creativity and problem-solving skills is

likely to enhance a sense of having the expected personal employability qualities and autonomy and leadership.

- Gender (female), age and career guidance need had only a negligible prediction effect suggesting that the attributes of career adaptability, career agility and world of work awareness play a stronger role in enhancing employability competency.
- Choice of qualification based on career interests is likely to further enhance a sense of graduateness. This result highlights the importance of providing career guidance support that help TUT students identify and crystallise their career interests in career exploration.

6.4.2 Mediation analysis

Mediation analysis was performed to achieve research aim 3:

Research aim 3: To explore the extent to which the link between students' career agility, world of work awareness, and career interests (antecedents), and their perceptions of complying with employer employability competency expectations (outcome), is mediated by their career adaptability.

The JASP Version 0.16.4 (2022) computer software program was used to conduct mediation analysis. Delta method standard errors, normal theory confidence intervals and maximum likelihood estimator were applied to address potential issues of bias (JASP, 2022).

Complete mediation effects were noted for evidence that the independent variable had no significant direct effect on the dependent variable (i.e., there was evidence of only a significant indirect effect). Partial mediation was evident when an independent variable had both a significant direct and indirect effect on the dependent variable (Hair et al., 2019).

6.4.2.1 *Career agility as independent variable*

Table 6.17 reports the results of the mediation results. For parsimony reasons only the significant direct and indirect effects are reported. The 95% percentile bootstrap method with the LLCI (lower-level confidence interval) and ULCI (upper limit confidence interval) range not including zero was adopted to assess for significant direct and indirect (mediating) effects.

The mediation analysis examined the extent to which career adaptability (as mediating or intervening variable) revealed more insight into how career agility (as independent variable) influences perceptions of complying with employer employability competency expectations (as dependent variable).

Table 6.17

Parameter Estimates of Significant Direct and Indirect Effects: Career Agility as Predictor

Variables	Estimate	Std error	z-value	p	95% LLCI	95% ULCI	Complete or partial indirect effect
Direct effects							
Agile learning → graduateness	-.12	.05	-2.46	.01	-.21	-.02	N/A
Career navigation → graduateness	.17	.05	3.67	<.001	.08	.27	N/A
Career navigation → personal employability qualities	.19	.05	3.73	<.001	.09	.28	N/A
Career navigation → autonomy/leadership	.13	.05	2.51	.01	.03	.23	N/A
Indirect effects							
Agile learning → career curiosity → graduateness	-.06	.02	-2.80	.005	-.10	-.02	Partial
Agile learning → career confidence → graduateness	-.05	.03	-1.97	.05	-.11	-.335	Partial
Career navigation → career curiosity → graduateness	.09	.03	3.51	<.001	.04	.15	Partial
Career navigation → career confidence → graduateness	.09	.03	3.31	<.001	.04	.15	Partial

Variables	Estimate	Std error	z-value	p	95% LLCI	95% ULCI	Complete or partial indirect effect
Career navigation → career curiosity → business/entrepreneurial skills	.13	.03	3.77	<.001	.06	.20	Complete
Agile learning → career curiosity → personal employability qualities	-.07	.02	-2.89	.004	-.12	-.02	Complete
Agile learning → career confidence → personal employability qualities	-.06	.03	-1.97	.05	-.11	-2.75	Complete
Career navigation → career curiosity → personal employability qualities	.11	.03	3.69	<.001	.05	.17	Partial
Career navigation → career confidence → personal employability qualities	.10	.03	3.30	<.001	.04	.15	Partial
Agile learning → career curiosity → autonomy/leadership	-.07	.03	-2.89	.004	-.12	-.02	Complete
Career navigation → career control → autonomy/leadership	.05	.02	2.30	.02	.01	.08	Partial
Career navigation → career curiosity → autonomy/leadership	.11	.03	3.69	<.001	.05	.17	Partial
Career navigation → career confidence → autonomy/leadership	.07	.02	2.87	.004	.02	.11	Partial

Table 6.17 reveals that career curiosity and career confidence had a significant and negative mediating effect in the link between agile learning and graduateness, personal employability qualities and autonomy/leadership. High levels of agile learning through career curiosity and career confidence seemed to be significantly associated with lower levels of graduateness, personal employability qualities and autonomy/leadership.

On the other hand, career confidence had a positive and significant mediating effect in the link between career navigation and graduateness, personal employability qualities and autonomy/leadership. High levels of career navigation through career confidence seemed to be significantly associated with higher levels of graduateness, personal employability qualities and autonomy/leadership.

High levels of career navigation through career curiosity seemed to be significantly associated with higher levels of graduateness, business/entrepreneurial skills, personal employability qualities and autonomy/leadership.

High levels of career navigation through career control seemed to be significantly associated with higher levels of autonomy/leadership.

The path coefficients of significant mediation effects were investigated and are summarised in Table 6.18.

Table 6.18
Path Coefficients of Significant Mediation Effects

Path coefficient	Estimate	Std error	z-value	p	95% LLCI	95% ULCI
Agile learning → career curiosity	-.25	.07	-3.71	<.001	-.38	-.18
Agile learning → career confidence	-.14	.07	-2.06	.04	-.28	-.01
Career navigation → career curiosity	.39	.06	6.18	<.001	.27	.51
Career navigation → career confidence	.25	.07	3.79	<.001	.12	.38
Career navigation → career control	.28	.07	4.32	<.001	.15	.41

Path coefficient	Estimate	Std error	z-value	p	95% LLCI	95% ULCI
Career curiosity → graduateness	.24	.06	4.26	<.001	.13	.35
Career curiosity → business/entrepreneurial skills	.33	.07	4.76	<.001	.19	.47
Career curiosity → personal employability qualities	.28	.06	4.59	<.001	.16	.39
Career curiosity → autonomy/leadership	.29	.06	4.60	<.001	.17	.42
Career confidence → graduateness	.37	.05	6.77	<.001	.26	.47
Career confidence → personal employability qualities	.38	.06	6.66	<.001	.27	.49

Career confidence → autonomy/leadership	.26	.06	4.60	<.001	.15	.38
Agile learning → gradueness	-.12	.05	-2.46	.01	-.21	-.02
Agile learning → personal employability qualities	-.05	.05	-.88	.38	-.15	.06
Agile learning → autonomy/leadership	-.02	.05	-.32	.75	-.12	.09
Career navigation → gradueness	.17	.05	3.67	<.001	.08	.27
Career navigation → business/entrepreneurial skills				<.001		
Career navigation → personal employability qualities	.19	.05	3.73	<.001	.09	.28
Career navigation → autonomy/leadership	.13	.05	2.51	.01	.03	.23
Career control → autonomy/leadership	.16	.06	2.72	.01	.05	.28

Source: Author's own work

Table 6.18 reveals that agile learning had significant and negative pathways to career curiosity ($\beta = -.25$; $p = <.001$; LLCI: $-.38$; ULCI: $-.18$) and career confidence ($\beta = -.14$; $p = .04$; LLCI: $-.28$; ULCI: $-.01$). Agile learning had a significant and negative direct pathway to only gradueness ($\beta = -.12$; $p = .01$; LLCI: $-.21$; ULCI: $-.02$). The results highlighted the positive influence of career curiosity and career confidence on gradueness, personal employability qualities and autonomy/leadership. Even when agile learning is low, career curiosity and career confidence assist in enhancing positive perceptions of demonstrating the expected employability competencies.

Career navigation had significant and positive pathways to career curiosity ($\beta = .39$; $p = <.001$; LLCI: $.27$; ULCI: $.51$), career confidence ($\beta = .25$; $p = <.001$; LLCI: $.12$; ULCI: $.36$) and career control ($\beta = .28$; $p = <.001$; LLCI: $.15$; ULCI: $.41$). In turn career curiosity had significant and positive pathways to gradueness ($\beta = .24$; $p = <.001$; LLCI: $.13$; ULCI: $.35$), business/entrepreneurial skills ($\beta = .33$; $p = <.001$; LLCI: $.19$; ULCI: $.47$), personal employability qualities ($\beta = .28$; $p = <.001$; LLCI: $.16$; ULCI: $.39$) and autonomy/leadership ($\beta = .29$; $p = <.001$; LLCI: $.17$; ULCI: $.42$). Career control had a significant and positive pathway to autonomy/leadership ($\beta = .16$; $p = .01$; LLCI: $.05$; ULCI: $.28$).

Career confidence had significant and positive pathways to gradueness ($\beta = .24$; $p = <.001$; LLCI: $.13$; ULCI: $.35$), business/entrepreneurial skills ($\beta = .33$; $p = <.001$; LLCI: $.19$; ULCI: $.47$), personal employability qualities ($\beta = .28$; $p = <.001$; LLCI: $.16$; ULCI: $.39$) and autonomy/leadership ($\beta = .29$; $p = <.001$; LLCI: $.17$; ULCI: $.42$).

6.4.2.2 World of work awareness as independent variable

Table 6.19 Reports the results of the mediation results. For parsimony reasons only the significant direct and indirect effects are reported. For parsimony reasons only the significant direct and indirect effects are reported. The 95% percentile bootstrap method with the LLCI (lower-level confidence interval) and ULCI (upper limit confidence interval) range not including zero was adopted to assess for significant direct and indirect (mediating) effects.

The mediation analysis examined the extent to which career adaptability (as mediating or intervening variable) revealed more insight into how world of work awareness (as independent variable) influences perceptions of complying with employer employability expectations (as dependent variable).

Table 6.19

Parameter Estimates of Significant Direct and Indirect Effects: World of Work Awareness as a Predictor

Variables	Estimate	Std error	z-value	p	95% LLCI	95% ULCI	Complete or partial indirect effect
Direct effects							
Occupation/job awareness → Graduateness	.01	.04	.15	.88	-.07	.08	N/A
Occupation/job awareness → Business/entrepreneurial skills	.09	.04	1.95	.05	-4.88	.17	N/A
Occupation/job awareness → Personal employability qualities	.05	.04	1.23	.22	-.03	.12	N/A
Occupation/job awareness → Autonomy/leadership	.03	.04	.76	.45	-.05	.11	N/A
Indirect effects							
Occupational/job awareness → Career curiosity → Graduateness	.06	.02	3.29	.001	.03	.10	Complete
Occupational/job awareness → Career confidence → Graduateness	.06	.02	2.75	.01	.02	.09	Complete
Occupational/job awareness → Career curiosity → Business/Entrepreneurial Skills	.07	.02	3.23	.001	.03	.12	Complete

Occupational/job awareness → Career curiosity → Personal employability qualities	.07	.02	3.29	<.001	.03	.10	Complete
Occupational/job awareness → Career confidence → Personal employability qualities	.06	.02	2.76	.01	.02	.10	Complete
Occupational/job awareness → Career curiosity → Autonomy/Leadership	.07	.02	3.24	.001	.03	.11	Complete
Occupational/job awareness → Career confidence → Autonomy/Leadership	.04	.02	2.52	.01	.01	.08	Complete

Source: Author's own work

Table 6.19 reveals that career curiosity and career confidence had a significant and positive mediating effect in the link between occupational/job awareness and gradueness, personal employability qualities and autonomy/leadership. High levels of occupation/job awareness through career curiosity and career confidence seemed to be significantly associated with higher levels of gradueness, personal employability qualities and autonomy/leadership. Occupation/job awareness through career curiosity was also associated with higher levels of business/entrepreneurial skills.

The path coefficients of the significant mediation effects were investigated and are summarised in Table 6.20.

Table 6.20

Path Coefficients of Significant Mediation Effects

Path coefficient	Estimate	Std error	z-value	p	95% LLCI	95% ULCI
Occupational/job awareness→ gradueness	.01	.04	.15	.88	-.07	.08
Occupational/job awareness→ business/entrepreneurial skills	.09	.04	1.94	.05	-4.88	.17
Occupational/job awareness→ personal employability qualities	.05	.04	1.23	.22	-.03	.12
Occupational/job awareness→ autonomy/leadership	.03	.04	.76	.45	-.05	.11
Occupational/job awareness→career curiosity	.23	.05	4.52	<.001	.13	.33

Occupational/job awareness→career confidence	.16	.05	3.03	.002	.06	.26
Career curiosity → graduateness	.28	.06	4.80	<.001	.16	.39
Career curiosity → business/entrepreneurial skills	.32	.07	4.61	<.001	.18	.45
Career curiosity → personal employability qualities	.29	.06	4.80	<.001	.17	.41
Career curiosity → autonomy/leadership	.29	.06	4.63	<.001	.17	.41
Career confidence → graduateness	.36	.06	6.54	<.001	.25	.47

Path coefficient	Estimate	Std error	z-value	p	95% LLCI	95% ULCI
Career confidence → personal employability qualities	.38	.06	6.66	<.001	.27	.50
Career confidence → autonomy/leadership	.27	.06	4.51	<.001	.15	.39

Source: Author's own work

Occupational/job awareness did not have significant direct pathways to graduateness, business/entrepreneurial skills, personal employability qualities and autonomy/leadership. However, occupational/job awareness had direct and positive pathways to career curiosity ($\beta = .23$; $p = <.001$; LLCI: .13; ULCI:.33) and career confidence ($\beta = .16$; $p = .002$; LLCI: .06; ULCI:.26). In turn career curiosity and career confidence had significant and positive pathways to graduateness, business/entrepreneurial skills, personal employability qualities and autonomy/leadership. The results suggest that strong occupational/job awareness is likely to enhance career curiosity and career confidence which in turn positively raise perceptions of having the expected employability competencies. Again, the importance of cultivating career curiosity and career confidence is evident from these results.

6.4.2.3 Career interests as independent variable

Table 6.21 Reports the results of the mediation results. For parsimony reasons only the significant direct and indirect effects are reported. The 95% percentile bootstrap method with the LLCI (lower-level confidence interval) and ULCI (upper limit confidence interval) range not including zero was adopted to assess for significant direct and indirect (mediating) effects.

For parsimony reasons only the significant direct and indirect effects are reported. The mediation analysis examined the extent to which career adaptability (as mediating or

intervening variable) revealed more insight into how career interests (as independent variable) influences perceptions of complying with employer employability expectations (as dependent variable).

Table 6.21

Parameter Estimates of Significant Direct and Indirect Effects: Career Interests as a Predictor

Variables	Estimate	Std error	z-value	p	95% LLCI	95% ULCI	Complete or partial indirect effect
Direct effects							
Specialised creativity and problem solving→ Business/Entrepreneurial Skills	.20	.05	4.11	< .001	.11	.30	N/A
Specialised creativity and problem-solving →Autonomy/Leadership	.23	.05	4.48	< .001	.13	.33	N/A
Indirect effects							
Specialised creativity and problem solving→Career curiosity→Graduateness	.06	.02	2.91	.004	.02	.09	Complete
Specialised creativity and problem-solving→ Career confidence →Graduateness	.11	.03	3.83	< .001	.05	.17	Complete
Security and stability →Career curiosity→Graduateness	.05	.02	2.6	.01	.01	.08	Complete
Security and stability →Career Confidence→Graduateness	.05	.03	2.03	.04	.00	.10	Complete
Specialised creativity and problem solving→Career Curiosity→ Business/Entrepreneurial Skills	.06	.02	2.76	.01	.02	.11	Partial
Specialised creativity and problem solving→Career confidence→ Business/Entrepreneurial Skills	.06	.02	2.65	.01	.02	.11	Partial
Security and stability→Career Curiosity→ Business/Entrepreneurial Skills	.05	.02	2.45	.01	.01	.09	Complete
Specialised creativity and problem solving→Career Curiosity→ Personal Employability Qualities	.07	.02	3.08	.002	.03	.12	Complete
Specialised creativity and problem solving→Career Confidence→ Personal Employability Qualities	.11	.03	3.76	< .001	.05	.17	Complete

Variables	Estimate	Std error	z-value	p	95% LLCI	95% ULCI	Complete or partial indirect effect
Security and stability→Career Curiosity→Personal Employability Qualities	.06	.02	2.66	.01	.02	.10	Complete
Security and stability→Career Confidence→Personal Employability Qualities	.05	.03	2.02	.04	.002	.10	Complete
Specialised creativity and problem solving→Career Control→Autonomy/Leadership	.04	.02	2.12	.03	.003	.07	Partial
Specialised creativity and problem solving→Career Curiosity→Autonomy/Leadership	.07	.02	3.00	.003	.02	.11	Partial
Specialised creativity and problem solving→Career Confidence→Autonomy/Leadership	.08	.02	3.13	.002	.03	.12	Partial
Security and stability→Career Curiosity→Autonomy/Leadership	.05	.02	2.61	.01	.01	.10	Complete

Table 6.21 reveals that the career interests of specialised creativity and problem-solving and security and stability through career curiosity and career confidence increased a sense of graduateness.

The career interests of specialised creativity and problem-solving and security and stability through career curiosity increased a sense of having business/entrepreneurial skills. Career confidence also enhanced the link between the career interest of specialised creativity and problem-solving and a sense of having business/entrepreneurial skills.

The career interests of specialised creativity and problem-solving and security and stability through career curiosity and career confidence increased a sense of having sound personal employability qualities.

Career confidence, career curiosity and career control also enhanced the link between the career interest of specialised creativity and problem-solving and a sense of having autonomy and leadership attributes.

Career curiosity further enhanced the link between the career interest of security and stability and a sense of having autonomy and leadership attributes.

The path coefficients of significant mediation effects were investigated and are summarised in Table 6.22.

Table 6.22
Path Coefficients of Significant Mediation Effects

Path coefficient	Estimate	Std error	z-value	p	95% LLCI	95% ULCI
Specialised creativity and problem-solving → career curiosity	.24	.06	4.02	<.001	.12	.36
Specialised creativity and problem-solving → career confidence	.30	.06	4.68	<.001	.17	.42
Specialised creativity and problem-solving → career control	.25	.06	4.08	<.001	.13	.37
Security and stability → career curiosity	.19	.06	3.20	.001	.08	.31
Security and stability → career confidence	.14	.06	2.13	.03	.01	.26
Career curiosity → graduateness	.25	.06	4.23	<.001	.13	.36
Career curiosity → business/entrepreneurial skills	.26	.07	3.80	<.001	.13	.39
Career curiosity → personal employability qualities	.29	.06	4.80	<.001	.17	.41
Career curiosity → autonomy/leadership	.28	.06	4.49	<.001	.16	.40
Career confidence → graduateness	.37	.06	6.66	<.001	.26	.48
Career confidence → business/entrepreneurial skills	.21	.07	3.22	.001	.08	.34
Career confidence → personal employability qualities	.37	.06	6.23	<.001	.25	.48
Career confidence → autonomy/leadership	.25	.06	4.21	<.001	.14	.37

Path coefficient	Estimate	Std error	z-value	p	95% LLCI	95% ULCI
Career control → autonomy/leadership	.14	.06	2.47	.01	.03	.26
Specialised creativity and problem-solving → graduateness	.07	.05	1.37	.17	-.03	.16
Specialised creativity and problem-solving → business/entrepreneurial skills	.03	.06	.53	.60	-.08	.14
Specialised creativity and problem-solving → personal employability qualities	.20	.05	4.11	<.001	.11	.30
Specialised creativity and problem-solving → autonomy/leadership	.23	.05	4.48	<.001	.13	.33
Security and stability → graduateness	.06	.05	1.38	.17	-.03	.15
Security and stability → business/entrepreneurial skills	-.04	.05	-.78	.44	-.15	.06
Security and stability → personal employability qualities	.03	.05	.61	.54	-.07	.12
Security and stability → autonomy/leadership	.04	.05	.71	.48	-.06	.13

Specialised creativity and problem-solving had direct positive pathways to personal employability qualities ($\beta = .20$; $p = <.001$; LLCI: .11; ULCI:.30) and autonomy/leadership ($\beta = .23$; $p = <.001$; LLCI: .13; ULCI:.33). Security and stability did not have significant pathways to the employability competencies. However, both specialised creativity and problem-solving and security and stability had significant and positive pathways to career curiosity and career confidence. Specialised creativity and problem-solving had also a significantly and positive pathway to career control ($\beta = .25$; $p = <.001$; LLCI: .13; ULCI:.37). Career curiosity and career confidence had positive and significant pathways to the four employability competencies. Career control had a positive and significant pathway to autonomy/leadership.

The results suggest that the career interests of specialised creativity and problem-solving and security and stability are likely to enhance career curiosity and career confidence which in turn

positively raise perceptions of having the expected employability competencies. Again, the importance of cultivating career curiosity and career confidence is evident from these results. To sum up, the mediation analysis results provided evidence in support of research hypothesis 3:

Research hypothesis 3: The link between students' career agility, world of work awareness, and career interests (antecedents), and their perceptions of complying with employer employability competency expectations (outcome), is mediated by their career adaptability.

Preliminary analysis 4: Career guidance for employability competency

The findings of the mediation analysis revealed fundamental intriguing relationships between the antecedents (career agility, world of work awareness, and career interests) and their perceptions of complying with employer employability competency expectations (outcome), which is mediated by their career adaptability.

- Career adaptability resources, career curiosity and career confidence had a negative mediating effect in the link between agile learning and graduateness, personal employability traits, and autonomy/leadership. It means agile learning is negatively related to employer employability competency requirements through career curiosity and career confidence. A career guidance framework thus needs to consider students' strengths in these career adaptability resources because of their likelihood to increase TUT students' employability competency.

- Career confidence exhibited a favourable and significant mediation influence in the relationship between career navigation and graduateness, personal employable traits, and autonomy/leadership. High degrees of career navigation via professional confidence appeared to be strongly connected with higher levels of graduateness, personal employability traits, and autonomy/ leadership. It means career adaptability resource (career confidence) have a positive mediating effect in the link between career navigation and employer employability competency expectations. Career navigation through their confidence will likely enhance the employability of TUT students.

- World of work awareness resource (Occupation/job awareness) has a direct link with employer/employability competency expectations. Occupation and job awareness of TUT students will likely enhance their employability competencies.
- Career adaptability resources (career curiosity and career confidence) mediated the relationship between occupational/job awareness and graduateness, personal employability traits, and autonomy/leadership. TUT students who possess high level of occupation/job awareness through career curiosity and confidence are likely to be more employable. Furthermore, A career guidance framework thus needs to consider students' strengths in this career adaptability resource (career curiosity) because of its likelihood to increase TUT students' entrepreneurial abilities.
- It was observed that the career interests' resources of specialised creativity and problem-solving, as well as security and stability, increased a sense of graduateness through career curiosity and career confidence. A career guidance framework thus needs to consider students' strengths in these career adaptability resources because of their likelihood to increase TUT students' employability competency.
- Career confidence, career curiosity, and career control also improved the link between a career interest in specialised creativity and problem-solving and a sense of autonomy and leadership traits. A career guidance framework needs to consider students strengths in these career adaptability resources (career curiosity & control) and career interest in specialised creativity and problem-solving through career curiosity because of its likelihood to enhance TUT students' autonomy and leadership traits.

6.4.3 Moderated regression analysis

Moderated regression analysis was performed to achieve research aim 4:

Research aim 4: To assess whether students' characteristics (gender, qualification choice based on career interest, demographic [urban/rural], and need for career guidance), act as moderators of the associations between the antecedent, mediating and outcome variables.

A moderating variable is assumed to affect the strength and direction of the link between the independent and dependent variables (Hair et al., 2019). In the present research, moderated regression analysis thus helped to assess whether the prediction effects of the independent variables (career agility, world of work awareness and career interests) and mediating variable

(career adaptability) on employer employability competency expectations (dependent variable) were conditional upon the moderating variables (listed in research aim 4).

The Hayes (2018) PROCESS Procedure for SPSS Version 3.4 was used to perform statistical analysis. A heteroscedasticity consistent standard error and covariance matrix estimator was used. The construct variables were mean centered prior to analysis. The more stringent bootstrap 95% lower-level confidence interval (LLCI) and upper-level confidence interval (ULCI) range not including zero, was used to assess for significant main and interaction effects.

For parsimony reasons, this section reports only the significant interaction (moderating) effects. The following dummy codes in Table 6.23 were used for the student characteristics variables (listed in research aim 4) in the significant interaction models.

Table 6.23

Dummy Codes

Gender	Demographics	Qualification choice based on career interest	Need for career guidance
Male = 0	Rural = 0	Low = 0	Low = 0
Female = 1	Urban = 1	High = 1	High = 1

Gender

No significant interaction (moderating effects) were observed for gender.

Demographics

No significant interaction (moderating effects) were observed for the demographics of rural and urban areas.

6.4.3.1 *Significant conditional effects of qualification choice based on career interest.*

Qualification choice based on career interests had significant interaction effects with career agility and world of work awareness.

Interaction with career agility: Business/entrepreneurial skills

In Table 6.24 a significant interaction (moderating) effect was evident between career agility and qualification choice based on career interest in predicting the employer employability competency expectation of business/entrepreneurial skills: $\beta = -.33$; $p = .02$; LLCI = $-.61$; UCLI = $-.05$). The F -statistic was significant ($F = 8.52$; $p = .000$) and the model explained a small practical effect percentage (9%: $R^2 = .09$) of the variance in business/entrepreneurial skills. The interaction (moderating) effect of qualification choice based on career interest was of practical small significance ($f^2 = .10$).

Table 6.24

Results of Significant Moderated Regression Analysis

Variable	β	SE	t	p	LLCI	UCLI	F	p	R^2	f^2
Business/entrepreneurial skills										
Constant	3.63	.10	38.06	.000	3.44	3.82	8.52	.000	.09	.10
Career agility (A)	.49	.12	4.17	.000	.26	.73				
Qualification choice based on career interest (B)	.16	.11	1.43	.15	-.06	.38				
Interaction (moderating) effect: A x B	-.33	.14	-2.30	.02	-.61	-.05				

Note: N = 369.

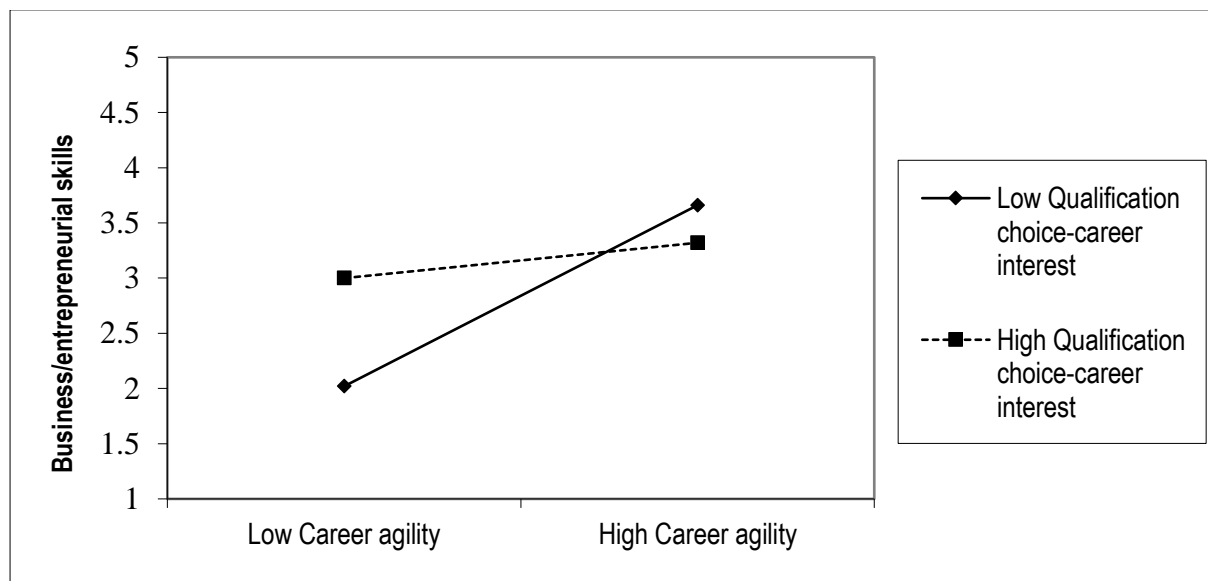
Figure 6.1 illustrates the interaction effect. As shown in figure 6.1, participants who had high scores on career agility and whose qualification choice was not necessarily based on their career interests (low scores), scored significantly higher on business/entrepreneurial skills than those whose qualification choice was strongly linked to their career interests.

Those who scored low on career agility and whose qualification choice was not strongly based on career interests scored significantly lower on business/entrepreneurial skills than those whose qualification choice was strongly based on career interests.

The results suggest that high and low scores on business/entrepreneurial skills were conditional upon the qualification choice being based on career interests or not. When the qualification choice was strongly based on career interests, perceptions of having the expected business/entrepreneurial skills were also relatively high irrespective of low or high career agility scores.

Figure 6.1

Interaction Effect between Career Agility and Qualification Choice based on Career Interest in Predicting Business/Entrepreneurial Skills



Interaction with world of work awareness: Graduateness

In Table 6.25 a significant interaction (moderating) effect was evident between world of work awareness and qualification choice based on career interest in predicting graduateness: $\beta = -.41$; $p = .001$; LLCI = $-.65$; UCLI = $-.16$). The F -statistic was significant ($F = 16.72$; $p = .000$) and the model explained a moderate practical effect percentage (15%: $R^2 = .15$) of the variance in graduateness. The interaction (moderating) effect of qualification choice based on career interest was of practical moderate significance ($f^2 = .18$).

Table 6.25*Results of Significant Moderated Regression Analysis*

Model	β	SE	<i>t</i>	<i>p</i>	LLCI	UCLI	<i>F</i>	<i>p</i>	<i>R</i>²	<i>f</i>²
Graduateness										
Constant	3.89	.08	49.77	.000	3.75	4.05	16.72	.000	.15	.18
World of work awareness (A)	.56	.11	5.34	.000	.36	.77				
Qualification choice based on career interest (B)	.25	.09	2.82	.01	.08	.43				
Interaction (moderating) effect: A x B	-.41	.13	-3.25	.001	-.65	-.16				
Variable	β	SE	<i>t</i>	<i>p</i>	LLCI	UCLI	<i>F</i>	<i>p</i>	<i>R</i>²	<i>f</i>²
Business/Entrepreneurial Skills										
Constant	3.63	.09	38.54	.000	3.45	3.82	10.54	.000	.11	.12
World of work awareness (A)	.54	.12	4.60	.000	.31	.78				
Qualification choice based on career interest (B)	.16	.11	1.44	.15	-.06	.38				
Interaction (moderating) effect: A x B	-.31	.15	-2.09	.04	-.61	-.02				

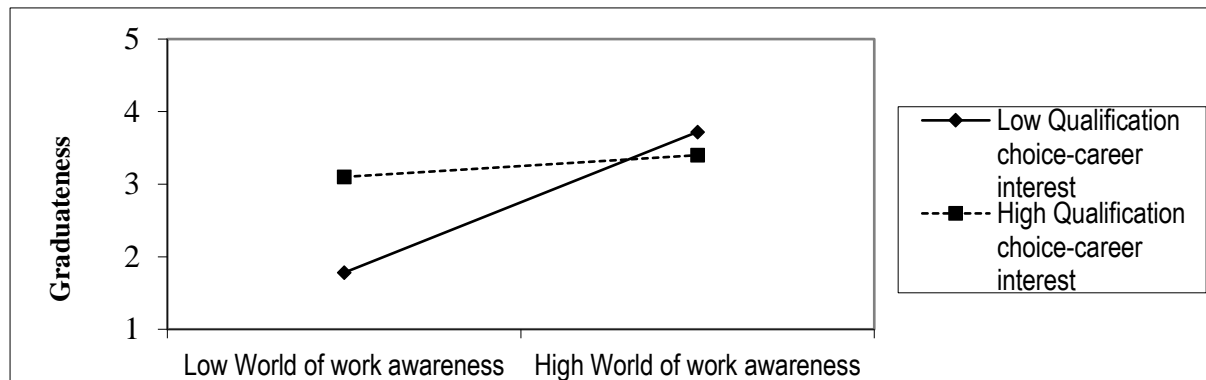
Model	β	SE	t	p	LLCI	UCLI	F	p	R ²	f ²
Variable	β	SE	t	p	LLCI	UCLI	F	p	R²	f²
Personal employability qualities										
Constant	3.90	.09	45.96	.000	3.73	4.06	13.35	.000	.15	.18
World of work awareness (A)	.60	.16	5.21	.000	.38	.83				
Qualification choice based on career interest (B)	.17	.10	1.70	.09	-.03	.37				
Interaction (moderating) effect: A x B	-.32	.15	-2.22	.03	-.61	-.04				
Variable	β	SE	t	p	LLCI	UCLI	F	p	R²	f²
Autonomy/leadership										
Constant	4.00	.08	51.96	.000	3.85	4.15	17.65	.000	.16	.19
World of work awareness (A)	.57	.09	6.41	.000	.40	.75				
Qualification choice based on career interest (B)	.16	.09	1.73	.09	-.02	.33				
Interaction (moderating) effect: A x B	-.33	.12	-2.85	.01	-.56	-.10				

Note: N = 369.

Figure 6.2 illustrates the interaction effect. As shown in figure 6.2, participants who had low scores on world of work awareness and low scores on graduatness, and whose qualification choice was not necessarily based on career interests, also scored significantly lower on graduatness than those whose qualification choice was strongly based on career interests. Thus, qualification choice based on career interest is an important condition for world of work awareness as predictor of graduatness.

Figure 6.2

Interaction Effect between World of Work Awareness and Qualification Choice based on Career Interest in Predicting Graduateness



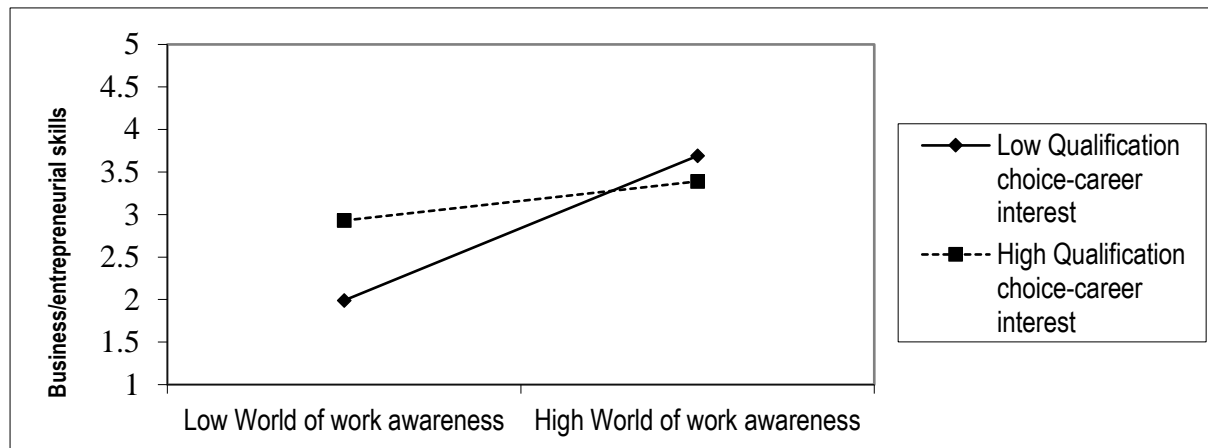
Interaction with world of work awareness: Business/entrepreneurial skills

In Table 6.25 a significant interaction (moderating) effect was evident between world of work awareness and qualification choice based on career interest in predicting business/entrepreneurial skills: $\beta = -.31$; $p = .04$; LLCI = $-.61$; UCLI = $-.02$). The F -statistic was significant ($F = 10.54$; $p = .000$) and the model explained a small practical effect percentage (11%: $R^2 = .11$) of the variance in business/entrepreneurial skills. The interaction (moderating) effect of qualification choice based on career interest was of practical small significance ($f^2 = .12$).

Figure 6.3 illustrates the interaction effect. As shown in figure 6.3 participants who had low scores on world of work awareness and low scores on business/entrepreneurial skills, and whose qualification choice was not necessarily based on career interests, also scored significantly lower on business/entrepreneurial skills than those whose qualification choice was strongly based on career interests. Thus, qualification choice based on career interest is an important condition for world of work awareness as predictor of business/entrepreneurial skills.

Figure 6.3

Interaction Effect between World of Work Awareness and Qualification Choice based on Career Interest in Predicting Business/Entrepreneurial Skills



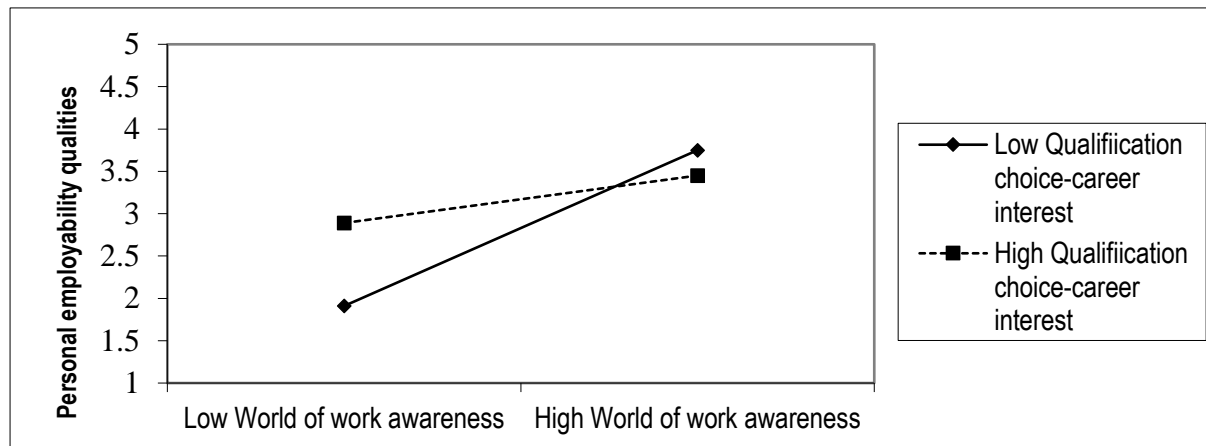
Interaction with world of work awareness: Personal employability qualities

In Table 6.25 a significant interaction (moderating) effect was evident between world of work awareness and qualification choice based on career interest in predicting personal employability qualities: $\beta = -.32$; $p = .03$; LLCI = $-.61$; UCLI = $-.04$). The F -statistic was significant ($F = 13.35$; $p = .000$) and the model explained a moderate practical effect percentage (11%: $R^2 = .11$) of the variance in personal employability qualities. The interaction (moderating) effect of qualification choice based on career interest was of practical moderate significance ($f^2 = .15$).

Figure 6.4 illustrates the interaction effect. As shown in figure 6.4, participants who had low scores on world of work awareness and low scores on personal employability qualities, and whose qualification choice was not necessarily based on career interests, also scored significantly lower on personal employability qualities than those whose qualification choice was strongly based on career interests. Thus, qualification choice based on career interest is an important condition for world of work awareness as predictor of personal employability qualities.

Figure 6.4

Interaction Effect between World of Work Awareness and Qualification Choice based on Career Interest in Predicting Personal Employability Qualities



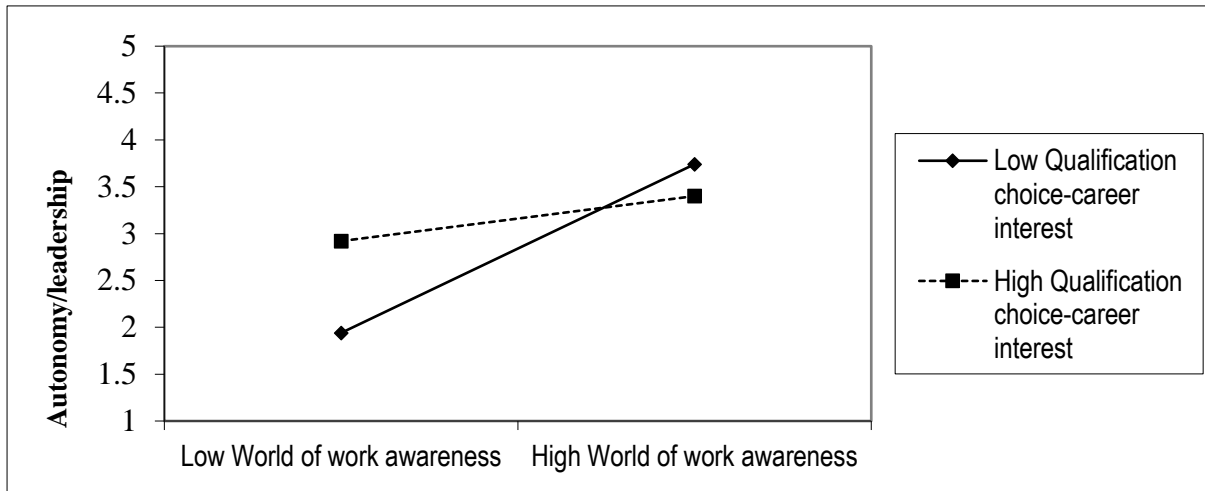
Interaction with world of work awareness: Autonomy/leadership

In Table 6.25 a significant interaction (moderating) effect was evident between world of work awareness and qualification choice based on career interest in predicting autonomy/leadership: $\beta = -.33$; $p = .01$; LLCI = $-.56$; UCLI = $-.10$). The F -statistic was significant ($F = 17.65$; $p = .000$) and the model explained a moderate practical effect percentage (16%: $R^2 = .16$) of the variance in autonomy/leadership. The interaction (moderating) effect of qualification choice based on career interest was of practical moderate significance ($f^2 = .19$).

Figure 6.5 illustrates the interaction effect. As shown in figure 6.5, participants who had low scores on world of work awareness and low scores on autonomy/leadership, and whose qualification choice was not necessarily based on career interests, also scored significantly lower on autonomy/leadership than those whose qualification choice was strongly based on career interests. Thus, qualification choice based on career interest is an important condition for world of work awareness as predictor of autonomy/leadership.

Figure 6.5

Interaction Effect between World of Work Awareness and Qualification Choice based on Career Interest in Predicting Autonomy/Leadership



6.4.3.2 Significant conditional effects of career guidance need

Career guidance need had significant interaction effects with career interests.

The F statistic (Table 6.26) was significant ($p \leq .05$) for each of the models and the R^2 indicated that only 11% ($R^2 = .11$; small practical effect) to 19% ($R^2 = .19$; moderate practical effect) of the variance in gradueness were explained. In terms of the significant interaction effects of career guidance need, the Cohen f^2 was small in practical effect ($f^2 \geq .02$ and $f^2 \leq .15$) for the specialised creativity and problem-solving and entrepreneurship career orientations. The practical effect of the significant interaction effect for security and stability was moderate ($f^2 = .19$).

Table 6.26*Results of Significant Moderated Regression Analysis: Graduateness*

Model	β	SE	t	p	LLCI	ULCI	F (p)	R²	f²
Graduateness									
Specialised creativity and problem-solving (A)	.40	.05	7.86	.000	.30	.50	24.11***	.19	.02
Career guidance need (B)	.15	.08	2.003	.05	.003	.30			
A X B	-.24	.08	-2.93	.004	-.40	-.08	8.55***	.02	
Model									
Security and stability (A)	.38	.06	5.88	.000	.25	.50	17.67***	.16	.19
Career guidance need (B)	.17	.08	2.18	.03	.02	.32			
A X B	-.19	.09	-2.18	.03	-.36	-.02	4.76*	.01	
Model									
Entrepreneurship (A)	.26	.05	4.78	.000	.15	.37	11.37***	.11	.12
Career guidance need (B)	.24	.08	3.02	.003	.08	.40			
A X B	-.17	.07	-2.40	.02	-.30	-.03	5.74*	.02	

Note: N = 369. ***p = .000. *p ≤ .05.

The general pattern (see Figure 6.1, Figure 6.2 and Figure 6.3) that emerged shows that participants with a low interest in the three career orientations (specialised creativity and problem-solving, security and stability and entrepreneurship) also had a significant higher score on graduateness and a higher need for career guidance than those participants with a low need for career guidance. Participants with a high interest in the three career orientations scored significantly higher on graduateness than those with a low career orientation interest irrespective of a relatively high or low need for career guidance.

Figure 6.6

Interaction Effect between Career Interest (Specialised Creativity and Problem-Solving) and Career Guidance Need in Predicting Graduateness

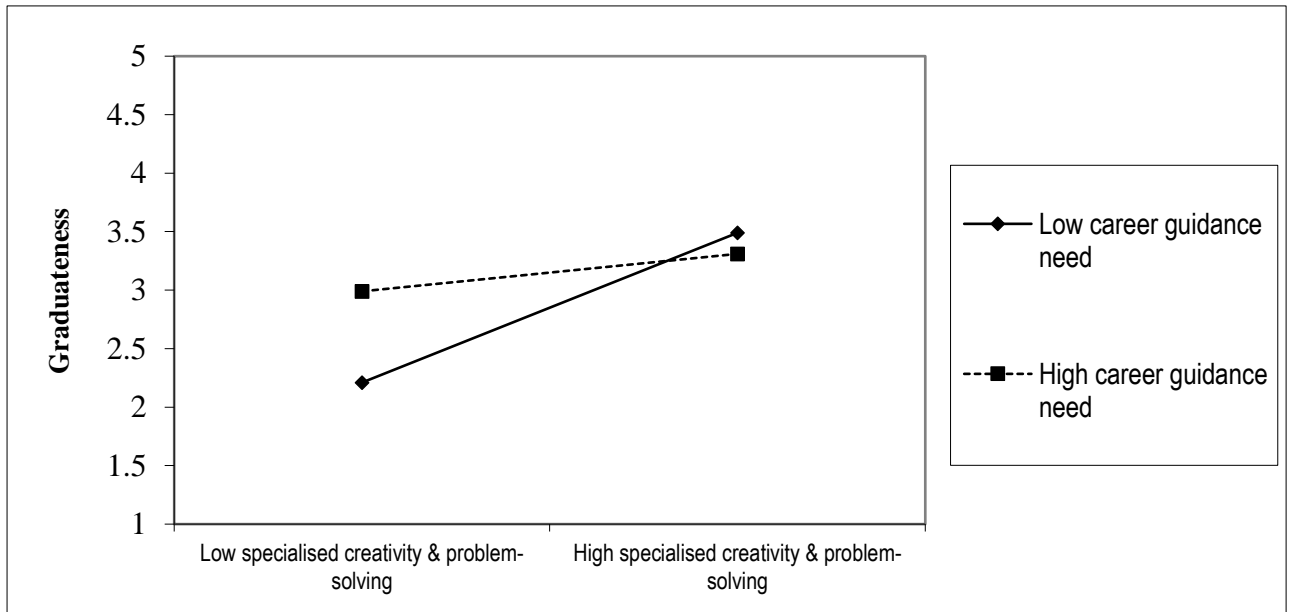


Figure 6.7

Interaction Effect between Career Interest (Security and Stability) and Career Guidance Need in Predicting Graduateness

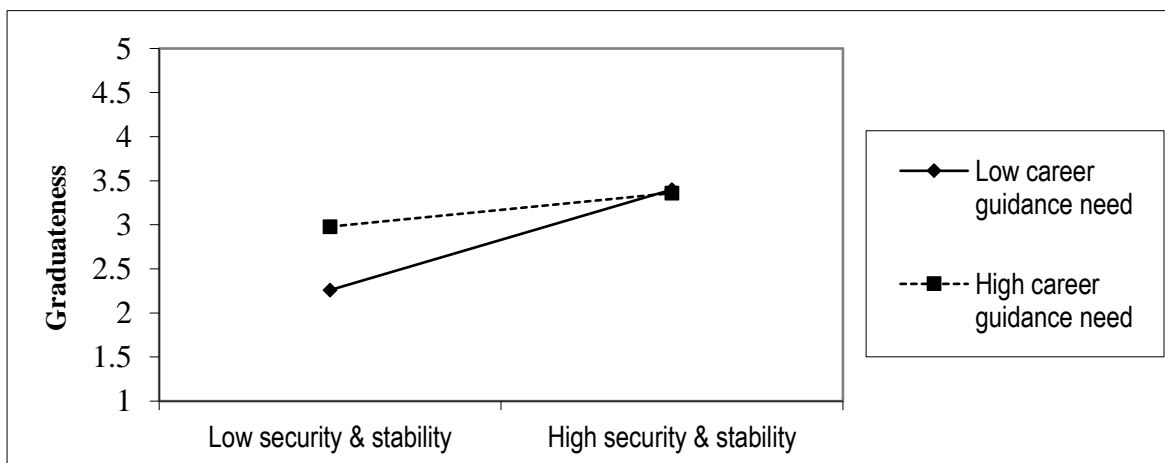
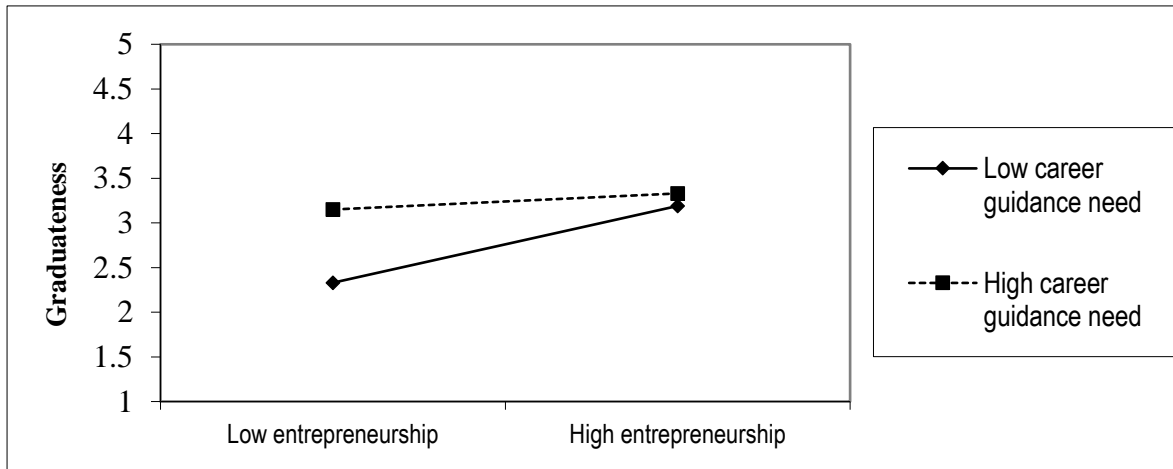


Figure 6.8

Interaction Effect between Career Interest (Entrepreneurship) and Career Guidance Need in Predicting Graduateness



The F statistic (Table 6.27) was significant ($p \leq .05$) for each of the models and the R^2 indicated that 6% to 8% ($R^2 \leq .08$; small practical effect) to 27% ($R^2 = .27$; large practical effect [specialised creativity and problem-solving]) of the variance in personal employability qualities were explained. In terms of the significant interaction effects of career guidance need, the Cohen f^2 was small in practical effect ($f^2 \geq .06$ and $f^2 \leq .08$) for the general managerial autonomy and entrepreneurship career orientations. The practical effect of the significant interaction effect for specialised creativity and problem-solving was large ($f^2 = .27$).

Table 6.27

Results of Significant Moderated Regression Analysis: Personal Employability Qualities

Model	β	SE	t	p	LLCI	ULCI	F (p)	R ²	f ²
Personal employability qualities									
Specialised creativity and problem-solving (A)	.48	.05	9.15	.000	.38	.59	33.81***	.21	.27
Career guidance need (B)	.12	.09	1.30	.19	-.06	.29			
A X B	-.20	.10	-2.06	.04	-.40	-.01	4.24*	.01	

Model	β	SE	t	p	LLCI	ULCI	F (p)	R ²	f ²
General managerial autonomy (A)	.22	.06	4.03	.000	.11	.33	7.20***	.06	.06
Career guidance need (B)	.19	.10	2.03	.04	.01	.38			
A X B	-.16	.07	-2.17	.03	-.30	-.01	4.69*	.01	
Model	β	SE	t	p	LLCI	ULCI	F (p)	R ²	f ²
Entrepreneurship (A)	.26	.07	3.88	.000	.13	.39	7.41***	.07	.08
Career guidance need (B)	.24	.10	2.47	.01	.05	.42			
A X B	-.18	.08	-2.18	.03	-.33	-.02	4.76***	.01	

Note: N = 369. ***p = .000. *p ≤ .05.

The general pattern (see Figure 6.9, Figure 6.10, Figure 6.11) that emerged shows that participants with a low interest in the three career orientations (specialised creativity and problem-solving, general managerial autonomy and entrepreneurship) also had a significant higher score on personal employability qualities and a higher need for career guidance than those participants with a low need for career guidance. Participants with a high interest in the three career orientations scored significantly higher on personal employability qualities than those with a low career orientation interest irrespective of a relatively high or low need for career guidance.

Figure 6.9

Interaction Effect between Career Interest (Specialised Creativity and Problem-Solving) and Career Guidance Need in Predicting Personal Employability Qualities

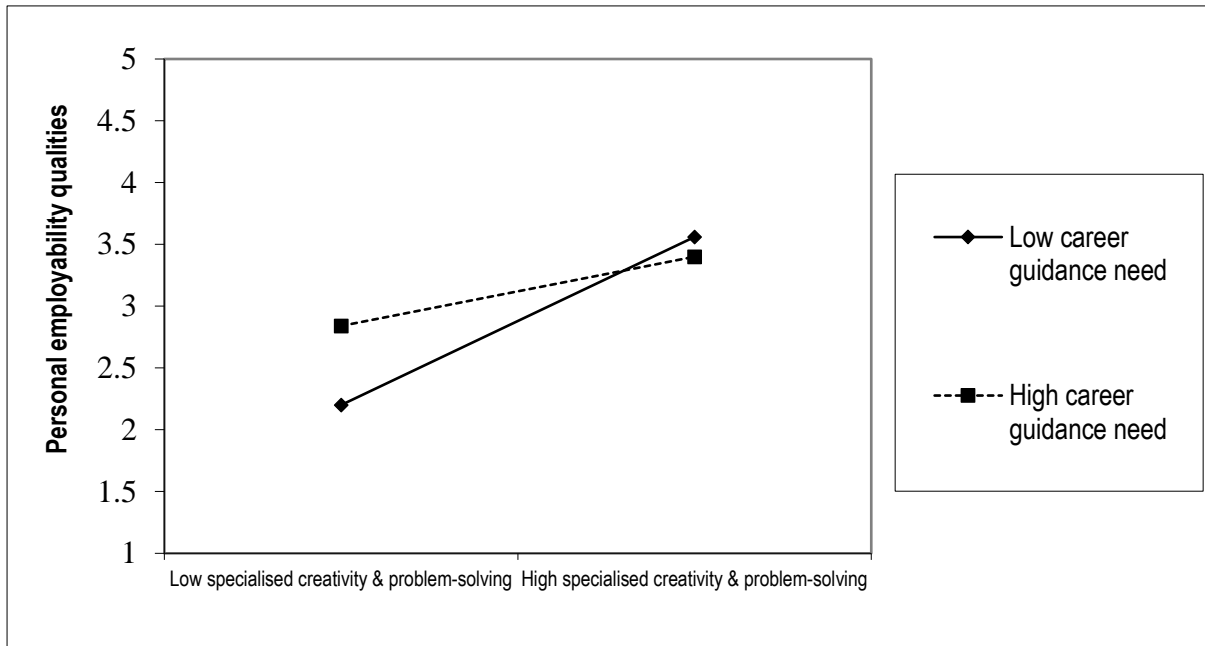


Figure 6.10

Interaction Effect between Career Interest (General Managerial Autonomy) and Career Guidance Need in Predicting Graduateness

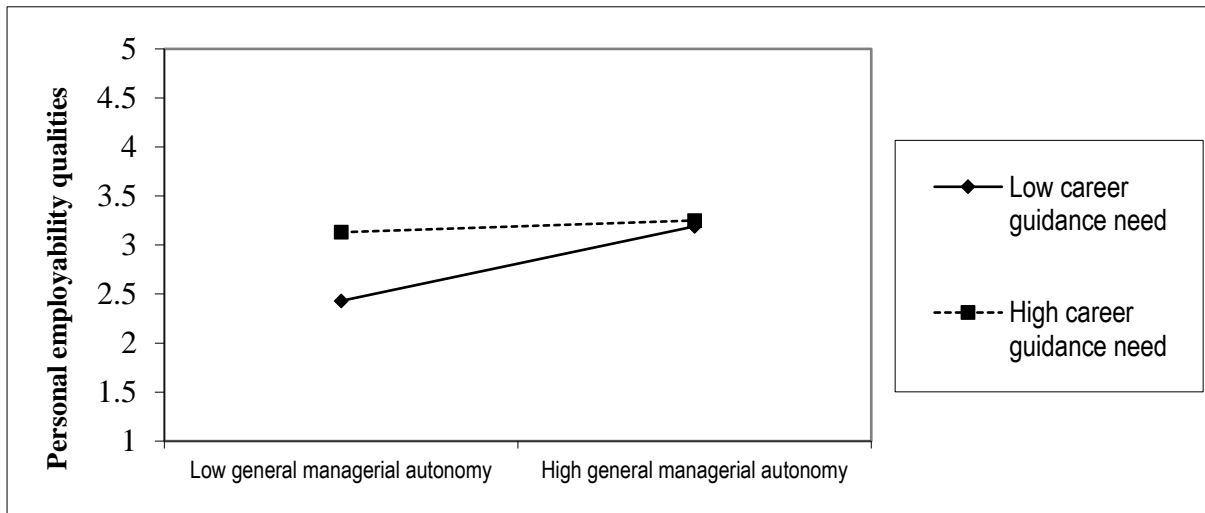
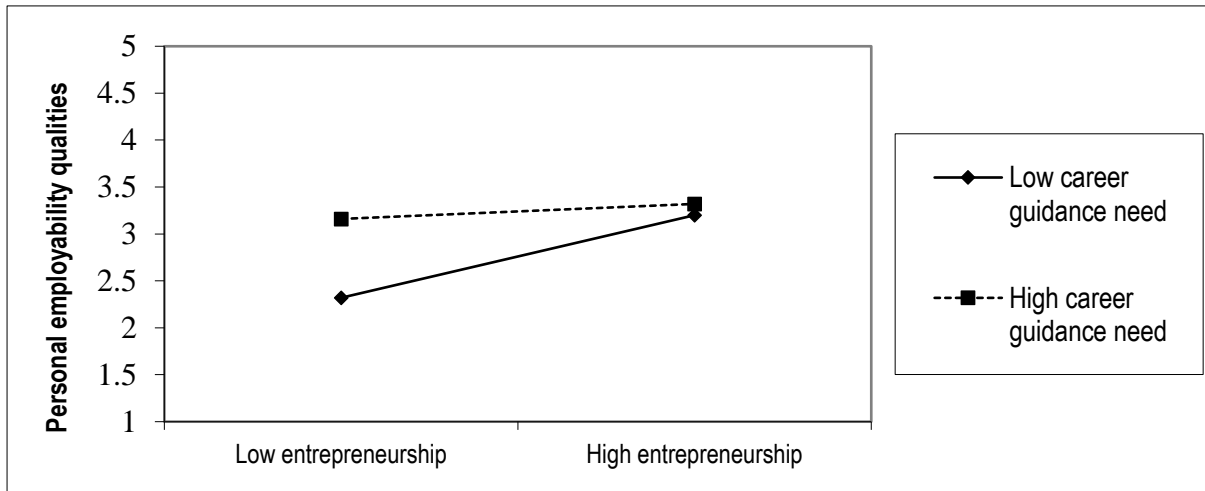


Figure 6.11

Interaction Effect between Career Interest (Entrepreneurship) and Career Guidance Need in Predicting Personal Employability Qualities



To summarise, the moderated regression analysis results provided evidence in support of research hypothesis 4:

Research hypothesis 4: Students' characteristics (gender, qualification choice based on career interest, demographic [urban/rural], and need for career guidance), act as moderators of the associations between the antecedent, mediating and outcome variables.

Preliminary analysis 5: Career guidance for employability competency

The results of the moderated regression analysis revealed that the prediction effects of the independent variables (career agility, world of work awareness, and career interests) and mediating variable (career adaptability) on employer employability expectations (dependent variable) were conditional on the moderating variables.

- There was no significant interaction (moderating effects) were observed for gender and demographics of rural and urban areas.
- Qualification choice based on career interests had significant interaction effects with career agility and world of work awareness.
- The results revealed that there is significant interaction effects between qualification choice based on career interests, career agility and the world of work awareness.

- There is a significant interaction (moderating) effect between career agility and qualification choice based on career interest in predicting the employer employability competency expectation of business/entrepreneurial skills. The results showed that students whose qualification choice was based on career interests stand a very good chance of being employable and becoming entrepreneurs than those who scored low on qualification choice based on career interests.
- Qualification choice was heavily influenced by career interests, and views of possessing the requisite business/entrepreneurial abilities were also quite high, regardless of low or high career agility scores.
- Students whose qualification choice was not necessarily based on career interests performed much worse on gradueness than those whose qualification choice was based mostly on career interests. As a result, as a predictor of gradueness, qualification selection based on career interest is a crucial requirement for world of work awareness. The career guidance framework needs to consider qualification choice based on career interests because of its likelihood of enhancing the employability competency of TUT students.
- Participants with a low interest in the three career orientations (specialized creativity and problem-solving, security and stability, and entrepreneurship) had a significantly higher score on gradueness and a higher need for career guidance than those with a low need for career guidance, according to the general moderation pattern. Participants with a strong interest in the three professional orientations performed considerably better on gradueness than those with a low interest in the three career orientations, regardless of whether they had a relatively high or low need for career advice.

6.4.4 Tests for significant mean differences

Tests for significant mean differences were performed to achieve research aim 5:

Research aim 5: To assess whether students from socio-demographic groups (gender, qualification choice based on career interest, demographic [urban/rural], and need for career guidance) differ significantly in terms of their career agility, world of work awareness, career interests, career adaptability and perceptions of complying with employer employability competency expectations.

The IBM SPSS Version 28.0 (IBM, 2021) computer software program was used for the statistical analyses. The researcher clustered the characteristics of the students in two subgroups as shown in Table 6.28.

Table 6.28

Subgroups Tested for Differences

Gender	Demographics	Qualification choice based on career interest	Need for career guidance
Male (n = 130)	Rural (n = 257)	Low qualification choice-career interest	Low career guidance need (n = 160)
Female (n = 239)	Urban (n = 112)	High qualification choice- career interest	High career guidance need (n = 209).
		(n = 101)	
		(n = 268)	

The Mann-Whitney U Test was utilised for testing for significant mean differences between the various subgroups. For parsimony reasons only the significant mean differences are reported in this section.

Table 6.29*Results of Tests for Significant Mean Differences: Gender and Demographics*

Variable	Source of difference	Mean (SD)	Mann-Whitney U	Wilcoxon W	Z	p	Cohen d (Practical effect)
Specialised creativity and problem solving	Male	5.12 (.97)	13014.00	41694.00	-2.59	.01	.24 (small)
	Female	4.88 (1.01)					
General managerial autonomy	Male	4.39 (1.27)	13391.00	42071.00	-2.19	.03	.23 (small)
	Female	4.09 (1.31)					
Entrepreneurship	Male	4.84 (1.18)	12572.00	41252.00	-3.05	.002	.32 (small)
	Female	4.47 (1.22)					
Overall career interests	Male	4.83 (.86)	13090.50	41770.50	-2.50	.01	.23 (small)
	Female	4.63 (.85)					
Business/entrepreneurial skills	Male	3.94 (.93)	12686.00	41366.00	-2.93	.003	.33 (small)
	Female	3.63 (.97)					
Overall employer employability competency expectations	Male	4.11 (.76)	13353.50	42033.50	-2.23	.03	.23 (small)
	Female	3.94 (.74)					
Job/occupation fitness	Rural	6.10 (1.09)	12253.50	18581.50	-2.29	.02	.20 (small)
	Urban	5.87 (1.16)					
TUT studies contribution to work world awareness	Rural	5.78 (.97)	12144.50	18472.50	-2.39	.02	.25 (small)
	Urban	5.53 (1.04)					

Note: $N = 369$. Male ($n = 130$). Female ($n = 239$). Rural ($n = 257$). Urban ($n = 112$).

Table 6.29 shows that the male participants scored significantly higher (mean = 5.12; SD = .97) ($p = .01$; *Cohen d* = .24, small practical effect) on the specialised creativity and problem-solving career interest than their female counterparts (mean = 4.88; SD = 1.01). The male participants (mean = 4.39; SD = 1.27) scored also significantly higher than the female participants (mean = 4.09; SD = 1.31) on general managerial autonomy ($p = .03$; *Cohen d* = .23, small practical effect), entrepreneurship (male: mean = 4.39; SD = 1.27; female: mean = 4.47, SD = 1.22; $p = .002$; $d = .32$, small practical effect) and business/entrepreneurial skills (male: mean = 3.94; SD = .93; female: mean = 3.63, SD = .97; $p = .002$; $d = .33$, small practical effect).

The rural participants had also significantly higher mean scores on job/occupation fitness (mean = 6.10; SD = 1.09; $p = .02$, $d = .20$) and TUT studies contribution to work world awareness (mean = 5.78; SD = .97; $p = .02$, $d = .25$) than the urban participants.

Table 6.30

Results of Tests for Significant Mean Differences: Qualification Choice based on Career Interest

Variable	Source of difference	Mean (SD)	Mann-Whitney U	Wilcoxon W	Z	p	Cohen d (practical effect)
Career curiosity	Low qualification choice-career interest	3.92 (.94)	10927.00	16078.00	-2.87	.004	.40 (small)
	High qualification choice-career interest	4.25 (.70)					
Career confidence	Low qualification choice-career interest	4.00 (.97)	11187.00	16338.00	-2.60	.01	.36 (small)
	High qualification choice-career interest	4.32 (.79)					
Overall career adaptability	Low qualification choice-career interest	4.07 (.76)	11140.00	16291.00	-2.62	.01	.41 (small)
	High qualification choice-career interest	4.34 (.54)					

Variable	Source of difference	Mean (SD)	Mann-Whitney U	Wilcoxon W	Z	p	Cohen d (practical effect)
Overall employer employability competency expectations	Low qualification choice-career interest	3.84 (.85)	11682.00	16833.00	-2.03	.04	.31 (small)
	High qualification choice-career interest	4.06 (.70)					
Graduateness	Low qualification choice-career interest	3.88 (.92)	11399.50	16550.50	-2.43	.02	.33 (small)
	High qualification choice-career interest	4.15 (.72)					

Note: N = 369. Low Qualification (n = 101). High Qualification (n = 268).

Table 6.30 reveals that those participants whose qualification choice was strongly based on their career interests had significantly higher mean scores than those participants whose qualification choice was not strongly based on career interests on:

- Career curiosity: mean = 4.25 vs 3.92, $p = .004$, $d = .40$ (small practical effect)
- Career confidence: mean = 4.32 vs 4.00, $p = .01$, $d = .36$ (small practical effect)
- Overall career adaptability: mean = 4.34 vs 4.07, $p = .01$, $d = .41$ (small practical effect)
- Overall employer employability competency expectations: mean = 4.06 vs 3.84, $p = .04$, $d = .31$ (small practical effect).
- Graduateness: mean = 4.15 vs 3.88, $p = .02$, $d = .33$ (small practical effect).

Table 6.31*Results of Tests for Significant Mean Differences: Career Guidance Need*

Variable	Source of difference	Mean (SD)	Mann-Whitney U	Wilcoxon W	Z	p	Cohen d (Practical effect)
Digital nature of work world	Low career guidance need	5.61 (1.18)	14226.00	27106.00	-2.47	.01	.23 (small)
	High career guidance need	5.87 (1.11)					
Continuous upskilling	Low career guidance need	5.95 (1.03)	14568.00	27448.00	-2.13	.03	.15 (negligible)
	High career guidance need	6.11 (1.05)					
Overall world of work awareness	Low career guidance need	5.70 (.94)	14343.00	27223.00	-2.34	.02	.20 (small)
	High career guidance need	5.89 (.95)					
TUT studies contribution to work world awareness	Low career guidance need	5.62 (.94)	14440.00	27320.00	-2.25	.03	.15 (negligible)
	High career guidance need	5.77 (1.04)					
Specialised creativity and problem-solving	Low career guidance need	4.80 (1.16)	14746.50	27626.50	-1.95	.05	.30 (small)
	High career guidance need	5.10 (.83)					
General managerial autonomy	Low career guidance need	4.05 (1.31)	14758.500	27638.50	-1.93	.05	.20 (small)
	High career guidance need	4.31 (1.28)					
Security and stability	Low career guidance need	4.85 (1.04)	14466.50	27346.50	-2.24	.03	.25 (small)
	High career guidance need	5.09 (.91)					

Variable	Source of difference	Mean (SD)	Mann-Whitney U	Wilcoxon W	Z	p	Cohen d (Practical effect)
Overall career interest	Low career guidance need	4.58 (.93)	14606.00	27486.00	-2.08	.04	.02 (negligible)
	High career guidance need	4.60 (1.21)					
Graduateness	Low career guidance need	3.93 (.85)	14188.50	27068.50	-2.50	.01	.32 (small)
	High career guidance need	4.18 (.71)					
Personal employability qualities	Low career guidance need	3.88 (.98)	14545.50	27425.50	-2.17	.03	.24 (small)
	High career guidance need	4.11 (.87)					

Note: N = 369. Low career guidance (n = 160). High career guidance (n = 209).

Table 6.31 reveals that those participants who had a strong need for career guidance had significantly higher mean scores than those participants whose did not have a strong need for career guidance on:

- Digital nature of work world: mean = 5.87 vs 5.61, $p = .01$, $d = .23$ (small practical effect)
- Continuous upskilling: mean= 6.11 vs 5.95, $p = .03$, $d = .15$ (negligible)
- Overall world of work awareness: mean= 5.89 vs 5.70, $p = .02$, $d = .20$ (small)
- TUT studies contribution to work world awareness. Mean= 5.77 vs 5.62, $p = .03$, $d = .15$ (negligible)
- Specialised creativity and problem-solving: mean= 5.10 vs 4.80, $p = .05$, $d = .30$ (small)
- General managerial autonomy: mean= 4.31 vs 4.05, $p = .05$, $d = .20$ (small)
- Security and stability: mean= 5.09 vs 4.89, $p = .03$, $d = .25$ (small)
- Overall career interest: mean= 4.60 vs 4.58, $p = .04$, $d = .02$ (negligible)
- Graduateness: mean= 4.18 vs 3.93, $p = .01$, $d = .32$ (small)
- Personal employability qualities: mean= 4.11 vs 3.88, $p = .03$, $d = .24$ (small)

In summary, the results of the tests for significant mean differences provided evidence in support of research hypothesis 5:

Research hypothesis 5: Students from **socio-demographic groups** (gender, qualification choice based on career interest, demographic [urban/rural], and need for career guidance) differ significantly in terms of their career agility, world of work awareness, career interests, career adaptability and perceptions of complying with employer employability competency expectations.

Preliminary analysis 6: Career guidance for employability competency

The significance test results revealed that students from different groups (gender, qualification choice based on career interest, demographic [urban/rural], and need for career guidance) differ significantly in terms of career agility, world of work awareness, career interests, career adaptability, and perceptions of complying with employer employability competency expectations.

- The findings of the tests for differences analysis revealed that individuals who chose their qualifications based on their career interests had considerably higher mean scores than those who did not choose their qualifications based on their career interests.
- The results showed that the male participants scored much higher on specialised creativity and problem-solving career desire than their female counterparts. Male participants also outperformed female participants in terms of overall management autonomy, entrepreneurship, and business/entrepreneurial abilities. The career guidance framework needs to include programmes that would motivate female students need/desire to acquire skills that will enable them to be employable in managerial positions and consider becoming entrepreneurs.
- The rural participants had also significantly higher mean scores on job/occupation fitness and TUT studies contribution to work world than the urban participants. The results revealed that students from the rural areas believe that TUT qualifications will contribute to their knowledge of the world of work as compared to students coming from the urban areas.

- The findings showed that participants who had a strong need for career guidance had significantly higher mean scores than those participants who did not have a strong need for career guidance on the following:
 - Digital nature of work world
 - Continuous upskilling
 - Overall world of work awareness
 - TUT studies contribution to work world awareness.
 - Specialised creativity and problem-solving
 - General managerial autonomy
 - Security and stability
 - Overall career interest
 - Graduateness
 - Personal employability qualities

6.5 DECISIONS REGARDING THE RESEARCH HYPOTHESES

Table 6.32 summarises the key decisions made in terms of achieving the research aims and supportive evidence for the research hypotheses.

Table 6.32

Decisions Regarding the Research Hypotheses

Research aim	Research hypothesis	Decision: Supportive evidence Yes/No
Research aim 1: To explore the nature of the statistical inter-relationships between students' career agility, world of work awareness, career interests, career adaptability and perceptions of employer employability competency expectations.	Research hypothesis 1 Significant statistical inter-relationships exist between students' career agility, world of work awareness, career interests, career adaptability and perceptions of employer employability competency expectations.	YES

Research aim	Research hypothesis	Decision: Supportive evidence Yes/No
<p>Research aim 2: To explore the extent to which students' socio-demographic characteristics (age, gender, qualification choice based on career interest, demographic [urban/rural], and need for career guidance), career agility, world of work awareness, career interests and career adaptability positively predict their perceptions of complying with employer employability competency expectations.</p>	<p>Research hypothesis 2 Students' socio-demographic characteristics (age, gender, qualification choice based on career interest, demographic [urban/rural], and need for career guidance), career agility, digital world of work awareness, career interests and career adaptability positively predict their perceptions of complying with employer employability competency expectations.</p>	YES
<p>Research aim 3: To explore the extent to which the link between students' career agility, world of work awareness, and career interests (antecedents), and their perceptions of complying with employer employability competency expectations (outcome), is mediated by their career adaptability.</p>	<p>Research hypothesis 3 The link between students' career agility, world of work awareness, and career interests (antecedents), and their perceptions of complying with employer employability competency expectations (outcome), is mediated by their career adaptability.</p>	YES
<p>Research aim 4: To assess whether students' socio-demographic characteristics (gender, qualification choice based on career interest, demographic [urban/rural], and need for career guidance), act as moderators of the associations between the antecedent, mediating and outcome variables.</p>	<p>Research hypothesis 4 Students' socio-demographic characteristics (gender, qualification choice based on career interest, demographic [urban/rural], and need for career guidance), act as moderators of the associations between the antecedent, mediating and outcome variables.</p>	YES

Research aim	Research hypothesis	Decision: Supportive evidence Yes/No
Research aim 5: To assess whether students from various socio-demographic groups (gender, qualification choice based on career interest, demographic [urban/rural], and need for career guidance) differ significantly in terms of their career agility, world of work awareness, career interests, career adaptability and perceptions of complying with employer employability competency expectations	Research hypothesis 5 Students from various socio-demographic groups (gender, qualification choice based on career interest, demographic [urban/rural], and need for career guidance) differ significantly in terms of their career agility, world of work awareness, career interests, career adaptability and perceptions of complying with employer employability competency expectations	YES

6.6 CHAPTER SUMMARY

This chapter presented the results of the preliminary statistical analysis, descriptive statistics, correlational statistics, and inferential statistics to achieve the empirical research aims relevant to the research hypotheses. Preliminary analyses were done to evaluate the results in the light of the envisioned career guidance framework for employability. The study's hypotheses were evaluated and supported.

Chapter 7 interprets and discusses the preliminary analyses of the results.

CHAPTER 7: DISCUSSION, CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

In this chapter, the researcher has integrated the literature review, and the results are discussed. Moreover, the chapter draws conclusions and makes recommendations on two fronts, namely, recommendations for research and for career guidance practices for students at Tshwane University of Technology (TUT).

7.1 DISCUSSION AND INTEGRATION OF RESULTS

This section includes an integration of the results of the study, including a discussion of main characteristics of the sample profile and the empirical research aims of the current study.

7.1.1 Main characteristics of the profile of the sample

The sample profile is characteristic of young emerging adults in the career exploration stage of their lives. The participants revealed several positive attributes such as an agile learning mindset, a desire for continuous upskilling and job/occupation fitness they attributed to their TUT studies that seemingly created an awareness of the digital era work world.

Agile learners typically experience a sense of vitality and vigor, and they are eager to look for opportunities to pick up new abilities that would further their professional and employment performance (Coetzee et al., 2020). Popular media portrays investing in education as a crucial aspect of career self-management that enables people to gain informed career-related knowledge that hastens the development of their careers. People with an agile learning mentality are more likely to investigate opportunities and projects that will help them develop, use, and maximize their knowledge, abilities, and preferred learning styles (Andersen, 2020; Konstant, 2020). According to Kara Dennison (Forbes, 13 April 2023), with the rapid changing industrial trends and technological advancements, the employment market in 2023 is expected to be competitive. As an illustration, the current surge in automation and artificial intelligence is putting many traditional employments in jeopardy and changing employer expectations by emphasizing professional development and lifelong learning. As a result, upgrading one's skills is more important than ever. Knight (2020) mentioned that one of the crucial components of job growth is discovering the "world of work." Other names for it include "opportunity awareness" and "occupational discovery." Work world awareness investigates the interactions that employees have with organisations and structures as well as how they trade labour for capital (Knight, 2020).

The sample's predominant career interests were security and stability (primary interest), specialised creativity and problem-solving skills (secondary interest) and entrepreneurship (tertiary interest). For young emerging adults such as TUT students, their capacity to gain and maintain stability in their employment is a primary career development task (Arnett, 2004). Their main career exploration and establishment goals are to have stable employment, predictable financial rewards, and effective pension and retirement programmes. Individuals with a career interest in security and stability favour positions that can provide them with steady, long-term employment (Greenhaus et. al., 2018). Those individuals who have a career interest of specialised creativity and problem-solving desire jobs allowing the expression of creative and entrepreneurial pursuits that require specialised skills and talents in the solving of challenging problems (Ngope & Coetzee, 2023). These people are driven by a great desire to expand their sense of self through the concepts and creations they have come up with or created (Leong et.al., 2013).

Coetzee and Ngope (2023) found that young emerging adults with clearly defined career interests in specialised creativity and problem-solving and security and stability have significantly higher perceptions of their gradueness and personal employability traits than those who do not have clearly defined career interests. Earlier studies on developing young African adults (Matjie & Coetzee, 2018) corroborated this finding. Young emerging adults, according to Arnett (2015) and Ackerman and Kanfer (2020), are in the process of preparing for a career or job by honing specialised skills and talents through higher education studies. They typically also place a high value on finding stable employment with a secure financial income for establishing an independent viable livelihood.

The participants exhibited a moderately high use of career concern resources (career adaptability). Career concern relates to individuals' concerns about their career future and career choices that need to be made (Savickas & Porfeli, 2012). The common concern of the participants for the current study is the possibility of progressing through their chosen career ladders, particularly if the prospects of advancing their vocations are not certain or non-existence (Nawaz & Pangil's, 2016).

The participants had a relatively high positive perceptions of complying with employers' expectations of autonomy/leadership and gradueness employability competency. Gradueness is a concept that pertains to how employers view the level of intellectual and personal development that individuals attained throughout their graduate academic studies (Coetzee, 2012). The ability of an individual to locate employment opportunities, seize them, and establish themselves as valuable employees is improved by their graduate status

(Franham, 2017; Moolman, 2016; Sin & Amaral, 2017; Tomlinson & Holmes, 2017). Employers value qualities like the capacity to learn new information quickly, education, training, and expertise in the relevant occupational field, job-specific knowledge and skills, the capacity to apply universal, global knowledge, principles, philosophies, and paradigms to solve job or work challenges and the capacity to work in teams with people from different cultural backgrounds (Coetzee, 2012, 2018). When properly integrated with employability traits, an individual's graduateness maximizes their value to employers and sets them apart from other graduate employees (Finch et al., 2016). Previous research by (Coetzee, 2012; Finch et al., 2016) demonstrates that individuals who exhibit graduateness and employability traits signal to employers that they are more likely to find employment.

Individuals with autonomy/leadership traits, according to Coetzee (2012) can perform well in challenging, ambiguous situations the ability to critically assess oneself and continue to learn on one's own for continuous education. An ability to manage learning activities independently, professionally, and ethically an ability to justify critical evaluations of one's own and others' work. The ability to show knowledge of their development and use of the necessary graduate-level abilities and traits.

The participants potentially seem to need career guidance on how to develop their career navigation (career agility), occupation/job awareness and job/occupation certitude (world of work awareness). The act of actively scanning one's environment for new job prospects is referred to as career navigation. This behaviour leads to positive and effective problem-solving. To exploit and apply changes to their own career and employment status with confidence, individuals demonstrate environmental awareness; they are keen to be informed about changes and opportunities in the labour market (Andersen, 2020; Coetzee, Bester, et al., 2020). Open-minded career adapters are individuals who score high on agile learning and career navigation. They actively engage in the ideation of new job/career opportunities in changing environmental contexts and set goals for searching for new opportunities to learn new skills. Agentic adapters score high on career navigation and their motivation to embrace and adapt to changes of technological advancement is activated, and they are willing to actively search for new job/career opportunities (Coetzee, 2020). An individual's occupation/job awareness of the changing nature of work helps them learn about potential new digitally driven occupational opportunities in their field of interest as well as the new kinds of skills and knowledge they need to be eligible for new types of jobs and occupations (Brown et al., 2018; Coetzee et al., 2021b; Deloitte, 2021).

The participants may need career guidance on developing their overall career adaptability and career curiosity. Career adaptability, which is defined as an individual's psychosocial resources to deal with developmental tasks, work traumas, and occupational transitions (Savickas, 2005, 2013; Savickas & Porfeli, 2012), is crucial in facilitating an individual's adaptation during career transitions. Career adaptability has consistently been found to be a positive predictor of self-efficacy during school-to-work or work-to-work transitions, as well as job search success and employment quality (Guan et al., 2013, 2014; Koen et al., 2012; Pan et al., 2018; Van der Horst et al., 2021), as well as subjective well-being (Ramos & Lopez, 2018). Additionally, professional adaptability is a crucial tool for reducing the detrimental effects of drastic career shifts on the ability to adapt (Rudolph & Zacher, 2021).

The ability to effectively investigate job possibilities and face the future realistically is made possible by career curiosity (Blustein, 1992; Flum & Blustein, 2000; Patton & Porfeli, 2007). Career curiosity reflects a curious attitude that promotes career exploration. An individual's development of a fundamental sense of inquisitiveness and curiosity in the working environment is facilitated by risk-taking and inquisitive behaviours. Lack of career interest, according to Hartung et al. (2008), prevents exploration and leads to false hopes and expectations for the future. Career counsellors encourage and reinforce exploration using reality checks and information-based treatments to raise awareness of the working world and encourage adventurous behaviour.

The participants may also need more guidance on developing confidence in their business/entrepreneurial skills and personal employability qualities. According to Hahn et al., (2019), universities can have a significant impact on society by providing students with skills for promoting the exploitation and commercialisation of knowledge, promoting the information of those endowed with entrepreneurial abilities who can recognise and seize new business opportunities (Politis 2005), and propelling economic progress and societal well-being (Audretsch and Belitski 2013). TUT can provide entrepreneurship education (EE) to provide students with opportunities to engage in entrepreneurial learning (Hahn et al. 2017). However, a thriving research stream aimed at assessing EE's impact on students (Lyons and Zhang 2018; Naia et al. 2014. Rideout and Gray 2013) revealed that as EE becomes more widely disseminated across campuses, it tends to reach individuals with varying demographics, prior entrepreneurial exposure, and commitment. The heterogeneous profiles of entrepreneurship course participants, whose outcomes have been assessed in existing EE impact studies, may be a contributing factor to heterogeneous results, leading to contrasting findings and limited theoretical advancement (Martin et al. 2013; Naia et al. 2014).

Employers want graduates to demonstrate various generic talents in addition to the fundamental qualification skills they acquired at university when recruiting fresh graduates. Graduates with a variety of abilities and traits are sought after by employers to preserve a competitive advantage (Kavanagh & Drennan, 2008). An individual's employability, a shorthand for an individual's employability skills and traits (McQuaid & Lindsay, 2005), is comprised of this broad variety of talents and attributes. Universities have been urged to update their curricula to close the expectations gap between what employers want and what graduates will know (Albrecht & Sack, 2000; Braun, 2004; Howieson, 2003; Kavanagh & Drennan, 2008). Higher education institutions need to do a better job of fostering students' employability and creating programs that are suitable for the shifting demands of employers (Nguyen, Yoshinari, & Shigeji, 2005).

7.1.2 Empirical research aim 1: Interpretation of the bi-variate correlation results.

Research aim 1: To explore the nature of the statistical inter-relationships between students' career agility, world of work awareness, career interests, career adaptability and perceptions of employer employability competency expectations.

Overall, the results revealed positive and significant associations between participants' career agility, world of work awareness, career interests, career adaptability and perceptions of employer employability competency expectations. The associations supported the notion that the constructs may contribute to the construction of an integrative empirical-based career guidance framework for enhancing employability competency.

The findings agree with previous research that found positive associations between career agility, world of work awareness and career interests. Career adaptability and the resources is crucial for people's interactions with the world of work. The four career adaptability resources are discovered in McMahon et al., (2012) analysis of the career self in connection to internal subjective experiences of the world of work (Johnston, 2018). In a study published in 2020, Coetzee et al. investigated the relationship between career agility and career adaptability. The findings supported their hypothesis that the three components of career agility—technological adaptivity, agile learning, and career navigation—would significantly and positively influence people's capacity for career adaptation. The components of career agility explained why people had cognitive knowledge of the career self-management tools that were a natural part of their career adaptability. Career interest is a significant career component that can have a significant impact on students' career paths, according to Ibrahim and Kamsani (2022). An optimum fit and a more fulfilling job are typically the results of a student's interests being compatible with their workplace. The study by Coetzee (2022) provided significant new

information about the career orientation anchors (technical and functional competence, autonomy and independence and sheer challenge) as explanatory antecedents of participants' knowledge of the digital age of work. The results also gave a thorough grasp of how participants' career agility was affected by their technical and functional competence, pure challenge, general management, and awareness of the realities of the digital age of work.

Coetzee et.al. (2015) research findings revealed strong correlations between the career adaptability components and employability capacities. According to De Guzman and Choi's (2013) study, it was anticipated that the two sets of constructs would have a positive relationship, and that the abilities to solve problems, make decisions, work in a team, and present and apply information would be associated with career adaptability. Their findings indicated that participants with high levels of problem-solving, decision-making, and interpersonal skills were also more likely to actively engage in career control (taking ownership of their career decisions and goal implementation), career curiosity (accumulating occupational information), and career confidence (having confidence in their ability to implement their career goals and solve problems). According to Coetzee (2022) research on the study of the relationships between people's career orientations, awareness of the digital age workplace, and career agility is limited.

7.1.3 Empirical research aim 2: Interpretation of the stepwise regression results.

Research aim 2: To explore the extent to which students' socio-demographic characteristics (gender, qualification choice based on career interest, demographic [urban/rural], and need for career guidance), career agility, world of work awareness, career interests and career adaptability positively predict their perceptions of complying with employer employability competency expectations.

Generally, the results revealed that guidance on the development of career adaptability resources is important, and especially the resources of career confidence, career curiosity and career control for fostering the four employer employability competencies (graduateness, business/entrepreneurial skills, personal employability qualities and autonomy/leadership). Coetzee et.al. (2015) study revealed that employers understand that graduates' employability skills and capacity for adapting to new work requirements are crucial human capital resources for maintaining a competitive business advantage. Career control entails a sense of self-direction and self-regulation caused by accepting responsibility for one's future and the career decision-making activities that come with it (Hartung, 2013). Career indecision can be caused

by issues with career control and individuals who lack a sense of career autonomy may struggle with ambiguity and indecision in today's workplace. Individuals who demonstrate personal control over their careers are better equipped to embrace unpredictability and the associated fears (Del Corso, 2013). Career curiosity leads to fruitful career exploration because of a curious approach about the career (Hartung, 2013). Individuals must exhibit an inquisitive mindset and engage in exploration by trying, taking risks, and enquiring while adapting to changing contexts or situations (Savickas, 2005, 2013).

Career confidence is expressed by demonstrating a competency in problem solving and effectively conquering future obstacles (Hartung, 2013). Furthermore, career confidence is demonstrated by how individuals deal with the numerous stressors they may encounter along the career path throughout their lifetime, such as unexpected unemployment, a lack of available jobs, health problems, family struggles, unexpected workplace challenges, or pressure to learn new skills (Del Corso, 2013). In line with research by Coetzee et.al., (2015), the three career adaptability capacities stand for a sense of agency and responsibility (control), motivation and willingness (curiosity), and effectiveness (confidence) to actively engage in vocational development tasks that will help people adjust proactively to unforeseen needs that may arise from changes in the labour markets or working conditions (Nota, Ginevra, Santili, & Soresi, 2014; Savickas & Porfeli, 2012). A career guidance framework thus needs to consider students' strengths in especially these three career adaptability resources because of their likelihood to increase TUT students' employability competency.

The results further suggested that career navigation is likely to enhance the perceived employability competencies of gradueness and personal employability qualities, while agile learning is likely to further enhance a sense of gradueness. Career navigation can be viewed as an individual's ability to develop a varied network of professional ties that can help to build significant new career paths in uncertain, changing work environments (Andersen, 2020; Konstant, 2020). Individuals have willingness to navigate and adapt to change and uncertainty in their job and career environment. Individuals with high levels of career navigation are willing to scan the environment for new career opportunities and to take advantage of changes in the job and career environment. Creating a diverse network of professional relationships often help to create meaningful new career pathways in uncertain, changing contexts. Relationship building and maintenance is an important factor in career navigation (Andersen, 2020; Konstant, 2020).

Awareness of the digital nature of work may likely enhance a sense of having autonomy and leadership attributes. Individuals' digital-era world of work awareness refers to intentional

extrinsic career exploration behaviour and cognitions that provide access to information about the changing nature of work, new occupation, and job opportunities, and their fit with personal career values and interests (Jiang et al., 2019; Coetzee, Ferreira, & Potgieter, 2021b). Jiang et al. (2019) stated that the digital-era world of work awareness is a person-in-environment construct of extrinsic career exploration. In addition, Coetzee (2022) indicated that individuals' world of work awareness denotes their conscious, purposeful cognitions that allow them access to information about the nature of work, occupations, and jobs in the digital-era world of employment. This knowledge includes a grasp of the impact of technological innovation on job and employment possibilities, as well as the changing nature of work (Brown et al., 2018; Deloitte, 2021; Deloitte Insights, 2019; McKinsey Global Institute, 2015, 2016).

Individuals' awareness of the changing world of work enables them to learn about potential new digitally driven occupational opportunities in their field of interest, as well as the new skills and knowledge required to qualify for new types of jobs and occupations (Brown et al., 2018; Coetzee et al., 2021b; Deloitte, 2021). Most of the contemporary studies emphasize the importance of autonomy in boosting individual performance, satisfaction, inventive behaviour, and passion for the work people accomplish (Jex et al., 2017). Autonomy has been shown to boost job satisfaction in people who work with information and communication technologies (ICT) since it allows them to maximize their capabilities (Madanagopal & Thenmozhi, 2015). According to Boskovic (2021), autonomy has proven to be the most important structural feature of work, employee engagement, and remote working in specific conditions such as the modern, digital environment, which is especially characteristic of ICT companies, as well as many others undergoing digital transformation to adapt to the contemporary economic order and the so-called Industry 4.0 (Boskovic, 2021).

Generally, the result highlighted the importance of providing career guidance support that help TUT students identify and crystallise their career interests in career exploration. A preference for careers that offer security and stability is likely to enhance a sense of gradueness. Research emphasizes the importance of integrating career guidance and employability development services, including career development learning, into the curriculum to foster graduate career capital, employability, and job readiness (Bennett, 2018; Bridgstock et al., 2019; Glerum & Judge, 2021; Lexis et al., 2021). Addressing graduates' career capital and employment demands during their higher education courses improves their ability to navigate the work world for fluctuations in job and career prospects. Graduates are not only better prepared to manage their employability and careers, but they are also more proactive in successfully responding to changes in the workplace (Bates et al., 2019; Bennett, 2018; Bridgstock et al., 2019).

According to research by Sutherland et al (2015), four interconnected dynamic elements of career capital serve as essential personal resources of graduate employability. Individuals' awareness of the work world, their personal job and study interests, career-related choices, and the passion they bring to their vocations and work are all examples of 'knowing why' career capital. Career identities alter in response to contextual changes (Dickmann et al., 2018). 'Knowing what' career capital refers to being aware of and knowledgeable about industry dynamics and their impact on employability needs in the setting in which the career is sought (Cortellazzo et al., 2020). The dynamic and future-oriented nature of intrinsic employability increases one's chances to successfully navigate the labour-market, finding or creating employment that matches one's interests, values, and competencies, and providing opportunities for continuous upskilling and learning to improve access to future job opportunities and career success (Cortellazzo et al., 2020).

A preference for careers that offer opportunities for entrepreneurship and general managerial autonomy is likely to enhance a sense of having business/entrepreneurial skills. The results highlighted the importance of providing career guidance support that will assist TUT students with the curriculum that will equip them with entrepreneurial skills and knowledge, including financial planning and management and help them expand their business (Coetzee, 2022). Fast-emerging hybrid methods to employment, such as portfolio careers (i.e., switching between employment, self-employment, and freelancing), and online job creation made possible by technology demonstrate entrepreneurial attitudes toward employability (Clinkard, 2018). In the current unstable, unpredictable labour market that forecasts high unemployment trends, scholars point to higher education's impending role in the growth of an entrepreneurial mindset, the aim to create jobs, and the development of knowledge and skills for career and business start-up (Ehiobuchee et al., 2022).

According to Coetzee et al. (2019), the attribute of business/entrepreneurial skills evaluates graduate workers' potential to use talents that suggest business acumen and entrepreneurial thought, which results in creative ideas and solutions to business difficulties. The autonomy/leadership attribute evaluates graduate workers' capacity to exhibit autonomous/independent thinking in network building, taking leadership, and persuading and influencing others (Coetzee et al., 2019).

A preference for careers that offer opportunities for applying specialised creativity and problem-solving skills is likely to enhance a sense of having the expected personal employability qualities and autonomy and leadership. According to Ngope and Coetzee

(2023), specialised creativity and problem-solving is the desire to apply specialised knowledge, skills, and abilities to complex problems in creative, entrepreneurial endeavours. They also stated that autonomy/leadership is the desire for autonomous working and the personal freedom that a managerial role may bring in terms of job content and position. Their findings demonstrated that problem solving, and general managerial autonomy reflect intrinsically oriented master career values of self-expression (i.e., jobs that demand creativity and innovation while granting one the freedom and position of power to set one's own goals and schedule as sources of career satisfaction: Coetzee, 2021).

Choice of qualification based on career interests is likely to further enhance a sense of graduateness. Graduateness postulates that graduates, in addition to their discipline-specific knowledge, skills, and values, can demonstrate a set of generic transferable meta-skills and personal qualities that employers view as critically important to their businesses and that they, therefore, expect graduates to have when they enter the workplace (Coetzee, 2011; Griesel & Parker, 2009; Raftopoulos et al., 2009). Choosing the right career is crucial in ensuring that workers live satisfying lives, are motivated at work, and can achieve incredible productivity, so setting the framework for organizational success and sustainability (Nyamwangwe, 2016). According to Nyamwangwe (2016), prior knowledge about a career is essential for generating and nurturing interest in the career. Indeed, prior information prepares an individual for the requirements of acquiring a career, and one will select to pursue a career based on prior knowledge. Making informed and deliberate career selections benefits an individual and the likelihood of advancement in the work hierarchy is another major aspect that determines career choice selections.

7.1.4 Empirical research aims 3: Interpretation of the mediation results.

Research aim 3: *The link between students' career agility, world of work awareness, and career interests (antecedents), and their perceptions of complying with employer employability competency expectations (outcome), is mediated by their career adaptability.*

Overall, resources of career adaptability acted as key intervening mechanisms in enhancing participants' perceptions of their employer employability competencies. A career guidance framework thus needs to consider students' strengths in certain career adaptability resources because of their likelihood to increase TUT students' employability competency.

Interestingly, the results suggested that agile learning is negatively related to employer employability competency requirements through career curiosity and career confidence. Low levels of career agility seem to enhance a sense of career curiosity and career confidence,

which in turn is likely to enhance the competencies of graduateness, personal employability traits, and autonomy/leadership. Agile learning reflects the willingness to actively set and manage career goals and energetically search for opportunities to learn new skills for improving one's job and career success (Coetzee et al., 2020). The results suggest that a lack of desire for agile learning may enhance the need to first investigate options before making a career choice, probing deeply into career-related questions, and first exploring further growth opportunities before actively set career goals (career curiosity: Savickas & Porfeli, 2012). Low levels of career agility are likely to enhance confidence in one's ability to overcome career-related obstacles and solve problems (career confidence: Savickas & Porfeli, 2012). Career confidence is the belief in one's ability to achieve career goals; one feels confident in standing by one's own aims and goals despite setbacks. Ginevra et al., 2016; Rudolph et al., 2017). The results suggest that positive attributes of career curiosity and career confidence are important resources for enhancing graduateness, personal employability qualities and autonomy/leadership.

High levels of career navigation through career confidence seemed to enhance competencies of graduateness, personal employable traits, and autonomy/leadership. Individuals' willingness to manage and adapt to change and uncertainty in their employment and career environment is reflected in their career navigation (Coetzee et al., 2020). Individuals with strong career navigation skills are eager to scan the surroundings for new professional prospects and to capitalize on changes in the employment and career environment. Individuals with this trait are highly adaptable to change (Coetzee et al., 2020). Andersen (2020) considers career navigation to be a crucial mindset for staying informed of market changes and opportunities. Career navigation promotes environmental awareness, which allows individuals to confidently leverage and apply changes to their own professions and occupations.

The results further revealed that participants' occupational/job awareness through their career adaptability resources (career curiosity and career confidence) may enhance their sense of graduateness, personal employability qualities, and autonomy/leadership. Individuals' world of work awareness refers to extrinsic career exploration behaviour and cognitions that provide access to information about the changing nature of work, new occupation, and job opportunities, and the fit of these with personal career values and interests (Coetzee, Ferreira, & Potgieter, 2021b; Jiang et al., 2019).

The career interests of specialised creativity and problem-solving and security and stability, increased a sense of graduateness through career curiosity and career confidence. The predominant career interests were security and stability (primary interest), specialised

creativity and problem-solving skills (secondary interest) exhibited a moderately high use of career concern resources (career adaptability). A preference for careers that offer opportunities for applying specialised creativity and problem-solving skills is likely to enhance a sense of having the expected personal employability qualities and autonomy and leadership. The urge to apply specialised abilities and talents to solve difficult challenges in creative, entrepreneurial endeavours is referred to as specialised creativity and problem solving.

Career confidence, career curiosity, and career control also improved the link between a career interest in specialised creativity and problem-solving and a sense of autonomy and leadership traits. The career interests of specialised creativity and problem-solving and security and stability through career curiosity and career confidence increased a sense of having sound personal employability qualities.

Career confidence, career curiosity and career control also enhanced the link between the career interest of specialised creativity and problem-solving and a sense of having autonomy and leadership attributes. Career control refers to the degree of responsibility that an individual assumes for their vocational destiny; it also entails the employment of self-regulation tools to adapt to the needs of various environments (Savickas, 2013; Savickas & Porfeli, 2012).

7.1.5 Empirical research aim 4: Interpretation of the moderated regression results

Research aim 4: To assess whether students' socio-demographic characteristics (gender, qualification choice based on career interest, demographic [urban/rural], and need for career guidance), act as moderators of the associations between the antecedent, mediating and outcome variables.

Overall, the results revealed certain conditions that need to be considered in the career guidance framework for employability. Participants' understanding of the association between their career agility and especially their world of work awareness and their qualification choice - career interest link seems to be important in career guidance for developing the employability competencies. According to Hewitt (2010), choosing a career is not a simple task. It is a difficult and frightening undertaking because the decision is influenced by a variety of elements - extrinsic, intrinsic, or a combination of both (Hewitt, 2010). According to research by Kerka (2000), the key intrinsic elements impacting career choice include an individual's personality, interests, self-concept, attitudes, and cultural identification. Extrinsic influences include social contacts, role models, the availability of resources such as knowledge and finances, globalization, ethnic background, level of educational attainment, topic choice, and variances in employment characteristics.

According to Nyamwange (2016), choosing the proper career is critical in ensuring that individuals live fulfilling lives, are motivated at work, and can achieve amazing productivity, so laying the groundwork for organisational success and sustainability. Given the significance of choosing the appropriate career choices, it is critical that individuals are aware of the elements that influence such important decisions and make them from a position of knowledge. Furthermore, Nyamwange (2016) mentioned that making informed and considered career decisions accrue various benefits to the employer and the individual. Another important factor that influences career choice decisions is the possibility of progression in work hierarchy.

Overall, a need for career guidance seems an important condition for career interests' role in enhancing especially graduateness and personal employability qualities. The participants' positive evaluations of their graduateness and personal employability traits could be attributable to the found positive connections of the employability attributes with students' career orientations and need for career guidance. According to the dispositional model of employability (Fugate & Kinicki, 2008), career orientations act as self-regulated career motivations that inspire awareness of employers' employability competency expectations in the form of graduateness and personal employability qualities. The findings confirm studies that reveal beneficial correlations between students' career preferences and awareness of job requirements (Coetzee, 2022).

Generally, participants with a low interest in the three career orientations (specialised creativity and problem-solving, security and stability, and entrepreneurship) had a higher need for career guidance than those with a low need for career guidance. Participants who expressed a strong desire for career guidance had significantly more clarity on their career orientation preference and positive perceptions of their employability attributes (graduateness and personal employability qualities) than those who expressed a weaker desire for career guidance. This research emphasizes career guidance's supportive role in assisting students in exploring their career interests and values in relation to qualification and occupational choices (Coetzee & Ngope, 2023). Career guidance assists students in determining a fit between their career orientation desires and the information, personal attributes, and abilities required for employability (Bennett, 2018; Coetzee, 2022).

7.1.6 Empirical research aim 5: Interpretation of the tests of significant mean differences.

Research aim 5: To assess whether students from various socio-demographic groups (gender, qualification choice based on career interest, demographic [urban/rural], and need for career guidance) differ significantly in terms of their career agility, world of work awareness, career interests, career adaptability and perceptions of complying with employer employability competency expectations.

Overall, the results revealed that gender, geographic origin (urban/rural), understanding qualification choice-career interest link, and need for career guidance are important factors to consider in the career guidance of the participants.

The results suggest that female participants may need more career guidance than their male counterparts on specialised creativity and problem-solving career interest, general managerial autonomy, and business/entrepreneurial skills. Furthermore, the results revealed that females may need more career guidance than their male counterparts on specialised creativity and problem-solving career interest and general managerial autonomy which means that females are likely complacent and more comfortable to do what they know rather than venture into the unknown. One of the most significant barriers to innovation is complacency—it can be more comfortable to stick with what you know rather than venture into the unknown. Business leaders can overcome this obstacle by enlisting the help of creative team members and allowing them to develop in a safe environment (Boyles,2022).

Research has indicated a link between gender stereotypes and employment prospects with reference to expectations and choices for careers (Atalay & Doan, 2020; Madikizela & Haupt, 2010). Childhood experiences and events can have an impact on a person's later years (Watson et al., 2011). While young women learn to ask for assistance and protection, young men learn to control their surroundings through early childhood contact (Enshassi & Mohammaden, 2012; Moodley, 2012). Gender-based profession stereotyping prevents young girls from making independent career selections or defying their parents' wishes (Akinlolu, 2022). Madikizela and Haupt (2010) revealed that young people start making career decisions by the age of 16.

Participants from an urban origin may need more career guidance than those from a rural origin on developing their job/occupation fitness and understanding how their TUT studies contribute to their work world awareness. According to Oosthuizen (2023), the Human studies Sciences Council studies (17 July 2023), many young people from historically disadvantaged places, such as small towns, townships, and villages, lack access to trained career advice

counsellors or other methods to obtain private career guidance. Many South African high school learners' career choices are accidental, consist of rushed decisions, are imposed by external factors, and are not made through a continuous process of conscious decision-making, self-discovery, and sense of alignment to the world of work (Dabula & Makura, 2013). When this is the case, research on career counselling in underprivileged communities takes on increased significance.

Participants whose qualification choice was not strongly based on career interests may need more career guidance than those whose qualification choice was based on their career interests on developing their career adaptability (career curiosity, career confidence) and gradueness. In a study conducted by Coetzee and Ngope (2023), the results demonstrated that participants' career interests had a considerably higher predictive effect on their employability traits than their desire for career counselling. This research sheds light on the role of career identity in career exploration. Career identity, as a significant part of total identity, reflects that aspect of the self that one obtains from one's occupational development efforts (Stringer et al., 2011). Career orientations represent the degree of crystallisation of the career identity; some students may demonstrate more clarity on career orientation choices than others because the student, as a young emerging adult, is still in the process of self-discovery (Arnett, 2015; Engelbrecht, 2020).

Participants who exhibited a low need for career guidance may need more career support than those with a strong need for career guidance on developing their awareness of the digital nature of work, the importance of continuous upskilling, how their TUT studies contribute to their work world awareness, career interests, gradueness and personal employability qualities. Coetzee and Ngope (2023) highlighted that those individuals who expressed a strong desire for career guidance showed significantly more clarity on their preferred career orientation and positive views of their employability attributes (gradueness and personal employability qualities) than those who expressed a lower want for career guidance. This research emphasizes career guidance's supportive role in assisting students in exploring their career interests and values in relation to qualification and occupational choices. Career guidance assists students in determining a fit between their career orientation desires and the information, personal attributes, and abilities required for employability (Bennett, 2018; Coetzee, 2022; Feldt et al., 2021; Fugate & Kinicki, 2008; Presti et al., 2022).

Table 7.1 provides an integrative summary of the key findings and their implications for the career guidance of the sample of TUT students.

Table 7.1*Integrative Summary: Toward Constructing a Career Guidance Framework for Employability Competency*

Empirical results	Individual strengths of sample	Individual areas for development	Integrative implications for career guidance
Mean scores	<p>Career agility: Agile learning</p> <p>World of work awareness: Continuous upskilling</p> <p>Job/occupation fitness</p> <p>Career interests</p> <p>Primary: Security and stability</p> <p>Secondary: Specialised creativity and problem-solving</p> <p>Tertiary: Entrepreneurship</p> <p>Career adaptability: Career concern</p> <p>Employer employability competency expectations:</p> <p>Autonomy/leadership</p> <p>Graduateness</p>	<p>Career agility: Career navigation</p> <p>World of work awareness</p> <p>Occupation/job awareness</p> <p>Job/occupation certitude</p> <p>Career interests: Career self-concept crystallisation in career exploration</p> <p>Career adaptability</p> <p>General and career curiosity</p> <p>Employer employability competency expectations</p> <p>Business/entrepreneurial skills</p> <p>Personal employability qualities</p>	<p>Career guidance should consider the participants' mean scores in the planning of career guidance interventions.</p> <p>Students can be made aware of their strengths and the attributes to develop for employability competency.</p> <p>Also assess students' development needs and resources needed for employability competency</p>
Correlations	<p>Positive associations between the constructs suggest that individual strengths in career agility, world of work awareness, career interests, and career adaptability are likely to enhance employer employability competency perceptions.</p>	<p>Positive associations between the constructs suggest that the study construct attributes are malleable and can be developed and enhanced.</p>	<p>Career guidance could consider activities and interventions for improving students' attributes (career agility, world of work awareness, career interests, career adaptability, perceptions of employer employability competency expectations)</p>

Empirical results	Individual strengths of sample	Individual areas for development	Integrative implications for career guidance
Stepwise regression	Resources of career agility, career adaptability, job/occupation awareness and career interests enhance employability competency	General development of resources of career agility, career adaptability, job/occupation awareness and career interests to enhance employability competency	Career guidance could consider activities and interventions for improving students' attributes (career agility, world of work awareness, career interests, career adaptability) and how these influence employability competency
Mediation	Career adaptability resources of career confidence, career curiosity and career control function as significant positive mediators	General development of career adaptability resources to enhance link between career agility, work world awareness and career interests and employability competency	Career guidance could consider activities and interventions for improving students' resources of career confidence, career curiosity, career control as part of their career self-management
Moderation	Qualification choice based on career interest and need for career guidance are important to consider in career guidance as these enhance employability competency in interaction with career agility and especially world of work awareness	Raising awareness of qualification choice -career interest link and role of career guidance for employability competency	TUT could establish awareness of career guidance services and guidance on qualification choice-career interest link for employability competency
Tests for significant mean differences	Male participants, rural origin, qualification choice-career interest link strong, and strong need for career guidance influence strengths of career agility, career adaptability, career interests, work world awareness and employability competency	Counterparts may need specialised career guidance	Career guidance should consider the needs of gender, raise awareness of qualification-choice-career interest link and importance of career guidance for employability competency

Source: Author's own work

The following section deals with the conclusions, limitations, and recommendations.

7.2 CONCLUSIONS

This section focuses on the conclusions that are based on both the literature review and the empirical study, in accordance with the research aims as outlined in Chapter 1.

7.2.1 Conclusions relating to the literature review.

The general research aim was to construct a career guidance framework for employability from the observed relationship dynamics among students' socio-demographics (gender, qualification choice based on career interest, demographic origin [urban/rural], and need for career guidance), career agility, world of work awareness, career interests, career adaptability and perceptions of complying with employer employability competency expectations.

The conclusions of the relationship dynamics between the variables will be explored in reference to each of the specific literature research aims of the study.

7.2.1.1 Research aim 1 (literature review)

To conceptualise the constructs of career agility, world of work awareness, career interests, career adaptability and perceptions of complying with employer employability competency expectations.

The first aim was achieved in Chapter 2

- Research has shown that career agility addresses people's adaptation to changes in work and careers brought on by rapid technological breakthroughs to explain why people's psychological career development needs fluctuate over time (Coetzee et al., 2021; Konstant, 2020). Career agile students confidently take advantage of and seek out new career development and upskilling opportunities that enable meaningful outlets for creative self-expression of needs, interests, and values enabled by technological advancement (Andela & Van der Doef, 2019; Coetzee, 2021; Hall et al., 2018; Sampaio et al., 2021).

- Furthermore, previous research has shown that individuals with high levels of career agility appear to be more confident in their career choices; they are eager to develop career action plans, gain new perspectives on the job search process, and can identify a broad range of professional options and possibilities that they want to pursue (Konstant, 2020; UBC, 2020).
- Students with a strong psychological need to adapt to and navigate changing work contexts for new career opportunities (i.e., career navigation), as well as a desire to actively set career goals for continuous upskilling, learning, and growth (i.e., agile learning), are likely to feel required to demonstrate a hardworking attitude and commitment to be engaged and to participate meaningfully to make a positive contribution to the organisations purpose, vision, and success (Coetzee et. al.,2022).
- The world of work has advanced substantially throughout the ages, from master craftspeople in the nineteenth century to industrial workers in the twentieth, to digital workers and robots in the twenty-first. Digital breakthroughs, together with globalisation and demographic shifts, have significantly altered how people live, work, conduct business, and communicate (Thite, 2022).
- Individuals' knowledge of the world of work in the digital era provides more context for the career agility approach. Their proclivity for epistemic curiosity about how the workplace is changing, leading to career agility in external career exploration, self-efficacious career goal setting, and intentional and upbeat career navigation of new chance career and development opportunities provided by technological advancement (Coetzee, 2021a).
- Career interests, in the form of career anchors, become an overarching concern at every stage of a person's career and serve as an internal driving force when making career decisions since they embody job-related preferences, values, motives, and demands (Coetzee, 2022). Schein (1990) discovered that when people's career interests, as explained by their career anchors, influence their job and career, they eventually have a favorable impact on career choice and outcomes.
- Career anchors are the motivational forces that govern people's professional choices and preferences for work and work surroundings (Schein, 1990). Coetzee et al. (2010) suggested that attaining a harmonious fit between one's internal professional demands

and interests and the qualities of one's external work environment leads to higher levels of career well-being and career and life satisfaction.

- Given economic, social, and technological changes, the ability to modify, adapt, or demonstrate career adaptability has become desired (Chen et al., 2020). Career adaptability has been demonstrated to help employees overcome problems, and a proactive personality is a significant determinant in the development of career adaptability (Chen et al., 2020). Career adaptability can help people see the opportunities in unexpected changes, capitalise on those changes, and recover from unexpected outcomes.
- According to Judge (1995), employability is a technique for an individual to increase their attractiveness to the labour market (Judge et al., 1995). Graduate employability is an ability of an alumni's to effectively transfer theoretical knowledge and skills acquired at institutions of higher learning into practical innovative solutions that employers require to transform an organization to achieve the desired goals (Tomilson & Nghia, 2020).

It can be concluded that the career exploration attributes (career agility, world of work awareness, career interests, career adaptability and perceptions of complying with employer employability competency expectations) played a significant role to construct a career guidance framework that may enhance the employability of students.

7.1.1.2 Research aim 2 (literature review)

To construct a theoretical career guidance framework based on the conceptualised theoretical relationship among the study variables.

The second aim was achieved in Chapter 4

The literature study on the constructs underlines their relevance and value in career exploration for self-regulated employability competency. A study of the research literature indicates that increasing individuals' self-awareness of the importance of these psycho-social career resources in managing their employability may add value to assisting TUT students in career exploration guidance.

7.1.1.3 Research aim 3 (literature review)

To outline the implications for student career guidance for employability practices.

The third aim was achieved in Chapter 4

Career guidance has been shown to boost people's confidence in their ability to purposefully design a meaningful, life-improving work future that is aligned with their inherent career values, interests, aspirations, and goals (Bates et al., 2019). Research on the connections between career exploration factors could significantly advance the body of knowledge about career guidance and the employability of students in the South African context.

The career counseling process fosters an agile career mindset similar to that of a protean, which directs agency in the management of a sustainable career in today's tumultuous and complicated workplace (Bates et al., 2019; Coetzee et al., 2021a; Hall, Yip, & Doiron, 2018). Career exploration components (career agility, awareness of work world, career interests, and career adaptability) are all related to or mutually dependent on each other in the current study to boost students' employability competency.

Individuals' awareness of the world of work in the digital age refers to extrinsic career exploration behaviour and cognitions that enable access to information about the changing nature of work, new occupations, and job opportunities, as well as the fit of these with individual career values and interests (Coetzee et al., 2021b).

According to study findings, intrinsic career exploration is guided by career orientations, which stimulates a sense of interest about the forms of work and vocations that will produce the highest sense of fulfillment and professional success (Schein, 1990; Su, 2020). To be career agile, one must be assessed and engage in conversational career orientation mindset exploration to activate the epistemic curiosity required to intentionally engage in extrinsic career exploration.

Based on research findings, career adaptability assists people in managing their careers and navigating workplace changes so they can adapt to changing duties, engage in continuous self-education, and take charge of their career path (Glavin & Berger, 2013) and (Savickas & Savickas, 2017).

Several demographic variables have been discovered to have an impact on career guidance both internationally and in the context of South Africa based on previous research.

7.2.2 Conclusions relating to the empirical study.

7.2.2.1 Research aim 1

To explore the nature of the statistical inter-relationships between students' career agility, world of work awareness, career interests, career adaptability and perceptions of employer employability competency expectations.

The first empirical aim was achieved in Chapter 6, which offered supporting evidence for research hypothesis 1 (H1).

Based on the empirical findings, the following main conclusion may be drawn:

The students' career agility, world of work awareness, career interests, career adaptability and perceptions of employer employability competency expectations are significantly related. The relationship dynamics point to the importance of considering the associations in a career guidance framework.

7.2.2.2 Research aim 2

To explore the extent to which students' socio-demographic characteristics (gender, qualification choice based on career interest, demographic [urban/rural], and need for career guidance), career agility, world of work awareness, career interests and career adaptability positively predict their perceptions of complying with employer employability competency expectations.

The second empirical aim was achieved in Chapter 6, which provided supportive evidence for research hypothesis 2 (H2).

Based on the empirical results, the following core conclusions were drawn:

- The perceptions of complying with employer employability competency expectations are positively predicted by students' gender (business/entrepreneurial skills), age (personal employability qualities), qualification choice based on career interest (graduateness), career guidance need (graduateness, personal employability qualities).

- The perceptions of complying with employer employability competency expectations are positively predicted by students' career agility, career adaptability, career interests and work world awareness.
- The predictive associations inform career guidance interventions for enhancing employability competency.

7.2.2.3 *Research aim 3*

To explore the extent to which the link between students' career agility, world of work awareness, and career interests (antecedents), and their perceptions of complying with employer employability competency expectations (outcome), is mediated by their career adaptability

The third empirical aim was achieved in Chapter 6, which provided supportive evidence for research hypothesis 3 (H3).

Based on the empirical results, the following main conclusion was drawn:

The career adaptability resources of career confidence, career curiosity and career control function as supportive positive intervening mechanisms to strengthen the link between students' career agility, career interests, world of work awareness and their employer employability competencies. Career guidance interventions to strengthen employability competency should consider the development of career adaptability resources.

7.2.2.4 *Research aim 4*

To assess whether students' socio-demographic characteristics (gender, qualification choice based on career interest, demographic [urban/rural], and need for career guidance), act as moderators of the associations between the antecedent, mediating and outcome variables.

The fourth empirical aim was achieved in Chapter 6, which provided supportive evidence for research hypothesis 4 (H4).

Based on the empirical results, the following conclusions were drawn:

- The prediction effect of students' career agility on their employability competency of business/entrepreneurial skills is conditional upon their qualification choice being based on their career interest.
- The prediction effect of students' world of work awareness on their employability competencies is conditional upon their qualification choice being based on their career interest.
- The prediction effect of students' career interests on their employability competency of graduateness and personal employability qualities is conditional upon their need for career guidance.
- Qualification choice being based on their career interest is an important condition to consider in career guidance interventions.

7.2.2.5 *Research aim 5*

To assess whether students from various socio-demographic groups (gender, qualification choice based on career interest, demographic [urban/rural], and need for career guidance) differ significantly in terms of their career agility, world of work awareness, career interests, career adaptability and perceptions of complying with employer employability competency expectations.

The fifth empirical aim was achieved in Chapter 6, which provided supportive evidence for research hypothesis 5 (H5).

Based on the empirical results, the following conclusions were drawn:

- Male participants seemed to be more interested than the female participants in careers that offer opportunities for specialised creativity and problem-solving, general managerial autonomy, security/stability and entrepreneurship. Female students may be in need for guidance on developing clear career interests.
- Students from rural areas, in contrast to urban students, seemed to perceive that TUT studies and certifications contribute to their understanding of the world of work and facilitate job/occupation fitness.

- Students with a less strong understanding of the qualification choice-career interest link for employability, may need specialised career guidance on developing career curiosity, career confidence, and their graduateness.
- Students with a less strong need for career guidance may need specialised guidance on developing awareness of the digital nature of work, the importance of continuous upskilling, how TUT studies contribute to their world of work awareness, career interests, graduateness and personal employability qualities.

7.2.3 Conclusions relating to the field of industrial and organisational psychology.

The findings and conclusions should make a significant contribution to the field of industrial and organisational psychology, and more specifically career psychology.

The literature review provided new insights into the constructs of career agility, career interests, world of work awareness, career adaptability and employer employability competency expectations and their relevance to the career exploration task of the digital era TUT student as emerging young adult. The theoretical relationship dynamics between these constructs provided further insight into career guidance implications.

The empirical study advanced knowledge on the role of career adaptability in strengthening the link between TUT students' career agility, work world awareness, career interests respectively and their employability competencies. The measuring of career agility, work world awareness and employer employability competency expectations originated in the South African higher education context and the association of these constructs with career adaptability in the TUT context advances the global research literature on career adaptability resources for young emerging adults.

The regression, mediation and moderation results revealed key attributes, conditions and the unique performance of certain participant groups on these that inform the construction of a career guidance framework for the employability competency of the TUT student.

7.3 LIMITATIONS

The limitations of the literature review and the empirical study are discussed below.

7.3.1 Limitations of the literature review

Even though a large range of research studies have been undertaken on career adaptability, and career interests, there seems to be limited research on career agility and world of work awareness in South Africa and globally. Furthermore, there is a dearth of research on the relationship between the variables (career agility, world of work awareness, career interests), career adaptability and employer employability competency expectations for university of technology students in South Africa and internationally. There is very little or no similar research on the study topic and the research variables, which hinders the credibility and scope of the research. This limitation is an opportunity to call for future research.

7.3.2 Limitations of the empirical study

When evaluating the findings of the current study, the following limitations should be considered:

- The majority of the sample's members were black African first-year faculty of Humanities students between the ages of 18 and 30 (mean age = 21). Future studies should include more varied groups in its investigations (such as students from different faculties and people of different races).
- Even though 369 participants made up the sample in this study, a larger sample would be required to establish a more conclusive relationship between the sociodemographic variables and the research variables (career agility, world of work awareness, career interests, career adaptability, and employer employability competency expectations). This limitation is an opportunity to call for future research.
- Self-report instruments (CAS, WWAS, COI, CAAS and ECI) were used in the study, therefore the reported data may be exaggerated because of the respondents' embarrassment at disclosing personal information and other biases, such as social desirability bias.
- The survey used a Likert-style rating system, in which participants assigned subjective ratings to various items which might be insufficient to determine students' accurate responses.

- Because the survey was lengthy, it is possible that respondents were weary, which reduced their interest as they progress and caused them to give less thoughtful responses to the survey's questions.
- Despite its shortcomings/limitations, the measurement scales had acceptable internal consistency reliability, construct validity and no major concerns about common method bias.
- The mediation analysis was only exploratory in nature because of the cross-sectional research design and no true causal effects could be assessed.

7.4 RECOMMENDATIONS

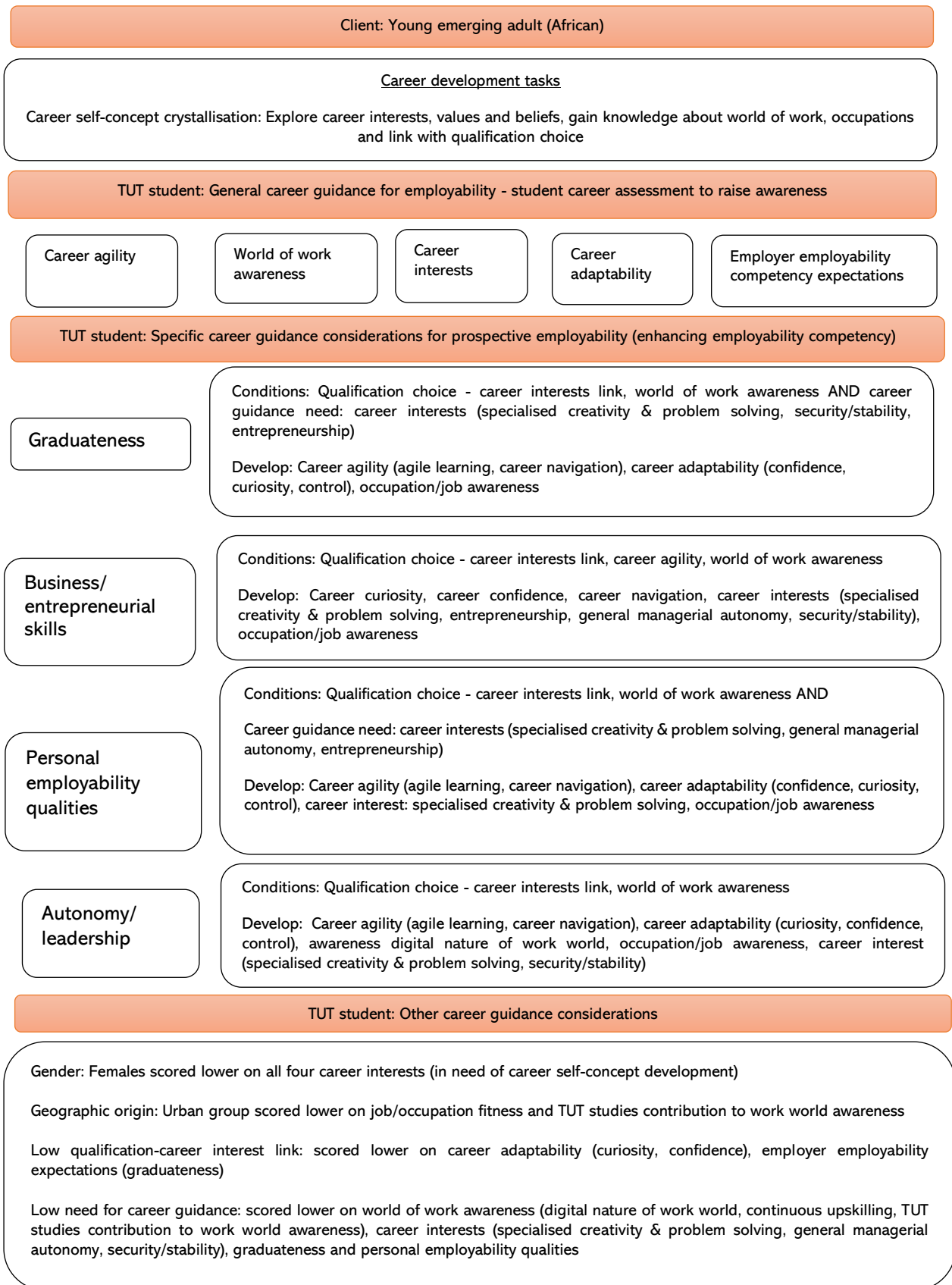
Based on these research findings, conclusions and limitations, recommendations for the career guidance of TUT students, industrial and organisational psychology, and further research in this field are discussed below.

7.4.1 Recommendations for the career guidance of TUT students

The empirical findings culminated into an integrative proposed empirical-based career guidance framework as shown in Figure 7.1.

Figure 7.1

Empirical-based Integrative Career Guidance Framework for TUT Student Employability



Source: Author's own work

The proposed integrative career guidance framework (figure 7.1) highlights the following key aspects that need to be considered in the career guidance of TUT students in the Faculty of Humanities:

- The students are emerging young adults which means they are in the career exploration stage. Drawing on the main premises of Super's (1990, 1996) theory, career exploration (usually from the ages of 15 to early 20's) is an inherent part of the process of learning how one's qualification choice, interests, and talents match with the requirements of jobs in the world of work. It stands to reason that the typical TUT student is in the career exploration phase as they prepare to enter the workforce.
- Career exploration entails the career development activities of crystallization, specification, and implementation of one's career self-concept (Coetzee et al., 2022; Kosine & Lewis, 2008). Career development tasks of the exploration involves career guidance to help the emerging young adult (TUT student) crystallise the career self-concept. Career guidance would typically assist in helping the young adult gain clarity on career interests, jobs and occupations, the nature and requirements of, and opportunities available in the digital-era world of work, and the extent to which the development of their career agility, career interests, work world awareness, and awareness of employer employability expectations may raise their prospectives for employability. Career guidance would also involve helping the TUT student develop career self-management skills (career agility and career adaptability) and guidance on job searching and career planning. Of high importance, is guiding the TUT student on understanding the link between their qualification choice and career interests and finding job opportunities that are congruent with their career interests.
- The career guidance framework assumes that well-rounded gradueness, business/entrepreneurial skills, personal employability qualities and autonomy/leadership skills will enhance the TUT students' prospects of employability. The empirical study revealed that students need awareness of the meaning of their career interests (as measured in this research) including a clear awareness of the link between their qualification choice and career interests. Although not all students expressed a strong need for career guidance, the findings revealed that the employability competencies of gradueness, business/entrepreneurial skills, personal employability qualities and autonomy/leadership will be enhanced by formal career guidance that raise awareness of, and help develop attributes of career agility, career

adaptability, work world awareness, and clarity of career interests to promote their employability competencies.

- Based on the empirical findings, career guidance should help especially female students develop their career self-concept (career interests). Urban-based students may need more guidance on their readiness for fitting into the digital-era work world, including how their TUT studies help contribute to their world of work awareness. Career guidance should help students understand the link between their qualification choice and career interests because having clarity on this link will help raise their career adaptability (especially career curiosity, career confidence, career control) and sense of gradueness.
- Students should be encouraged to make use of, or request career guidance that helps them better understand the requirements of the digital-era work world, the need for continuous upskilling, how the TUT studies contribute to their world readiness and help them develop the values underpinning career interests and how these link to jobs and occupations. Most importantly, career guidance must help students understand employer employability competency expectations and how their qualification studies contribute to their gradueness and personal employability qualities.
- It is recommended that the Faculty of Humanities consider integrating formal career guidance in the curriculum.

Career guidance interventions can consider principles of planned happenstance theory (Krumboltz, 2009; Mitchell et al., 1999) in strengthening TUT students career agility, career adaptability, career interest development, and work world awareness: Exploring personal values and career interests while actively developing one's career agility, career adaptability, world work awareness and employer employability competencies can help students better understand their career and employability prospects in unstable and uncertain employment contexts. These attributes may help enhance students' planned happenstance attributes and increase their career adaptability resources of career curiosity, career confidence and career control which this research showed strengthen the link between career interests, career agility and job/occupation awareness and the employer employability competencies. Career guidance on the value of these career constructs can help students gain confidence in dealing with happenstance (unplanned) events impacting their job search.

Furthermore, Vo et al. (2017) revised and evaluated career counselling literature on the Planned happenstance Learning Theory (PHLT) which focuses on the attitudes and abilities needed to turn happenstance into a positive factor in one's life. The professional growth of TUT students is impacted by the abilities and dispositions of PHLT. Faculty advisors and mentors can be better prepared to encourage students to adopt and utilize these attitudes and skills by attending a program that introduces them to PHLT skills and attitudes.

7.4.2 Recommendations for the field of industrial and organisational psychology

The research findings and significant relationships that emerged from the study could contribute to the development of the following interventions in terms of career guidance practices for enhancing employability competency:

7.4.2.1 Individual-level interventions

- There is an immediate need for TUT students to receive comprehensive career guidance so they may get access to a variety of support services to improve their employability. Along with continued assistance with job search and job placement, these include training, retraining, and work experience Organization for Co-operation and Development (OCED, 2004).
- In most universities, including TUT, the departments that assist students with career guidance often must handle other responsibilities, which lowers the emphasis that they can devote to career planning. Additionally, it may cause conflicts between other competing objectives and career guidance.
- Staff members in Student Development Services provide career assistance typically have no specific training. Instead of emphasizing career guidance competencies, their training frequently focuses on the development of organisational and administrative skills. The university can assist by providing necessary training to ensure that the gap is addressed.
- Encourage the creation of high-quality Internet career guidance services for students to assist them with concerns related to career development. Career guidance should consider the aspects highlighted in the proposed integrative career guidance framework (Figure 7.1).

7.4.2.2 *Organisational-level interventions*

- Improve training for employees who offer career advice to newly admitted students.
- Harnessing ICT to develop self-service approaches to guidance that will include diagnostic instruments (based on interests), data on occupations including labour-market trends, information on education and training opportunities, and access to a web version of the database of job vacancies (OCED, 2004).
- TUT can collaborate with businesses, trade associations, professional associations, employers' organisations, educational institutions, public and private employment agencies, and community-based organisations to efficiently provide career assistance for students.
- Encourage the creation of telephone support lines for information and guidance on lifelong learning and career counselling.
- TUT may introduce mandatory courses that recognise prior learning and provide career counseling and this initiative will help students' job mobility and career growth.
- TUT could offer seminars or workshops to increase career awareness for career development chances and spread information about various career options for career growth both inside and outside the institution.

7.4.3 Recommendations for future research

Black African young students, with a mean age mean age of 21 years made up most of the sample. To increase the generalisability of the results, future studies should employ more heterogeneous samples that are more representative of various sociodemographic in the South African higher educational setting. It may be beneficial to carry out a longitudinal study to better understand the connections between the independent variables (career agility, world of work awareness, and career interests), mediating variable (career adaptability), and outcome variable (employer employability competency expectations) over the course of student's life-career. This would enable industrial psychologists and career guidance specialists to design frameworks that would help colleges, universities, schools, and career counseling centers enhance the students' employability prospects and becoming life-long

learners. Lastly, the relationship dynamics between the independent variables, mediating variable and employer employability competency expectations may be better understood by a mixed-method (qualitative and quantitative designs) study. The mixed method will make it possible to triangulate or confirm data or findings from several sources or methodologies, enhancing the validity or reliability of the research.

7.5 EVALUATION OF THE STUDY

The study investigated the possibility of TUT students' ability to adapt to the technological-driven environment (career agility), their basic world of work awareness as an element of career decision making, their career interests (measured by Schein's [1990] construct of career anchors), and career self-management resources (as measured by their career adaptability) to predict their awareness of employer employability competency expectations. The research makes three contributions to the field of industrial and organisational psychology: theoretical, empirical, and practical.

7.5.1 Value added on a theoretical level.

The literature in this study aimed to identify the theoretical relationships between the study variables. The conceptual analysis of hypothetical links between the study variables was useful in the construction and proposal of a theoretical career guidance framework for the employability of graduates that informed the empirical analysis of the manifested links in the empirical study. It has been determined that for students to develop their professional welfare, career growth, and ability to become lifelong learners, they must be career-agile and adapt to the changing digital technology environment.

The literature review provided a significant theoretical contribution by demonstrating how the theoretical relationship between the study's variables influenced the development of a career guidance framework. Lastly, the literature review addressed the implications for student career guidance practices.

7.5.2 Value added on an empirical level.

The study empirically revealed that the relationship dynamics between students' socio-demographics, including gender, qualification choice based on career interest, demographic origin (urban/rural), and need for career guidance, as well as career agility, world of work awareness, career interests, career adaptability, and perceptions of compliance with employer

employability competency expectations do exist. The research findings revealed that the independent variables and employer employability competency expectations are mediated by career adaptability. Additionally, there has not been any prior research in a single study on the dynamics of the relationships in the context of student career development in South Africa.

The empirical study delivered an empirical-based career guidance framework for enhancing the TUT student's prospects of employability in the more volatile digital-era work world. The study revealed key constructs and associations that informed the construction of a reliable and valid career guidance framework relevant to the sample of participants. The empirically manifested career guidance framework may inform the design of interventions that facilitate the development of students' career-related inner capabilities and psychosocial resources, so they achieve a better match with employer employability competency expectations. The proposed integrative framework to enhance career guidance for employability competency may help students in South African institutions of higher learning manage their careers and improve their work world readiness and prospects of employability. Overall, the study findings added new insight to career guidance for self-regulated employability in the University of Technology space. Recommendations were formulated for career guidance practices for employability of students at the university of technology and for future research.

7.5.3 Value added on a practical level.

On a practical level, the proposed, empirical-based, integrative career guidance framework may help industrial psychologists and career guidance counsellors gain a better understanding of the conditions and aspects to address in career guidance to enhance TUT students' compliance with employer employability competency expectations and thus their prospects of employability.

The findings may potentially inform the TUT higher education sector about the importance of providing a suitable career guidance programme to contribute to career guidance practices for student employability. A properly developed career guidance framework that is embedded in the curriculum in early career guidance intervention programmes will assist students advance in their careers and prepare them to deal with employer employability competency expectations they may encounter in their prospective workplaces.

Finally, this study has aimed to ensure that the career guidance framework contributes positively to the industrial and organisational psychology field and that the framework will assist students to develop self-awareness they need to manage their careers and make

informed career choices, which will enhance their self-regulated employability in the digital era world of work.

7.6 REFLECTION ON DOCTORATENESS

The researcher learned how the various variables are related to one another, as well as how socio-demographic factors can influence these relationships. The researcher was better able to comprehend the problems faced by graduates in South Africa and other first-world countries, as well as how the covid-19 pandemic had changed the labour market. The study also gave the researcher insight into the strategies industrialised countries use for career counseling, how their governments finance them, and how they deal with graduate unemployment. The research also identified the need for career counseling and guidance in both urban and rural locations in the Republic of South Africa.

In addition to gaining new insights and advanced research abilities, the study taught the researcher a deeper understanding of descriptive and inferential statistics as well as how to analyse data and present the findings in an integrative manner which speaks to both the scholarly and practitioner community. The study showed the researcher that there is still work that needs to be done by career guidance practitioners and industrial psychologists in both rural and urban sections of the nation, especially at Technical and Vocational Education and Training colleges, secondary schools, universities of technology and traditional universities.

7.7 CHAPTER SUMMARY

This chapter was based on interpreting the research results, drawing conclusions formulated based on the results of the study and its integration into the research literature review. The limitations of the study are discussed and the recommendations in terms of the construction of the career guidance framework were presented.

The following research aim was accomplished in this chapter:

To draw conclusions and formulate recommendations for student career guidance practices for self-regulated employability and future research.

Herewith this research project is completed.

REFERENCES

- Abessolo, M., Rossier, J., & Hirschi, A. (2017). Basic Values, Career Orientations, and Career Anchors: Empirical Investigation of Relationships. *Frontiers in Psychology*, 8.1556, 1-11. <https://doi.org/10.3389/fpsyg.2017.01556>
- Aanstoos, C. M. (2003). The Relevance of Humanistic Psychology. *Journal of Humanistic Psychology*, 43(3), 121–132. <https://doi.org/10.1177/0022167803043003010>
- Adams, R., Adeleke, F., Anderson, D., Bawa, A., Branson, N., Christoffels, A., De Vries, J., Etheredge, H., Flack-Davison, E., Gaffley, M., Marks, M., Mdhului, M., Mahomed, S., Molefe, M., Muthivhi, T., Ncube, C., Olckers, A., Papathanasopoulos, M., Pillay, J., . . . Ramsay, M. (2021). POPIA Code of Conduct for Research (with corrigendum). *South African Journal of Science*, 117(5/6). <https://doi.org/10.17159/sajs.2021/10933>.
- Ahmad, S., & Afthanorhan, W. M. A. B. W. (2014). The Importance-Performance Matrix Analysis in Partial Least Square Structural Equation Modeling (PLS-SEM) with SmartPLS 2.0 M3. *International Journal of Mathematical Research*, 3(1), 1–14. <https://doi.org/10.18488/journal.24/2014.3.1/24.1.1.14>
- Agrawal, A., Gans, J. S., & Goldfarb, A. (2023). Artificial intelligence adoption and system-wide change. *Journal of Economics & Management Strategy*. <https://doi.org/10.1111/jems.12521>
- Alshurideh, M. T., Al Kurdi, B., AlHamad, A. Q., Salloum, S. A., Alkurdi, S., Dehghan, A., Abuhashesh, M., & Masa'deh, R. (2021). Factors Affecting the Use of Smart Mobile Examination Platforms by Universities' Postgraduate Students during the COVID-19 Pandemic: An Empirical Study. *Informatics*, 8(2), 32. <https://doi.org/10.3390/informatics8020032>
- Akkermans, J., Paradniké, K., Van der Heijden, B. I. J. M., & De Vos, A. (2018). The Best of Both Worlds: The Role of Career Adaptability and Career Competencies in Students' Well-Being and Performance. *Frontiers in Psychology*, 9. <https://doi.org/10.3389/fpsyg.2018.01678>

- Al-Harthi, H. K. (2011). University student perceptions of the relationship between university education and the labour market in Egypt and Oman. *Prospects*, 41(4), 535–551. <https://doi.org/10.1007/s11125-011-9216-4>
- Amundson, N. E. (2008). Mold, mould, mole-d: the three m's of career development. *Journal of Employment Counseling*, 45(4), 168–177. <https://doi.org/10.1002/j.2161-1920.2008.tb00056.x>
- Alisic, A., & Wiese, B. S. (2020). Keeping an insecure career under control: The longitudinal interplay of career insecurity, self-management, and self-efficacy. *Journal of Vocational Behaviour*, 120, 103431. <https://doi.org/10.1016/j.jvb.2020.103431>
- Arnett, J. J. (2007). Emerging Adulthood, a 21st Century Theory: A Rejoinder to Hendry and Kloep. *Child Development Perspectives*, 1(2), 80–82. <https://doi.org/10.1111/j.1750-8606.2007.00018.x>
- Arnett, Jeffrey Jensen. "Emerging Adulthood: A Theory of Development From the Late Teens Through the Twenties." *American Psychologist*, vol. 55, no. 5, 2000, pp. 469–480. <http://dx.doi.org/10.1037/0003-066X.55.5.469>
- Arnett, J. J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist*, 55(5), 469–480. <https://doi.org/10.1037/0003-066x.55.5.469>
- Andela, M., & van der Doef, M. (2018). A Comprehensive Assessment of the Person–Environment Fit Dimensions and Their Relationships With Work-Related Outcomes. *Journal of Career Development*, 46(5), 567–582. <https://doi.org/10.1177/0894845318789512>
- Andrade, C. (2018). Internal, External, and Ecological Validity in Research Design, Conduct, and Evaluation. *Indian Journal of Psychological Medicine*, 40(5), 498–499. https://doi.org/10.4103/ijpsym.ijpsym_334_18
- Andrews, J., & Higson, H. (2008). Graduate Employability, 'Soft Skills' Versus 'Hard' Business Knowledge: A European Study. *Higher Education in Europe*, 33(4), 411–422. <https://doi.org/10.1080/03797720802522627>
- Artess, J., Hooley, T., & Mellors-Bourne, R. (2017). Employability: A review of the literature 2012–2016. <https://hdl.handle.net/10545/621285>
- Handbook of Career Theory*. (1989). Cambridge University Press eBooks. <https://doi.org/10.1017/cbo9780511625459>

- Atkins, M. J. (1999). Oven-ready and self-basting: taking stock of employability skills. *Teaching in Higher Education*, 4(2), 267-280. <https://doi.org/10.1080/1356251990040208>
- Augustyn, B. D., Hall, T. W., Wang, D. C., & Hill, P. C. (2017). Relational spirituality: An attachment-based model of spiritual development and psychological well-being. *Psychology of Religion and Spirituality*, 9(2), 197–208. <https://doi.org/10.1037/rel0000100>
- . Babbie, E. (Ed.). (2010). Research design. In *The practice of social research* (pp. 85-88). International Thomson Publishing Services.
- Bahari, S. F. (2010). Qualitative versus quantitative research strategies: Contrasting epistemological and ontological assumptions. *Sains Humanika*, 52(1). <https://doi.org/10.11113/sh.v52n1.256>
- Bakhshi, H., Downing, J. M., Osborne, M. A., & Schneider, P. (2017). *The future of skills: Employment in 2030*. Pearson.
- Balcar, J. (2016). Is it Better to Invest in Hard or Soft Skills? *The Economic and Labour Relations Review*, 27(4), 453-470. <https://doi.org/10.1177/1035304616674613>
- Baldry, K. (2016). Graduate unemployment in South Africa: social inequality reproduced. *Journal of Education and Work*, 29(7), 788-812. <https://doi.org/10.1080/13639080.2015.1066928>
- Ball, B. (1996). *Assessing your career: Time for change?* British Psychological Society, Blackwall.
- Bandura, A. (2010). Self-efficacy. In *The Corsin iEncyclopedia of Psychology*. John Wiley & Sons. <http://onlinelibrary.wiley.com/doi/10.1002/9780470479216.corpsy0836/abstract>
- Bandura, A. (2005). The evolution of social cognitive theory. In K. G. Smith & M. A. Hitt (Eds), *Great minds in management* (pp. 9-35). Oxford University Press. <https://www.uky.edu/~eushe2/Bandura/Bandura2005.pdf>

- Banerjee, A., & Chaudhury, S. (2010). Statistics without tears: Populations and samples. *Industrial Psychiatry Journal*, 19(1), 60-65.
<https://www.industrialpsychiatry.org/text.asp?2010/19/1/60/77642>
- Behrend et al., (2011), T.S. Behrend, D.J. Sharek, A.W. Meade, E.N. Wiebe
The viability of crowdsourcing for survey research.
Behaviour Research Methods, 43 (2011), pp. 800-813. [DOI 10.3758/s13428-011-0081-0](https://doi.org/10.3758/s13428-011-0081-0)
- Barling, J., Kelloway, E. K., & Weber, T. (1996). Effects of transformational leadership training on attitudinal and financial outcomes: A field experiment. *Journal of Applied Psychology*, 81, 827-832. <https://doi.org/10.1037/0021-9010.81.6.827>
- Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), 1173. <https://doi.org/10.1037/0022-3514.51.6.1173>
- Barrie, S. C. (2004). A research-based approach to generic graduate attributes policy. *Higher Education Research & Development*, 23(3), 261-275. <https://doi.org/10.1080/07294360.2012.642842>
- Bates, G. W., Rixon, A., Carbone, A., & Pilgrim, C. (2019). Beyond employability skills: Developing professional purpose. *Journal of Teaching and Learning for Graduate Employability*, 10(1), 7. <http://dx.doi.org/10.21153/jtlge2019vol10no1art794>
- Becker, G. (1993). *Human capital: A theoretical and empirical analysis with special reference to education* (3rd ed.). The University of Chicago Press.
- Becker, G. (1962). Investment in human capital: A theoretical analysis. *Journal of Political Economy*, 70(5), 9-49. <https://www.jstor.org/stable/i304799>
- Bedard, K., & Herman, D. A. (2008). Who goes to graduate/professional school? The importance of economic fluctuations, undergraduate field, and ability. *Economics of Education Review*, 27(2), 197-210. <https://doi.org/10.1016/j.econedurev.2006.09.007>
- Beins, B. (2009). *Research methods: A tool for life* (2nd ed.). Pearson.

- Bejanyan, K., Marshall, T. C., & Ferenczi, N. (2014). Romantic ideals, mate preferences, and anticipation of future difficulties in marital life: A comparative study of young adults in India and America. *Frontiers in Psychology*, 5. [doi:10.3389/fpsyg.2014.01355](https://doi.org/10.3389/fpsyg.2014.01355).
- Benbow, R. J., & Hora, M. T. (2018). Reconsidering college student employability: A cultural analysis of educator and employer conceptions of workplace skills. *Harvard Educational Review*, 88(4), 483-515. <https://doi.org/10.17763/1943-5045-88.4.483>
- Berntson, E., Sverke, M., & Marklund, S. (2006). Predicting perceived employability: Human capital or labour market opportunities? *Economic and Industrial Democracy*, 27(2), 223-244. <https://doi.org/10.1177/0143831X06063098>
- Bezuidenhout, M. (2011). *The development and evaluation of a measure of graduate employability in the context of the new world of work* (Unpublished master's thesis). University of Pretoria.
- Bezuidenhout, M., & Coetzee, M. (2010). *Exploratory factor analysis of the employability attributes scale: An initial study* (Unpublished research report). University of South Africa.
- Bimrose, J., & Brown, A. (2014). Mid-career progression and development: The role for career guidance and counselling. In G. Arulmani, A. Bakshi, F. Leong & A. Watts (Eds), *Handbook of career development*. Springer. https://doi.org/10.1007/978-1-4614-9460-7_11
- Bimrose, J., Brown, A., Barnes, S., & Hughes, D. (2011). The role of career adaptability in skills supply. UK Commission for employment and skills, Evidence reports 35. Warwick Institute for Employment Research: University of Warwick. <http://wrap.warwick.ac.uk/42878>
- Bisel, R. S., Kavya, P., & Tracy, S. J. (2020). Positive deviance case selection as a method for organizational communication: A rationale, how-to, and illustration. *Management Communication Quarterly*, 34(2), 279-296. <https://doi.org/10.1177/0893318919897060>

- Bittaye, M., Odukogbe, A. T. A., Nyan, O., Jallow, B., & Omigbodun, A. O. (2012). Medical students' choices of specialty in the Gambia: The need for career counselling. *BMC Medical Education*, 12(1), 72-81. <https://doi.org/10.1186/14726920-12-72>
- Bloch, B. (2009). *The toxic mix: What's wrong with South Africa's schools and how to fix it*. Tafelberg.
- Bloem, J., Van Doorn, M., Duivesteyn, S., Excoffier, D., Maas, R., & Van Ommeren, E. (2014). The fourth industrial revolution. *Things Tighten*, 8, 11-15.
- Blumenthal, I. (2009). Seta head slams graduate-producing institutions. *East Coast Radio*.
- Bort, J. (2014). Bill Gates: people don't realise how many jobs will soon be replaced by software bots. *Business Insider*. <http://www.businessinsider.com.au/bill-gates-bots-are-taking-away-jobs-2014-3>
- Botha, J. (2014). *The relationship between adult learner self-directedness and employability attributes: An open distance learning perspective* (Unpublished master's dissertation). University of South Africa. <https://hdl.handle.net/10500/13598>
- Botha H, Mostert K (2013). Significant predictors associated with the career uncertainty of university students. *South African journal of higher education*, 27 (3). Published Online:1 Jan 2013. <https://hdl.handle.net/10520/EJC149336>
- Brewer, L. (2013). *Enhancing the employability of disadvantaged youth: What? Why? and How? Guide to core work skills*. International Labour Organisation. https://www.ilo.org/wcmsp5/groups/public/@ed_emp/@ifp_skills/documents/publication/wcms_213452.pdf
- Bridgstock, R. (2009). The graduate attributes we've overlooked: Enhancing graduate employability through career management skills. *Higher Education Research & Development*, 28(1), 31-44. <https://doi.org/10.1080/07294360802444347>
- Brougham, D., & Haar, J. (2018). Smart technology, artificial intelligence, robotics and algorithms (STARA): Employees' perceptions of our future workplace. *Journal of Management & Organization*, 24(2), 239-257. <https://doi.org/10.1017/jmo.2016.55>

- Brown, A., & Bimrose, J. (2011). Changing patterns of guidance, learning and careers of older workers in Europe. In CEDEFOP (Ed.), *Working and ageing: Guidance and counselling for mature* (pp. 166-185). CEDEFOP.
- Brown, A., Bimrose, J., Barnes, S. A., & Hughes, D. (2012). The role of career adaptabilities for mid-career changers. *Journal of Vocational behaviour*, 80(3), 754-761.
- Brown, J. D. (1997). Skewness and kurtosis. *Shiken: Japan Association for Language Teaching Testing & Evaluation SIG Newsletter*, 1(1), 20-23.
<https://hosted.jalt.org/test/PDF/Brown1.pdf>
- Brown, P., & Lauder, H. (2001). *Capitalism and social progress: the future of society in a global economy*. Palgrave Macmillan.
- Brown, P., & Lauder, H. (1996). Education, globalisation, and economic development. *Journal of Education Policy*, 11(1), 1-24.
- Brown, R., Copeland, W. E., Costello, E. J., Erkanli, A., & Worthman, C. M. (2009). Family and community influences on educational outcomes among Appalachian youth. *Journal of Community Psychology*, 37(7), 795-808.
<https://doi.org/10.1002/jcop.20331>
- Brown, S. D., & Lent, R. W. (2005). *Career development and counseling: Putting Theory and Research to Work*. Wiley.
- Brynard, D. J., Hanekom, S. X., & Brynard, P. (2014). *Introduction to research*. Van Schaik.
- Bureau of Labour Statistics (BLS). (2020). *The employment situation – April 2020*.
https://www.bls.gov/news.release/archives/empsit_05082020.pdf.
- Bryman, A. (2016). *Social research methods*. Oxford university press.
<https://ktpu.kpi.ua/wp-content/uploads/2014/02/social-research-methods-alan-bryman.pdf>
- Burton-Jones, A. (1999). *Knowledge capitalism*. Oxford University Press.

- Cai, Y. (2013). Graduate employability: A conceptual framework for understanding employers' perceptions. *Higher Education*, 65(1), 457-469. <https://doi.org/URL>
[10.1007/s10734-012-9556-x](https://doi.org/10.1007/s10734-012-9556-x)
- Camizuli, E., & Carranza, E. J. (2018). Exploratory data analysis (EDA). *The Encyclopaedia of Archaeological Sciences*, 1-7. <https://doi.org/10.7717/peerj.801>
- Campbell, D. P. (1971). Handbook for the strong vocational interest blank. Stanford, CA: Stanford University Press. <https://doi.org/10.1037/h0076265>.
- Canadian Labour Force Development Board (CLFDB). (1994). *Putting the pieces together: towards a coherent transition system for Canada's labour force*. CLFDB.
- Carnevale, A. P., Cheah, B., & Strohl, J. (2013). *Hard times: College majors, unemployment, and earnings: Not all college degrees are created equal*.
<https://hdl.handle.net/10822/559308>
- Cavanaugh, J. E., & Neath, A. A. (2019). The Akaike information criterion: Background, derivation, properties, application, interpretation, and refinements. *Wiley Interdisciplinary Reviews: Computational Statistics*, 11(3), e1460.
<https://doi.org/10.1002/wics.1460>
- Cedefop, European Commission, ETF, ICCDPP, ILO, OECD, UNESCO. (2020). Career guidance policy and practice in the pandemic: Results of a joint international survey—June to August 2020.
- Central Intelligence Agency (CIA). (2016). The world factbook. CIA. <https://www.cia.gov/the-world-factbook/about/cover-gallery/2016-cover/>.
- Charlie Winter & R.V. Gundur (2022): Challenges in gaining ethical approval for sensitive digital social science studies, *International Journal of Social Research Methodology*,
[DOI: 10.1080/13645579.2022.2122226](https://doi.org/10.1080/13645579.2022.2122226).
- Charles Shaaba Saba, Nicholas Ngepah & Abieyuwa Ohonba | (2022) Employment impact of national, provincial and local government capital in South Africa: An aggregate and

sectoral perspective, *Cogent Economics & Finance*, 10:1, 2046322, DOI: 10.1080/23322039.2022.2046322. <https://doi.org/10.1080/23322039.2022.2046322>

Chetty, Y. (2012). Graduateness and employability within the higher education environment: A focused review of the literature. In M. Coetzee, J.-A. Botha, N. Eccles, H. Nienaber & Holtzhausen, N. (Eds), *Developing student graduateness and employability: Issues, Provocations, Theory and Practical Application* (pp. 5-24). Knowres Publishing.

Chireshe, R. (2012). Career guidance and counselling provisions at a South African university: Career advisors' reflections. *The Anthropologist*, 14, 305-310. <https://doi.org/10.1080/09720073.2012.11891251>

Chen, H., Fang, T., Liu, F., Pang, L., Wen, Y., Chen, S., & Gu, X. (2020). Career Adaptability Research: A Literature Review with Scientific Knowledge Mapping in Web of Science. *International Journal of Environmental Research and Public Health*, 17(16), 5986. MDPI AG. <http://dx.doi.org/10.3390/ijerph17165986>.

Cifre E, Vera M, Sánchez-Cardona I, de Cuyper N. Sex, Gender Identity, and Perceived Employability Among Spanish Employed and Unemployed Youngsters. *Front Psychol*. 2018 Dec 7;9: 2467. [doi: 10.3389/fpsyg.2018.02467](https://doi.org/10.3389/fpsyg.2018.02467). PMID: 30581404; PMCID: PMC6292941.

Cilliers, P. (2000). What can we learn from a theory of complexity? *Emergence*, 2(1), 23-33. https://doi.org/10.1207/S15327000EM0201_03.

Clarke, M. (2018). Rethinking graduate employability: The role of capital, individual attributes and context. *Studies in Higher Education*, 43(11), 1923-1937. doi.org/10.1080/03075079.2017.1294152.

Cockerham, W. C., Ruten, A., & Abel, T. (1997). Conceptualizing contemporary health lifestyles: moving beyond Weber. *Sociological Quarterly*, 38(.2), 321-342. <https://doi.org/10.1111/j.1533-8525.1997.tb00480.x/>.

Coetzee, M. (2014). A psychological career resources framework for contemporary career development. In M. Coetzee (Ed.), *Psycho-Social Career Meta-Capacities: Dynamics*

of *Contemporary Career Development* (pp. 87-122). <https://doi:10.1007/978-3-319-00645-1>

- Coetzee, M. (2008). Psychological career resources of working adults: A South African survey. *SA Journal of Industrial Psychology*, 34(2), 10-20. <https://www.sajip.co.za>
- Coetzee, M., & Beukes, C. (2010). Employability, emotional intelligence, and career preparation support satisfaction among adolescents in the school-to-work transition phase. *Journal of Psychology in Africa*, 20, 439-446. <https://doi.org/10.1080/14330237.2010.10820396>.
- Coetzee, M., & Engelbrecht, L. (2020). How employability attributes mediate the link between knowledge workers' career adaptation concerns and their self-perceived employability. *Psychological Reports*, 123(4), 1005-1026. <https://doi.org/10.1177/0033294119844981>.
- Coetzee, M., & Roythorne-Jacobs, H. (2007). *Career counselling and guidance in the workplace: A manual for career practitioners*. Juta & Company.
- Coetzee, M., & Schreuder, A. M. G. (2021). *Careers: An organisational perspective*. Juta & Company.
- Coetzee, M., & Schreuder, A. M. G. (2014). Career anchors as a meta-capacity in career development. In M. Coetzee (Ed.), *Psycho-social career meta-capacities: dynamics of contemporary career development* (pp. 139-154). Springer International.
- Coetzee, M., Bergh, Z. C., & Schreuder, A. M. G. (2010). The influence of career orientations on subjective work experiences. *South African Journal of Human Resource Management*, 8(1), Art. #279. <https://doi:10.4102/sajhrm.v8i1.279>
- Coetzee, M., Oosthuizen, R. M., & Stoltz, M. E. (2016, April 26). *Predictors of staff satisfaction with retention factors* [Paper presentation], Society for Industrial & Organisational Psychology.
- Coetzee, M. (Ed.), Roythorne-Jacobs, H.J., & Tebele, C. (2022). *Career counselling and development guidance in the workplace: a manual for professional career practitioners*. JUTA.

- Coetzee, M. & Schreuder, A.M.G. (2014). Career anchors as a meta-capacity in career development. In M. Coetzee (ed.), *Psycho-social career meta-capacities: dynamics of contemporary career development* (pp.139-154). Dordrecht: Springer International. ISBN: 978-3-319-00644-4/ e-pub: 978-3-319-00645-1.
- Cohn, M. A., Fredrickson, B. L., Brown, S. L., Mikels, J. A., & Conway, A. M. (2009). Happiness unpacked: positive emotions increase life satisfaction by building resilience. *Emotion*, 9(3), 361. doi: [10.1037/a0015952](https://doi.org/10.1037/a0015952)
- Commission of the European Communities (CEC). (1999). *The European employment strategy: Investing in people; investing in more and better jobs*. Office for Official Publications of the European Communities.
- Colliver, J. A., Conlee, M. J., & Verhulst, S. J. (2012). From test validity to construct validity... and back? *Medical education*, 46(4), 366-371. DOI: [10.1111/j.1365-2923.2011.04194.x](https://doi.org/10.1111/j.1365-2923.2011.04194.x)
- Cook, D. (2020). The freedom trap: Digital nomads and the use of disciplining practices to manage work/leisure boundaries. *Information Technology & Tourism*, 22, 355-390. <https://doi.org/10.1007/s40558-020-00172-4>
- Cook, E. P. (1994). Role salience and multiple roles: A gender perspective. *The Career Development Quarterly*, 43(1), 85-96. <https://psycnet.apa.org/doi/10.1002/j.2161-0045.1994.tb00849.x>
- Cortada, J. W. (1998). *Rise of the knowledge worker*. Butterworth-Heinemann.
- Craig, K. (2009). *Reputation: A network interpretation*. Oxford University Press.
- Creighton, L. M. (2007). Factors affecting the graduation rates of university students from underrepresented populations. *International Electronic Journal for Leadership in Learning*, 11, #7. <https://www.ucalgary.ca/ucpress>
- Creswell, J. W. (2014). *A concise introduction to mixed methods research*. SAGE Publications.

- Creswell, J. W. (2013). *Research design: Qualitative, quantitative, and mixed methods approach*. Sage Publications.
- Crisp, G., & Oliver, B. (2019). Re-imagining graduate achievement and employability. In J. Higgs, G., Crisp & W. J. Letts (Eds), *Education for Employability Encyclopaedia (Volume 1)* (pp. 73-82). Brill Sense. https://doi-org-443.webvpn.zisu.edu.cn/10.1007/978-981-13-2262-4_177-1
- Crossman, J. E., & Clarke, M. (2010). International experience and graduate employability: Stakeholder perceptions on the connection. *Higher Education*, 59(5), 599-613. <https://doi.org/10.1007/s10734-009-9268-z>
- Dacre Pool, L., & Sewell, P. (2007). The key to employability: Developing a practical model of graduate employability. *Education & Training*, 49(4), 277-289. <https://doi.org/10.1108/00400910710754435>
- Dargahi, M., Newson, T., & Moore, J. R. (2020). A numerical approach to estimate natural frequency of trees with variable properties. *Forests*, 11(9), 915. <https://doi.org/10.3390/f11090915>.
- Darrow, J.B., & Behrend, T.S. (2017). Person-environment fit is a formative construct. *Journal of Vocational Behaviour*, 103, 117-131. <http://dx.doi.org/10.1016/j.jvb.2017.08.007>.
- De Bruin, G. P., & De Bruin, K. (2009). *Career counselling assessment: Introduction to psychological assessment in the South African context*. Wits University Press. <https://creativecommons.org/licences/by-nc-nd/4.0/>
- De Cuyper, N., Mäkikangas, A., Kinnunen, U., Mauno, S., & Witte, H. D. (2012). Cross-lagged associations between perceived external employability, job insecurity, and exhaustion: Testing gain and loss spirals according to the conservation of resources theory. *Journal of Organizational behaviour*, 33(6), 770-788. <https://doi.org/10.1002/job.1800>
- De Cuyper, N., Raeder, S., Van der Heijden, B. I. J. M., & Wittekind, A. (2012). The association between workers' employability and burnout in a reorganization context:

- longitudinal evidence building upon the conservation of resources theory. *Journal of Occupational Health Psychology*, 17(2), 162-174. <https://doi:10.1037/a0027348>
- Deng, L., Yang, M., & Marcoulides, K. M. (2018). Structural equation modeling with many variables: A systematic review of issues and developments. *Frontiers in psychology*, 9, 580. <https://doi.org/10.3389/fpsyg.2018.00580>
- De Grip, A., Van Loo, J., & Sanders, J. (2004). The industry employability index: Taking account of supply and demand characteristics. *International Labour Review*, 143(3), 211-233. <https://doi.org/10.1111/j.1564-913X.2004.tb00269.x>
- Di Fabio, A., & Maree, J. G. (2012). Group-based life design counseling in an Italian context. *Journal of Vocational Behaviour*, 80, 100– 107.
[doi:10.1016/j.jvb.2011.06.001](https://doi.org/10.1016/j.jvb.2011.06.001)
- De Weert, E. (2007). Graduate employment in Europe: The employers' perspective. In U. Teichler (Ed.), *Careers of university graduates. Views and experiences in comparative perspectives* (pp. 225-246). Springer.
- De Witte, H., Rothmann, S., & Jackson, L.T. (2012). The psychological consequences of unemployment in South Africa. *South African Journal of Economic and Management*, 15(3). http://www.scielo.org.za/scielo.php?script=sci_arttext&pid=S2222-34362012000300001&lng=en&nrm=iso
- Dearing, E., & Hamilton, L. C. (2006). Contemporary advances and classic advice for analysing mediating and moderating variables. *Monographs of the Society for Research in Child Development Sciences*, 71(3), 88-104.
<https://dx.doi.org/10.1111/j.1540-5834.2006.00406.x>
- Dearing, R. (1997). *The Dearing Report – Higher education in the learning society*. Education in England
<http://www.educationengland.org.uk/documents/dearing1997/dearing1997.html>
- Department for Business, Innovation and Skills (DBIS). (2016). *Success as a knowledge economy: Teaching excellence, social mobility and student choice*. HMSO.

Department of Higher and Further Education, Training and Employment (DHFETE). (2002). Report of the taskforce on employability and long-term unemployment. DHFETE.

Department of Higher Education (DHE). (2012, February). *Green paper for post-school education and training*. DHE.

Department of Higher Education and Training (DHET). (2014). *Building an expanded, effective and integrated post-school system*. DHET.

<https://hdl.voced.edu.au/10707/303712>

Dervin, B. (1999). On studying information seeking methodologically: The implications of connecting metatheory to method. *Information Processing & Management*, 35(6), 727-750. <https://www.scielo.org.za/scielo.php?script=sci>

De' R, Pandey N, & Pal A. Impact of digital surge during Covid-19 pandemic: A viewpoint on research and practice. *Int J Inf Manage*. 2020 Dec; 55:102171. [doi: 10.1016/j.ijinfomgt.2020.102171](https://doi.org/10.1016/j.ijinfomgt.2020.102171). Epub 2020 Jun 9. PMID: 32836633; PMCID: PMC7280123

Dick, E.A., Raithatha, A., Musker, L., Redhead, J., Mehta, A. and Amiras, D. (2020), "Remote reporting in the COVID-19 era: from pilot study to practice", *Clinical Radiology*. [doi: 10.1016/j.crad.2020.06.016](https://doi.org/10.1016/j.crad.2020.06.016)

Dikid, T., Chaudhary, S., Goel, K., Padda, P., Sahu, R., Kumar, T., et al. (2020). Responding to COVID-19 Pandemic: Why a strong Health System Is Required. *Indian J. Med. Res.* 151 (2), 140–145. [doi:10.4103/ijmr.IJMR_761_20](https://doi.org/10.4103/ijmr.IJMR_761_20)

Disabato, D. (2016, July 22). The double standard against cross-sectional mediation. <https://www.daviddisabato.com/blog/2016/5/22/the-double-standard-against-cross-sectional-mediation>.

Dobson, G., & Douglas, G. (2020). Factors influencing the career interest of SENCOs in English schools. *British Educational Research Journal*, 46(6), 1256-1278. <https://doi.org/10.1002/berj.3631>

- Donald, W. E., Baruch, Y., & Ashleigh, M. (2019). The undergraduate self-perception of employability: Human capital, careers advice, and career ownership. *Studies in Higher Education*, 44(4), 559-614. <https://doi.org/10.1080/03075079.2017.1387107>
- Drucker, P. F. (1985). *Innovation and entrepreneurship*. Butterworth-Heinemann.
- Drucker, P. F. (1993). *Post-capitalist society*. Harper Collins.
- Du Toit-Brits, C. (2018). The educator as a self-directed learner and agent. *Tydskrif vir Geesteswetenskappe*, 58(2), 376–386. <https://doi.org/10.15700/saje.v39n2a1645>
- Dulock, H. L. (1993). Research design: Descriptive research. *Journal of Paediatric Oncology Nursing*, 10(4), 154-157. <https://doi.org/10.1177/104345429301000406>
- Dumontheil, I. (2016). Adolescent brain development. *Current Opinion in Behavioural Sciences*, 10, 39-44. <https://doi.org/10.1080/03069885.2018.1455169>
- Durrheim, K., & Tredoux, C. (2004). *Numbers, hypotheses & conclusions: A course in statistics for the social sciences*. Juta and Company Ltd.
- Durr II, M.R., & Tracey, T.J.G. (2009). Relation of person-environment fit to career certainty. *Journal of Vocational Behaviour*, 75, 129-138m <https://doi.org/10.1016/j.jvb.2009.05.003>
- Du Plessis M, Jansen van Vuuren CD, Simons A, Frantz J, Roman N and Andipatin M (2022) South African Higher Education Institutions at the Beginning of the Covid-19 Pandemic: Sense-Making and Lessons Learnt. *Front. Educ.* 6:740016. [doi: 10.3389/feduc.2021.740016](https://doi.org/10.3389/feduc.2021.740016).
- Dziedzic, A. (2019). Safety of labour market management. *World Scientific News*, pp. 14-28. www.worldscientificnews.com
- Edgar, D., Edgar, P., Birrell, B., Betts, K., Dow, B., & Lovell, C. (2017). The new middle age: ways to thrive in the longevity economy. <https://www.google.com/url?>
- Erschens R, Herrmann-Werner A, Schaffland TF, Kelava A, Ambiel D, Zipfel S, et al. (2021) Association of professional prequalification's, study success in medical school and

- the eligibility for becoming a physician: A scoping review. PLoS ONE 16(11): e0258941. <https://doi.org/10.1371/journal.pone.0258941>.
- Ehiyazaryan, E., & Barraclough, N. (2009). Enhancing employability: Integrating real world experience in the curriculum. *Education & Training*, 51(4), 292-308. <http://dx.doi.org/10.1108/00400910910964575>.
- Ermine, W. (1995). Aboriginal epistemology. In M. Battiste & J. Barman (Eds), *First Nations Education in Canada: The circle unfolds* (pp. 101-112). UBC Press.
- Ertmer, P. A., & Newby, T. J. (2013). Behaviourism, Cognitivism, Constructivism: Comparing critical features from an instructional design perspective. *Performance Improvement Quarterly*, 26(2), 43-71. <https://doi.org/10.1002/piq.21143>.
- European Centre for the Development of Vocational Training (ECDVT). (2009, November 27). *Professionalising career guidance: Practitioner competences and qualification routes in Europe*. European Centre for the Development of Vocational Training.
- Evans, V. P. (1999). *Strategies for detecting outliers in regression analysis: An introductory primer*. ERIC Clearinghouse.
- Fairchild, A. J., & McDaniel, H. L. (2017). Best (but oft-forgotten) practices: Mediation analysis. *The American Journal of Clinical Nutrition*, 105(6), 1259-1271. <https://doi.org/10.3945/ajcn.117.152546>.
- Farouq, A., & Adilovic, S. (2014). *Understanding graduate employability-fit with the company: The employer perspective* (Unpublished Bachelor thesis). Hogskolan. <https://www.diva-portal.org/smash/get/diva2:871741/FULLTEXT01.pdf>
- Fevre, R. (2007). Employment insecurity and social theory: The power of nightmares. *Work, Employment and Society*, 21(3), 517-535. <https://doi.org/10.1177/0950017007080013>
- Ferreira, N., Coetzee, M., & Potgieter, I. (2022). Validity of the career embeddedness scale as predictor of affective commitment. *SA Journal of Industrial Psychology/SA Tydskrif vir Bedryfsielkunde*, 48(0), a1956. <https://doi.org/10.4102/sajip.v48i0.1956> Copyright:© 2022

- Finch, D. J., Hamilton, L. K., Baldwin, R., & Zehner, M. (2013). An exploratory study of factors affecting undergraduate employability. *Education & Training*.
<https://doi.org/10.1108/ET-07-2012-0077>
- Finch, D. J., Peacock, M., Levallet, N., & Foster, W. (2016). A dynamic capabilities view of employability: Exploring the drivers of competitive advantage for university graduates. *Education & Training*, 58(1), 61-81. <https://doi.org/10.1108/ET-02-2015-0013>
- Foxcroft, C., & Roodt, G. (2009). *An introduction to psychological assessment in the South African context* (2nd ed.). Oxford University Press.
- Franham, J. (2017). Employability and higher education: The follies of the productivity challenge in the teaching excellence framework. *Journal of Education Policy*, 32(5), 628-641. <https://doi.org/10.1080/02680939.2016.1268271>
- Fredericks, S., Sidani, S., Fox, M., & Miranda, J. (2019). Strategies for balancing internal and external validity in evaluations of interventions. *Nurse Researcher*, 27(4).
<https://doi.org/10.7748/nr.2019.e1646>
- Frey, C. B., & Osborne, M. A. (2013). The future of employment: how susceptible are jobs to computerisation?
http://www.oxfordmartin.ox.ac.uk/downloads/academic/The_Future_of_Employment.pdf
- Froehlich, D. E., Beausaert, S. A. J., & Segers, M. S. R. (2015). Age, employability and the role of learning activities and their motivational antecedents: A conceptual model. *The International Journal of Human Resource Management*, 26(16), 2087-2101.
<https://doi.org/10.1080/09585192.2014.971846>
- Furnham, A. (2005). *The psychology of behaviour at work: The individual in the organization*. London University College.
- Furness, M. P. (2020). What predicts career adaptability? An application of achievement goal theory and adult attachment theory. *Journal of Career Development*, 47(6), 671-685.
<https://doi.org/10.1177/0894845318815610>

- Gati, I., Levin, N., & Landman-Tal, S. (2019). Decision-making models and career guidance. In J. Athanasou & H. Perera (Eds), *International handbook of career guidance* (Chapter 6). Springer International Publishing.
- Geneva Foundation for Medical Education and Research (GFMER). (2020). *Training course in adolescent sexual and reproductive health research*. <https://www.gfmer.ch/SRH-Course-2020/index.htm>
- Ghasemi, A., & Zahediasl, S. (2012). Normality tests for statistical analysis: a guide for non-statisticians. *International Journal of Endocrinology and Metabolism*, 10(2), 486. <https://dx.doi.org/10.5812/ijem.3505>
- Gibbons, M. M., Hardin, E. E., Taylor, A. L., Brown, E., & Graham, D. (2020). Evaluation of an SCCT-based intervention to increase postsecondary awareness in rural Appalachian youth. *Journal of Career Development*, 47(4), 424-439. <https://doi.org/10.1177/0894845319832972>
- Gibson, D. E. (2004). Role models in career development; New directions for theory and research. *Journal of Vocational Behaviour*, 65(1), 134-156. [http://dx.doi.org/10.1016/S0001-8791\(03\)00051-4](http://dx.doi.org/10.1016/S0001-8791(03)00051-4)
- Gill, R. (2020). Graduate employability skills through online internships and projects during the COVID-19 Pandemic: an Australian example. *Journal of Teaching and Learning for Graduate Employability*, 11(1), 146-158. <https://files.eric.ed.gov/fulltext/EJ1281720.pdf>
- Ginzberg, E., Ginzburg, S. W., Axelrad, S., & Herma, J. L. (1951). *Occupational choice*. Columbia University.
- Glavin, K., & Berger, C. (2013). Assessing career adaptability using the Career Adapt-Abilities Scale. In J. G. Maree (Ed.), *Psychology of career counseling: New challenges for a new era* (pp. 207–220). Hauppauge, New York: Nova Science Publishers, Inc.

- Golafshani, N. (2003). Understanding reliability and validity in qualitative research. *The qualitative Report*, 8(4), 597-607. <https://www.nova.edu/ssss/QR/QR8-4/golafshani.pdf>
- Gong, G., Phillips, S. G., Hudson, C., Curti, D., & Philips, B. U. (2019). Higher US rural mortality rates linked to socioeconomic status, physician shortages, and lack of health insurance. *Health Affairs*, 38(12), 2003-2010. <https://doi.org/10.1377/HLTHAFF.2019.00722>
- Goos, M., Arntz, M., Zierahn, U., Gregory, T., Carretero Gómez, S., González Vázquez, I., & Jonkers, K. (2019). *The impact of technological innovation on the future of work*. European Commission.
- Goswami, A. K., Sharma, J. P., Burman, R. R., Gills, R., Rani, A., Roy, P. & Singh, R. (2019). Educational needs for entrepreneurship promotion and barriers for Entrepreneurship among agricultural graduates. *Journal of Community Mobilisation and Sustainable Development*, 14(1), 155-159. Indianjournals.com.
- Gottfredson, L. S. (1996). Gottfredson's theory of circumscription and compromise. In D. Brown & L. Brooks (Eds), *Career choice and development* (3rd ed.) (pp. 179-232). Jossey-Bass.
- Government Equalities Office (GEO). (2014). Female entrepreneurs set to benefit from superfast broadband. <https://www.gov.uk/government/news/female-entrepreneurs-set-to-benefit-from-superfast-broadband>.
- Govindarajan, V., and Srivastava, A. (2020). What the Shift to Virtual Learning Could Mean for the Future of Higher Ed. Harvard Business Review. Available at: <https://hbr.org/2020/03/what-the-shift-to-virtual-learning-could-mean-for-the-future-of-higher-ed>.
- Grivokostopoulou, F., Kovas, K., & Perikos, I. (2020). The effectiveness of embodied pedagogical agents and their impact on students learning in virtual worlds. *Applied Sciences-Basel*, 10(5), 14. <https://doi.org/10.3390/app10051739>.
- Grayson N. Holmbeck, Lauren Zurenda, in *Developmental-Behavioural Paediatrics*, 2008

Greenhaus, J. H., Callanan, G. A., & Godshalk, V. M. (2010). *Career management*. Sage

Greenhaus, J. H., Callanan, G. A., & Godshalk, V. M. (2018). *Career management for life*.
Routledge.

Greenleaf, A. T. (2011). Human agency, hardiness, and proactive personality: potential resources for emerging adults in the college-to-career transition (Doctoral dissertation, University of Iowa). [DOI: 10.17077/etd.tarlrjbf](https://doi.org/10.17077/etd.tarlrjbf)

Griesel, H., & Parker, B. (2009). Graduate attributes. *A baseline study on South African graduates from the perspective of employers*. HESA.
<http://hdl.voced.edu.au/10707/40519>.

Guerrieri, V., Lorenzoni, G., Straub, L., & Werning, I. (2020). *Macroeconomic implications of covid-19: Can negative supply shocks cause demand shortages?* NBER.
<http://www.nber.org/papers/w26918>.

Gunz, H. P., & Heslin, P. A. (2005). Reconceptualising career success. *Journal of Organisational Behaviour*, 26(2), 105-111. <http://www.jstor.org/stable/4093973>.

Gutman, L. M., & Schoon, I. (2012). Correlates and consequences of uncertainty in career aspirations: Gender differences among adolescents in England. *Journal of Vocational Behaviour*, 80, 608–618. <https://doi.org/10.1016/j.jvb.2012.02.002>

Guan, Y., Deng, H., Fan, L., & Zhou, X. (2021). Theorizing person-environment fit in a changing career world: Interdisciplinary integration and future directions. *Journal of Vocational Behaviour*, 126, 103557. <https://doi.org/10.1016/j.jvb.2021.103557>

Hartmann, F. G.; Heine, B.J.-H.; Ertl, B. Concepts and Coefficients Based on John L. Holland's Theory of Vocational Choice—Examining the R Package
holland. *Psych* 2021, 3, 728–750. <https://doi.org/10.3390/psych3040047>

Hamilton, L., & De Klerk, N. (2016). Generation Y female student's motivation towards entrepreneurship. *International Journal of Business and Management Studies*, 8(2), 50-65. <https://www.researchgate.net/publication/317278471>.

- Hall, D.T. A theoretical model of career subidentity development in organizational settings. *Organ. Behav. Hum. Perform.* 1971, 6, 50–76. [CrossRef].
[https://www.scirp.org/\(S\(czeh2tfqyw2orz553k1w0r45\)\)/reference/referencespapers.aspx?referenceid=9718](https://www.scirp.org/(S(czeh2tfqyw2orz553k1w0r45))/reference/referencespapers.aspx?referenceid=9718)
- Hemed, M. (2015, November 20) *Cross-sectional studies* [Paper presentation]. Training Course in Sexual and Reproductive Health Research, Geneva.
<https://www.gfmer.ch/SRH-Course-2015/research-methodology/Cross-sectional-studies-Hemed-2015.htm>
- Hammer, C. (2011). The importance of participant demographics. *American Journal of Speech-Language Pathology*, 20(4), 261. [https://doi.org/10.1044/1058-0360\(2011/ed-04\)](https://doi.org/10.1044/1058-0360(2011/ed-04))
- Hanapi, Z., & Nordin, M. S. (2014). Unemployment among Malaysia graduates: Graduates' attributes, lecturers' competency, and quality of education. *Procedia-Social and Behavioural Sciences*, 112, 1056-1063.
<https://doi.org/10.1016/j.sbspro.2014.01.1269>
- Hannafin, M. J., Hannafin, K. M., Hooper, S. R., Rieber, L. P., & Kini, A. S. (1996). Research on and research with emerging technologies. In *Hard technologies: Media-related research* (pp. 291-317). Simon & Schuster.
https://www.researchgate.net/publication/201381865_Research_on_and_research_with_emerging_technologies
- Harmon, L. W., Hansen, J. C., Borgen, F. H., & Hammer, A. L. (1994). *Strong interest inventory applications and technical guide*. Stanford University Press.
- Hayes, A.F. (2018). *PROCESS Procedure for SPSS Version 3.4*. www.guilford.com/p/hayes3
- Hecker, I., & Loprest, P. (2019). *Foundational digital skills for career progress*. Urban Institute.
- Hinchliffe, G., & Jolly, A. (2011). Graduate identity and employability. *British Educational Research Journal*, 37(4), 563-584. <http://dx.doi.org/10.1080/01411926.2010.482200>

- Hirschi, A., Herrmann, A., & Keller, A. (2015). Career adaptivity, adaptability, and adapting: A conceptual and empirical investigation. *Journal of Vocational Behaviour*, 87, 1 – 10, <https://doi.org/10.1016/j.jvb.2014.11.008>
- Hirschi, A. (2018). The fourth industrial revolution: Issues and implications for career research and practice. *The Career Development Quarterly*, 66(3), 192-204. <https://doi.org/10.1002/cdq.12142>
- Hirschi, A., Herrmann, A., & Keller, A. (2015). Career adaptivity, adaptability, and adapting: A conceptual and empirical investigation. *Journal of Vocational Behaviour*, 87, 1 – 10, <https://doi.org/10.1016/j.jvb.2014.11.008>
- Hoffman, D. (2003). Sandor Ferenczi and the origins of humanistic psychology. *Journal of Humanistic Psychology*, 43(4), 59-86. <https://doi.org/10.1177/0022167803257133>
- Holland, J. L. (1997). *Making vocational choices: A theory of vocational personalities and work environments* (3rd ed.). Psychological Assessment Resources.
- Holland, J. L. (1973). *Making vocational choices*. Prentice Hall.
- Holland, J. L. (1959). A theory of vocational choice. *Journal of Counselling Psychology*, 6(1), 35-45. <https://dx.doi.org/10.1037/h0040767>
- Holmes, L. (2013). Competing perspectives on graduate employability: Possession, position, or process? *Studies in Higher Education*, 38(4), 538-554. <https://doi.org/10.1080/03075079.2011.587140>.
- Нечаев, Nechaev, M., Фролова, Frolova, S., Куницына, & Kunitsyna, S. (2018, July 18). Professional Environment of Russian Schools: Overview and Analysis. *Profession-Oriented School*, 6(3), 20–26. https://doi.org/10.12737/article_5b44712e718622.86030309
- Hooley, T., & Dodd, V. (2015). *The economic benefits of career guidance* (Unpublished research paper). Careers England. <http://hdl.handle.net/10545/559030>
- Hooley, T., Sultana, R. G., & Thomsen, R. (Eds). (2018). The neoliberal challenge to career guidance – Mobilising research, policy and practice around social justice. In *Career*

Guidance for Social Justice: Contesting Neoliberalism. Routledge.

<https://doi.org/10.4324/9781315110516>

Hwang, Y. (2017). What Is the cause of graduates' unemployment? Focus on individual concerns and perspectives. *Journal of Educational Issues*, 3(2), 1-10.

<https://doi.org/10.5296/jei.v3i2.11378>

Imai, K. (2018). *Quantitative Social Science*. Princeton University Press.

International Labour Organization (ILO). (2020, April). *ILO Monitor: COVID-19 and the world of work – Updated estimates and analysis*.

https://www.ilo.org/wcmsp5/groups/public/@dgreports/@dcomm/documents/briefingnote/wcms_743146.pdf

International Labour Organization (ILO). (2018). *World employment and social outlook 2018: Greening with jobs*. www.ilo.org/publns

International Labour Organisation (ILO). (2000). *Training for employment: Social inclusion, Productivity report V*. ILO.

International Monetary Fund (IMF). (2014). Labour market reforms to boost employment and productivity in the gcc-an update. The international monetary fund (IMF). Kuwait City.

<https://www.imf.org/external/np/pp/eng/2014/102514a.pdf>

Ireh, M. (2000). Career development theories and their implications for high school career guidance and counseling. *The High School Journal*, 83(2), 28-40.

<http://www.jstor.com/stable/40364508>

Ismail, S. (2017). Graduate employability capacities, self-esteem and career adaptability among South African young adults. *SA Journal of Industrial Psychology*, 43(1), 1-10.

<https://doi.org/10.4102/sajip.v43i0.1396>

Ismail, S. (2015). *Self-esteem, gradueness skills attributes and career adaptability of the young adult in the school-to-work transition phase*. (Unpublished Masters dissertation). University of South Africa.

https://uir.unisa.ac.za/bitstream/handle/10500/20299/dissertation_ismail_s.pdf;sequence=1

- Iwara, I. O., Netshandama, V. O., Kilonzo, B., & Zuwarimwe, J. (2019). Sociocultural issues contributing to poor youth involvement in entrepreneurial activities in South Africa: A prospect of young graduates in Thohoyandou. *AffrikaKA Journal of Politics, Economics and Society*, 9(2), 111-134. <https://hdl.handle.net/10520/EJC-1a80860648>
- Jackson, D. (2013). The contribution of work-integrated learning to undergraduate employability skill outcomes. *Asia-Pacific Journal of Cooperative Education*, 14(2), 99-115. http://www.apjce.org/files/APJCE_14_2_99_115.pdf
- Jackson, D. (2010). An international profile of industry-relevant competencies and skill gaps in modern graduates. *International Journal of Management Education*, 8(3), 29-58. <https://doi:10.3794/ijme.83.288>
- Jackson, D., & Wilton, N. (2016). Developing career management competencies among undergraduates and the role of work-integrated learning. *Teaching in Higher Education*, 21(3), 266-286. <https://doi.org/10.1080/13562517.2015.1136281>
- Jackson, J. T. (2009). Capitalizing on digital entrepreneurship for low-income residents and communities. *West Virginia Law Review*, 112, 187-198. <https://www.washburnlaw.edu/profiles/faculty/activity/fulltext/jackson-janet-2009-112westvirginialawreview187.pdf>
- Javier, B. S. (2015). Determinants of employability of the information technology graduates in Cagayan State University, Philippines. *Countryside Development Research Journal*, 3(1), 43-52. <https://cdrj.ssu.edu.ph/index.php/CDRJ/article/view/94>.
- Jie Cao, Monika Hamori, Adapting careers to the COVID crisis: The impact of the pandemic on employees' career orientations, *Journal of Vocational Behaviour*, Volume 139, 2022, 103789, ISSN 0001-8791, <https://doi.org/10.1016/j.jvb.2022.103789>
- Johnston, C. S., Luciano, E. C., Maggiori, C., Ruch, W., & Rossier, J. (2013). Validation of the German version of the career adapt-abilities scale and its relation to orientations to happiness and work stress. *Journal of Vocational Behaviour*, 83(3), 295-304. <https://doi.org/10.1016/j.jvb.2013.06.002>

- Johnston, C.S. (2018). A systematic review of the career adaptability literature and future outlook. *Journal of Career Assessment*, 26(1), 3-30.
<https://doi.org/10.1177/1069072716679921>.
- Jonassen, D. H. (1991). Evaluating constructivist learning. *Educational Technology*, 31(9), 28-33. <https://www.jstor.org/stable/44401696>
- Jorre de St Jorre, T., & Oliver, B. (2018). Want students to engage? Contextualise graduate learning outcomes and assess for employability. *Higher Education Research and Development*, 37(1), 1-14. <http://dx.doi.org/10.1080/07294360.2017.1339183>
- Jordan, P. J., & Troth, A. C. (2020). Common method bias in applied settings: The dilemma of researching in organizations. *Australian Journal of Management*, 45(1), 3-14.
<https://doi.org/10.1177/0312896219871976>
- Judge, T. A., & Bretz, R. D. (1994). Political influence behaviour and career success. *Journal of Management*, 20(1), 43-65.
<https://psycnet.apa.org/doi/10.1177/014920639402000103>
- Judge, T. A., Cable, D. M., Boudreau, J. W., & Bretz, R. D. (1995). An empirical investigation of the predictors of executive career success. *Personnel Psychology*, 48(3), 485-519.
<https://psycnet.apa.org/doi/10.1111/j.1744-6570.1995.tb01767.x>
- Jüttler, A., Schumann, S., Neuenschwander, M.P. et al. General or Vocational Education? The Role of Vocational Interests in Educational Decisions at the End of Compulsory School in Switzerland. *Vocations and Learning* 14, 115–145 (2021).
<https://doi.org/10.1007/s12186-020-09256-y>
- Kamaruzaman, F. M., Hamid, R., Mutalib, A. A., & Rasul, M. S. (2019). Conceptual framework for the development of 4IR skills for engineering graduates. *Global Journal of Engineering Education*, 21(1), 54-61.
<http://www.wiete.com.au/journals/GJEE/Publish/vol21no1/07-Kamaruzaman-F.pdf>
- Kashdan TB, Rottenberg J. Psychological flexibility as a fundamental aspect of health. *Clin Psychology Rev*. 2010 Nov;30(7):865-78. [doi: 10.1016/j.cpr.2010.03.001](https://doi.org/10.1016/j.cpr.2010.03.001). Epub 2010 Mar 12. PMID: 21151705; PMCID: PMC2998793

- Komarraju, M., Swanson, J., & Nadler, D. (2013). Increased career self-efficacy predicts college students' motivation, and course and major satisfaction. *Journal of Career Assessment*, 22, 420–432. <https://doi.org/10.1177/1069072713498484>
- Katiyatiya, L. M., & Lubisi, N. (2021). Part B: The role of substantive equality in shaping transformative social protection in South Africa into the digital platform work. *Journal of Poverty*, 25(1), 23-42. <https://doi.org/10.1080/10875549.2020.1744788>
- Kay, L. E., & Fretwell, D. H. (2003, April 15). *Public policies and career development: A framework for the design of career information, guidance and counselling services in developing countries (Country Report on South Africa)*. World Bank.
- Kerr, C. D., Harbinson, F., & Myers, C. (1973). *Industrialism and industrial man*. Penguin Books.
- Khuluvhe, M., Bhorat, H., Oosthuizen, M., Asmal, Z., Ganyaupfu, E., & Netsh, E. (2022). Skills supply and demand in South Africa. *Unpublished) Technical Report, Labour Market Intelligence Research Programme, Pretoria*.
<https://imiresearch.org.za/publication/skills-supply-and-demand-in-south-africa-booklet-2022/>
- Kim, H. Y. (2013). Statistical notes for clinical researchers: assessing normal distribution (2) using skewness and kurtosis. *Restorative Dentistry & Endodontics*, 38(1), 52-54. <https://doi10.5395/rde.2013.38.1.52>
- Kim, Y. J., & Cribbie, R. A. (2018). ANOVA and the variance homogeneity assumption: Exploring a better gatekeeper. *British Journal of Mathematical and Statistical Psychology*, 71(1), 1-12. <https://doi.org/10.1111/bmsp.12103>
- Knight, P., & Yorke, M. (2003). *Assessment, learning and employability*. McGraw-Hill Education. <https://www.mcgraw-hill.co.uk/openupusa/html/0335212298.html>
- Knight, P., & Yorke, M. (2002). Employability through the curriculum. *Tertiary Education and Management*, 8(4), 261-276. <https://doi.org/10.1023/A:1021222629067>
- Knight J. The need for improved ethics guidelines in a changing research landscape. *S Afr J Sci*. 2019; 115(11/12), Art. #6349, 3 pages. <https://doi.org/10.17159/sajs.2019/6349>

- Kohen, A. I., & Breinich, S. C. (1975). Knowledge of the world of work: a test of occupational information for young men. *Journal of Vocational Behaviour*, 6(1), 133-144.
[https://psycnet.apa.org/doi/10.1016/0001-8791\(75\)90028-7](https://psycnet.apa.org/doi/10.1016/0001-8791(75)90028-7)
- Koen, J. (2013). Prepare and pursue: Routes to suitable (re-) employment (Unpublished doctoral dissertation). University of Amsterdam, Amsterdam.
<http://hdl.handle.net/uplib.idm.oclc.org/11245/2.120347>
- Kothari, C. R. (2004). *Research methodology: Methods and techniques*. New Age International.
- Kraak, A. (2010). The collapse of the graduate labour market in South Africa: Evidence from recent studies. *Research in Post-Compulsory Education*, 15(1), 81-102.
<https://doi.org/10.1080/13596740903565384>
- Kristof, 1996 A.L. Kristof, Person-organization fit: An integrative review of its conceptualization, measurement, and implications. *Personnel Psychology*, 49 (1996), pp. 1-50. <https://doi.org/10.1111/j.1744-6570.1996.tb01790.x>
- Kristof-Brown, 2000 A.L. Kristof-Brown. Perceived applicant fit: Distinguishing between recruiters' perceptions of person-job and person-organization fit *Personnel Psychology*, 53 (2000), pp. 643-671. <https://doi.org/10.1111/j.1744-6570.2000.tb00217.x>
- Krumboltz, J. D. (2009). The happenstance learning theory. *Journal of Career Assessment*, 17(2), 135-154. <https://doi.org/10.1177/1069072708328861>
- Krumboltz, J. D., Mitchell, A. M., & Jones, G. B. (1976). A social learning theory of career selection. *The Counselling Psychologist*, 6(1), 71-81.
<https://doi.org/10.1177/001100007600600117>
- Krumboltz, J. D., Foley, P. F., & Cotter, E. W. (2013). Applying the happenstance learning theory to involuntary career transitions. *The Career Development Quarterly*, 61(1), 15-26. <https://doi.org/10.1002/j.2161-0045.2013.00032.x>

- Kuder, F. (1977). Activity interests and occupational choice. Chicago, IL: Science Research Associates. <https://psycnet.apa.org/record/2011-23563-023>
- Kwon, Jung Eon. 2019. "Work Volition and Career Adaptability as Predictors of Employability: Examining a Moderated Mediating Process" *Sustainability* 11, no. 24: 7089. <https://doi.org/10.3390/su11247089>
- Lansbury, R. D. (2018). The changing world of work and employment relations: a multi-level institutional perspective of the future. *Labour & Industry: Journal of the Social and Economic Relations of Work*, 28(1), 5-20. <https://doi.org/10.1080/10301763.2018.1427425>
- Law, B., & Watts, A. (1977). *Schools, careers, and community: A study of some approaches to careers education in schools*. CIO Publishing.
- Le Roux, D. B. (2018). Automation and employment: The case of South Africa. *African Journal of Science, Technology, Innovation and Development*, 10(4), 507-517, <https://doi.org/10.1080/20421338.2018.1478482>
- Leadbetter, C. (2000). *Living on thin air*. Penguin.
- Leavy, P. (2017). *Research design: Quantitative, qualitative, mixed methods, arts-based, and community-based participatory research approaches*. Guilford Press.
- Lent, R. W. (2018). Future of work in the digital world: Preparing for instability and opportunity. *The Career Development Quarterly*, 66(3), 205-219. <https://doi.org/10.1002/cdq.12143>
- Lent, R. W., Brown, S. D., & Hackett, G. (1994). Toward a unifying social cognitive theory of career and academic interest, choice, and performance. *Journal of Vocational Behaviour*, 45(1), 79-122. <https://psycnet.apa.org/doi/10.1006/jvbe.1994.1027>
- Leong, R. (2012). An assessment rubric on reflection in a career development learning component of a business course. In Campbell, M. (Ed.), *Collaborative education: Investing in the future – 2012 Proceedings of the Australian Collaborative Education Network (ACEN) National Conference* (pp. 153-162). ACEN.

- Lim, H. E. (2010). Predicting low employability graduates: The case of Universiti Utara Malaysia. *The Singapore Economic Review*, 55(3), 523-535.
<https://doi.org/10.1142/S0217590810003870>
- Lo, (2019). A Study of the Influence of Career Counseling Perception on the Employment Competencies of Design Students in Central Taiwan. *Applied Sciences*. 9. 5072.
[10.3390/app9235072](https://doi.org/10.3390/app9235072). DOI:10.3390/app9235072
- Lowden, K., Hall, S., Elliot, D., & Lewin, J. (2011). *Employers' perceptions of the employability skills of new graduates*. Edge Foundation.
https://www.edge.co.uk/media/63412/employability_skills_as_pdf_final_online_version.pdf
- Lynch, C. (2015, October 15). Stephen Hawking on the future of capitalism and inequality. *Counterpunch*. <http://www.counterpunch.org/2015/10/15/stephen-hawkings-on-the-future-of-capitalism-and-inequality>.
- Mahlow, C.; Hediger, A. Digital Transformation in Higher Education—Buzzword or Opportunity? *eLearn Mag*. 2019, 5, 13. [CrossRef].
<https://doi.org/10.1145/3329488/3331171>
- Majid, M. Z. A., Hussin, M., Norman, M. H., & Kasavan, S. (2020). The employability skills among students of public higher education institution in Malaysia. *Malaysian Journal of Society and Space*, 16(1), 36-45. <https://doi.org/10.17576/geo-2020-1601-04>
- Manda, M. I., & Backhouse, J. (2017). *Digital transformation for inclusive growth in South Africa. Challenges and opportunities in the 4th industrial revolution* [Paper presentation]. 2nd African Conference on Information Science and Technology, Cape Town, South Africa.
- Manda, M. I., & Ben Dhaou, S. (2019, April). Responding to the challenges and opportunities in the 4th Industrial revolution in developing countries [Paper Presentation]. *12th International Conference on Theory and Practice of Electronic Governance* (pp. 244-253). <https://doi.org/10.1145/3326365.3326398>

- Maree, J. G. (2015). Research on life design in (South) Africa: A qualitative analysis. *South African Journal of Psychology*, 45(3), 332-348.
<https://doi.org/10.1177/0081246314566785>
- Maree, J. G. (2014). *Career interest profile: Technical manual* (4th ed.). JvR Africa Group.
- Maree, J. G. (2013). Latest developments in career counselling in South Africa: Towards a positive approach. *South African Journal of Psychology*, 43(4), 409-421.
<https://doi.org/10.1177/0081246313504691>
- Maree, J. G. (2010). Brief overview of the advancement of postmodern approaches to career counselling. *Journal of Psychology in Africa*, 20(3), 361-367.
<https://hdl.handle.net/2263/16150>
- Maree, J. G. (2009). Career counselling in the 21st century: South African institutions of higher education at the crossroads. *South African Journal of Higher Education*, 23(3), 436-458. <https://doi.org/10.4314/sajhe.v23i3.51017>
- Maree, J. G., & Taylor, N. (2016). Development of the Maree career matrix: A new interest inventory. *South African Journal of Psychology*, 46(4), 462-476.
<https://doi.org/10.1177/0081246316641558>
- Maree, J. G., Pienaar, M., & Fletcher, L. (2018). Enhancing the sense of self of peer supporters using life design-related counselling. *South African Journal of Psychology*, 48(4), 420-433. <https://doi.org/10.1177/0081246317742246>
- Maree, Jacobus Gideon (Kobus). (2020). Editorial: Renewing career counselling to promote the facilitation of sustainable decent work across the globe. *South African Journal of Education*, 40(Suppl. 1), 1-3. <https://dx.doi.org/10.15700/saje.v40ns1editorial>
- Marock, C. (2008). *Grappling with employability in South Africa*. Human Sciences Research Council. <https://hdl.handle.net/20.500.11910/5425>
- Marope, M. T. (2006). *Namibia human capital and knowledge development for economic growth with equity*. Africa Region Human Development Working Paper Series No. 84. World Bank. <https://openknowledge.worldbank.org/handle/10986/36219>

- Martin, M. C., & Gentry, J. W. (1997). Stuck in the model trap: The effects of beautiful models in ads on female pre-adolescents and adolescents. *Journal of Advertising*, 26(2), 19-33. <https://doi.org/10.1080/00913367.1997.10673520>
- Martinez Dy, A., Martin, L., & Marlow, S. (2018). Emancipation through digital entrepreneurship? A critical realist analysis. *Organization*, 25(5), 585-608. <https://doi.org/10.1177/1350508418777891>
- Martinez, L. (Ed.) (2017). . (Vols. 1-4). SAGE Publications, Inc., <https://dx.doi.org/10.4135/9781483381411>
- Mason, C. M., Carter, S., & Tagg, S. (2011). Invisible businesses: The characteristics of home-based businesses in the United Kingdom. *Regional Studies*, 45(5), 625-639. <https://doi.org/10.1080/00343401003614241>
- Mason, G., Williams, G., & Cranmer, S. (2009). Employability skills initiatives in higher education: what effects do they have on graduate labour market outcomes? *Education Economics*, 17(1), 1-30. <https://doi.org/10.1080/09645290802028315>.
- Marks, B., Thomas, J. Adoption of virtual reality technology in higher education: An evaluation of five teaching semesters in a purpose-designed laboratory. *Educ Inf Technol* 27, 1287–1305 (2022). <https://doi.org/10.1007/s10639-021-10653-6>
- Matli, W. (2020), "The changing work landscape as a result of the Covid-19 pandemic: insights from remote workers life situations in South Africa", *International Journal of Sociology and Social Policy*, Vol. 40 No. 9/10, pp. 1237-1256. <https://doi.org/10.1108/IJSSP-08-2020-0386>
- Matjie, T., & Coetzee, M. (2018). Exploring the links between gender, dwelling, and career orientations of African emerging adults. *Journal of Psychology in Africa*, 28(4), 303–309. <https://doi.org/10.1080/14330237.2018.1501896>
- McArdle, S., Waters, L., Briscoe, J. P., & Hall, D. T. T. (2007). Employability during unemployment: Adaptability, career identity and human and social capital. *Journal of Vocational Behaviour*, 71(2), 247-264. <https://dx.doi.org/10.1016/j.jvb.2007.06.003>

- McArthur, E., Kubacki, K., Pang, B., & Alcaraz, C. (2017). The employers' view of 'work-ready' graduates: A study of advertisements for marketing jobs in Australia. *Journal of Marketing Education*, 39(2), 82-93. <https://doi.org/10.1177/0273475317712766>
- McCarthy, J., & Pecze, B. (2020). Aims for, and access to, career development. *Opus et Educatio*, 7(2). <https://doi.org/10.3311/oep.373>
- McCrae, R. R., Kurtz, J. E., Yamagata, S., & Terracciano, A. (2011). Internal consistency, retest reliability, and their implications for personality scale validity. *Personality and Social Psychology Review*, 15(1), 28-50. <https://doi.org/10.1177/1088868310366253>
- McCurry, J. (2017, January 5). Japanese company replaces office workers with artificial intelligence, Japanese company replaces office workers with artificial intelligence. *The Guardian*. <https://www.theguardian.com/technology/2017/jan/05/japanese-company-replaces-office-workers-artificial-intelligence-ai-fukoku-mutual-life-insurance>
- McKinsey Global Institute. (2015, September). *South Africa's big five: Bold priorities for inclusive growth*. McKinsey & Company.
- McQuaid, R. W., & Lindsay, C. (2005). The concept of employability. *Urban Studies*, 42(2), 197-219. <https://doi.org/10.1080/0042098042000316100>
- Mezhoudi, N., Alghamdi, R., Aljunaid, R. et al. Employability prediction: a survey of current approaches, research challenges and applications. *J Ambient Intell Human Comput* (2021). <https://doi.org/10.1007/s12652-021-03276-9>
- Mhlanga, D.; Denhere, V.; Moloi, T. COVID-19 and the Key Digital Transformation Lessons for Higher Education Institutions in South Africa. *Educ. Sci.* 2022, 12, 464. <https://doi.org/10.3390/educsci12070464>
- Michaels, E., Handfield-Jones, H., & Axelrod, B. (2001). *The war for talent*. Harvard Business School Press.

- Middleton, F. (2019). *Reliability vs validity: what's the difference?* Scribbr Knowledge Base. <https://www.scribbr.com>
- Mitchell, K. E., Levin, S. A., & Krumboltz, J. D. (1999). Planned happenstance: Constructing unexpected career opportunities. *Journal of Counselling and Development*, 77(2), 115-125. <https://doi.org/10.1002/j.1556-6676.1999.tb02431.x>
- Mitchell, M. A., & Maxwell, S. E. (2013). A comparison of the cross-sectional and sequential designs when assessing longitudinal mediation. *Multivariate Behavioural Research*, 48(3), 301-339. <https://doi.org/10.1080/00273171.2013.784696>
- Mncayi, P., & Dunga, S. H. (2016). Career choice and unemployment length: A study of graduates from a South African university. *Industry and Higher Education*, 30(6), 413-423. <https://doi.org/10.1177/0950422216670500>
- Mohan Thite (2022) Digital human resource development: where are we? Where should we go and how do we go there?, *Human Resource Development International*, 25:1, 87-103, [DOI: 10.1080/13678868.2020.1842982](https://doi.org/10.1080/13678868.2020.1842982)
- Moleke, P. (2009). *Chapter 6: the graduate labour market*. HSRC Press. <https://hdl.handle.net/20.500.11910/4382>
- Monga, C., Shimeles, A., & Woldemichael, A. (2019). *Creating decent jobs: Strategies, policies and instruments*. African Development Bank.
- Mseleku, Z. (2022). From Workplace to Joblessness: The Determinants of Post-Internship Graduate Unemployment in South Africa. *Academic Journal of Interdisciplinary Studies*. 11. 330. 10.36941/ajis-2022-0055. <https://doi.org/10.36941/ajis-2022-0055>
- Monteiro, S., Almeida, L., Gomes, C., & Sinval, J. (2020). Employability profiles of higher education graduates: A person-oriented approach. *Studies in Higher Education*. <https://doi.org/10.1080/03075079.2020.1761785>
- Montenovo, L., Jiang, X., Rojas, F. L., Schmutte, I. M., Simon, K. I., Weinberg, B. A., & Wing, C. (2020). *Determinants of disparities in covid-19 job losses*. Working Paper No. w27132. NBER. <https://www.nber.org/papers/w27132.pdf>

- Moon, J. A. (2004). *Reflection and employability, learning and employability series four*. LTSN Generic Centre.
- Moore, T., & Morton, J. (2017). The myth of job readiness? Written communication, employability, and the 'skills gap' in higher education. *Studies in Higher Education*, 42(3), 591-609. <https://doi.org/10.1080/03075079.2015.1067602>
- Mouton, J., & Marais, H. C. (1996). *Basic concepts in the methodology of the social sciences*. (4th ed.). HSRC Publishers.
- Mouton, J., & Marais, H. C. (1990). *Basic concepts in the methodology of the social sciences* (Revised ed.). Human Sciences Research Council.
- Mtawa, N., Fongwa, S., & Wilson-Strydom, M. (2019). Enhancing graduate employability attributes and capabilities formation: a service-learning approach. *Teaching in Higher Education*, 1-17. <https://doi.org/10.1080/13562517.2019.1672150>
- Nesaratnam, S., Karan, S. P., & Von, F. Y. (2018, October 23). Conceptualisation of a Graduate Employability Framework from a Malaysian Perspective. *International Journal of Human Resource Studies*, 8(4), 112. <https://doi.org/10.5296/ijhrs.v8i4.13813>
- Nathans, L. L., Oswald, F. L., & Nimon, K. (2012). Interpreting multiple linear regression: A guidebook of variable importance. *Practical Assessment, Research, and Evaluation (PARE)*, 17, #9. <https://doi.org/10.7275/5fex-b874>
- National Academies of Sciences. (2018). *The frontiers of machine learning: 2017 Raymond and Beverly Sackler US-UK Scientific Forum*. National Academies Press. <https://doi.org/10.17226/25021>
- National Planning Commission (NPC). (2010). *National Human Resources Plan*. Government of the Republic of Namibia.
- Neale-Shutte, M., & Nel, H. (2013). Examining the evidence: Graduate employability at NMMU. *South African Journal of Higher Education*, 27(2), 437-453. <https://hdl.handle.net/10520/EJC144268>

- Nesaratnam, S., Karan, S. P., & Von, F. Y. (2018). Conceptualisation of a Graduate Employability Framework from a Malaysian Perspective. *International Journal of Human Resource Studies*, 8(4).
<https://www.macrothink.org/journal/index.php/ijhrs/article/view/13813>
- Nghia, T. L. H. (2019). *Building soft skills for employability: Challenges and practices in Vietnam*. Routledge.
- Ngope, M. M., & Coetzee, M. (2023). Internal career orientations guidance for emerging adults in a university of technology. *African Journal of Career Development*, 5(1), 75.
DOI: <https://doi.org/10.4102/ajcd.v5i1.75>
- Nooshin Pordelan and Simin Hosseinian (2022). Design and development of the online career counselling: a tool for better career decision-making.
<https://doi.org/10.1080/0144929X.2020.1795262>
- Organisation for Economic Cooperation and Development (OECD) (2016), *Innovating Education and Educating for Innovation: The Power of Digital Technologies and Skills*, OECD Publishing, Paris. <http://dx.doi.org/10.1787/9789264265097-en>
- Organisation for Economic Cooperation and Development (OECD). (2021). *Career guidance for adults in a changing world of work*. OECD Publishing.
<https://doi.org/10.1787/9a94bfad-en>
- Organisation for Economic Cooperation and Development (OECD). (2012). *Equity and quality in education: Supporting disadvantaged students and schools*. OECD Publishing. <http://dx.doi.org/10.1787/9789264130852-en>
- Organisation for Economic Cooperation and Development (OECD). (1998). *Human capital investment: An international comparison*. OECD.
- Organisation for Economic Cooperation and Development (OECD). (1994a). *OECD jobs study: Evidence and explanations*. OECD.
- Organisation for Economic Cooperation and Development (OECD). (1994b). *New orientations for social policy*. OECD.

- O'Rourke, K. H., Rahman, A. S., & Taylor, A. M. (2013). Luddites, the Industrial Revolution, and the Demographic Transition. *Journal of Economic Growth*, 18(4), 373-409. <http://www.jstor.org/stable/42635331>
- Okay-Somerville, B., & Scholarios, D. (2017). Position, possession or process? Understanding objective and subjective employability during university-to-work transitions. *Studies in Higher Education*, 42(7), 1275-1291. <https://doi.org/10.1080/03075079.2015.1091813>
- Okolie, U. C., Nwosu, H. E., & Mlanga, S. (2019). Graduate employability: How the higher education institutions can meet the demand of the labour market. *Higher Education, Skills and Work-Based Learning*, 26. <https://doi.org/10.1177/1478210319864824>
- Oluwajodu, F., Greyling, L., Blaauw, D., & Kleynhans, E. P. (2015). Graduate unemployment in South Africa: Perspectives from the banking sector. *SA Journal of Human Resource Management*, 13(1), 1-9. <https://dx.doi.org/10.1111/ecc.13205>
- Omar, N. H., Manaf, A. A., Mohd, R. H., Kassim, A. C., & Abd Aziz, K. (2012). Graduates' employability skills based on current job demand through electronic advertisement. *Asian Social Science*, 8(9), 103. <https://10.5539/ass.v8n9p103>
- Onwuegbuzie, A. J. (2000). *Expanding the framework of internal and external validity in quantitative research* (Paper Presentation). Annual Meeting of the Association for the Advancement of Educational Research (AAER) (Ponte Vedra, FL.).
- Oosthuizen, R. M., Coetzee, M., & Mntonintshi, F. (2014). Investigating the relationship between employees' career anchors and their psychosocial employability attributes in a financial company. *South African Journal of Human Resource Management*, 12(1), art. #650. <https://dx.doi.org/10.4102/sajhrm.v12i1.650>.
- Oosthuizen, A. HSRC Review 20 (3). September: 1-45.
- Osmani, M., Weerakkody, V., Hindi, N., & Eldabi, T. (2019). Graduates employability skills: A review of literature against market demand. *Journal of Education for Business*, 94(7), 423-432. <https://doi.org/10.1080/08832323.2018.1545629>.

- Otake, K., Shimai, S., Tanaka-Matsumi, J., Otsui, K., & Fredrickson, B. L. (2006). Happy people become happier through kindness: A counting kindnesses intervention. *Journal of happiness studies*, 7, 361-375. doi: [10.1007/s10902-005-3650-z](https://doi.org/10.1007/s10902-005-3650-z)
- Parson, F. (1909). *Choosing a vocation*. Houghton Mifflin Co.
- Patel, F. (2012, September 6-7). *Career guidance policy and delivery in South Africa* (Keynote address). The National Career Guidance Conference, Johannesburg, South Africa. <https://doi.org/10.15700/saje.v39ns2a1538>
- Patino, C. M., & Ferreira, J. C. (2018). Internal and external validity: can you apply research study results to your patients? *Journal of Brasileiro de Pneumologia*, 44(3), 183-183. <https://dx.doi.org/10.1590/s1806-37562018000000164>
- Patrick, L., Care, E., & Ainley, M. (2011). The relationship between vocational interests, self-efficacy, and achievement in the prediction of educational pathways. *Journal of Career Assessment*, 19(1), 61-74. <https://doi.org/10.1177/1069072710382615>
- Per-Åke Rosvall (2020) Counselling to stay or to leave? - Comparing career counselling of young people in rural and urban areas, *Compare: A Journal of Comparative and International Education*, 50:7, 1014-1032, DOI: [10.1080/03057925.2020.1760788](https://doi.org/10.1080/03057925.2020.1760788)
- Pham, H. H., & Tran, L. T. (2013). Developing graduate knowledge and skills for the world of work: The case of the translation curriculum in Vietnam. *Language, Society, and Culture*, 36, 7-17. <http://hdl.handle.net/10536/DRO/DU:30055898>
- Pheko, B. (2008). Secondary school leadership practice in Botswana: Implications for effective training. *Educational Management Administration & Leadership*, 36(1), 71-84. <https://doi.org/10.1177/1741143207084061>
- Pheko, M. M., & Molefhe, K. (2017). Addressing employability challenges: a framework for improving the employability of graduates in Botswana. *International Journal of Adolescence and Youth*, 22(4), 455-469. <https://doi.org/10.1080/02673843.2016.1234401>

- Pillai, S., Khan, M. H., Ibrahim, I. S., & Raphael, S. (2012). Enhancing employability through industrial training in the Malaysian context. *Higher Education*, 63(2), 187-204.
<https://10.1007/s10734-011-9430-2>
- Pillay, A. L. (2020). Prioritising career guidance and development services in post-apartheid South Africa. *African Journal of Career Development*, 2(1), a9.
<https://doi.org/10.4102/ajcd.v2i1.9>
- Pinto, L. H., & Ramalheira, D. C. (2017). Perceived employability of business graduates: The effect of academic performance and extracurricular activities. *Journal of Vocational Behavior*, 99, 165-178. <https://psycnet.apa.org/doi/10.1016/j.jvb.2017.01.005>
- Pitan, O. S. (2016a). Employability development opportunities (EDOs) as measures of students' enhanced employability. *Higher Education, Skills and Work-based Learning*, 6(3), 288-304. <http://dx.doi.org/10.1108/HESWBL-05-2016-0024>
- Pitan, O. S. (2016b). Towards enhancing university graduate employability in Nigeria. *Journal of Sociology and Social Anthropology*, 7(1), 1-11.
<https://doi.org/10.1080/09766634.2016.11885696>
- Pitan, O. S., & Atiku, S. O. (2017). Structural determinants of students' employability: Influence of career guidance activities. *South African Journal of Education*, 37(4).
<https://doi.org/10.15700/saje.v37n4a1424>
- Pitan, O. S., & Muller, C. (2020). Student perspectives on employability development in higher education in South Africa. *Education & Training*, 63(3), 453-471.
<https://doi.org/10.1108/ET-02-2018-0039>
- Plant, P. (2014). *Ways: On career guidance*. Aarhus University Press.
- Poba-Nzaou, P., Galani, M., Uwizeyemungu, S., & Ceric, A. (2021). The impacts of artificial intelligence (AI) on jobs: An industry perspective. *Strategic HR Review*.
<https://doi.org/10.1108/SHR-01-2021-0003>
- Pologeorgis, N. A. (2014). Unemployment, and economic problem or a social issue: Empirical study. *International Journal of Business & Economics Perspectives*, 9(1).

link.gale.com/apps/doc/A397580005/AONE?u=anon~14122660&sid=googleScholar&xid=da3e5893

Pool, L. D., & Sewell, P. (2007). The key to employability: developing a practical model of graduate employability. *Education & Training*.

<https://doi.org/10.1108/00400910710754435>

Posel, D., Oyenubi, A., & Kollamparambil, U. (2021). Job loss and mental health during the COVID-19 lockdown: Evidence from South Africa. *PLOS ONE*, 16(3), e0249352.

<https://doi.org/10.1371/journal.pone.0249352>

Potgieter, I. L. (2014). Personality and psychosocial employability attributes as meta-capacities for sustained employability. In M. Coetzee (Ed.), *Psycho-social career meta-capacities: Dynamics of contemporary career development* (pp. 35-54).

Springer International. http://dx.doi.org/10.1007/978-3-319-00645-1_3

Prediger, D. J., Roth, J. D., & Noeth, R. J. (1974). Career development of youth: A nationwide study. *The Personnel and Guidance Journal*, 53(2), 97-97.

<https://doi.org/10.1002/j.2164-4918.1974.tb05193.x>

PricewaterhouseCoopers (PwC). (2018). *Workforce of the future: The competing forces shaping 2030*. [https://www.pwc.com/gx/en/services/people-](https://www.pwc.com/gx/en/services/people-organisation/publications/workforce-of-the-future.html)

[organisation/publications/workforce-of-the-future.html](https://www.pwc.com/gx/en/services/people-organisation/publications/workforce-of-the-future.html)

Privitera, G. J. (2018). *Research methods for the behavioral sciences*. Sage Publications.

Purdy, E. R., & Popan, E. M. (2020). *Descriptive research*. Salem Press Encyclopaedia.

<https://search.ebscohost.com/login.aspx?direct=true&site=eds-live&db=ers&AN=113931140>.

Quinlan, K.M., Renninger, K.A. Rethinking employability: how students build on interest in a subject to plan a career. *High Educ* 84, 863–883 (2022).

<https://doi.org/10.1007/s10734-021-00804-6>.

Rabie, S., Visser, M., Naidoo, A., Van den Berg, F., & Morgan, B. (2021). Beyond the individual: A group-based career development intervention implemented in resource-

- constrained schools in South Africa. *The Journal for Specialists in Group Work*, 46(1), 48-61, <https://doi.org/10.1080/01933922.2020.1856252>
- Ramlachan, P., Ramnund-Mansingh, A., & Naidoo, K. (2021). The impact of globalisation on governance of local authorities: A 10-year comparative analysis of eThekweni Municipality. *Journal of Public Administration*, 56(2), 250-264. <https://hdl.handle.net/10520/ejc-jpad-v56-n2-a7>
- Ramnund-Mansingh A., & Reddy, N. (2021). South African specific complexities in aligning graduate attributes to employability. *Journal of Teaching and Learning for Graduate Employability*, 12(2), 206-221. <https://doi.org/10.21153/jtlge2021vol12no2art1025>.
- Rasool, F., & Botha, C. J. (2011). The nature, extent and effect of skills shortages on skills migration in South Africa. *SA Journal of Human Resource Management*, 9(1), 1-12. <https://dx.doi.org/10.4102/sajhrm.v9i1.287>
- Reddy, V., Bhorat, H., Powell, M., Visser, M. M., & Arends, F. (2016, September). *Skills supply and demand in South Africa*. Commissioned by the Department of Higher Education and Training (DHET), Labour Market Intelligence Partnership (LMIP). <http://hdl.handle.net/20.500.11910/10186>
- Rehman, S., & Mehmood, D. A. (2014). Employability skills, The need of the graduates and the employer. Research. *The Qualitative Report*, 8(4), 597-607. <https://www.nova.edu/ssss/QR/QR8-4/golafshani.pdf>
- Reich, R. (1991). *The work of nations*. Simon & Schuster.
- Ro, H. (2012). Moderator and mediator effects in hospitality research. *International Journal of Hospitality Management*, 31(3), 952-961. <https://doi.org/10.1016/j.ijhm.2011.11.003>
- Rothmann, S., & Cilliers, F. V. N. (2007). Present challenges and some critical issues for research in industrial/organisational psychology in South Africa. *SA Journal of Industrial Psychology*, 33(1), 8-17. <https://doi.org/10.4102/sajip.v33i1.262>

- Rodrigues, R., Guest, D., Budjanovcanin, A. (2013). From anchors to orientations: Towards a contemporary theory of career preferences. *Journal of Vocational Behaviour*. 83 (2), 142–152. <http://dx.doi.org/10.1016/j.jvb.2013.04.002>
- Rodrigues, Ricardo & Guest, David & Budjanovcanin, Alexandra. (2013). From anchors to orientations: Towards a contemporary theory of career preferences. *Journal of Vocational Behaviour*. 83. 142–152.
[10.1016/j.jvb.2013.04.002](http://dx.doi.org/10.1016/j.jvb.2013.04.002).<https://doi.org/10.1016/j.jvb.2013.04.002>
- Rodrigues, R., Guest, D., Budjanovcanin, A. (2013). From anchors to orientations: Towards a contemporary theory of career preferences. *Journal of Vocational Behaviour*. 83 (2), 142–152. <http://dx.doi.org/10.1016/j.jvb.2013.04.002>
- Rounds, J., & Armstrong, P. I. (2014). Integrating values and interests for career counseling. In M. Pope, L. Y. Flores, & P. J. Rottinghaus (Eds.), *The role of values in careers* (pp. 101–113). Charlotte, NC: IAP Information Age Publishing.
<https://psycnet.apa.org/record/2014-49411-008>
- Rubinfeld, M. I., & Gilroy, F. D. (1991). Relationship between college women's occupational interests and a single-sex environment. *The Career Development Quarterly*, 40, 64-70. <https://doi.org/10.1002/j.2161-0045.1991.tb00313.x>
- Ryan, A. B. (2006). *Post-positivist approaches to research*. In M. Antonesa, H. Fallon, A. B. Ryan, A. Ryan, & T. Walsh (Eds), *Researching and writing your thesis: A guide for postgraduate students* (pp. 12-26). Maynooth Adult and Community Education.
- Shrestha, N. (2021). Factor analysis as a tool for survey analysis. *American Journal of Applied Mathematics and Statistics*, 9(1), 4-11. <http://pubs.sciepub.com/ajams/9/1/2>
[Published by Science and Education Publishing DOI: 10.12691/ajams-9-1-2](https://doi.org/10.12691/ajams-9-1-2)
- Schreuder, A. M. G., & Coetzee, M. (2011). *Careers: An organisational perspective* (4th ed.). Juta. <https://doi.org/10.1007/978-3-319-00645-1>

- Sabadash, A. (2013). *ICT-induced technological progress and employment: A happy marriage or a dangerous liaison? A literature review*. JRC Working Papers JRC76143. Joint Research Centre.
- Salami, S. O. (2010). Gender as a Moderator of Relation between Emotional Intelligence and Career Development. *Online Submission*, 7(9), 1-14.
https://www.academia.edu/63518356/Gender_as_a_Moderator_of_Relation_between_Emoional_Intelligence_and_Career_Development
- Sampaio, C., Cardoso, P., Rossier, J., Savickas, M.L. (2021). Attending to clients' psychological needs during career construction counselling. *The Career Development Quarterly*, 69, 96-113. <https://doi.org/10.1002/cdq.12252>
- Samuel, M. O., & Chipunza, C. (2009). Employee retention and turnover: Using motivational variables as a panacea. *African Journal of Business Management*, 3(9), 410-415.
<http://www.academicjournals.org/AJBM>
- Sanders, J., & De Grip, A. 2004. Training, task flexibility and the employability of low-skilled workers. *International Journal of Manpower*, 25(1), 73-89.
[doi:10.1108/01437720410525009](https://doi.org/10.1108/01437720410525009)
- Satalkina, L., & Steiner, G. (2020). Digital entrepreneurship and its role in innovation systems: A systematic literature review as a basis for future research avenues for sustainable transitions. *Sustainability*, 12(7), 2764.
<https://doi.org/10.3390/su12072764>
- Sathekge, H. S. (2014). *The roles and perceptions of career guidance teachers in influencing learners' choice of nursing as a career* (Unpublished MSN thesis). University of the Witwatersrand.
<https://wiredspace.wits.ac.za/bitstream/handle/10539/15276/FinalThesis.190514.pdf?sequence=1&isAllowed=y>
- Savickas, M. L. (2011). New questions for vocational psychology: Premises, paradigms, and practices. *Journal of Career Assessment*, 19(3), 251-258.
<https://dx.doi.org/10.1177/1069072710395532>

- Savickas, M. L., & Porfeli, E. J. (2012). Career Adapt-Abilities Scale: Construction, reliability, and measurement equivalence across 13 countries. *Journal of Vocational Behavior*, 80(3), 661-673. <https://psycnet.apa.org/doi/10.1016/j.jvb.2012.01.011>
- Sawilowsky, S. S. (2009). New effect size rules of thumb. *Journal of Modern Applied Statistical Methods*, 8(2), 26. <https://digitalcommons.wayne.edu/jmasm>.
- Schein, E. H. (2007). Career research: Some issues and dilemmas. In H. Gunz & M. Peiperl (Eds), *Handbook of career studies*, (pp. 573-576). Sage.
<https://doi.org/10.1108/13620430810849506>
- Schein, E. H. (1990). *Career anchors: Discovering your real values*. University Associates.
<http://hdl.voced.edu.au/10707/353831>
- Schein, E. H. (1978). *Career dynamics: Matching individual and organizational needs*. Addison-Wesley.
- Schein, E.H., & Van Maanen, J. (2016). Career anchors and job/role planning: Tools for career and talent management. *Organizational Dynamics*, 45, 165-173.
<http://dx.doi.org/10.1016/j.orgdyn.2016.07.002>
- Schmidt, E. (2011, May 16). The internet is the path to Britain's prosperity: This country is still one of the world's leaders in technology innovation and inventions. *The Telegraph*. <https://www.telegraph.co.uk/technology/internet/8515771/The-internet-is-the-path-to-Britains-prosperity.html>
- Schneider, K. J., Pierson, J. F., & Bugental, J. F. (2014). *The handbook of humanistic psychology: Theory, research, and practice*. Sage Publications.
<https://dx.doi.org/10.4135/9781483387864>
- Shin-Huei Lin, Chia-huei Wu & Lung Hung Chen (2015) Unpacking the role of self-esteem in career uncertainty: A self-determination perspective, *The Journal of Positive Psychology: Dedicated to furthering research and promoting good practice*, 10:3, 231-239, DOI: [10.1080/17439760.2014.950178](https://doi.org/10.1080/17439760.2014.950178)
- Sedgwick, P. (2012). Pearson's correlation coefficient. *BMJ*, 345, e4483.
<https://doi.org/10.1136/bmj.e4483>

- Sennett, R. (2006). *The culture of new capitalism*. Yale University Press.
- Sharf, R. S. (2013). Advances in theories of career development. In W. B. Walsh, M. L. Savickas, & P. J. Hartung (Eds), *Handbook of vocational psychology: Theory, research, and practice* (p. 3-32). Routledge/Taylor & Francis Group.
- Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). *Experimental and quasi-experimental designs for generalized causal inference*. Boston, MA: Houghton Mifflin and Company. <https://www.scholars.northwestern.edu/en/publications/experimental-and-quasi-experimental-designs-for-generalized-causa>.
- Sharf, R. S. (1997). *Applying career development theory to counseling* (2nd ed). Brooks.
- Shivoro, R. S., Shalyefu, R. K., & Kadhila, N. (2018). Perspectives on graduate employability attributes for management sciences graduates. *South African Journal of Higher Education*, 32(1), 216-232. <https://doi.org/10.20853/32-1-1578>
- Shoenfelt, E. L., Stone, N. J., & Kottke, J. L. (2013). Internships: An established mechanism for increasing employability. *Industrial and Organizational Psychology*, 6(1), 24-27. <https://doi.org/10.1111/iops.12004>
- Aşkin Tekkol İ and Demirel M (2018) An Investigation of Self-Directed Learning Skills of Undergraduate Students. *Front. Psychol.* 9:2324. [doi: 10.3389/fpsyg.2018.02324](https://doi.org/10.3389/fpsyg.2018.02324)
- Sicherman, N., & Galor, O. (1990). A theory of career mobility. *Journal of Political Economy*, 98(1), 169-192. <https://www.jstor.org/stable/2937647>
- Siddiky, M., & Akter, S. (2021). The students' career choice and job preparedness strategies: A social environmental perspective. *International Journal of Evaluation and Research in Education*, 10(2), 421-431. <https://doi.org/10.11591/ijere.v10i2.21086>
- Sienkiewicz, L. (2012). *Job profiles and training for employment counsellors*. European Commission. <https://ec.europa.eu/progress>

- Simon, M. K., & Goes, J. (2011). *Developing a theoretical framework – Includes excerpts from Simon (2011), Dissertation and scholarly research: Recipes for success*. Dissertation Success LLC. <https://pdf4pro.com/view/developing-a-theoretical-framework-56526e.html>
- Sinha, N. (2018). Understanding the effects of unemployment in Indian graduates: Psychological, financial and social perspectives. *Psychological Studies*, 63(3), 315-324. <https://doi.org/10.1007/s12646-018-0447-9>
- Small, L., Shacklock, K., & Marchant, T. (2018). Employability: A contemporary review for higher education stakeholders. *Journal of Vocational Education & Training*, 70(1), 148-166. <https://doi.org/10.1080/13636820.2017.1394355>.
- Smids, J., Nyholm, S. & Berkers, H. Robots in the Workplace: a Threat to—or Opportunity for—Meaningful Work? *Philos. Technol.* **33**, 503–522 (2020). <https://doi.org/10.1007/s13347-019-00377-4>
- Smith, C., Ferns, S., Russell, L., & Cretchely, P. (2014). *The impact of work integrated learning on student work-readiness*. Australian Government Office for Learning and Teaching. <http://hdl.voced.edu.au/10707/337518>
- Smith, M., Brooks, S., Lichtenberg, A., McIlveen, P., Torjul, P., & Tyler, J. (2009, June). *Career development learning: Maximising the contribution of work-integrated learning to the student experience – Final project report*. Austrian Learning and Teaching Council. https://www.academia.edu/20298470/Career_Development_Learning_Maximising_the_Contribution_of_Work_Integrated_Learning_to_the_Student_Experience_Australia_n_Learning_and_Teaching_Council_Final_Project
- Sneader, K., & Singhal, S. (2020, March 5). *Beyond coronavirus: The path to the next normal*. McKinsey & Company. <https://www.mckinsey.com/industries/healthcare-systems-and-services/our-insights/beyond-coronavirus-the-path-to-the-next-normal>
- Somerville, F. (2019). Capabilities for media graduate employability: a case study of private higher education in South Africa. *Journal of Comparative & International Higher Education*, 11(Winter), 189-191. <https://doi.org/10.32674/jcihe.v11iWinter.1463>

- Sparber, C., & Fan, J. S. (2011). *Unemployment, skills, and the business cycle since 2000*. Working Papers 2011-04. Department of Economics, Colgate University.
- Spokane, A. R., Meir, E. I., & Catalano, M. (2000). Person–environment congruence and Holland's theory: A review and reconsideration. *Journal of Vocational Behavior*, 57(2), 137-187. <https://doi.org/10.1006/jvbe.2000.1771>
- Spöttl, G., & Windelband, L. (2021). The 4th industrial revolution – Its impact on vocational skills. *Journal of Education and Work*, 34(1), 29-52. <https://doi.org/10.1080/13639080.2020.1858230>
- Statistics South Africa (Stats SA). (2020). *Quarterly labour Force Survey (QLFS)*. <http://www.statssa.gov.za/publications/P0211/P02114thQuarter2020.pdf>
- Statistics Sweden (2002). *Statistical yearbook of salaries and wages*. Statistics Sweden.
- Stewart, T. A. (1997). *Intellectual capital: the new wealth of organizations*. Nicholas Brealey.
- Strong, E. K., Jr. (1943). *The vocational interests of men and women*. Stanford, CA: Stanford University Press. <https://doi.org/10.1037/h0076265>
- Stoll, G., Einarsdóttir, S., Chelsea Song, Q., Ondish, P., Sun, J.-T., & Rounds, J. (2020). The Roles of Personality Traits and Vocational Interests in Explaining What People Want out of Life. *Journal of Research in Personality*, 86, 103939. <https://doi.org/10.1016/j.jrp.2020.103939Stoll>.
- Stoll, G., & Trautwein, U. (2017). Vocational interests as personality traits: Characteristics, development, and significance in educational and organizational environments. In J. Specht (Ed.), *Personality development across the lifespan* (pp. 401–417). Amsterdam, the Netherlands: Elsevier. Strong, E. K., Jr. (1943). *The vocational interests of men and women*. Stanford, CA: Stanford University Press. <https://doi.org/10.1016/B978-0-12-804674-6.00025-9>
- Stromquist, N. P. (2019). World Development Report 2019: The changing nature of work. *International Review of Education*, 65, 321-329. <https://doi.org/10.1007/s11159-019-09762-9>

- Succi, C., & Canovi, M. (2020). Soft skills to enhance graduate employability: Comparing students and employers' perceptions. *Studies in Higher Education*, 45(9), 1834-1847. <https://doi.org/10.1080/03075079.2019.1585420>
- Suhr, D. (2006). The basics of structural equation modelling (Unpublished PhD thesis). University of Northern Colorado. <https://www.lexjansen.com/wuss/2006/tutorials/TUT-Suhr.pdf>
- Sultana, R.G., & Watts, A.G. (2007). *Career guidance in the Mediterranean turn*. European Training Foundation. https://www.researchgate.net/publication/44839215_Career_guidance_in_the_Mediterranean_region
- Sun, V. J., & Yuen, M. (2012). Career guidance and counselling for university students in China. *International Journal for the Advancement of Counselling*, 34(3), 202-210. <https://doi.org/10.1007/s10447-012-9151-y>
- Supriatna, M., Amirullah, M., & Budiamin, A. (2019). Analysis of employability skills scale on vocational high school students. *International Journal of Recent Technology and Engineering (IJRTE)*, 8(1C2), 515-522. <https://www.ijrte.org/wp-content/uploads/papers/v8i1C2/A10850581C219.pdf>
- Sutherland, E. (2020). The fourth industrial revolution – The case of South Africa. *Politikon*, 47(2), 233-252. <https://doi.org/10.1080/02589346.2019.1696003>
- Sweet, R., Watts, T., & Watts, A. G. (2004). *Career guidance and public policy: Bridging the gap*. Praeger/Greenwood.
- Schwartz, S.H., Cieciuch, J., Vecchione, M., Davidov, E., Fischer, R., Beierlein, C., Ramos, A., Verkasalo, M., Lönnqvist, J., Demirutku, K., Dirilen-gumus, O., & Konty, M. (2012). Refining the theory of basic individual values. *Journal of Personality and Social Psychology*, 103, 663-88. <https://doi.org/10.1037/a0029393>.
- Stoll, G., & Trautwein, U. (2017). Vocational interests as personality traits: Characteristics, development, and significance in educational and organizational environments. In J. Specht (Ed.), *Personality development across the lifespan* (pp. 401–417).

Amsterdam, the Netherlands: Elsevier. <https://doi.org/10.1016/B978-0-12-804674-6.00025-9>.

Su, R., Stoll, G., & Rounds, J. (2019). The nature of interests: Toward a unifying theory of trait-state interest dynamics. In C. D. Nye & J. Rounds (Eds.), *Vocational interests in the workplace: Rethinking behaviour at work* (pp. 11–38). New York, NY: Routledge. <https://doi.org/10.4324/9781315678924>.

Tabachnick, B. G., & Fidell, L. S. (2013). *Using multivariate statistics* (6th ed.). Pearson.

Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education*, 2, 53. <https://doi: 10.5116/ijme.4dfb.8dfd>

Tandiyuk, S., Susanto, A. F., & Bellani, E. (2022). The Contribution of Employability Skills to Career Adaptability in Final-Year Students. *Golden Ratio of Social Science and Education*, 2(2), 57-65. DOI: <https://doi.org/10.52970/grsse.v2i2.188>

- Taylor, A. R., & Hooley, T. (2014). Evaluating the impact of career management skills module and internship programme within a university business school. *British Journal of Guidance & Counselling*, 42(5), 487-499.
<https://doi.org/10.1080/03069885.2014.918934>
- Te Wierik, M. J. L., Beishuizen, J., & Van Os, W. (2015). Career guidance and student success in Dutch higher vocational education. *Studies in Higher Education*, 40(10), 1947-1961. <https://doi.org/10.1080/03075079.2014.914905>
- Teng, W., Ma, C., Pahlevansharif, S., & Turner, J. J. (2019). Graduate readiness for the employment market of the 4th industrial revolution the development of soft employability skills. *Education & Training*, 61(5), 590-604. <https://doi.org/10.1108/ET-07-2018-0154>
- Terre Blanche, M. J., Durrheim, K., & Painter, D. (2006). *Research in practice: Applied methods for the social sciences*. Juta and Company Ltd.
- Tiedeman, D.V.; O'Hara, R.P. Career Development: Choice and Adjustment; College Entrance Examination Board: New York, NY, USA, 1963.
<https://doi.org/10.1002/j.2161-007X.1964.tb00183.x>
- The World Bank. (2016). *World development indicators*. The World Bank.
- Thomas, J. R., Nelson, J. K., & Silverman, S. J. (2015). *Research methods in physical activity*. Human Kinetics.
- Tomlinson, M. (2017). Forms of graduate capital and their relationship to graduate employability. *Education and Training*, 59(4), 338-352. <https://doi.org/10.1108/ET-05-2016-0090>
- Tomlinson, M. (2008). The degree is not enough': students' perceptions of the role of higher education credentials for graduate work and employability. *British Journal of Sociology of Education*, 29(1), 49-61. <https://doi.org/10.1080/01425690701737457>

- Tran, J. (2012). Vietnamese higher education and the issue of enhancing graduate employability. *Journal of Teaching and Learning for Graduate Employability*, 3(1), 2-16. <https://doi.org/10.21153/jtlge2012vol3no1art554>
- Tran, T. (2016). Enhancing graduate employability and the need for university enterprise collaboration. *Journal of Teaching and Learning for Graduate Employability*, 7(1), 58-71. <https://doi.org/10.21153/jtlge2016vol7no1art598>
- United Nations (UN). (2001). *Recommendations of the high-level panel of the youth employment*. United Nations.
- US Bureau of Labor Statistics (BLS). (2020, May 8). *Frequently asked questions: The impact of the coronavirus (covid-19) pandemic on the employment situation for April 2020*. <https://www.bls.gov/cps/employment-situation-covid19-faq-april-2020.pdf>
- Usinger, J. (2005). Parent/guardian visualization of career and academic future of seventh graders enrolled in low-achieving schools. *The Career Development Quarterly*, 53(3), 234-245. <https://psycnet.apa.org/doi/10.1002/j.2161-0045.2005.tb00993.x>
- Uy, M. A., Chan, K.-Y., Sam, Y. L., Ho, M.-h. R., & Chernyshenko, O. S. (2015). Proactivity, adaptability and boundaryless career attitudes: The mediating role of entrepreneurial alertness. *Journal of Vocational Behaviour*, 86, 115-123. <https://doi.org/10.1016/j.jvb.2014.11.005>
- Van Aardt, I. (2012). A review of youth unemployment in South Africa. *South African Journal of Labour Relations*, 36(1), 54-68. <https://hdl.handle.net/10520/EJC120858>
- Van Broekhuizen, H. (2016, August). *Graduate unemployment and Higher Education Institutions in South Africa. Working Papers*. Stellenbosch University, Department of Economics.
- Van Dam, K. (2004). Antecedents and consequences of employability orientation. *European Journal of Work and Organizational Psychology*, 131, 29-51. <https://doi.org/10.1080/13594320344000237>

- Van der Berg, S. (2011). Current poverty and income distribution in the context of South African history. *Economic History of Developing Regions*, 26(1), 120-140.
<https://doi.org/10.1080/20780389.2011.583018>
- Van der Berg, S., & Van Broekhuizen, H. (2012). *Graduate unemployment in South Africa: A much exaggerated problem*. Centre for Development and Enterprise, Stellenbosch University.
- Van der Heijde, C. M., & Van der Heijden, B. (2006). A competence-based and multi-dimensional operationalization and measurement of employability. *Human Resource Management*, 45(3), 449-476. <https://doi:10.1002/hrm.20119>
- Van Esbroeck, R., & Athanasou, J. A. (2008). Introduction. In J. A. Athanasou & R. Van Esbroeck (Eds), *International handbook of career guidance* (pp. 1-22). Springer Science + Business Media B.V.
- Van Vianen, A. E. M. (2018). Person-environment fit: a review of its basic tenets. *Annual Review of Organizational Psychology and Organizational Behaviour*, 5, 75-101.
<https://doi.org/10.1146/annurev-orgpsych-032117-104702>.
- Van Yperen, N., Blaga, M., & Postmes, T. (2014). A meta-analysis of self-reported achievement goals and non-self-report performance across three achievement domains (work, sports, and education). *PLoS ONE*, 9, 1–6. <https://doi.org/10.1371/journal.pone.0093594>.
- Vanclay, F., James, T., Baines, C., & Taylor, N. (2013). Principles for ethical research involving humans: ethical professional practice in impact assessment Part I. *Impact Assessment and Project Appraisal*, 31(4), 243-253.
<https://hdl.handle.net/10520/EJC120858>
- Vanhercke, D., De Cuyper, N., Peeters, E., & De Witte, H. (2014). *Defining perceived employability: a psychological approach*. *Personnel Review*, 43(4), 592-605.
<https://doi.org/10.1108/PR-07-2012-0110>

- Vital, L. M. (2021). Higher education and career development experiences of emerging adults: A focus on university students and graduates in Haiti. *African Journal of Career Development*, 3(1), a30. <https://doi.org/10.4102/ajcd.v3i1.30>
- Walker, M. (2015). *Student perceptions of employability and inclusive development*. The British Council. <http://hdl.voced.edu.au/10707/464222>
- Walker, M., & Fongwa, S. (Eds). (2017). Human development, capabilities, and graduate employability. In *Universities, Employability and Human Development* (pp. 215-227). Palgrave Macmillan.
- Welsh, M., & Schmitt-Wilson, S. (2013). Executive function, identity, and career decision-making in college students. *SAGE Open*, 3(4), 2158244013505755. <https://doi.org/10.1177/2158244013505755>.
- Wangenge-Ouma, G., and Kupe, T. (2020). Uncertain Times: Re-Imagining Universities For New, Sustainable Futures. Available at: <https://www.usaf.ac.za/wp-content/uploads/2020/09/Uncertain-Times-Paper.pdf>.
- Watts, A. G. (2006, July). *Career development learning and employability*. Higher Education Academy. <https://www.researchgate.net/publication/241130724>
- Watts, A. G., & Sultana, R. G. (2004). Career guidance policies in 37 countries: Contrasts and common themes. *International Journal for Educational and Vocational Guidance*, 4(2-3), 105-122. <https://doi.org/10.1007/s10775-005-1025-y>
- Weinstein, N., Przybylski, A. K., & Ryan, R. M. (2012). The index of autonomous functioning: Development of a scale of human autonomy. *Journal of Research in Personality*, 46(4), 397-413. <https://doi/dx.doi.org/10.1016/j.jrp.2012.03.007>
- Weligamage, S., & Siengthai, S. (2003, November). *Employer needs and graduate skills: the gap between employer expectations and job expectations of Sri Lankan university graduates* (Paper presentation). 9th International conference on Sri Lanka Studies. Matara, Sri Lanka.

- Wellman, N. (2010). The employability attributes required of new marketing graduates. *Marketing Intelligence & Planning*, 28(7), 908-930. <https://doi:10.1108/02634501011086490>
- Wilkinson, A., Pettiford, A., Rosenberg, M., Halpern, C. T., Thirumurthy, H., Collinson, M. A., & Kahn, K. (2017). The employment environment for youth in rural South Africa: A mixed-methods study. *Development Southern Africa*, 34(1), 17-32. <https://doi.org/10.1080/0376835X.2016.1259986>
- Wils, L., Wils, T., & Tremblay, M. (2010). Toward a career anchor structure: an empirical investigation of engineers. *Relations Industrielles/Industrial Relations*, 65(2), 236-256. <https://doi.org/10.2307/23078339>.
- Wille, B., De Fruyt, F., & Feys, M. (2013). Big five traits and intrinsic success in the new career era: A 15-Year longitudinal study on employability and Work–Family conflict. *Applied Psychology*, 62(1), 124-156. <https://doi.org/10.1111/j.1464-0597.2012.00516>
- Williams, R. B. G. (Ed.) (1984). Linear regression. In *Introduction to Statistics for Geographers and Earth Scientists* (pp. 279-301). Palgrave. <https://doi.org/10.1007/978-1-349-06815-9>
- Xenos, M., Christodouloupoulou, C., Mallas, A., & Garofalakis, J. (2019). The future time traveller project: Career guidance on future skills, jobs and career prospects of Generation Z through a game-based virtual world environment. arXiv preprint arXiv:1911.08480
- Yawson, R. (2020). Strategic flexibility analysis of HRD research and practice post COVID-19 pandemic. *Human Resource Development International*, 23(4), 406-417. <https://doi.org/10.1080/13678868.2020.1779169>
- Yawson, R., & Greiman, B. C. (2016). A systems approach to identify skill needs for Agrifood Nanotechnology: A multiphase mixed methods study. *Human Resource Development Quarterly*, 27(4), 517-545. <https://doi.org/10.1002/HRDQ.21266>
- Yorke, M. (2001). Formative assessment and its relevance to retention. *Higher Education Research & Development*, 20(2), 115-126. <https://doi.org/10.1080/758483462>

- Yorke, M., & Knight, P. T. (2006). Curricula for economic and social gain. *Higher Education*, 51(4), 565-588. <https://doi.org/10.1007/s10734-004-1704-5>.
- Zhao, Y.; He, F.; Feng, Y. Research on the Industrial Structure Upgrading Effect of the Employment Mobility of Graduates from China's "Double First-Class" Colleges and Universities. *Sustainability* 2022, 14, 2353. <https://doi.org/10.3390/su14042353>.
- Xizhen & Coffman, Donna & Piper, Megan & Li, Runze. (2022). Estimation and inference for the mediation effect in a time-varying mediation model. *BMC Medical Research Methodology*. [22. 10.1186/s12874-022-01585-x](https://doi.org/10.1186/s12874-022-01585-x). doi: [10.1186/s12874-022-01585-x](https://doi.org/10.1186/s12874-022-01585-x).
- Zhang, J., Yuen, M., & Chen, G. (2021). Career-related parental support, vocational identity, and career adaptability: Interrelationships and gender Differences. *The Career Development Quarterly*, 69(2), 130-144. DOI: [10.1002/cdq.12254](https://doi.org/10.1002/cdq.12254)
- Zougari, A. (2000). Le projet de la Charte nationale d'éducation et de formation. In *Rapport du Social 2000 – Bulletin Economique et Social du Maroc*. OKAD.
- Zunker, V. G. (1990). *Career counseling: Applied concepts of life planning* (3rd ed.). Brooks/Cole-Thompson Learning.

APPENDIX A: UNISA ETHICAL CLEARANCE CERTIFICATE



UNISA IOP ETHICS REVIEW COMMITTEE

18 May 2021

Dear Ms. Margaret Mosima Ngope

Decision: Provisional Ethics Approval from 18 May 2021 to 18 July 2021

NHREC Registration # : (if applicable)
ERC Reference : **2021/CEMS/IOP/012**
Name : Ms. Margaret Mosima Ngope
Student #: 32834829
Staff #: NA

Researcher(s): Name: Ms. Margaret Mosima Ngope
Address: 11 Bottelklapper Street, Amandasig. 0182
E-mail address, telephone: 32834829@mylife.unisa.ac.za, 0788538002

Supervisor (s): Name: Prof M Coetzee
Address: Unisa, Muckleneuk Campus, Preller Street, Pretoria, 0003
E-mail address, telephone: Coetzm1@unisa.ac.za, 0124298204

Constructing a career guidance framework to enhance employability of graduates at a university of technology.

Qualification: Doctorate (PHD) – Postgraduate degree

Thank you for the application **for an amendment to your research ethics clearance** to the Unisa IOP Ethics Review Committee for the above-mentioned research. The amendment to your original ethics approval is granted for a period of **60 Days (until 18 July 2021)**.

*The **low risk application** was **reviewed** by the IOP Research Ethics Review Committee on 28th April 2021 in compliance with the Unisa Policy on Research Ethics and the Standard Operating Procedure on Research Ethics Risk Assessment. The **provisional approval decision** was approved on 6th May 2021. This provisional approval is valid for a period of **60 Days**. You must now obtain ethical clearance from the Tshwane University of Technology, Gauteng Province, in the form of the standard Gatekeeper Permission Letter and submit this together with your Research Ethics Application to the IOP ERC within **60 Days**. Thereafter the IOP ERC will issue a formal ethical clearance certificate.*

The proposed research may only commence once **full ethics approval** has been obtained with the following in mind:

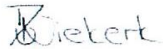


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- 1. The researcher will ensure that the research project adheres to the relevant guidelines set out in the Unisa COVID-19 Position Statement on research ethics dated 26 June 2020 which is attached.**

*The reference number **2021/CEMS/IOP/012** should be clearly indicated on all forms of communication with the intended research participants, as well as with the Committee.*

Yours sincerely,



Signature

Chair of IOP ERC

Dr A Van Niekerk

E-mail : vnieka2@unisa.ac.za

Tel: (012) 429-8231



Signature

Acting Executive Dean : CEMS

Prof RT Mpofu

E-mail: Mpofurt@unisa.ac.za

Tel : (012) 429-4808

APPENDIX B: TUT ETHICAL CLEARANCE CERTIFICATE



Research Ethics Committee

The TUT Research Ethics Committee is a registered Institutional Review Board (IRB 00005968) with the US Office for Human Research Protections (IORG# 0004997) (Expires 14 Jan 2023). Also, it has Federal Wide Assurance for the Protection of Human Subjects for International Institutions (FWA 00011501). In South Africa it is registered with the National Health Research Ethics Council (REC- 160509-21).

September 20, 2021

Ms MM Ngope
C/o Prof M Coetzee
Department of Industrial and Organisational
Psychology University of South Africa

REC Ref #: REC/2021/06/014

Name: Ngope MM Staff
#: 32834829, Unisa

Name: Ngope MM

Project title: *Constructing a career guidance framework to enhance employability of graduates at a university of technology.*

Qualification: Doctor of Philosophy in Psychology

Supervisor: Prof M Coetzee

Thank you for submitting the revised project documents for review by the Research Ethics Committee (REC), Tshwane University of Technology (TUT). In reviewing the documents, the comments and notes below are tabled for your consideration, attention and/or notification:

- **Participant Information Sheet**

- **“Why am I being invited to participate?”** The revised participant information sheet is in order and duly.

The chairperson of the Research Ethics Committee, Tshwane University of Technology, reviewed the revised project documents on September 17, 2021. Gatekeeper Permission is granted to the project.

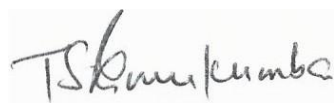
The proposed research project may now continue with the proviso that:

- 1) The researcher/s will conduct the study according to the procedures and methods indicated in the approved proposal, particularly in terms of any undertakings and/or assurances made regarding the confidentiality of the collected data.
- 2) The proposal will be submitted to the Committee for prospective ethical clearance if there are any substantial deviations and/or changes from the approved proposal.
- 3) The researcher/s will act within the parameters of any applicable national legislation, professional codes of conduct, institutional guidelines and scientific standards relevant to the specific field of study. Strict adherence to the following South African legislation, where applicable, is especially important: Protection of Personal Information Act (Act 4 of 2013), Children's Act (Act 38 of 2005) and the National Health Act (Act 61 of 2003).
- 4) The researcher will inform the REC as soon as possible of any adverse events involving research participants that may have occurred during the course of the study. It includes the actions and/or processes that were implemented to mitigate and/or prevent any further injuries and/or adverse outcomes.
- 5) The researcher will inform the REC of any new or unexpected ethical issues that may have emerged during the course of the study, as well as how these ethical issues were addressed. The researcher must consult with the REC for advice and/or guidance in any such event.
- 6) The current ethics approval expiry date for this project is September 16, 2023. No research activities may continue after the ethics approval expiry date. An application for the extension of ethics approval must be submitted for projects that need to continue beyond the expiry date.

Note:

The reference number [top right corner of this communiqué] should be clearly indicated on all forms of communication [e.g. Webmail, E-mail messages, letters] with the intended research participants.

Yours sincerely,



Prof TS Ramukumba

Chairperson: Research Ethics Committee [TUTRef#2021=06=014=Ngopemm]

[TUTRef#2021=06=014=Ngopemm]

APPENDIX C: TABLE 6.6

Table 6.6

Discriminant Validity of the Overall Measurement Model: Paired Factor Covariances

	Estimate	Std error	z-value	p	95% Confidence interval Lower	95% Confidence interval Upper
Technological adaptivity-digital nature of the world of work	.76	.09	7.70	<.001	.56	.95
Technological adaptivity – job/occupation awareness	.52	.08	6.71	<.001	.37	.57
Technological adaptivity – Upskilling	.54	.07	7.44	<.001	.40	.67
Technological adaptivity – JobOccCertitude	.54	.08	6.90	<.001	.39	.70
Technological adaptivity – JobOccFitness	.40	.06	6.40	<.001	.28	.53
Technonological Adaptability - FactorA	.24	.05	4.95	<.001	.15	.34
Technonological Adaptability - FactorB	.13	.05	2.92	0.003	.04	.22
Technonological Adaptability - FactorC	.21	.05	4.04	<.001	.11	.31
Technonological Adaptability - FactorD	.22	.07	3.30	<.001	.09	.34
Technonological Adaptability - Concern_	.89	.03	3.42	<.001	.38	.14
Technonological Adaptability - Control_	.14	.04	3.48	<.001	.59	.21
Technonological Adaptability - Curiosity	.13	.04	3.25	0.001	.50	.20
Technonological Adaptability - Confidence	.12	.04	2.87	0.004	.39	.21
Technonological Adaptability - Graduateness	.15	.04	3.64	<.001	.71	.24
Technonological Adapdability - Business	.16	.04	3.66	<.001	.74	.25

	Estimate	Std error	z-value	p	95% Confidence interval Lower	95% Confidence interval Upper
Technonological Adapdability - PersonalEmployabilityqualities	.18	.05	3.51	<.001	.79	.28
Technonological Adapdability - Leadership	.13	.04	3.13	0.002	.50	.22
AgileLearning - Career Navigation	.97	.12	9.51	<.001	.87	.32
AgileLearning - DidgitalWow	.76	.09	7.92	<.001	.57	.95
AgileLearning – Job Awareness	.58	.08	7.09	<.001	.42	.74
AgileLearning - UpSkilling	.67	.08	8.50	<.001	.52	.83
AgileLearning - JobOccCertidute	.70	.09	7.93	<.001	.52	.87
AgileLearning - JobOccFitness	.54	.07	7.51	<.001	.40	.68
AgileLearning - Specialised creativity and problem solving.	.22	.05	4.16	<.001	.12	.32
Agile Learning - General managerial autonomy	.06	.05	1.27	0.206	-.03	.16
Agile Learning-Security and stability	.15	.06	2.73	0.006	.04	.26
Agile Learning - Entrepreneurship	.22	.07	2.95	0.003	.07	.36
Agile Learning - Concern	.47	.03	1.65	0.099	-0.1	.10
Agile Learning - Control	.88	.04	2.07	0.039	.01	.17
Agile Learning - Curiosity_	.85	.04	1.97	0.048	.01	.17
Agile Learning - Confidence_	.80	.05	1.67	0.096	-0.014	.18
Agile Learning - Graduateness	.89	.05	1.96	0.050	-.01	.18
Agile Learning - Business	.13	.05	2.63	0.009	.03	.22
Agile Learning – Personal Employability qualities	.16	.06	2.73	0.006	.44	.27
Agile Learning - Leadership	.19	.05	2.45	0.014	.24	.21
Career Navigation - DidgitalWow	.94	.11	8.39	<.001	.72	.16
Career Navigation - Job Awareness	.78	.10	7.93	<.001	.58	.97
Career Navigation - UpSkilling	.75	.09	8.52	<.001	.58	.93

	Estimate	Std error	z-value	p	95% Confidence interval Lower	95% Confidence interval Upper
Career Navigation - JobOccFitness	.61	.08	7.52	<.001	.45	.76
Career Navigation - Specialised creativity and problem solving	.39	.07	5.89	<.001	.25	.52
Career Navigation General managerial autonomy	.24	.06	3.78	<.001	.11	.36
Career Navigation - Security and stability	.33	.07	4.69	<.001	.19	.47
Career Navigation - Entrepreneurship	.33	.09	3.80	<.001	.16	.50
Career Navigation - Concern_	.15	.04	4.17	<.001	.77	.22
Career Navigation - Control	.24	.05	4.54	<.001	.14	.34
Career Navigation – Curiosity	.28	.06	5.16	<.001	.17	.39
Career Navigation - Graduateness	.32	.06	5.38	<.001	.20	.43
Career Navigation - Business	.29	.06	4.88	<.001	1.7	.40
Career Navigation – Personal Employability qualities	.42	.07	5.88	<.001	.28	.56
Career Navigation - Leadership	.32	.06	5.39	<.001	.20	.44
DidgitalWow – Job Awareness	.80	.10	8.21	<.001	.61	.10
DidgitalWow - UpSkilling	.77	.09	8.78	<.001	.60	.94
DidgitalWow - JobOccCertidute	.72	.09	7.73	<.001	.54	.91
DidgitalWow - JobOccFitness	.51	.07	6.88	<.001	.36	.65
DidgitalWow - Specialised creativity and problem solving	.40	.06	6.23	<.001	.27	.53
DidgitalWow - General managerial autonomy	.29	.06	4.55	<.001	.16	.41
DidgitalWow - Security and stability	.37	.07	5.27	<.001	.23	.50
DidgitalWow - Entrepreneurship	.36	.08	4.43	<.001	.20	.53
DidgitalWow - Concern	.11	.03	3.54	<.001	.05	.17

	Estimate	Std error	z-value	p	95% Confidence interval Lower	95% Confidence interval Upper
DidgitalWow - Control_	.18.	.05	3.86	<.001	.90	.28
DidgitalWow - Curiosity	.21	.05	4.26	<.001	.11	.31
DidgitalWow - Confidence_	.17	.05	3.21	0.001	.07	.27
DidgitalWow - Graduateness	.23	.05	4.39	<.001	.13	.33
DidgitalWow - Business	.24	.05	4.40	<.001	.13	.34
DidgitalWow – Personal Employabilityqualities	.32	.07	4.94	<.001	.19	.45
DidgitalWow - Leadership	.30	.06	5.32	<.001	.19	.40
Job Awareness - UpSkilling	.63	.08	8.18	<.001	.48	.77
Job Awareness - JobOccCertidute	.85	.10	8.86	<.001	.66	.04
JobAwareness - JobOccFitness	.61	.08	8.14	<.001	.46	.76
Job Awareness - Specialised creativity and problem solving	.38	.06	6.30	<.001	.26	.50
Job Awareness - General managerial autonomy	.34	.06	5.26	<.001	.21	.47
Job Awareness - Security and stability	.38	.07	5.59	<.001	.25	.51
Job Awareness - Entrepreneurship	.40	.08	5.06	<.001	.25	.60
Job Awareness - Concern_	.15	.03	4.80	<.001	.09	.22
Job Awareness - Control_	.21	.05	4.48	<.001	.12	.30
Job Awareness - Curiosity	.27	.05	5.50	<.001	.18	.37
Job Awareness - Confidence	.23	.05	4.41	<.001	.13	.33
Job Awareness - Graduateness	.24	.05	4.76	<.001	.14	.34
Job Awareness - Business	.28	.05	5.24	<.001	.17	.38
Job Awareness – Personal Employability qualities	.35	.05	5.65	<.001	.23	.47
Job Awareness - Leadership	.30	.06	5.61	<.001	.19	.40
UpSkilling - JobOccCertidute	.69	.08	8.60	<.001	.53	.84
UpSkilling - JobOccFitness	.53	.06	8.18	<.001	.40	.66
UpSkilling - Specialised creativity and problem solving	.33	.05	6.32	<.001	.23	.43

	Estimate	Std error	z-value	p	95% Confidence interval Lower	95% Confidence interval Upper
UpSkilling- General managerial autonomy	.14	.05	2.97	<.001	.05	.22
UpSkilling - Security and stability	.31	.06	5.37	<.001	.02	.42
UpSkilling - Entrepreneurship	.26	.07	3.87	<.001	.13	.39
UpSkilling - Concern	.99	.03	3.77	<.001	.48	.15
UpSkilling - Control	.16	.04	3.20	<.001	.08	.24
UpSkilling - Curiosity	.17	.04	4.22	<.001	.91	.25
UpSkilling - Confidence	.15	.04	3.41	<.001	.06	.23
UpSkilling - Graduateness	.17	.04	3.92	<.001	.83	.25
UpSkilling - Business	.15	.04	3.54	<.001	.69	.24
Upskilling-Personal Employability qualities	.26	.05	4.89	<.001	.16	.36
UpSkilling - Leadership	.22	.05	4.89	<.001	.13	.31
UpSkilling -JobOccFitness	.77	.09	9.12	<.001	.61	.94
JobOccCertidute - Specialised creativity and problem solving	.30	.06	5.44	<.001	.19	.41
JobOccCertidute - General managerial autonomy	.23	.06	4.17	<.001	.12	.34
JobOccCertidute - Security and stability	.33	.06	5.16	<.001	.20	.45
JobOccCertidute - Entrepreneurship	.32	.08	4.19	<.001	.17	.46
JobOccCertidute - Concern_	.18	.03	5.36	<.001	.11	.24
JobOccCertidute - Control	.22	.05	4.68	<.001	.13	.31
JobOccCertidute - Curiosity	.51	.05	5.24	<.001	.16	.35
JobOccCertidute - Confidence	.24	.05	4.76	<.001	.14	.34
JobOccCertidute - Graduateness	.24	.05	4.88	<.001	.15	.34
JobOccCertidute - Business	.25	.05	4.89	<.001	.15	.35
JobOccCertidute – Personal Employability qualities	.29	.06	4.86	<.001	.17	.41

	Estimate	Std error	z-value	p	95% Confidence interval Lower	95% Confidence interval Upper
JobOccCertidute- Leadership	.26	.05	5.18	<.001	.16	.36
JobOccFitness - Specialised creativity and problem solving	.28	.05	5.43	<.001	.16	.35
JobOccFitness - General managerial autonomy	.16	.05	3.56	<.001	.07	.25
JobOccFitness- Security and stability	.26	.05	5.00	<.001	.16	.37
JobOccFitness - Entrepreneurship	.27	.07	4.19	<.001	.14	.397
JobOccFitness - Concern	.11	.03	4.24	<.001	.06	.16
JobOccFitness - Control	.16	.04	4.24	<.001	.09	.24
JobOccFitness - Curiosity_	.17	.04	5.00	<.001	.09	.25
JobOccFitness - Confidence_	.19	.04	4.35	<.001	.10	.27
JobOccFitness - Graduateness	.16	.04	3.84	<.001	.08	.24
JobOccFitness - Business	.11	.04	2.72	0.007	.03	.19
JobOccFitness - Business	.11	.04	2.72	0.007	.03	.19
JobOccFitness – Personal Employability qualities	.21	.05	4.27	<.001	.12	.31
JobOccFitness - Leadership	.18	.04	4.33	<.001	.10	.27
Specialised creativity and problem solving	.23	.05	4.88	<.001	.14	.32
- General managerial autonomy						
Specialised creativity and problem solving	.42	.07	6.52	<.001	.29	.55
- Security and stability						
Specialised creativity and problem solving	.47	.07	7.00	<.001	.33	.61
- Entrepreneurship						
Specialised creativity and problem solving	.15	.03	5.72	<.001	.10	.020
- Concern_						

	Estimate	Std error	z-value	p	95% Confidence interval Lower	95% Confidence interval Upper
Specialised creativity and problem solving - Control_	.22	.04	5.74	<.001	.15	.30
Specialised creativity and problem solving - Curiosity_	.24	.04	6.03	<.001	.16	.32
Specialised creativity and problem solving - Confidence_	.24	.04	5.81	<.001	.16	.32
Specialised creativity and problem solving - Graduateness_	.25	.04	6.02	<.001	.17	.33
Specialised creativity and problem solving - Business	.23	.04	5.69	<.001	.15	.31
Specialised creativity and problem solving - Personal Employability qualities	.36	.05	6.85	<.001	.25	.46
Specialised creativity and problem solving - Leadership	.31	.05	6.95	<.001	.22	.40
General managerial autonomy - Security and stability	.27	.06	4.91	<.001	.16	.38
General managerial autonomy - Entrepreneurship	.43	.08	5.60	<.001	.28	.58
General managerial autonomy - Concern_	.09	.02	3.71	<.001	.04	.13
General managerial autonomy - Control_	.12	.03	3.52	<.001	.05	.19
General managerial autonomy - Curiosity_	.15	.04	4.09	<.001	.08	.22
General managerial autonomy - Confidence_	.07	.04	2.34	0.042	.00	.14

	Estimate	Std error	z-value	p	95% Confidence interval Lower	95% Confidence interval Upper
General managerial autonomy - Graduateness_	.15	.04	3.95	<.001	.08	.22
General managerial autonomy - Business	.22	.04	4.96	<.001	.13	.30
General managerial autonomy – Personal Employability qualities	.15	.04	3.47	<.001	.07	.24
General managerial autonomy - Leadership	.14	.04	3.69	<.001	.07	.21
Security and stability - Entrepreneurship	.43	.08	5.69	<.001	.28	.58
Security and stability - Concern_	.13	.03	4.66	<.001	.07	.18
Security and stability - Control_	.20	.04	4.88	<.001	.12	.28
Security and stability - Curiosity_	.23	.04	5.30	<.001	.15	.32
Security and stability- Confidence_	.20	.04	4.65	<.001	.18	.29
Security and stability - Graduateness_	.25	.05	5.33	<.001	.16	.34
Security and stability - Business	.20	.04	4.67	<.001	.19	.29
Security and stability – Personal Employability qualities	.29	.05	5.36	<.001	.18	.40
Security and stability - Leadership	.26	.05	5.50	<.001	.17	.35
Entrepreneurship - Concern_	.14	.03	4.17	<.001	.07	.20
Entrepreneurship - Control_	.22	.05	4.43	<.001	.12	.32
Entrepreneurship - Curiosity_	.28	.05	5.29	<.001	.18	.39

	Estimate	Std error	z-value	p	95% Confidence interval Lower	95% Confidence interval Upper
Entrepreneurship	.16	.05	3.11	0.002	.06	.27
- Confidence_						
Entrepreneurship	.23	.05	4.32	<.001	.12	.33
- Graduateness_						
FactorD - Business	.38	.06	6.21	<.001	.26	5.00
Entrepreneurship	.24	.63	3.86	<.001	.12	.37
- Personal Employability qualities						
Entrepreneurship	.23	.05	4.24	<.001	.12	.33
- Leadership						
Concern_ - Control_	.22	.03	6.94	<.001	.15	.28
Concern_ - Curiosity_	.22	.03	7.19	<.001	.16	.28
Concern_ - Confidence_	.24	.03	7.56	<.001	.18	.31
Concern_ - Graduateness_	.20	.03	6.79	<.001	.14	.26
Concern_ - Business	.17	.03	6.44	<.001	.12	.22
Concern_ - Personal	.23	.03	6.97	<.001	.16	.29
Employability qualities						
Concern_ - Leadership	.18	.03	6.69	<.001	.13	.23
Control_ - Curiosity_	.33	.05	7.23	<.001	.24	.41
Control_ - Confidence_	.36	.05	7.64	<.001	.27	.45
Control_ - Graduateness_	.30	.04	6.91	<.001	.22	.39
Control_ - Business	.24	.04	6.27	<.001	.16	.31
Control_ -	.34	.05	7.06	<.001	.25	.43
PersonalEmployabilityqualities						
Control_ - Leadership	.30	.04	7.18	<.001	.22	.38
Curiosity_ - Confidence_	.42	.05	8.33	<.001	.32	.52
Curiosity_ - Graduateness_	.36	.05	7.52	<.001	.26	.45
Curiosity_ - Business	.31	.04	7.37	<.001	.23	.40
Curiosity_ - Personal	.43	.05	8.06	<.001	.32	.53
Employability qualities						
Curiosity_ - Leadership	.35	.04	7.88	<.001	.26	.44
Confidence_ - Graduateness_	.41	.05	8.14	<.001	.31	.51

	Estimate	Std error	z-value	p	95% Confidence interval Lower	95% Confidence interval Upper
Confidence_ - Business	.31	.04	7.35	<.001	.23	.40
Confidence_ - Personal Employability qualities	.50	.06	8.86	<.001	.39	.61
Confidence_ - Leadership	.38	.05	8.35	<.001	.29	.47
Graduateness_ - Business	.41	.05	8.10	<.001	.31	.51
Graduateness_ - Personal Employability qualities	.53	.06	8.59	<.001	.41	.65
Graduateness_ - Leadership	.42	.05	8.29	<.001	.32	.52
Business – Personal Employability qualities	.48	.06	8.71	<.001	.37	.59
Business - Leadership	.38	.05	8.36	<.001	.29	.47
Personal Employability qualities - Leadership	.58	.06	9.71	<.001	.46	.70

Note: N = 369

