APPLYING THE SOCIAL COGNITIVE CAREER THEORY TO THE INFLUENCE OF SOCIOCULTURAL FACTORS ON WOMEN'S CAREER CHOICES IN CONSTRUCTION

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A thesis submitted to the College of Agriculture, Engineering and Science, the School of Engineering, Construction Studies program, University of KwaZulu-Natal, South Africa, in fulfilment of the degree of

DOCTOR OF PHILOSOPHY IN CONSTRUCTION MANAGEMENT

By

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Supervised By

Professor Theodore C. Haupt

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DECLARATION OF ORIGINALITY

As the candidate's supervisor, I agree to the submission of this thesis

Signed:

Supervisor: Prof Theo C. Haupt   Date: 14th December 2020

I, Mariam Temisola Akinlolu, hereby state that this thesis represents the original work of myself the author and is submitted for the degree of Doctor of Philosophy in Construction Management at the University of KwaZulu-Natal, Durban. Where the works of other authors have been used, they have been duly acknowledged and referenced. This research has not been submitted before for any degree or examination to any other university.

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DECLARATION 2 - PUBLICATIONS

Details of contribution to publications that form part and/or include research presented in this thesis (include publications in preparation, submitted, *in press* and published and give details of the contributions of each author to the experimental work and writing of each publication)

Publication 1
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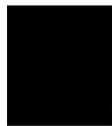
Temisola Akinlolu

DEDICATION

To my Parents, Safiat and Olufemi, for giving all of themselves so that I could thrive.

ACKNOWLEDGEMENTS

ABSTRACT

Despite its significant contribution regarding employment in South Africa, women remain severely underrepresented in the construction industry. Men have become the primary beneficiaries of these job opportunities and the determinants of the construction industry's culture. The construction industry continues to be a highly male-dominated sector, with a significant overrepresentation of men. Consequently, women have been perceived to be inferior to men and therefore, occupy minor employment positions in the industry. Limited research has been undertaken regarding the meaning men, and women make of various career choice behaviours and activities. Consequently, very little is known about why women make certain career choices.

This study examines the influence of sociocultural factors on women's underrepresentation in construction and then develops a model to improve women's career choices in the construction industry. The Socio-Cognitive Career Theory was applied to determine the factors that predict career choices in construction, in the South African context. The study further explores the possible differential validity of SCCT variables and person and contextual factors such as self-efficacy, outcome expectations, goalrepresentations, social supports, interests, learning experiences, perceived barriers, gender stereotypes and access to opportunity structures for men and women, as well as among women from different socio- economic backgrounds. Therefore, a mixed-method approach, consisting of a Delphi and survey method, was adopted to model career choice in construction within the South African context.

Results of this study were consistent with some of the propositions of the SCCT (1994), except the direct influence of learning experiences on career choices, which was not supported for the sample in this study. The findings revealed that career choice in the construction profession is a nine-factor model. The final model revealed that self-efficacy, outcome expectations, goal representations, social supports, interests, perceived discriminatory barriers, perceived barriers to career success and progression, gender stereotypes and access to opportunity structures are significant with career choice. Learning experiences was found to be insignificant. Therefore, the identified constructs have a significant direct influence on career choice and are predictors and determinants of career choice in the South African construction industry. Also, the goodness of fit and statistical significance of the parameter estimates met the cut-off criteria for the hypothesized model.

A practical implication of the research is that results from the study suggest clear pathways to making a career choice in construction, for women who want to enter and remain in the construction work. This study

is unique, as samples from diverse groups are usually not included in career choice and development research. Therefore, the study recommends that further cross-cultural studies should be conducted in this area of research.

Keywords: Construction industry, Career choice, Gender differences, SCCT, SES, Women

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CHAPTER ONE

INTRODUCTION TO THE RESEARCH

1.1 Introduction

This chapter provides background information on women's status and participation in the construction industry with an emphasis on South Africa, as contextualized in literature. This chapter also highlights the research problem and research questions for the study.

1.2 Rationale for the Research (Nature and Scope)

The South African construction industry has been identified as one of the significant contributors to the economy of the country in terms of production of infrastructure and fixed capital assets (English and Hay, 2015). According to Statistics South Africa (2011), the construction industry contributed 1.2% to the country's 3.2% GDP increase in the first quarter of 2011 and contributed of 8.4% to the country's GDP in the last quarter of the same year. The construction industry plays a unique role in the country's labour market through the provision of employment. After hosting the World Cup in 2010, South Africa's construction industry has employed 430,000 people in the third quarter of 2009, making it South Africa's most sought-after sector, providing a cutting edge of sustainable growth, development, and innovation in the economy (Du Plessis and Venter, 2010; Sangweni, 2015).

Regardless of the industry's significant contribution to employment in South Africa, women are still underrepresented, making men the significant beneficiaries of these employment opportunities (Chileshe and Haupt, 2010; Sangweni, 2015). Of the total employed South African population in 2017, 44% were women, and only 13% of these women were employed in the construction industry (Meyer, 2017). No changes have occurred over the years, as it has been 44% since September 2002. Furthermore, sectors of the economy, such as mining and transportation, had low concentrations of female employees (Ibid). Out of the total female workforce, which is estimated at ten million and two hundred thousand, the construction industry has only one hundred and seventy-four thousand (Ibid). This indicates that South Africa has a high proportion of the female workforce in the services industry.

Despite international efforts to provide women with opportunities in non-traditional roles, the feminine footprint, especially in the areas of employment and promotion of women, are still lacking in some sectors of the economy such as construction (Ozumba and Ozumba, 2012). Numerous studies have provided evidence to the essence of sociocultural gender-linked factors by explaining that the field of construction is viewed orthodoxly as a profession with male-gendered social constructs with a focus on technical skills

whereas women associate better with the social areas of construction (Male et al., 2017). Gender stereotyping poses a significant challenge in the construction industry, and that men predetermine the culture of the industry. The construction industry has been defined with male-gendered social constructs focusing on technical skills, while women undertake traditional and administrative roles, which makes it hard for women to thrive in the sector (Ahuja and Kumari, 2012). Historically, the construction industry is a male-dominated sector with a significant overrepresentation of men (Male et al., 2017). Women have been perceived to be inferior to men, and therefore occupy minor positions in employment (Chileshe and Haupt, 2010; English and Hay, 2015; Vainikolo, 2017). Many studies have suggested that the percentage of women employed in the construction sector would have been lower, if not for the inclusion of clerical, secretarial, administrative and safety-related positions which are predominantly occupied by women (Madikizela and Haupt, 2010; Jahn, 2010; Sangweni, 2015).

Gender divisions in the workplace are established by vertical segregation and gender stereotyping (Aulin and Jingmond, 2011; Sang and Powell, 2012). More specifically in the construction industry with a low number of women, there as an indication of gender segregation, shortage of skilled females in the workforce and conflict between the industry and women's household roles (Madikizela and Haupt, 2010).

Gender-related studies have revealed that women's career choices are affected by social and cultural role expectations (Powell et al., 2009). Due to cultural influences, many women are brought up with the understanding that they cannot undertake non-traditional careers such as construction and are advised to follow instead 'soft skills' occupations such as nursing (Sangweni, 2015). Their primary roles are to take care of the family and nurture their children, while their spouses are the breadwinners and are entitled to the workplace (Madikizela and Haupt, 2010; English and Le Jeune, 2012). Putting women's roles in such stereotypical boxes is one of the hindrances that shorten the working life of women and makes it impossible to maintain an upward trend in the number of women in construction (Moodley, 2012; Enshassi and Mohammaden, 2012; Koatsa and Nchake, 2017).

1.3 Background of the Problem

Despite several initiatives and legislations advocating for equality and diversity, the construction industry remains excessively gender stratified and conservative in the recruitment and retention of women (Aulin

and Jingmond, 2011; Sang and Powell, 2012). This has been particularly evident in the African construction industry, where patriarchy is an obstacle to women's growth and development (Koch et al., 2009a). Although, there has been an increase in representation in other sectors, women are seriously underrepresented in all construction professions (Haupt and Fester, 2012). The general imbalance between men and women in the construction industry has been demonstrated, and several critical issues in this regard have been identified. Firstly, the fact that women are underrepresented and marginalized in the construction industry; secondly, that the level of underrepresentation and nature of marginalization may vary in South Africa.

Much of the current literature describes a variety of formidable constraints facing women in the construction sector ranging from sexual harassment, the industry's low image, glass ceiling, sexist attitudes, discrimination, unfavourable policies, and regulations to lack of education and training programs suited to accommodate the roles of women as being mothers and career women (Haupt and Fester, 2012). The institutionalized discrimination, which is deeply rooted in the industry, makes construction less attractive to non-traditional entrants and prevents women from considering careers within the industry (Alves and English, 2018).

The 'image' of the industry, which makes men and women reluctant to enter the industry is a significant factor to consider in understanding the shortage of workers in the sector (English and Le Jeune, 2012; Watts, 2009; Wright, 2014). This problem is compounded by a lack of information and knowledge of the industry, availability of opportunities and qualifications (Ahuja and Kumari, 2012; Aulin and Jingmond, 2011; Lowe and Woodcroft, 2014).

Making a career choice in the construction industry has not been a prevalent decision by women in South Africa (Enshassi and Mohammaden, 2012; Ozumba and Ozumba, 2012). Haupt and Fester (2012) revealed in their study on women-owned construction enterprises that the decision of some women to pursue a career in construction was opportunistic and coincidental rather than an option. Lack of knowledge and understanding of the career opportunities available in the industry as well as the discriminatory environment are some of the main obstacles negatively influencing the career choices by women in construction (Madikizela, 2008; English and Hay, 2015). Findings from a study conducted by Chileshe and Haupt (2010) on the factors impacting career decisions in the South African construction industry revealed that out of 491 female high school students, 424 of them reported that they had not considered a career in construction or building. The study further revealed that parents, teachers, and students believed construction only involved jobs such as carpentry, bricklaying, and painting.

Clearly, the construction industry needs to improve and enhance its image to counter common stereotypes. Therefore, research concerning this issue should be continually conducted until improvements are made.

1.4 Problem Statement

Issues regarding gender equality and accommodation of peculiar gender needs are lacking in South Africa (Alves and English, 2018; Chileshe and Haupt, 2010; Vainikolo, 2017). A lack of understanding of girls and women's career choice and development is a significant obstacle to attracting women into the construction industry. Although, the industry has sought to find solutions to the problem of under-representation of women, progress seems to be very slow and erratic. Despite the existence of a significant range of studies on gender and women's career choice and development in construction (Ahuja and Kumari, 2012; English and Hay, 2015; Madikizela and Haupt, 2010; Powell et al., 2009), limited progress has been made to develop interventions and strategies that can be applied to the women and minorities in the construction industry (Brown, 2002; Moore, 2006).

Another issue is the lack of understanding of social and cultural factors that influence women's career choices in the construction industry. Influences from the society and culture combined with the negativity they experience have been discovered to contribute to the few numbers of women in the construction profession, therefore resulting in a low number of mentors to attract young women into the profession. Numerous studies have explored women in other non-traditional and male-dominated environments (Shapiro et al., 2009; Wells et al., 2010), but few have specifically focused on the construction industry in the South African context, where the experiences of women may differ because of a variety of sociocultural influences.

Recent studies have begun to dismiss the assumption that references made to women include all women, and that all women have similar experiences (Byrd, 2009; English, 2007; Flores et al., 2010). Although, in the South African context women may share a common gender, their cultural and socio-economic backgrounds vary (English, 2007; Louw-Harmse, 2015; Van Klaveren et al., 2009). The differences in their environments may influence the extent to which socio-cultural factors affect their career decisions more than others. Findings from previous studies suggest that demography and ethnic differences may have an impact on the career decisions of women and their perceptions of career-related barriers. While scholars have begun seeking the role culture and society plays on the career decisions of women and their development at the workplace, fewer studies have focused on inter-group differences (Holvino, 2010). Likewise, although numerous researchers have suggested a convergence of major career development theories (Eccles, 1984; Eccles et al., 1985; Hackett et al., 1991; Krumboltz et al., 1976; Lent et al., 1994) most recognize that this has still not been achieved. Although, there have been numerous studies on the experiences of women in the construction industry (Chileshe and Haupt, 2010; English and Hay,

2015; Enshassi and Mohammaden, 2012; Madikizela, 2008; Rosa et al., 2017; Vainikolo, 2017), few studies have attempted to view their experiences from a theoretical perspective to giver larger meaning to their career choices and development. The lack of empirical research in this area suggests that more in-depth exploration of this problem is required.

1.5 Aim

The study aims to develop an appropriate model to improve women's career choices in construction in South Africa.

1.6 Research Questions

In examining the above problem, the study responds to the following main question:
What is the appropriate model to improve women's career choices in construction?

Sub-Questions:

a) What are the key factors that influence the career choices of men and women in the construction industry?

b) Do gender differences exist in the factors that influence career choices in the construction industry?

c) Do differences exist among socio-economic categories in the factors that influence career choices in the construction industry?

d) Do differences exist among women from various socio-economic categories in the factors that influence career choices in the construction industry?

e) What model will improve women's career choices in construction in South Africa?

f) How does the hypothesized model fit into the sample data?

1.7 Research Objectives

The specific objectives of the research are the following;

a) To identify the key factors that influence the career choices of men and women in the construction industry.

b) To determine whether gender differences exist in the factors that influence career choices in the construction industry.

c) To determine whether differences exist among socio-economic categories in the factors that influence career choices in the construction industry.

d) To determine whether differences exist among women from different socio-economic categories

in the factors that influence career choices in the construction industry.

   e)   To develop a career choice model for women in the South African construction industry; and

   f) To determine the goodness of fit of the hypothesized career choice mode.

1.8 Theoretical Framework

The study explored the social and cultural perspectives of women in the construction industry from a feminist and postmodern feminist standpoint concerning women's career choices in construction. Theories of career development such as (Lent et al., 1994; Lent et al., 2002) social cognitive career theory also provided the theoretical framework for this study. Various factors of non-traditional career choice, career development, and persistence were also integrated into this framework.

1.9 Overview of the Research Methodology

1.8.1 Research Approach and Design

This study adopted the quantitative and qualitative research approaches, which is referred to as the mixed-method research design (Bryman, 2014; Creswell et al., 2011). The study utilized the Delphi technique and a survey because there is a need for a contextual understanding of the career choice predictors in the South African construction industry and to test hypothesized relationships among the constructs in the model.

1.8.1.1. Delphi Study

In the Delphi technique, information is gathered from a group of experts to provide their opinion based on knowledge and expertise (Giannarou and Zervas, 2014; Grisham, 2009a). Participation is anonymous, and responses are collected until the panel members reach a predetermined level of consensus on the subject. A questionnaire was developed to solicit ideas from the panel members in the construction industry, regarding career choices in the industry. Two iterations were conducted until consensus was attained. The opinions of the panel members helped to refine the questions in the final survey.

1.8.1.2 Survey

A survey was used in this study to garner respondents' perspectives of the factors that influence career choices in construction in South Africa and evaluate factors that will increase women's participation and representation in the construction industry.

1.8.2 Data Collection Method

To collect quantitative data, questionnaires with close-ended questions were utilized. For the Delphi study, a semi-structured questionnaire was used to collect qualitative data. The Delphi process involved two iterative stages, where experts were expected to complete a series of questionnaires and reach a consensus and give reasons for their different opinions.

1.8.3 Sampling Method

Because a Delphi study requires the expert opinion of qualified professionals, who have a deep understanding of the subject matter, the purposive sampling method was adopted. A convenience sampling method was used to identify participants for the survey. The non-probability sampling method was preferred to conveniently select two universities, which were closest to the research domicile.

1.10   Research Process Overview

The study consisted of six processes, namely, literature review, the Delphi study, conceptual model development, questionnaire development, questionnaire administration and data capturing and data analysis.

1.9.1 Literature Review

The research process started with an extensive review of literature to identify the predictors of career choice. The reviewed literature also identified general essential topics and areas related to career choices in construction in tandem with the objectives of the research.

1.9.2 Conceptual Model

The career choice predictors established from the review of literature and findings from the Delphi study were developed into a conceptual model theorising how the constructs are related in practice.

1.9.3 Questionnaire Design

The concepts in the theoretical model were operationalised and developed into a research instrument. Where available, existing instruments were adopted for the constructs under study. In instances where there were no suitable instruments, new instruments were developed.

1.9.4 Questionnaire Administration

The research instrument was distributed to a sample of undergraduate students enrolled in construction-related programmes at two universities in the KwaZulu-Natal province of South Africa.

1.9.5 Data Analysis

Data obtained from the Delphi study will be analysed using the Microsoft Excel spreadsheet software. The analysis produced a set of descriptive statistics in the form of means, median and standard deviation. Data obtained from the questionnaire survey were analysed using IBM SPSS v 27 and later exported and analysed with IBM SPSS AMOS v27. IBM SPSS v27 was used for exploratory factor analysis (EFA), and IBM SPSS AMOS v27 was used for structural equation modelling (SEM).

1.11 Research Limitations

Although an extensive review of existing literature on the topic was conducted, the scope of the study is limited to the perceptions of men and women enrolled in construction-related undergraduate programmes in two universities in the KwaZulu-Natal province of South Africa. It is possible that some participants were unable to remember the influences on their career choices accurately or were unconscious of the factors that determined the career choices.

The purpose of this research was to develop a model of career choice specific to the population of men and women who plan to undertake a profession in construction.
The study evaluated the influence of nine constructs (self-efficacy, outcome expectations, goal representations, learning experiences, interests, social supports, gender stereotypes, perceived barriers, and access to opportunity structures) on career choice.

1.12 Significance of the Study

Research on women in construction bears significance to the career planning, development, recruitment, and retention of more women in the construction profession. Issues regarding the challenges and successes women face within and outside the construction workforce play a massive role in their retention and job satisfaction.

Women in construction-related issues exist all over the world and have been analysed from various points of view (Charity-Leeke, 2012; Male et al., 2017; Sangweni, 2015). In South Africa, considerable research related to women in/and the construction industry has been conducted (Ahuja and Kumari, 2012; English and Hay, 2015; English and Le Jeune, 2012; Jahn, 2010; Madikizela and Haupt, 2010; Ozumba and Ozumba,

2012; Sangweni, 2015).

Most of the previous studies on women focused on factors affecting their career choices and their influences (Charity-Leeke, 2012; Madikizela, 2008; Male et al., 2017). Some of the research on women in construction has also concentrated on gender imbalance and underrepresentation (Ceci et al., 2009; Louw-Harmse, 2015). Other aspects such as discrimination against women, women's participation (Jahn, 2010; Gilbreath, 2015) and barriers they experience in the profession (English and Le Jeune, 2012; Du Plessis and Barkhuizen, 2012) have also been studied. However, very few studies have attempted to view women's experiences from a theoretical perspective to provide further meaning to women's career choices in construction.

The most significant contribution of this study to knowledge is the development of a career choice model for the construction industry. This model is an authentic neutral tool that legitimizes the career choices of women in construction. This model would provide a framework for men's and women's career choice-related patterns and a basis for developing more comprehensive intervention strategies to broaden the range of choices considered by both men and women and to promote the inclusivity of diverse groups in the South African construction industry.

The study contributes methodologically by adopting a mixed-method approach involving a Delphi method and SEM of variables studied through the survey, identifying the factors that are most likely predict career choice in the South African construction industry, which is a novel approach.

This study also seeks to provide insights on how to meet the individual needs of men and women from different socio-economic and cultural backgrounds who are considering taking up a career in construction in the 21st century. This study also intends to transform the construction climate to accommodate the interests and talents of women.

It is hoped that the recommendations of this research, will guide efforts to transform social perceptions of which gender is suited for the construction profession, by ensuring equality and inclusivity of both men and women.

1.13 Ethical Consideration

To conform to the accepted ethical research standards, the study ensured that appropriate ethical considerations were made in the conduct of this research. Therefore, all existing materials and studies previously published were referenced and acknowledged correctly. The participants were contacted, and consent was obtained through an informed consent form distributed to all participants with all the research information. Implications of their participation in the study were clearly stated. A copy of the consent form is annexed to the dissertation.

Further, gatekeeper's permission was obtained from the participating universities, before the survey of the students. Anonymity and confidentiality of the participants were ensured by not identifying the questionnaires with a particular participant and ensuring that the data collected was only for this research. Duty of care was ensured to store and preserve the research data in tandem with the university ethics committee requirements by storing the data in a secure location

1.14 Outline of the Study

The research is divided into eleven chapters, as follows:

1.13.1 Chapter One: Introduction

This chapter presents an overview of the study; it discusses an introduction to the study, the problem statement, research questions and objectives, methodology, research scope and limitations, and the contributions of the study to knowledge. The significance of the study is also illustrated to provide a conceptual framework of the study.

1.13.2 Chapter Two: History of Women's Education and Career Options in South Africa

This chapter gives a general introduction and discusses the literature on women's education and career options. This includes the history of Women's education in Science, Technology, Engineering and Maths.

1.13.3 Chapter Three: Women and the Construction Industry

Literature on the characteristics, status, and representation of women in construction was presented. Also, discussions on the image of the industry, barriers to and discriminatory attitudes were highlighted.

1.13.4 Chapter Four: Gender Roles and Sociocultural Influences Regarding Women's Career Decisions and Opportunities

This chapter highlights how gender influences within family and society, particularly influences of parents and educators affect women's career decisions in both conventional and non-conventional career areas.

1.13.5 Chapter Five: Theoretical Framework

This chapter presents the theoretical framework adopted for this study. The feminist theoretical perspective, feminist postmodern perspective and the social cognitive career theory were discussed.

1.13.6 Chapter Six: Research Methodology

This chapter discusses the methodology and the specific method used in the study. Firstly, it explains the various philosophical underpinnings of the research; philosophical assumptions; the rationale for the research's philosophical position and methodology. It also introduces plans for the research approach and design adopted data collection instruments and representative sampling methods. Finally, the chapter presents the methods adopted for data analysis.

1.13.7 Chapter Seven: Results from the Delphi Study

This chapter analyses the results and presents the findings of the Delphi study, which uses a panel of experts to evaluate the importance and impact of certain variables identified in the literature.

1.13.8 Chapter Eight: Conceptual Career Choice Model for Women in Construction

This chapter presents the conceptual model developed for a career choice in construction. In the end, nine hypotheses were developed to be tested using SEM and the data collected in the questionnaire survey.

1.13.9 Chapter Nine: Presentation of Results from the Questionnaire Survey

This chapter presents the results and analysis of the data obtained from the survey, using descriptive and inferential statistics. To establish the relationship between the constructs and test the proposed conceptual for fit, Structural Equation Modelling (SEM) was performed, and findings are presented. Results of the Exploratory Factor Analysis (EFA) conducted before SEM are also presented.

1.13.10 Chapter Ten: Discussion of Survey Results

This chapter identified the significant career choice predictors, arising from the SEM results. Results and interpretations of the goodness of fit of the postulated career choice model are presented.

1.13.11 Chapter Eleven: Conclusion and Recommendations

This is the final chapter of the research. It concludes the study and draws conclusions from the research findings. Finally, areas that require further studies are recommended. Contributions of the study to the body of knowledge are also outlined.

CHAPTER TWO

HISTORY OF WOMEN'S EDUCATION AND CAREER OPTIONS IN SOUTH AFRICA

2.1 Introduction

This chapter comprises discussions on literature focusing on a historical perspective of women's education in South Africa, followed by a transition into the historical background of women's employment and career options in South Africa.

2.2 Historical Background of Women's Education in South Africa

South Africa consistently remains one of the countries with the highest inequality rates in the world and is grappling with being categorized as a developed or developing country (McKeever, 2017). With a current Gini coefficient of 0.63, South Africa has the highest measurement of income inequality in the world, like salaries, wages and other social grants vary widely (SA, 2018). The aspect of education is no exception. While South Africa offers a high quality of education compared to other countries on the African continent and is favourably ranked internationally, there is an extremely uneven distribution within the country's dominant population, and progress continues to be impeded by the change-resistant effects of the apartheid education system which legitimizes discrimination and racial superiority of Whites of Blacks (Fiske and Ladd, 2004; Lu and Treiman, 2011). Despite the government's efforts to diversify this flourishing education system to the total population post-apartheid, educational disparities are still lingering (McKeever, 2017).

The education system in South Africa experienced a drastic change immediately after World War II with the imposition of the apartheid regime. During the apartheid era, the education system was characterized by segregation and centralization and was grossly inequitable regarding how people of different races and gender were treated (Fiske and Ladd, 2004; Rakometsi, 2008). An effect of segregation was the evident differentiation of the population concerning access to education (Spaull, 2013). This segregated educational system was also characterized by gross inequality in disbursements between Black and White education. Most of the country's resources and public funds were expended on "White" schools, subjecting "Black" schools to poor quality schooling. According to McKeever (2017), the separation of schools in terms of race was branded with unequal regulations, funding, and curriculum. Although government-funding levels were equalized across schools after 1994, there continued to be substantial racial differences in progress through school and ultimate educational attainment (Bhorat and Oosthuizen, 2006; Van der Berg, 2008).

Consequently, South Africa developed a high-quality education, which was only to the benefit of a dominant minority of the population (Lu and Treiman, 2011). In the 1960's the disparities in educational progress and quality of education under apartheid conditions was quite significant, with Whites having access to an average of 8 more years of schooling than Blacks (Cloete and Moja, 2005; Fiske and Ladd, 2004; Maharaj et al., 2000; Rakometsi, 2008). Van der Berg (2008) reported a progressive decrease in the differential in educational achievement for all races except Whites since the 1960s. Given the evident disparities in educational opportunities between racial groups in South Africa, it is typical for inequalities to exist in the level of education attained (Anderson et al., 2001; Lam et al., 2011; Lu and Treiman, 2011). Although progress has been made to reduce this disproportions, educational inequality still exists as there are still disparities between the quality of schooling received by Whites and Indians compared to that of Black and Colored (Anderson et al., 2001; Branson et al., 2012; Louw-Harmse, 2015; Sayed and Motala, 2012).

Due to South Africa's apartheid history, only a small minority, predominantly whites had access to tertiary education, and many of the tertiary institutions were formed to serve separate racial groups (Van der Berg, 2008). South African universities were categorized into the historically black universities which were created to serve people of different ethnicities and seen as the racially mixed universities with inadequate resources; the historically white universities, created to serve the English and Afrikaans speaking groups and seen as the universities of choice (Morrow, 2007). Although the composition of students and faculty in terms of race and gender varied across universities, most of the universities were primarily staffed by the Afrikaner Broederbond members, an exclusively male secret organization that had a significant influence within the South African political and social society (Rakometsi, 2008; Van der Berg, 2008). Over time, universities began to adopt non-discriminatory policies and regulations to promote racial and gender inclusivity (Fiske and Ladd, 2004; Sayed and Motala, 2012).

Gender inequality and discrimination against women in the South African context can be traced back to the patriarchal structures and system of the apartheid era (McKeever, 2017). Patriarchy puts men in control of property and at the center of making decisions. Rakometsi (2008) described patriarchy as being deeply rooted within the South African society and served as a catalyst to propagate discrimination against women to the extent that it was a standard way of life. Akala and Divala (2016) ; Walker (2005) argued that patriarchy is not a preserve of the African culture as many have come to believe but exists in all racial groups in South Africa.

For many decades' education has been made to seem unnecessary for women. Education for South African girls only began to gain attention in the 20th century (Msimang and Poulos, 2001). South African pioneer

schools in the 19th century perceived women as less significant and were not permitted to provide women with any form of academic and skill training. Certain schools were specifically instituted to groom African girls to become domestics. Lu and Treiman (2011) further explained that education for girls was categorized as, docile, domestic, and vocational suited for Africans, women, and people from subservient classes. The primary concern was to prepare women to become good, religious wives and mothers, as well as possess domestic skills such as cooking, sewing and laundry (Bhorat and Oosthuizen, 2006;Rakometsi, 2008). In 1871, industrial training was introduced to provide women with housewifery training to meet demands for servants (Ibid). Subsequently, administrators indorsed for the brightest girls to obtain higher academic and teacher training in preparation to take up the role of wives of elite preachers and teachers.

Several studies on women's education in South Africa have focused on the subjects high school girls enroll for and made deductions regarding the subsequent employment of women (Badat, 2009; Mutekwe and Modiba, 2012; Mwangala and Shumba, 2016). In a study conducted by Badat (2009), it was discovered that social sciences and biology subjects were the most popular subjects within all racial groups. The study further found that black high school girls opted for commercial and vocational subjects, while math-related subjects were prevalent amongst White and Indian girls. Phatlane (2007) indicated that segregated schooling in South Africa has influenced not only the differences in subjects studied between women of different races but also between men and women. From as early as 1955, enrolments of girls compared to boys in elementary schools in South Africa had reached a level of parity. By 1960, a drastic increase had occurred in female enrolments in primary and high schools (Phatlane, 2007). Despite this progression, only a small fraction of the female population had completed their secondary education. In 1985, less than 5% of Black girls in South Africa had completed secondary education and did not have access to compulsory education until the end of 1994 (Ibid).

While a relative number of women have received some level of primary education, and some have advanced to tertiary level, a significant proportion remains under-educated and illiterate (Msimang and Poulos, 2001). Regarding the expansion of education opportunities, apartheid laws favoured many White girls, White working and lower-middle-class women over Black girls and women (Jansen, 2003). Akala and Divala (2016) reported that although between (1970-1994) girls of all races accounted for about half of the enrollments in high schools, only a few proceeded to enroll in a university. Although following statistics between 1994 and 2015 revealed an increase in enrolment of female students in institutions of higher learning, a comparison of the overall population group indicates that Black students are underrepresented and have not reached a position of equal access (Ramrathan, 2016). Akala and Divala (2016) suggested that the proportion of White female university students was higher that of Black and Indian female university

students. This was because the same group of girls and women in institutions of higher learning continue to be affected by gender-related inequities and discrimination.

Sexist apartheid laws that segregated and excluded Black South Africans and women from actively participating in higher education aggravated the pursuit for equality, especially gender equity in higher education (Akala and Divala, 2016; Jansen, 2003). Numerous studies have critiqued the inequalities between historically Black and historically White universities in South Africa, but limited research has been undertaken to explore the double persecution black women face in institutions of higher learning (Cornell, 2015). According to Msimang and Poulos (2001) apartheid laws formally controlled participation in all levels of education and informal control mechanisms during the apartheid regime influenced everyday experiences and practices. Badat (2009) indicated that due to the racialized nature of higher education in the 1960s, men monopolized universities until 1975 and most of the women population in institutions of higher learning were enrolled in nursing, paramedic and teaching courses. From 1985 until 2010, women, particularly Black women, remained huddled in traditional disciplines (Akala and Divala, 2016; McKeever, 2017). Black and White women continue to be significantly under-represented in engineering and technology courses, with the enrolment of Black women being extremely low compared to that of White women (Leathwood and Read, 2009). Women, particularly Blacks, were also under-represented in Masters and Doctoral qualification levels (Herman, 1995).

Throughout the African continent, the education of women is found to be characterized by low enrollments and inconsistent qualities, especially in science and engineering (Akala and Divala, 2016). South African schools have been found to steer boys and girls into separate curricula. Pells (1970) described the pattern as boys being instructed in trade and girls in domestic-related programs. Bhana et al. (2005) argued that a gender-sensitive curriculum that incorporates the needs of women, especially in sciences, should be introduced. In 1988, only 5% of Black women were enrolled in technical courses at universities with no record of anyone registered in a science, engineering, and technology (SET) related course (Yehualashet, 2010). By 1991, enrolment of women in SET courses improved, but the majority of enrolments in engineering were still men with 97% for White men against 3% for White women; 95% for Colored men against 5% for Colored women, 97% for Indian men against 3% for Indian Women, and 98% for Black men against 2% for Black women (Ibid). Conversely, students enrolled in secretarial courses were majorly female with 85% for Black women and almost 99% for other racial groups (Klasen, 1997). Further, these figures revealed a somewhat disturbing trend and indicated a continuation and expansion of traditional male dominance in South Africa in the coming years. In 1995, data obtained from 15 to 21 universities showed that female graduates accounted for 9 % in engineering subjects, 28% in agriculture, 38% in medicine and 47% in sciences (Badat, 2009).

Available data from 2007 showed that men dominated the engineering and sciences fields of study. 57% of students in engineering were men, while 56% of enrolments in business, commerce, and management were women and 73% of students in education and humanities were women (Phatlane, 2007). A similar pattern of underrepresentation of women across traditional fields of study has been recorded since 2004 (Ibid). Similarly, in 2013 enrolment was higher for men irrespective of race in engineering and technology subjects at universities/universities of technologies. Women were more concentrated in humanities and education courses. Furthermore, the most considerable fraction of those enrolled in engineering and technology subjects were Whites; 44.7% for men and 26.1% for women followed Indian/Asian; 40.5% for men and 25.5% for women. On the contrary, the lowest proportion for those registered for the same course was found amongst Blacks; 35.9 % for men and 21.4% for women, Coloreds; 33.7% for men and 21.9% for women (Lehohla, 2014).

The South African education sector has been significantly influenced by paternalism (Akala and Divala, 2016). Mutekwe and Modiba (2012) pointed out that dominant hegemonic views of stereotypical masculinity and femininity have opposite effects on the education of women. According to Featherman et al. (2009), historical, cultural, and socio-economic factors play a significant role in the impediments that arise in the progress of South African women. Akala and Divala (2016) further suggested the need to investigate the educational system for discriminations against women within the context of South Africa's norms and ideologies. The disparities in the level of educational attainment between women and their male counterparts sometimes go beyond the inequality in the education system (Moletsane and Ntombela, 2010). In many African communities, South Africa inclusive, parents have higher expectations of the boy child compared to the girl child. The education of their daughters is perceived as a less-valuable investment because they are being married off into another family that will benefit from her education while their sons will perpetuate the family name (Budlender et al., 2004; Posel et al., 2011). These parental influences have contributed to the high number of female dropouts and low enrolments in schools (Mugaga and Akumu, 2010).

Enrolment of South African girls in schools was also found to be affected by the unwillingness of families to allow their daughter travel to and from school; and inter-relate with male teachers and classmates (Mugaga and Akumu, 2010; Rarieya et al., 2014). Rape statistics indicate that of all countries in the world, South Africa records the highest number of rape cases with most of the victims being young girls (Statistics South Africa, 2018). The fear of such dangerous circumstances explains why some parents are reluctant to enroll their daughters in school (Rarieya et al., 2014). Jewkes and Morrell (2010) argued that sexual harassment in the classroom at secondary schools was of great concern and posed a threat to the advancement of girls to higher institutions. Teenage pregnancies which are high, particularly amongst black

girls were also found to lessen the educational pursuits of women especially at the higher education level (Macleod and Tracey, 2009; Moletsane and Ntombela, 2010). Chabaya et al. (2009); Mugaga and Akumu (2010) further explained that pressure from the society on the significance and need for marriage as well as women's obsession for marriage might hinder educational progress and influence their career decisions. Some women are cautious about obtaining high qualifications and taking up careers in non-traditional areas that may limit their choice of a husband.

In assessing achievements worldwide and expanding access to schooling for girls, it is evident considerable challenges remain with regards to inequalities associated with gender, poverty, location, racial or ethnic divisions and disability (Unterhalter et al., 2010). Additionally, the financially profitable disciplines such as Science, Technology, Engineering and Mathematics (STEM) continue to bolster the power and status of men. Wang and Degol (2017) argued that male supremacy in STEM fields might continue as the world becomes progressively reliant on computer technologies. McKeever (2017) claimed that if South African women, particularly Black women, continue to be huddled in traditional disciplines, they will undoubtedly remain marginalized from society's power structures and policy-making processes. Dorius and Firebaugh (2010) supported this view and argued that women could achieve political and social emancipation through their active involvement of women in economic activities.

2.3 History of Women's Employment and Career Options in South Africa

South Africa's history is characterized with racism, where civil liberties, wealth distribution, access to land, educational opportunities and circulation of goods and services were afforded based on racial privileges (Hendrickse, 2012). Notably, the level of veneration for the self-worth of people was determined by their skin colour and, further within different ethnic groups, by their gender description. Numerous studies have indicated that women all over the world have been perceived as secondary to men, with men possessing more power in most interpersonal relationships (Hendrickse, 2012; Lues, 2005).

For decades, women globally have faced all forms of sociological and economic discernments; and their access to the workforce was restricted (Naidoo and Kongolo, 2018; Yehualashet, 2010). In instances where they had access, they were placed in junior levels at the workplace (Rarieya et al., 2014). Women in South Africa have been confronted with discriminatory attitudes in the workplace since the apartheid era (McKeever, 2017; Sinden, 2017a). Formal and informal relationships at the workplace were influenced by a history of patriarchal attitudes (Walker, 2005). Women were perceived by the sociocultural directives of all racial groups as inferior to men and therefore, were placed in minor positions in public and private sectors (Hendrickse, 2012). Men were predominantly recruited to occupy senior management positions

while women were excluded from most forms of formal engagement and were offered lower-level jobs such as secretarial and administrative positions (Sinden, 2017a).

Under the apartheid regime, several cases of inequality and discriminatory treatment against women at the workplace were recorded (Walker, 2005). The rules of the apartheid period played a significant part in the marginalization of women, particularly black women, and the poor conditions they were subjected to. Women were offered unequal job opportunities compared to men (McKeever, 2017). Some types of jobs were referred to as "female jobs" and were even reserved for Black men (Ibid). Over 90% of economically active women worked as domestic helps on white-owned farms and households (Wang and Degol, 2017).

Women were underrepresented in all positions of power, in employment, education and law. The traditional subservience of women was retained and reinforced as new practices of oppression were introduced. The apartheid system mandated that women take up traditional roles, be solely responsible for the upbringing of their children and become dependent on their husbands for financial support (Vainikolo, 2017). The lives of women were subjected to violence because of the dogmatic and rigid nature of the apartheid era (Mugaga and Akumu, 2010). This strengthened the patriarchal domination. With the aid of colonial legal interventions and the development of customary law and practices, black women were kept in rural reserves under the surveillance of grown-up patriarchal males (Sinden, 2017a).

Regardless of the prevailing state of poverty in the reserves, Naidoo and Kongolo (2018) points out that only 13.6% of all potential rural Black women were employed in profitable work. It is noteworthy that the women in the reserves were not entirely uneducated. Amongst them were moderately educated women, who had been constrained out of towns and repatriated or resettled in the reserves. These reserves were a part of the politically sanctioned national segregation framework of the apartheid system (Mutekwe and Modiba, 2012). While in the reserves, women were barred from pursuing any career. In some instances, industries known as "border industries" were set up in "White regions" bordering the reserves. A couple of these firms enlisted the services of Black women and placed them in the least paid positions or paid lower rates compared to Black men in similar employments (Featherman et al., 2009). Before the twentieth century, Black South African women were predominantly employed as domestic workers and teachers (Sinden, 2017a). At the point when missionaries opened healing facilities for Blacks in the mid-nineteenth century, they utilized Black women as domestics and auxiliary nurses (Lues, 2005). By 1910, just a single Black woman had completed full nurse's training compared to 3,446 Black women with teacher training qualifications. Not long after, nursing turned out to be one of the most sought-after professions open to Black South African women. By the end of 1960, some advancement had occurred in the economic prospects for the country's Black women. Out of 7.5 million Black women, only 800,000 could be classified

as economically active. A large number were employed as house helps; 200,000 as labourers on White homesteads; 25,000 as nurses and educators; and the rest as of factory labourers and clerks (Pells, 1970).

After 1994, women were permitted to gain access into urban areas in search of employment with high hopes that the labour market could accommodate them (Banerjee et al., 2008). Nonetheless, employment opportunities were restricted to women in urban areas. Rural life drove women to urban areas in search of work. Still, they were only offered domestic positions and farm labour with meagre wages and strict requirements and rules by the Afrikaner and English communities (Rakometsi, 2008). Segment 10 of the Bantu (Urban Areas) Consolidation Act No. 25 of 1945 stated that no Black person, except for those who meet specific strict requirements, may stay in an urban zone for over 72 hours except if he or she owned a permit control indicating the reason and length of the stay or visit. The permit was usually issued to Black migrant workers and was valid for the period of the contract. It was difficult for Black women to secure this permit. However, because it was difficult for Black women to fulfil this requirement, the number of Black women who were employed in urban areas was significantly lower than that of Black men (Mvimbi, 2009).

The inequalities in the educational system influenced the career options of women (Naidoo and Kongolo, 2018). By 1981, 56% of White, 4% of Colored, 13% of Indian, and 5% of Black women had accomplished more than secondary school qualification; however, despite their educational triumphs, women did not undertake high-level careers to the extent that their academic training permits (Johnson and Mathur-Helm, 2011). According to Africa (2015) the participation of women in science and management has experienced some growth in recent years. Unterhalter et al. (2010) reported that the percentage of women in science-related occupations such as dentistry, veterinary medicine and paramedic careers progressed from 4.8% in 1965 to 15.9% in 1981; in finance-related professions such as accountants and economists progressed from 14.4% in 1965 to 23.2% in 1981; in management related careers progressed from 8.3% in 1965 to 13.8% in 1981. In 2017, the percentage of women in science-related professions moved to 30.7%; women in finance declined to 14.2%, and women in management-related occupations were 24.4% (SA, 2018).

2.4 Current Employment Profile of Women in South Africa

Although the population of economically active women has increased over the years, the South African labour market is still highly segregated with a deep horizontal and vertical division of labour (Sinden, 2017a). From 23% in 1960 to 41% in 1991 and 45.3% in 2018 majority of the women in the labour force are employed in finance, trade, private households, community, and services (SA, 2018). Not only is the labour force characterized by segregation concerning gender, but also by race. Of many women employed in the service industry, White women are employed in finance and trade, while private households and

community service are dominated by Black women (SA, 2018). Researchers and policymakers have recognized comparable gender disparities around the globe, yet in South Africa, calls for schemes to accelerate the section of Black women into non-traditional professions are astoundingly lacking (Mugaga and Akumu, 2010; Naidoo and Kongolo, 2018).

Confronted with the obligation to care for their families, women make up most of the South African population living in poverty and place a massive burden on the country's economy (SA, 2018). Findings from the 18th Commission for Employment Equity Report illustrated that women are still immensely underrepresented in all sectors. Evidence indicating this declaration is reflected in the tables and discussions below and focused on an analysis of 27, 163 employment equity reports submitted by designated employers, which included 7, 299, 428 employees and reflects the 2017-2018 announcing cycle. Likewise, the report indicated that progress was slow in the attempt to transform the working environments in South Africa and that all occupation levels and across various sectors continue to be dominated by men (Department of Labour, 2018).

Table 1. 1: Employment Profile by Sector – Top Management (Department of Labour, 2018)

Level	Sector	Male					Female					Foreign National		
												M	F	
		B %	C %	I %	W %	Total %	B %	C %	I %	W %	Total %	%	%	Total %
Top Management	Agriculture	5.2	2.5	0.9	73.4	**82.0**	1.8	1.3	0.2	13.6	**16.9**	1.0	0.1	**0.2**
	Mining	20.0	1.9	2.6	56.4	**80.9**	5.8	0.7	1.0	8.0	**15.5**	3.5	0.1	**3.6**
	Manufacturing	5.4	3.1	9.0	60.1	**77.6**	2.6	1.6	2.5	10.8	**17.5**	4.4	0.6	**5.0**
	Electricity	22.4	5.7	6.1	40.4	**74.6**	11.1	2.1	2.9	6.1	**22.2**	3.3	0.4	**3.7**
	Construction	13.3	5.2	5.9	57.5	**81.9**	4.8	1.8	2.3	6.5	**15.4**	2.5	0.3	**2.8**
	Retail	4.1	3.1	8.6	61.1	**76.9**	1.6	1.9	2.6	15.5	**21.6**	1.3	0.3	**1.6**
	Wholesale	4.6	2.4	10.7	57.3	**75.0**	2.6	1.5	3.3	14.3	**21.7**	2.7	0.5	**3.2**
	Catering	7.7	2.6	4.4	49.1	**63.8**	5.5	2.5	1.9	22.1	**32.0**	3.4	0.8	**4.2**
	Transport	10.9	3.5	9.7	47.5	**71.6**	6.2	2.6	3.8	11.4	**24.0**	4.1	0.4	**4.5**
	Finance	9.2	2.9	5.6	50.8	**68.5**	5.7	2.2	3.1	16.0	**27.0**	3.7	0.9	**4.6**
	Community Services	21.3	4.0	4.8	35.1	**65.2**	11.0	2.2	2.9	16.7	**32.8**	1.2	0.7	**1.9**

Table 1.1 shows that at the top management level, men dominated the workforce in all the sectors. Women occupied less than 33% of top management positions across all industries, while men occupied over 68%. In agriculture, mining, construction, manufacturing, electricity, wholesale and finance, men were found to be employed in more than 70% with women occupying just about 25% of the positions. The table indicates that across all sectors, the highest percentages of women were employed in catering and accommodation (32.0%) and community services (32.8%). Although these occupations are perceived as traditional and usually dominated by women, most of the top management positions were filled by men.

Wide racial disparities were also evident in this data, as Table 1.1 shows that White males across all sectors highly dominated top management positions. Within the female group, White women were found to occupy most of the top management positions compared to their Black counterparts in all the sectors except the electricity sector. Coloured and Indian women were highly under-represented across all industries.

Table 1.2 shows that at the senior management level, the White Population Group dominated in all sectors of the economy. The Black Population Group was better represented in Electricity, Gas and Water sector, as well as in the Community services compared to other industries. Women were highly under-represented at this occupational level across all sectors of the economy. Although the situation is somewhat better at this level compared to top management. Across all industries, women occupied 46% of senior management positions. In non-traditional sectors such as mining, construction, manufacturing and electricity, women occupied less than 32% compared to over 66% by men. Community services and the catering sector were the only sectors where women occupied about 45% of senior management positions.

As with the top management level, White women were found to dominate senior management positions across all sectors of the economy. The data indicated that as with the top management, huge disparities exist regarding employment for women within population groups.

Table 1. 2: Employment Profile by Sector – Senior Management (DepartmentofLabour, 2018)

Level	Sector	Male					Female					Foreign National		
													M	F
		B %	C %	I %	W %	Total %	B %	C %	I %	W %	Total %	%	%	Total %
Senior Management	Agriculture	9.8	4.2	1.4	58.6	**74.0**	3.8	1.7	0.8	18.3	**24.6**	1.1	0.3	**1.4**
	Mining	19.3	2.7	3.5	54.8	**80.3**	5.1	0.9	1.4	9.2	**16.6**	2.7	0.4	**3.1**
	Manufacturing	9.0	5.5	9.3	46.7	**70.5**	4.3	2.6	3.6	15.7	**26.2**	2.8	0.6	**3.4**
	Electricity	28.7	4.4	6.2	27.3	**66.6**	16.9	2.2	2.6	9.2	**30.9**	2.1	0.4	**2.5**
	Construction	16.5	6.4	5.7	48.0	**76.6**	5.8	2.0	2.0	10.6	**20.4**	2.5	0.5	**3.0**
	Retail	10.4	6.3	8.6	39.6	**64.9**	5.5	4.8	4.0	19.2	**33.5**	1.3	0.3	**1.6**
	Wholesale	8.8	4.3	10.9	39.6	**63.6**	5.3	3.3	4.9	20.3	**33.8**	2.1	0.7	**2.8**
	Catering	13.1	4.5	4.0	29.6	**51.2**	10.5	5.1	3.2	26.6	**45.4**	2.4	1.0	**3.4**
	Transport	14.6	4.8	9.3	35.8	**64.5**	7.9	2.7	4.5	15.4	**30.5**	4.0	1.0	**5.0**
	Finance	9.6	3.7	7.5	36.4	**57.2**	7.3	3.3	5.4	22.2	**38.2**	3.0	1.3	**3.3**
	Community Services	28.2	4.4	4.1	18.3	**55.0**	18.5	3.4	3.2	17.7	**42.8**	1.4	0.8	**2.2**

Data from Table 1.3 illustrated that men continued to dominate across all sectors except the catering sector at the professionally qualified level, where women accounted for 48.8% of employment compared to 46.5% for men. Women were also mostly represented in the community services sector. Surprisingly men again

dominated in the so-called traditional industries such as wholesale, retail, finance, agriculture and community services, occupying over 55% of the positions and women occupying less than 45%.

Table 1.3 further shows a high representation of the White Population Group in all sectors of the economy. Within the female group, White women were employed in the majority of the professionally qualified positions across all industries except the electricity, gas and water sector compared to their counterparts from other population groups.

Table 1. 3: Employment Profile by Sector – Professionally Qualified

(Department of Labour, 2018)

Level	Sector	Male					Female					Foreign National		
												M	F	
		B %	C %	I %	W %	Total %	B %	C %	I %	W %	Total %	%	%	Total %
Professionally Qualified	Agriculture	19.3	5.7	1.6	37.6	**64.2**	10.2	3.1	1.1	19.8	**34.2**	1.2	0.3	**1.5**
	Mining	28.2	3.2	2.4	40.3	**74.1**	10.0	1.1	1.5	10.5	**23.1**	2.3	0.4	**2.7**
	Manufacturing	15.4	6.7	8.3	36.3	**66.7**	9.0	3.4	4.0	14.6	**31.0**	1.9	0.5	**2.4**
	Electricity	31.0	5.0	5.9	21.5	**63.4**	22.9	2.3	2.7	6.8	**34.7**	1.5	0.3	**1.8**
	Construction	25.0	7.0	4.8	36.8	**73.6**	9.0	1.7	1.7	10.2	**22.6**	3.2	0.5	**3.7**
	Retail	27.1	7.1	4.8	13.0	**52.0**	23.8	9.5	3.7	10.0	**47.0**	0.7	0.2	**0.9**
	Wholesale	15.0	5.3	7.2	28.1	**55.6**	10.1	4.6	5.1	22.5	**42.3**	1.7	0.5	**2.2**
	Catering	19.1	5.5	3.7	18.2	**46.5**	18.1	7.1	3.2	20.4	**48.8**	3.0	1.7	**4.7**
	Transport	22.5	5.9	7.6	28.3	**64.3**	11.9	3.2	3.9	12.9	**31.9**	3.1	0.7	**3.8**
	Finance	14.5	5.1	6.9	23.6	**50.1**	14.0	5.8	6.5	20.2	**46.5**	2.4	1.1	**2.5**
	Community Services	24.5	3.6	2.2	8.1	**38.4**	37.9	5.0	2.9	13.1	**58.9**	1.8	1.0	**2.8**

Table 1.4 shows at the skilled technical and academically qualified level, women were employed in less than 47% of the position across all sectors of the economy except community services where they were employed in 58.9% of the posts compared to 38.4% for men. In non-traditional occupations like mining, manufacturing, electricity and construction, the representation of women, accounting for less than 35% of the entire employed population. The highest percentage of women were employed in finance (46.5%), retail (47%), catering and accommodation (48.8%) and community services. Although there is a significant, representation of women at this occupational level, it is evident that the majority of employed women occupied junior management, supervisors, foremen, superintendents' positions and are not involved in decision making across all sectors (Department of Labour, 2018). Sinden (2017) who argued that women have remained excluded from leadership and decision-making positions, given that they are better represented at the professionally qualified and skilled technical levels than at the top and senior management levels support this view.

Although, as indicated in Table 1.4, more than 30% Black Population Group was employed at the skilled technical and academically qualified level across all sectors of the economy, this occupational level was still dominated by the White Population group. White women were found to dominate all sectors of the economy, except in electricity and community services where Black women were majorly represented.

Table 1. 4: Employment Profile by Sector – Skilled Technical and Academically Qualified (Department of Labour, 2018)

Level	Sector	Male					Female					Foreign National		
												M	F	
		B %	C %	I %	W %	Total %	B %	C %	I %	W %	Total %	%	%	Total %
Skilled Technical and Academically Qualified	Agriculture	34.7	12.0	1.1	15.2	63.0	15.7	6.5	0.7	12.0	34.9	1.8	0.2	2.0
	Mining	50.0	3.9	0.6	23.3	77.8	11.2	1.0	0.4	5.3	17.9	4.3	0.1	4.4
	Manufacturing	33.3	10.2	6.1	19.5	69.1	11.5	5.1	2.9	9.4	28.9	1.8	0.3	2.1
	Electricity	43.6	4.9	2.2	13.4	64.1	25.7	2.6	1.5	5.3	35.1	0.6	0.1	0.7
	Construction	51.7	7.5	2.4	14.1	75.7	10.8	2.1	1.3	6.3	20.5	3.5	0.2	3.7
	Retail	27.1	7.1	4.8	13.0	52	23.8	9.5	3.7	10.0	47.0	0.7	0.2	0.9
	Wholesale	27.2	6.0	4.8	14.1	52.1	19.2	7.1	4.4	14.7	45.4	1.8	0.7	2.5
	Catering	28.5	4.8	1.9	6.6	41.8	32.3	8.6	2.6	9.8	53.3	3.2	1.8	5.0
	Transport	37.1	7.5	4.8	14.9	64.3	18.6	4.3	2.6	8.0	33.5	1.9	0.3	2.1
	Finance	21.4	5.8	3.8	9.5	40.5	28.3	9.8	5.1	14.5	57.7	1.1	0.6	1.7
	Community Services	32.0	3.6	1.4	3.9	40.9	43.4	4.6	2.3	8.1	58.4	0.5	0.3	0.8

Dedeoğlu (2009) pointed out that the achievement of gender equality should be the focal objective of good governance and government plays a significant role in achieving gender equality in society. Furthermore, it is difficult to discuss the strengthening of human rights and democracy, if more than half of the number of its population is oppressed. In the bid to eradicate racial inequalities and sexism, the South African government introduced a series of anti-discriminatory laws and regulations (Sinden, 2017b). Some of these laws were designed to ensure the recruitment and retention of women and promote equal opportunities and job security for women (Mvimbi, 2009). Although some progress has been achieved, growth in the employment of South African women in relatively highly skilled formal jobs that yield high earnings has been slow (Floro and Komatsu, 2011). Furthermore, women's inferior status in the labour market and the gender bias they encounter in informal employment has resulted in low financial earnings for women compared to men (Forgey et al., 2001; Galiani et al., 2008).

The South African government argues that clear affirmative action measures have been set up for women to have equal access to employment opportunities. A report by the Department of Women (2017) highlighted that the nation had accomplished significant advancement in numerous aspects of women's economic empowerment through, among other things, increments in educational achievement, participation

in the labour market; access to credit, land and wealth distribution; reduce poverty and inequity, and an allocation of paid work. In a similar report, President Jacob Zuma stated that significant progress had been made to promote the advancement and empowerment of women concerning participation in politics and legislature, representation in senior administrative positions and employment in white and male-dominated occupations such as mining, construction and infrastructure development (Unterhalter et al., 2010). Regardless of these claims about the progress being made to improve women's access to equal employment, research reveals an insufficient and sluggish movement towards achieving parity in the workplace in South Africa (McKeever, 2017).

De Waal (2006) pointed out that for South Africa's economic growth and development, it is essential to invest in the economic empowerment and human rights of women who account for half of the country's population (Sarwar and Abbasi, 2013). Sinden (2017a) opined that if the anti-discriminatory laws introduced by the South African government were executed excellently, women would have an opportunity to participate equally in the workforce, not just as a form of empowerment but also contribute to economic growth and capacity building in the nation. Additionally, providing equal job opportunities for women will address the issue of gender inequality and discrimination by expanding women's social and economic standing in the country (Ibid).

2.5 Chapter Summary

This chapter outlined an extensive literature review concerning the background of women's education in South Africa and presented an overview of the history of the career options and employment of South African women. The next chapter presents a general overview and discusses women and the construction industry.

CHAPTER THREE

WOMEN AND THE CONSTRUCTION INDUSTRY

3.1 Introduction

This chapter concentrates on the status and representation of women in the construction sector of developing countries as well as South Africa. Also, discussions on the image of the construction industry, barriers to entry into the sector and discriminatory attitudes towards women are presented in this chapter.

3.2 Women in the Construction Industry in Developing countries and South Africa

Before the 1980s, very little research existed on gender issues in construction. Well-known studies implicitly focused on men. Most of the studies concentrated emphatically on the status of men in construction work, the culture of the construction industry with little to no emphasis on gender (Barley and Kunda, 1992; Meiksins and Smith, 1993). To address the problem of limited employment of women around the globe, very few strategies were developed (Nations, 2016). Although the United Nations listed "Gender Equality "as one of its 17 Sustainable Development Goals aimed at promoting equality and female empowerment, it has not been religiously executed even in First World Countries and especially in non-traditional sectors particularly in the construction industry (English and Le Jeune, 2012).

The position of women in an economy has been identified as one of the determinants of the general development of any country (Moodley, 2012). Initiatives to create awareness of the predicaments of women in developing countries were pioneered by the United Nations (Njoh and Rigos, 2003; Koatsa and Nchake, 2017). Reports from the International Labour Organization (ILO) initiated the commencement of research on gender inequality, poor working conditions experienced by women and barriers to entry in the construction industry (Charity-Leeke, 2012). Therefore, construction research focusing on women, post-1980 concentrated on women in developing countries and a bulk of the study in the construction industry remains focused on developing countries as gender issues are comparatively more severe in these countries (English, 2007).

Gender-based barriers continue to be a problem in the recruitment and retention of women in the construction industry (Charity-Leeke, 2012). Several studies revealed that women are often discouraged from undertaking careers in the construction industry by informal recruitment processes, advertisement and promotional materials with content, which reflect masculine qualities and interests, unstructured interviews, unfair selection measures and chauvinist demeanors (Amaratunga et al., 2006; Moodley, 2012; Othman and Jaafar, 2013; Kolade and Kehinde, 2013; Ibáñez, 2017). Evidence showed that the existence of gender

equality in the construction industry affects the recruitment, retention, and advancement of women and is primarily attributed to social and structural barriers (Sang and Powell, 2012). The segregation women encounter in the labour market, which is dominated by men is influenced by social norms (Charity-Leeke, 2012). Aulin and Jingmond (2011); Othman and Jaafar (2011) concluded that not only is the construction industry male-dominated, but involvement and participation of women remains relatively low.

Although both first and third world countries share the problem of inadequate representation of women, women are very present in the construction workforce of some developing countries compared to European countries (English and Le Jeune, 2012; Moodley, 2012). Unlike European countries, Latin America and sub-Saharan Africa where women are almost invisible and debarred from staying in the construction profession, men are outnumbered by women on construction sites in Asia (Ahuja and Kumari, 2012).

In Thailand, Bangladesh, and Sri-Lanka women represent 95%, 88% and 78% respectively of workers doing construction work (Jimoh et al., 2016). Women's inclination to undertake construction work in Thailand is attributed to higher wages compared to other labor-intensive jobs in the country (Ibid). Regardless of their visibility on construction sites, women represent a small fraction (14.6%) of the employed population in the Asian construction industry – not more than 17.9% in Thailand, 12.2% in Sri Lanka and 5.7% in India (Patel and Pitroda, 2016).

In India, the construction industry is one of the most flourishing sectors and the second-largest generator of employment after agriculture (Ahuja and Kumari, 2012). Thirty-one million people were employed in construction in 2008 and are estimated to reach 92 million by 2022 (Ahuja and Kumari, 2012). Over half of the population of construction workers are women, with a majority of them serving as manual labourers or helpers (Patel and Pitroda, 2016). In Singapore, the situation is noticeably different. The Labour Force Survey reported that only 15% of the labour force in the construction industry was women (Toor and Ofori, 2010). This skewed pattern was also detected in other countries, whereby construction workers remain men predominantly.

Similarly, in Zimbabwe of the 105, 567 employees in the construction industry, only 6.7% were women, and most of them occupied administrative positions (Moodley, 2012). This trend seemed to be quite evident in other countries as well. In the Czech Republic, only 2.7 % of business owners in the construction industry were women, and 4.55% of senior management positions were occupied by women (Putnová and Seknička, 2007).

In a recent survey conducted by the SA (2018) it was found that of the one million, four hundred and seventy-sixthousand (1,476,000) people employed in the construction sector, only one hundred and fifty-seven thousand (157,000) were women. A study conducted in Cape Town, Nairobi and Kumasi by the International Labor Organisation (ILO) revealed that countries in sub-Saharan Africa were deficient of female workers and entrepreneurs (Othman and Jaafar, 2013). Even though women face discrimination in the industry and are dominated by men, women entrepreneurs had made some constructive advancement (English and Le Jeune, 2012). Jahn (2010) noted that women are effectively debuting careers in the construction industry and have even been able to receive grants and tenders from the South African government to build houses. English and Hay (2015) revealed that women are considered to possess exceptional skills, which could benefit the construction industry and are equipped to undertake a variety of jobs on and off the construction site.

3.2.1 Historical Representation of Women in Construction

Numerous studies have reported that despite an extensive range of global legislation which was developed in the 1990s to promote women's growth in the economy, women are still underrepresented in the construction industry with a majority occupying clerical positions rather than technical construction roles (English and Hay, 2015; Madikizela, 2008).

In Africa, the development of traditional building was part of a custom, with skills and talents distributed amongst generations (English and Le Jeune, 2012). For some families in specific communities, the responsibility of building their own houses fell on them (Kalabamu, 2006). Mafico (1991) described the building process where everyone in society was involved and understood the various aspects of building construction, as an essential feature. Therefore, many members of a community had developed skills in different aspects of construction (Kalabamu, 2006). Skills were acquired on-site as activities were practical, with no formal instructions and written texts (English and Le Jeune, 2012).

According to (Kalabamu, 2004; Moodley, 2012), the majority of the houses in informal settlements and rural areas were built and preserved by women. Mafico (1991) noted that traditional women in pastoral communities in Tanzania, Zimbabwe, Botswana, South Africa, Kenya and Lesotho were responsible for building houses for their families. In various parts of Africa, like Botswana and Zimbabwe, women undertook different manual building tasks such as mixing and moulding bricks, building walls, wall decorations and thatching (Mthembi-Mahanyele, 2002; Kalabamu, 2001). Principally, men were responsible for hunting, cow grazing and protecting the family admist wars (Kalabamu, 2005). Women performed similar tasks as men and in some cases, were more involved in the building process (Flannery and Coyle, 2005; English, 2007).

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In South Africa, women have existed in the construction industry, especially in the construction of buildings since at least 1994 (Mjoli-Mncube, 2005). Although women have had an influence in the building of houses for a considerable length of time, in South Africa it was only at the inception of the dispensation of democratic rule that they began to gain recognition as salaried employees and entrepreneurs in the construction industry (Kalabamu, 2005).

Noteworthy is the fact that the employment of women started from a much significantly lower level in 1995 compared to that of men (Sangweni, 2015). Over time, the population of women entering the workforce had increased dramatically as growth had been realized in education, health, finance, and retail sectors (ibid). However, in the manufacturing, utilities, and construction industry the total female employment growth was at an average of 3.3 % per annum, somewhat below the overall average employment growth rate of 3.4% in these sectors (Jimoh et al., 2016).

During the early 1990s, the employment rates of women in the South African construction industry was about 6% of the industry's total labour force (Ndinda, 2003). Between 1995 to 2001, women employed in construction increased to 13.8% (Dabke et al., 2008). By 2004, the population of women employed across various trades in the industry had reduced by 2.5% (Wangle, 2009). In a report by the Department of Labor (2005) employment of women increased to 22% between 2004 and 2005, with women accounting for 55% of the total employment growth. A South African professional registration report (2008) described women as representing only 20% of architects, 12% of quantity surveyors, 2% of civil engineers, 3% of project managers and 0.6% of site engineers.

English (2007) indicated that gender roles and building roles became more Eurocentric than African with the influence of Western cultures on African societies and its impact on the entrance of women into the construction industry is evident. The construction industries of First World countries like the United States, UK and Australia utilized modern technological methods and materials that were often imported and required experts to operate them (Lingard and Lin, 2003). Previously, the construction methods adopted in Africa were extremely labour intensive with the use of little mechanical equipment (Kalabamu, 2004). English (2007) pointed out that these tasks could no longer be carried out by the same group of people as the complex and sophisticated procedures require expert abilities and training and these skills were not conveniently acquired by a majority of the prospective women engineers.

3.2.2 Current Representation of Women in Construction in Developing Countries

Studies which are incredibly insightful for South Africa are those focusing on obstacles faced by Third world country women trying to undertake work in First world construction industries (English and Le Jeune, 2012). India offers the best example of women at labouring levels in construction as about 50% of the workforce in the Indian construction industry are women (Government of India, 2016). Of the 50% employed in the industry, only 1.4% are employed as engineers, architects and managers while the others work as casual labourers (Patel and Pitroda, 2016). Parikh et al. (2004) study of the Indian construction industry discovered that there was a significant decrease in women's decisions to take up construction-related professions. Women strongly opined that they were side-lined in the sector concerning promotions, wages, as well as professional recognition (Kolås, 2017). This is not a system South Africa should emulate where training and development of women are crucial to the enhancement of socio-economic problems (English and Le Jeune, 2012).

Ahuja and Kumari (2012) indicated a rapid growth and participation of women in the Cuban construction industry. Unlike India and other developing countries, George et al. (2019) expressed that Cuba introduced equality rights such as equal pay, maternity leave with pay, free daycare centers for women with children and affirmative action at the workplace for women in construction. This has helped to promote entry and increase participation in the construction industry (Ahuja and Kumari, 2012).

In Southern Africa, many women are victims of gender-based discrimination and are often neglected because they are economically poor (Floro and Komatsu, 2011). Moodley (2012) indicated that women's participation in the construction industry breaks gender stereotypes and promotes the empowerment of women by ensuring a rationale for sustainable sources of income (Gupta et al., 2009).

According to Adeyemi et al. (2006), empirical studies on the participation of women in the construction industry in developing countries revealed that a significant number of socio-cultural barriers hindered women from entering construction. Furthermore, the construction industry has only recently begun to establish initiatives targeted to increase the representation of women within the sector (Alves and English, 2018; Aneke et al., 2017; Worrall et al., 2010). Although, specific initiatives have been designed to encourage the participation of women in male-dominated industries, the objective of these schemes appears to be to resolve the crisis of skill shortages and labour resources (Vainikolo, 2017).

Worldwide, the construction industry is currently facing skill shortages, and diversity-based levels are inadequate in meeting the skill gap (Worrall et al., 2010; Vainikolo, 2017). English and Hay (2015); Worrall

et al. (2010) suggested that encouraging the participation of women would enable untapped resources, promote inclusivity, and improve the skill gap in the industry. Women possess a unique set of skills which could diversify the industry's organisational culture and provide a competitive advantage (Fernando et al., 2014).

3.2.3 Wages

A study in India indicated that women in the building workforce are integrated at the lowest positions in the job hierarchy and are found suitable for unskilled trades such as flooring, painting, tiling and headload carriers (Moodley, 2012). They are denied access to training (Shah and Saurabh, 2015). Another study of construction workers in five cities found that inequality existed in the earnings, with women earning 15 - 20% less than men for the same work (Parikh et al., 2004). Women in India experience extensive discrimination in so that they take on most of the arduous tasks but are only recognized in the roles of unskilled workers or assistants (Ahuja and Kumari, 2012).

Moreover, to increase output, workers are encouraged to promote the participation of their wives as part of a family work unit (Organization, 2001). They are paid less than their male counterparts for similar tasks and do not receive these payments directly, as in several instances their wages are paid to their spouse or male family members (Wells, 2007). This shows that the contractors' register does not contain the name of women. Although women are working on construction sites and are recognized as casual observers, they are invisible in statistics and official records and do not exist as employees of the construction industry (Moodley, 2012). Wells (2007) attributed India's exceptional situation to the caste system, which devalues women and underestimates female labour, reliance on modern technology and mechanization.

Very few women were employed in the construction industry within sub-Saharan Africa as women in rural and informal settlements in Botswana, and other countries are responsible for building and maintaining their houses (Kalabamu, 2004). In Botswana, similar circumstances consisting of non-recognition and wage discrimination were found (English and Le Jeune, 2012). Women working on construction sites were found to undertake supporting positions like painting, cleaning, and fetching water. However, these activities were usually not recorded because it was often non-waged and categorised as casual work (Kalabamu, 2006). It was argued that work on construction sites involved brute physical manual activities that could be appropriately executed only by men (Kolade and Kohinde, 2013). This division of labour economizes on the use of women's skills, accommodates discrepancies in tasks along gender lines and allows for wage discrimination (Moodley, 2012).

Despite the rise in the number of women in the UK construction industry, the wage gap between men and women remains wide (Amaratunga et al., 2006). Women working full-time jobs in the UK were found to earn less than 60% of the average remuneration rate of full time employed men (Worrall et al., 2010). Even highly skilled and qualified professionals face discrimination concerning remuneration (Bentley, 2003). A study conducted by Hakim and Counselling (2006) on wage discrimination concluded that closing the remuneration gap between male and female construction workers continues to be one of the significant challenges faced by government and the private sector. Although over the past few years, some progress has been made in implementing equal pay, progress is still erratic (Vainikolo, 2017).

South Africa is no exception. Data from ILO (2011); World Bank (2017) indicated that South Africa is one the countries with the highest inequality rates in the world and holds the 38th position with a gender pay gap of 4.4%. In South Africa, the Equal Pay Act of 1970 is one of the discriminatory acts that was introduced alongside the Employment Equity Act of 1998. The Act was introduced to abolish unequal pay between men and women who perform similar work. Luescher-Mamashela and Mugume (2014) opined that the South African Equal Pay Act of 1970 reflects the United States' Equal Pay Act of 1963. Both legislations were established to amend the pay gap between men and women (Vainikolo, 2017). A comparative study of Britain, Germany, Luxembourg, Spain, and the United States indicated that low pay was significantly prominent amongst women compared to men (Robson et al., 1999). Each country revealed lower payment of full-time working women compared to their male counterparts in all industries except the finance and community services.

Findings from a study on construction workers and site workers in South Africa identified that employees were remunerated based on time rather than on a task basis (English, 2007). Payments were made depending on skills possessed and varied according to the site (English, 2007). Most employers ignored standing regulations on wages and acknowledged that site workers were poorly paid (Moodley, 2012).

A similar study conducted by Horwitz (2002) involving small construction employers in the Western Cape Province of South Africa identified extensive non-conformance to wage regulations composed by the Bargaining Council. Respondents explained that the wages they received did not meet up to the minimum wage rates and benefits stated. Horwitz (2020) recommended a payment system that was based on produced output and piecework for three categories of workers: manual labourers, semi-skilled employee, and artisans.

3.3 Image of the Construction Industry

The masculine culture is understood to prioritize the length of service or years of experience of a worker over a person who possesses suitable qualifications to take up the position (Worrall et al., 2010). This culture provides men who primarily remain loyal to the construction industry with better chances of progressing in the sector (Vainikolo, 2017). Furthermore, women are belittled because of perceived proficiencies and notions that they do not blend into the social construction and culture of the industry (Agapiou, 2002). Consequently, women receive very little support as regards their access to opportunities and progression to senior positions (Dimovski et al., 2010; Liff et al., 2001).

The under-representation of women in the construction industry has been acknowledged as a worldwide phenomenon and a situation that requires global research (Othman and Jaafar, 2013). The masculine culture of the industry has been identified as a prevalent contributor to women's refusal to take up careers in the construction industry (Agapiou, 2002; Amaratunga et al., 2006). Watts (2009) referred to this masculine culture as 'competitive presentism'.

In a study conducted by McDonald (2011), the culture of the industry was identified as a predominant barrier to the recruitment and retention of men and women. Although significant for both genders, the culture of the sector was found to be principally a significant barrier for women. Women have to circumnavigate common issues such as discriminatory attitudes perpetrated by the dominant male management and adversarial business relationships (Dainty and Lingard, 2006; Haupt and Fester, 2012; Worrall et al., 2010). Numerous studies have shown that women who look to pursue careers in the construction industry either have to behave like men to be successful, leave if they cannot adapt to the masculine culture or maintain their feminine attitudes to occupy minor positions. (Haupt and Fester, 2009; Moodley, 2012; English and LeJeune, 2012; English and Hay, 2015; Vainikolo, 2017).

A wide range of studies has been conducted on the participation of women with a strong focus on equality and inclusivity in the construction industry (Adogbo et al., 2015). In studies regarding inclusivity, attempts have been made to address the issue of masculinity and interaction dynamics within the construction industry (Sang and Powell, 2013). An early study by Kanter (1977) which aimed at understanding male-female interactions and the situations facing women in organizations, revealed how women employed in non-traditional careers were referred to as 'tokens,' which meant minorities, and mandated to permit exaggerated displays of aggression from men who were referred to as 'dominants' in their presence. Women showed loyalty to the men by allowing men to make fervent off-colour jokes about them, often conspiring with the men in doing so. Dainty and Lingard (2006); Menches et al. (2007); Watts (2009); Wright (2014)

demonstrated that women had trouble when communicating with the male network and usually felt isolated in the workplace. Watts (2009) further explained this seclusion could lead to boundary heightening, a situation where a new entrant feels isolated while trying to understand a modern workplace and colleagues reject the new entrant thereby worsening the entrants feeling of isolation.

3.3.1 Perceived Barriers to Entering the Construction Industry

Women in the construction industry encounter barriers at every point of their career progression (Agapiou, 2002; Arena et al., 2015; Gurjao, 2006). Dainty et al. (2000) opined that women encounter challenges in developing their careers because of the obstacles they face within the industry. Amaratunga et al. (2006) postulated that an important reason for the low participation of women in the construction industry is the barriers they encounter. Dainty et al. (2000) also revealed from empirical studies that these barriers inhibit most women from taking up careers in the construction industry.

In comparison to existing literature, women encounter a variety of discriminations while undertaking careers in the construction industry. Dainty et al. (2000); Agapiou (2002); Adogbo et al. (2015) identified the poor image of the industry, which is perceived as a space for promoting antagonistic business relationships, poor working practices that require physical strength and poor working conditions as predominant barriers that hinder the participation of women in the industry. According to Agapiou (2002); Amaratunga et al. (2006); Menches et al. (2007); Worall et al. (2010); Watts (2009); Wright (2014), the masculine image of the construction industry poses a significant threat to women's recruitment, retention and career progression. The presumed working practices in the construction industry have been identified as the most prominent reason for the under-representation of women in the industry (Worall et al., 2010; English and LeJeune, 2012). These practices and other barriers have contributed to a tainted image and reputation of the construction industry (Wangle, 2009). The negative factors in the workplace are considered undesirable for women (English and LeJeune, 2012). Provisions, such as career breaks, job sharing, and part-time working are deemed feminine and unfeasible in the industry (Lingard and Lin, 2003).

Site conditions are unconducive for women, thereby forcing site managers to invest extra funds in providing essential amenities such as toilets and accommodation, particularly for women (Wangle, 2009). An overview of the Indian construction industry showed that at numerous sites, the provision of essential sanitation, medical and childcare facilities was utterly ignored. Of the total construction sites surveyed, 64% had no toilets, and 45% had no safe drinking water (Baruah, 2010). Additionally, the number of female labourers in the construction industry is deficient, even though many aspects of the job are supported by machines and do not require physical strength (Fielden et al., 2000; Moccio, 2006; Wangle, 2009). Vocations like decorating, carpentry, painting, and electrical works rarely require manual strength yet, employers

perceive physical capability as more critical than maths skills in the recruitment of prospective apprentices (English and LeJeune, 2012, Menches et al., 2007).

Numerous studies focusing on developing countries have identified some obstacles deterring the entry of women into the construction industry. Gurajo (2006); Hoobler et al. (2009) discovered that women encountered myriad problems like low skills set, work-life balance issues, social perceptions, and glass ceiling. Studies conducted by Ahuja and Kumari (2012); Munn and Chaudhuri (2016) revealed that some of the factors prompting women to leave the industry include organisational environment and working conditions, for example, long working hours, health and safety in the workplace. Hatipkarasulu and Roff (2011) reported the absence of flexibility in construction organisations as one of the major causes of low representation of women. Women are predominantly obligated to perform domestic, and household duties and usually require working times that are flexible (Amaratunga et al., 2006; Gurjao, 2006). Moore (2006) argued that these barriers had been discovered to be experienced globally by women, especially those who have families or have intentions of starting a family.

Issues such as balancing work and family commitment are not accommodated in the industry, resulting in women having to choose between their careers and family (Fielden et al., 2000; Amaratunga et al., 2006). Consequently, this could impede women's career advancement (Agapiou, 2002; Arena et al., 2015; Chandra et al., 2004; Dainty et al., 2000; Dainty and Lingard, 2006; Kaewsri et al., 2013; Watts, 2009).

Vainikolo (2017) argued that the lack of flexibility in the industry is firmly connected to the concept of the glass ceiling. This view is supported by Gurjao (2006); Hoobler et al. (2009); Kolade and Kehinde (2013), who argued that gender discrimination which is viewed as an imperceptible attitudinal and structural hindrance which limits women's participation and abilities to gain promotion or advance to managerial positions is as a result of the glass ceiling phenomenon. This discrimination influences the gender pay gap within the labour market and stereotypical gendered roles within the society (Hoobler et al., 2009). Also, women experience limited progress in their careers due to the traditional positions, otherwise referred to as supporting roles they occupy which makes them invisible and frequently not considered for promotion in the construction industry (French et al., 2015; Agapiou, 2002; Kaewsri et al., 2013; Menches et al., 2007).

An underlying challenge prominent in current research is related to the perception of sexual harassment (Rosa et al., 2017). Kehinde et al. (2004) found that emotional stress and sexual harassment at the workplace caused setbacks to the career progression of women. Women executives, as well as site workers,encounter at least one form of sexual harassment (Haupt and Fester, 2012). Women who occupy managerial positions experience various degrees of harassment and confrontations which they perceive as emotionally

exhausting and sometimes resulting in them leaving the industry (Watts, 2009). In a study conducted in the Thai construction industry, it was found that women employed in contractor companies faced more problems of sexual harassment, work-life conflicts and workplace discrimination compared to women in non-contractor companies (Kaewsri and Tongthong, 2011).

Other significant barriers identified by several authors include the following:
- Lack of knowledge and career information about the industry (Fielden et al.,2000; Adogbo et al.,2005; Amaratunga et al.,2006; Lowe and Woodcroft,2014; Ahuja and Kumari, 2012)
- Lack of role models (English and LeJeune, 2012; Whittock, 2002; Yokwana et al., 2016)
- gender stereotypes (Watts,2009; Wright,2014)
- Lack of education and training programmes (Dainty and Lingard, 2006; Haupt and Fester, 2012)
- Lack of opportunities and challenges in career progression (Loosemore and Waters, 2004; Menches and Abraham, 2007; English and LeJeune, 2012; Ahuja and Kumari, 2012).

3.3.2 Lack of role models

The lack of role models is pervasive in all sectors of the South African economy (English, 2012). In South Africa, there are very few women on construction sites and therefore, a small number of role models (Vainikolo, 2017). English and LeJeune (2012) identified that the self-sustaining nature of construction work and the presence of role models is a contributory factor to why India has many women working on construction sites compared to Africa. Women observe other women as they undertake construction work and are aware that it is a straightforward entry approach to earning money (Baruah, 2010). The absence of role models has also been discovered to be a significant influence on the entry of women into the UK construction industry (Whittock, 2002). Unlike men, new female entrants were unlikely to have been encouraged to join the industry by female role models who had some experience of working in construction (Agapiou, 2002). English and LeJeune (2012) discovered that woman who joined the industry had a same-sex role model.

According to Yokwana et al. (2016); Vainikolo (2017), networking and mentorship are two most significant avenues through which women can gain supports and positive results in the construction industry. Mentoring and networking serve as supporting mechanisms for women who wish to undertake careers and progress in the sector (Watts, 2009). Through these supporting mechanisms of mentoring and networking, women could become versatile and equipped with adaptable skills that are beneficial to the construction industry (Vainikolo, 2017).

Lingard and Lin (2004); Yokwana et al. (2017); Francis (2017) identified the effects of role models and expectations of mentors from mentees and vice versa. English and Hay (2015) described mentoring as a relationship between two individuals, with one being more knowledgeable than the other and acts as a role model to the less-experienced person. The mentor motivates, guides and inspires the mentee whose aim is to improve in their career (Vainikolo, 2017). Women expect their mentors to support and aid their career progress and be role models that they can imitate and admire (Yokwana et al., 2016). Consequently, the presence of role models makes women more dedicated and display high rates of retention in an organization (Lingard and Lin, 2004). Francis (2017) further suggested that mentoring is associated with higher remuneration and progression. Affirmatively, these strengthen the fact that women who are trying to advance in construction and have role models are conceivably more likely to succeed in the construction industry (English and Hay, 2015, Francis, 2017).

A similar concept to mentoring is the idea of networking to support the progress and accomplishment of women's careers in the industry (Adogobo et al., 2015; Vainikolo, 2017). McDonald (2011) related networking to the 'old boys' network and described it as an assembly of a group of people who come together to support, encourage and share each other's experience regarding a similar subject. Networks are considered as an essential support system that could assist women in their personal growth and longevity in the construction industry (Chandra and Loosemore, 2004; Wright, 2014; Adogobo et al., 2015; Jimoh et al., 2016). Furthermore, networking forms solid partnerships with other women who share similar interests, attributes, and values within the construction industry (Chandra and Loosemore, 2004).

3.4 Discriminatory Attitudes towards women

3.4.1 Discriminatory Attitudes Towards Women in Developing Countries

Globally, in the construction industry, women are of the impression that they may not experience significant discrimination. Still, they have to prove themselves at all times by working twice as hard as their male counterparts (Parikh and Sukhatme, 2004; English and Hay, 2015). Construction-related studies on women entrepreneurs have also indicated that women-owned businesses are considered by financial organizations to be high-risk. Therefore, women find it difficult to secure capital to fund their projects (Vainikolo, 2017).

For a better understanding of gender discrimination, it is best to understand the concept of gender in this context. Thayaparan et al. (2014) described gender in the construction context as a gender's capability based on social constructs to carry out a task which determines seclusion from or reception into the industry's social circle. Numerous studies have shown that gender discrimination is a significant influence on the decisions of women to take up a career and remain in the construction industry particularly in management

positions (Agapiou, 2002; Arditi et al., 2013; Styhre and Economics, 2011; Wright, 2014). Comments made by men regarding the appearance of women and the assumptions made about women's skills and talents based on their outlook are an example of gender discrimination. Other comments made focused on their abilities to use the tools of the trade (Vainikolo, 2017). Women are being exempted from a series of activities because of the assumption that they have lower capabilities compared to their male colleagues (Ibanez, 2016).

With the masculine image of the industry, women face some level of gendered cultures and discriminations in the workplace constructed around stereotypes of their ability to perform (Agapiou, 2002, Male et al., 2017). In India, most buildings materials are procured locally, and mechanization is not accommodated (English and LeJeune, 2012). This provides opportunities for women to gain employment in construction. However, their presence in the industry in no way equates to the absence of discrimination. There is a pronounced level of bigotry and sexism towards the efforts of women to make progress in the industry (Kaewsri and Tongthong, 2013). There is extreme skills shortage among women as skills are passed down from father to son, or within male groups (Ahuja and Kumari, 2012).

Consequently, these infiltrating discriminatory behaviours help employers often get away with not providing basic amenities required for women on site (Ibid). Independent studies discovered that toilet facilities or daycares for women who had children were not offered (Moodley, 2012). Therefore, even though India indulges the participation of women in construction, they continue to face severe discrimination.

Similarly, in Thailand, most of the women in construction are employed as manual labourers with less than five per cent of them in the semi-skilled group such as, for example, carpenters (Kaewsri and Tongthong, 2013). Also, because women are at a higher risk of job insecurities compared to their male colleagues, they are the first to experience instabilities in the industry particularly in times of economic crisis (English and Hay, 2015).

A culture for men and women to work together in trade is no longer in existence (Vainiklo,2017). As a result, women who choose to take up careers in the construction profession continue to face discriminatory attitudes (Ibanez, 2016). Kalabamu (2004) found that in Botswana, employers displayed different discriminatory behaviours. Although employers affirmed that women were harder workers and showed more commitment to the job, yet they still preferred to employ men (Ibid). Vainikolo (2017) observed that employers had different expectations of women and recruited them as their last resort to meet impromptu

human resources shortages. This is supported by (AL-Hazmi et al., 2017; Martin and Barnard, 2013) who concluded that some employers perceived women working on construction sites as an obstacle.

The discrimination they experience affects the self-esteem of women as several studies have discovered that women believe that they are not competent enough to thrive in the profession (Kalabamu, 2004; Vainikolo, 2017; English and Hay, 2015). Typically, in situations where job opportunities are available, women are slow and reluctant to undertake them.

3.4.2 Discriminatory Attitudes Towards Women in South Africa

The South African construction industry is the third most predominantly male sector and demonstrates extreme discrimination in the recruitment of women (Navarro-Astor et al., 2017). English and LeJeune (2012) reported that most recruitment programs and professional workshops were mostly tailored to fit male work patterns and do not refer to prospects of career opportunities for women to gain employment in the construction industry. The discrimination and oppression they face have been identified as a significant reason why women do not enter or remain in the construction industry (Jahn, 2010).

Generally, training is subject to the employer's willingness to permit the employee to acquire training while in service (English and LeJeune, 2012). Most South African SMMEs lack resources to conduct training programs for their workers (Muriithi, 2017). Women undertaking employment in the construction industry are however faced with compounded problems, as they enter the industry with little or no training which contributes to their difficulty of being accepted (Jahn, 2010, Moodley, 2012).

Gender discrimination refers to a situation where a person may be deprived of employment opportunities or exempted from specific activities based on their gender (Albertyn, 2011). Nkuna (2010) explained that gender discrimination could be direct or indirect. An example of direct gender discrimination is a situation where a man in possession of fewer qualifications and experience is offered a promotion or a position irrespective of a woman who has higher qualifications and more experience and is contending for the same spot (Romei and Ruggieri, 2015). Ridgeway (2001) described indirect gender discrimination as policies and practices that extensively put a person at a disadvantage because of one's gender. For example, women who take maternity leave sometimes lose their benefits and entitlements which are associated with a length of service.

Numerous studies have found that women in South Africa experienced various kinds of discrimination at the workplace (Okpara et al., 2005; Makarova et al., 2016; English and LeJeune, 2012). The South African Employment Equity Act of 1998, states discrimination at the workplace occurs when an employer makes a

judgement about an employee for reasons that are not associated with work requirements. Discrimination is most evident when an employer makes decisions about an employee for purposes which are based on extraneous personal characteristics such as gender, ethnicity and religion rather than work performance or merit (Romei and Ruggieri, 2013). Therefore, women have to put in extra effort to progress and gain promotion (Okpara et al., 2005).

Historically, in South Africa women were at the center of discriminatory laws which favoured men and were confronted with the burden of unwaged labour (Haupt and Fester, 2012, Makarova et al., 2016). An inflexible and obdurate arrangement of working conditions and poor maternity rights prevented them from performing well, bearing in mind that they require breaks for childcare and family responsibilities (Vainikolo, 2017). These responsibilities often deny them the opportunity to undertake full-time paid employment (Ibáñez, 2017).

Mgcotyelwa (2013) argued that considerable attention was given to racial discrimination such that there was less focus on significant gender gaps. In her extensive study from 1995-1999, it was evident that unfair treatment contributing to gender gaps materialised at the recruitment stage with Black women being the primary victims. In recent studies, women, especially Black women who were employed in the construction industry identified problems such as women hindering the progress of other women, female managers achieving their real potential due to patriarchy, lack of role models and lack of confidence (Mgcotyelwa, 2013; Suraj-Narayan, 2010). Kalabamu (2004); English and LeJeune (2012) concluded that in modern construction, women and men can co-work equally and that for this to be achieved, women should be given access to work, training, and fair working conditions.

3.5 Chapter Summary

Despite being the world's largest industrial employer, traditionally women have difficulty entering the construction industry. Women in South Africa who constitute over half of the population are still more disadvantaged than men. Generally, the South African workplace has been unaccommodating to women, without the exception of the construction industry. Therefore, those who previously participated in the industry can no longer do so, as they have ceased to play a vital role in construction. Modern technologies and the introduction of Western gender stereotypes have become a basis for discrimination against women attempting to enter the construction industry. To improve the image of the construction sector, the growth of women in the industry must be monitored and improved. Furthermore, a diversified workforce with gender balance would arguably ensure higher levels of productivity within the industry.

The gender roles and the socio-cultural influences regarding women's career decisions and opportunities in the construction industry are explored in the next chapter.

CHAPTER FOUR

GENDER ROLES AND SOCIO-CULTURAL INFLUENCES REGARDING WOMEN'S CAREER DECISIONS AND OPPORTUNITIES

4.1 Introduction

This chapter highlights the concept of gender stereotypes and gender roles within the family, society, and the workplace. This chapter also discusses the perception of gender roles and stereotypes and how the influence of parents and educators, affect women's career choices and opportunities in male-dominated environments.

4.2 Gender and its Institutionalisation

The term "Gender" is not the same as "Sex" and refers to social and cultural constructs rather than biological characteristics of men and women (Anderson et al., 2012; Stergiou-Kita et al., 2015). It is determined by socio-cultural beliefs of identities, roles and functions attributed to men and women (Ifegbesan, 2010; Vainikolo, 2017). Gender refers to a socially constructed attribute that prescribes relationships, norms, responsibilities and roles of men and women (Stergiou-Kita et al., 2015). Although social beliefs and structural settings restrain individual decisions, individuals actively reproduce gender stereotypes in their day-to-day interactions (Makarova et al., 2016).

West et al. (1987) introduced the theory of "doing gender" to justify the reproduction of stereotypes through interaction. The concept argued that gender is because of social undertakings of some sort and not a set of characteristics, a role nor a variable (Jurik et al., 2009). During social interactions, individuals act as either male or female, participating in almost any activity as a man or woman. At the same time, their position in a sex group can be used to validate or discredit their other activities (Connell, 2012). Heilman and Parks-Stamm (2007) viewed "doing gender" as an individual's risk of facing gender assessment and penalties associated with engaging in behaviour out of his/her gender. Women encounter a range of career-related criticism for not conforming to stereotypically feminine standards because the violation of such stereotypes tend to ricochet that actors suffer adverse consequences for their rebellion (Rudman and Phelan, 2007b). However, criticism of non-stereotypical practices promotes gender inequalities and reproduction of pigeonholed career pathways (Makarova et al., 2016).

Dainty et al. (2006) described an organisation's culture as the specific way individuals behave and interact within it. The culture is not gender-neutral but is built along the lines of gender (Makarova et al., 2016). Acker's Theory of Gendered Organisations (1990) described gendering in organisational culture and proposed five interrelated processes of gendering in organisations. The first one is the gendered inequalities

in labour that put men in control of technology and associates skilled work with men and unskilled labour with women. Secondly, images of gendered construction that put men in leadership roles and women as subordinates. Thirdly, the social beliefs that perceive men as "actors" and women as emotional beings. Fourthly, reproduction of an individual's gender identity through their choice of self-representation as a gendered member of an organisation. Lastly, the effect of fundamental processes of gendering on the establishment of social structures and organisational logic. (Acker, 2008; Akinlolu and Haupt, 2019) concluded that gendered organisational culture puts women at a disadvantage by positioning them at the bottom hierarchy in specific careers and institutions.

4.3 Gender Stereotypes and Gender Roles

Numerous studies have identified similarities in the concept of gender stereotypes and gender roles, and it is however argued that gender roles are determined by behaviours and society's socio-cultural expectations enforced on males and females (Saucerman and Vasquez, 2014). Femininity and masculinity are gender roles and focus on societal and cultural expectations of sex (Enshassi and Mohammaden, 2012). Gender stereotypes are conceptions commonly held by society associating a set of characteristics, skills and behaviour to men and women, indicating that what is masculine is feminine and vice versa (Makarova et al., 2016).

Shelley et al. (2011) stated that gender role stereotypes are institutionalised when authorities and individuals in a society share a collective opinion concerning roles suited for men and women. As part of a societal belief system, stereotypes are descriptive and prescriptive (Heilman and Parks-Stamm, 2007; Rudman and Phelan, 2007a). The descriptive component of gender stereotypes uncovers how men and women behave and are usually perceived while the prescriptive element reveals what men and women ought to be and more importantly what they ought not to be (Rudman and Phelan, 2007a). Gupta et al. (2009) argued that descriptive and prescriptive stereotypes are not different from one another; instead, there is an intersection between them, with a direct relation between prescribed behaviours and positive characteristics that describe each sex. These stereotypical beliefs are considerably moulded from sociocultural expectations, which include perceptions of male and female gender and occupational roles (Makarova et al., 2016). Socialization facilitated by parents, teachers, peers and media and occurs during childhood through adolescence promotes gender stereotyping (Francis, 2017).

Social role theory argues that convictions about gender roles are borne during the socialization process and conserved and alleviated during psychological processes which make members of the society perceive these societal practices as normal and natural (Eagly and Johannesen-Schmidt, 2001). Rudman and Phelan (2007b) indicated that gender stereotypes stem from an individual's observation and perception of daily activities of a particular group and the perceiver's belief that the personal attributes and capabilities required

to conduct a task are typical of that group. Gender stereotypes by which a specific gender is expected to possess certain traits that equip it to function correctly are reinforced by male and female societal roles (Diekman et al., 2000).

Associated with stereotypical societal roles, men are expected to have higher power and occupy senior work positions while women take up domestic roles and have a lesser status in the society (Makarova et al., 2016). An example of such instances is when women are perceived to possess domestic skills, while men are granted with mechanical skills (Ridgeway, 2001). Szelényi et al. (2013) indicated that stereotypical beliefs emphasize on the communality of women and agency of men. Men are believed to possess traits of self –assertion and dominance, while women have attributes aligned with selflessness and empathy. Although it is flattering that women are perceived as warm, supportive, and kind, these stereotypes may also undermine their abilities and competence (Ibid). Rudman and Glick (2001) opined that most times perceptions of empathy and proficiency of social groups are inversely connected and that the benign practices of sexism that perceive women as warm but not competent, serve to promote gender inequality. Therefore, these assumptions confirm that gender stereotypes are assigned by gender and are universal unfounded generalizations targeted to specific groups, becoming a basis for the inaccuracy (Saucerman and Vasquez, 2014).

4.3.1 Gender-role Stereotyping in the Workplace

Gender-role stereotypes are usually displayed in professions that are perceived as predominantly masculine or feminine (Francis, 2017). Stereotyping in a work-setting is usually expressed in situations where multi-tasking is involved and under circumstances where there is a threat to the self-image and self-esteem of an individual (Simard et al., 2012). Stereotyping also occurs when there is a distinct member in a group, such as an only woman in a predominantly male team, where the woman will be a victim of more stereotyping compared to her male counterparts (Ibid). Vainikolo (2017) related this form of stereotyping to the concept of tokenism, where the dominant group perceive members of the token group as a representation of all the stereotypical traits of that gender. Therefore, the tokens find themselves working twice as hard as the dominant group as they are subjected to more scrutiny compared to their male counterparts. In this context, gender becomes a lens through which abilities and capabilities are evaluated, with the performance of women being judged through jade-coloured lenses (Ibid).

Expectations and beliefs regarding the abilities men and women possess and apply to their work often determines the professions that are suited for them, prompting the gender-based categorization of work (Vainikolo, 2017). These stereotypical beliefs of classification of work promote gender segregation and discrimination (Marlow and Carter, 2004). Work that portrays power, prestige and authority are categorized as masculine rather than feminine. Furthermore, senior management is believed to be for men while junior

positions are perceived as 'woman's work' (Arditi et al., 2013). Heilman (2001) stressed that gender stereotyping of senior-level work as masculine is a significant barrier to the career advancement of women. Men occupying executive positions has become a norm, that when women occupy similar positions, they are incompetent and eventually leave the position. Therefore, considerable evidence confirms that managerial traits are mostly related to masculine traits compared to feminine traits (Schein, 2001).

In careers identified as feminine, the communality of women is perceived as an ingredient for success, but as an obstacle in male-dominated workplaces and senior management positions. (Rudman and Phelan, 2007a) argued that socially constructed and learned beliefs about the communality of women can prompt benevolent sexism towards women, which undermines their abilities. Benevolent sexism comprises of condescending beliefs and behaviours towards women as well as low standards for women's merit and less tangible rewards (Makarova et al., 2016). One of the coping mechanisms adopted by women to ensure their contributions are acknowledged is to tolerate and adapt to the culture of the workplace by making efforts to adopt male practices and moderate their feminine traits (Akinlolu and Haupt, 2019; Martin and Barnard, 2013).

Empirical evidence shows that there has been a positive change in stereotypes held by women concerning managerial and feminine traits, while men continue to see no connection between a managerial position and feminine characteristics (Arditi et al., 2013). Numerous studies found that on a range of personal appraisals, including recruitment, placement, and promotion, female managers are perceived as incompetent and judged less favourably than their male counterparts (Makarova et al., 2016). Dezsö and Ross (2012) argued that a study across thirty years found that there had been an increase in the number of female managers. This has led women to believe that managers could possess either male or feminine traits and encourage their participation in such positions.

Although there has been an increase in the representation of women in managerial positions, the phenomenon of the glass ceiling effect that confines women to lower-level management positions is still evident (Schein, 2007). An overview of women in management worldwide identified the unwavering stereotype that associates management with male characteristics as the most significant obstacle for women in management (Makarova et al., 2016).

4.3.2 Perceptions Concerning Gender Roles in Male-Dominated Environments

In numerous African societies, the education of the girl child has been perceived as a less worthwhile investment (Kalabamu, 2006). African men are usually more educated than their female counterparts (McKeever, 2017). In many developing countries, South Africa being no exception, parents are opined that the girl child does not require as much education as the male child because she will be married into another

family, who will eventually reap the benefits of her education whereas they look up to their sons to propagate the family name (Powell et al., 2009). These parental expectations are found to be a significant contributing factor to the low enrollment in school and a high dropout rate of female (Badat, 2009;Mutekwe and Modiba, 2012).

Pressure from society on the significance of marriage may also limit the type of courses and professions women undertake (Mugaga and Akumu, 2010). Many African women consider education to be essential but are wary of being too educated or undertaking careers that may restrict their choice of a husband (Chabaya et al., 2009). Many African men prefer to marry women in nursing and teaching professions, whose careers afford them the time to attend to domestic needs and household chores (Casale and Posel, 2011). This reality influences the decisions of many women to undertake courses and careers in engineering and technology (Ibid). Intense pressure from parents and the educational environment also influences the professions women choose to pursue.

Most people refute the belief in the stereotype that recognizes the achievements of boys over girls and believes that girls and women are not as good as boys and men in math and science (Hill et al., 2010). Heilman (2012) argued that individuals who consciously deny gender role career stereotypes usually still have the belief implicitly. These unconscious biases are found to be more potent than conscious beliefs because the individuals are not aware of them. Although, some argue that gender bias is slowly diminishing, studies show that unconscious beliefs and values which form the basis of negative stereotypes are still persistent and continue to influence assumptions about people's identities and behaviour (Saucerman and Vasquez, 2014). Unconscious beliefs relating to gender roles may influence the decisions of parents to encourage girls from pursuing careers in a male-dominated profession (Hill et al., 2010). These beliefs further influence the hiring decisions of employers and their evaluation of female employees. Nosek et al. (2002) revealed that over 70% of the gender-science test-takers eagerly associated 'science' with male and arts with the female. This is indicative of the deep level of implicit gender stereotyping among women and men of all races and ethnicities.

Numerous studies have found that many of the studies on gendered differences in male-dominated environments revealed a range of sociocultural motives behind these differences (Madikizela and Haupt, 2010, Enhassi and Mohammaden, 2013, Akinlolu and Haupt, 2018). Perceptions on the suitable occupations for women in the labour market and the inappropriateness of women undertaken careers in male-dominated fields are commonly cited barriers (Ahuja and Kumari, 2012). Makarova et al. (2016) opined that women are disadvantaged by their numerical minority status in male-dominated environments. Hill et al. (2010) suggested that a similar proportion of various social groups shapes interactions between the minority and majority group. Kanter (1977) argued that the minority group "tokens" are usually aware

of their underrepresentation and differences compared to the majority group "dominants" and are pressurized to adapt to pre-existing principles about their social group.

Also, several influences within the educational environment and societal expectations have been found to pressure girls and women to conform to standards of femininity and circumnavigate male-dominated careers (Chileshe and Haupt, 2010). Consequently, women ultimately acknowledge professions like nursing and teaching as progressively feminine. On the other hand, disciplines such as engineering are perceived as masculine (Sangweni, 2015). An investigation of the influence of parental attitudes on the career decisions revealed that mothers often expect their sons to outdo their daughters in science and engineering-related subjects and their daughters to surpass their sons in social and art-related subjects (Agapiou, 2002). The study further revealed that girls whose mothers held these perceptions performed poorly in mathematics and physics subjects as opposes to their performance in English and geography (Ibid). Chileshe and Haupt (2010) indicated that girls who undertook studies in science and engineering fields were disfavored by both male and female teachers, while boys were given preference and expected to outperform the girls.

Attitudes, teaching methods of instructors and textbooks depicting stereotypically feminine roles have been found to limit the progress and achievement of girls in male-dominated fields (Fahim, 2010). Furthermore, the media conveys explicit as well as implicit images about women and STEM. These messages may have a negative or positive influence on the decisions of women to take up careers in STEM fields. Portraying these careers as attractive and accessible, will encourage women and stimulate their interest (Madikezela and Haupt, 2010). However, the media typically becomes a hindrance to women's participation and progress when it portrays STEM fields as exclusively for men (Ibid).

4.3.3 Gender Stereotypes and Women in Construction

Gender divisions exist within the construction industry, and relations are very complex (Vainikolo, 2017), (Smallwood and Haupt, 2005). Atalay and Doan (2020) identified a link between work motivation, gender role socialization and work opportunities concerning career choices and expectations. Events and experiences that occur during childhood could influence an individual later in life (Ibid). In a study on the differences in characteristics of successful men and women concerning motivation and achievement, Enhassi and Mohammaden (2013) stated that early childhood interaction enables and teach young men to master their environment while young women learn to seek help and protection. Madikizela and Haupt (2010) confirmed that young people to begin to make career decisions by the age of 16 and that gender-based career stereotyping hinder the ability for young girls to make career choices or take contrary career decisions to those of their parents. English and Hay (2015) revealed that although many parents were reluctant to encourage their students to take up a profession in construction, they showed no hesitance in

allowing their sons to enter the construction industry. These findings offer explanations for the lack of consideration that many capable women give to construction-related careers (Moodley, 2012).

Since, the culture of construction is aggressive, masculine, and highly gendered, women find it hard to thrive when displaying characteristics typically attributed to females (Amaratunga et al., 2006). Discriminatory behaviours towards women include the belief that women are unsuitable to occupyexecutive positions, since the model of an ideal manager is based on masculine qualities ((Makarova et al.,2016). Women occupy supporting roles involving secretarial, clerical, and administrative duties which arelinked to society's stereotypical beliefs that recognize women as nurturers (Kaewsri and Tongthong, 2013,Arditi et al., 2013, Wright, 2014, Francis, 2017). This implies that women listen actively and use discretionin decision making and problem-solving (Vainikolo, 2017). Meanwhile, men's roles comprise of managerial duties and tasks that involve strength and lifting heavy tools (Kaewsri and Tongthong, 2013). Chandra and Loosemore (2004) discovered that men are perceived to be leaders and achievement driven. These gendered roles are assigned from the assumption that each gender possesses a distinct set of skills (Vainikolo, 2017).

A considerable amount of literature has indicated that women do not take up careers in construction for several reasons (Wangle, 2009; Rosa et al., 2017). Madikizela and Haupt (2010) revealed that considering the basic features of each type of work, women might tend to lean towards white-collar jobs than blue-collar employment. Women also steer away from socially unacceptable professions because of adverse reactions from family members and employers (Haupt and Fester, 2009). A survey of female construction students found that over 50% of respondents indicated that their family and friends influenced their career decisions (Jimoh et al., 2018).

In construction, heteronormative gender stereotyping is evident through men's perception of women's capabilities (Chandra and Loosemore, 2004; Wright, 2014; Vainikolo, 2017). Embedded social and cultural beliefs regarding construction work have reinforced the perception that women are unsuitable and are unable to handle the heavy workload that exists in the industry (Adeyemi et al., 2006, Wangle, 2009, Vainikolo, 2017, Francis, 2017). The lack of interest in construction displayed by women has been attributed to socially developed divisions in male-dominated occupations, and the treatments women who enter these professions are subjected to by their male counterparts affecting their choices relating to flexible work hours and balancing childcare (Mangaroo-Pillay et al., 2020; Moccio, 2006). Along with men's perceptions regarding women's unsuitability for construction work, maternal profiling creates doubts about women's abilities (Sassler et al., 2017; Saucerman and Vasquez, 2014). This mind-set intensifies gender disparities and put women at a constant disadvantage (Mangaroo-Pillay et al., 2020).

According to Moodley (2012), gender stereotyping of women in construction is activated at the recruitment phase, where they must compete with their male counterparts despite fulfilling all requirements concerning qualifications and experience. Men, especially managers, are reluctant to acknowledge the skills and perspectives women bring to the industry (Worall et al., 2010; Mangaroo-Pillay et al., 2020). Women usually must adapt and tolerate the masculine gendered culture of construction workplaces to be able to fit in (Akinlolu and Haupt, 2019; Hartman and Hartman, 2009; Martin and Barnard, 2013). Numerous studies highlighted that women must continually work twice as hard as men to prove their abilities to perform in several roles and occupy various positions in the construction industry (Arditi et al., 2013). Male et al. (2017) study on the attitude of employers towards women in construction found that employers opined that women would have to work harder than their male counterparts to get promoted. Worall et al. (2010) concluded that women were equally capable of executing construction activities efficiently, but employers still have higher expectations and reservations about employing women. Wang and Degol (2017), Yokwana et al. (2016) suggested that increasing leadership, mentorship, and allowing flexibility of women in construction professions could promote their advancement and reduce negative gender stereotypes.

4.4 Childhood and Career Development

Career is an interrupted practice of work, which spans throughout an individual's lifetime and is divided into stages of development, from preliminary concepts about working to retirement (Ali and Saunders, 2006). Career development theories concerning children formulated by (Watson et al., 2011) validate the fundamental principle that the historical and cultural environment moulds the development of an individual. The career development theory stated that children's self-identity develops through their interaction with the environment, primarily through exposure to adult career roles (Becares and Priest, 2015).

During the stages of childhood development, occupational aspirations become progressively realistic. Gottfredson's (2005) theory on children's career development explained that children's career aspirations gradually become constrained and influenced as they develop. A variety of social and cultural factors such as family could affect children's career development and aspirations (Schultheiss and Development, 2003; Whiston and Keller, 2004). (Howard and Walsh, 2010; Porfeli et al., 2008) proposed a child reasoning development model which suggested that individuals aspire to specific careers based on a systematic interaction which has its antecedents in their childhood. Watson et al. (2011) concluded that career construction theory highlights a core belief that people are deeply rooted in environments that influence them.

Patton and Creed (2007) framework on career development identified systemic social and environmental influences on the career development of children. The aspirations of children are influenced within the prevailing social and cultural environment in which they develop. Personality interests, family, school, media, socio-economic and geographic settings were found to have an impact on the professional aspirations of children (Watson et al., 2011; Porfeli et al., 2008). Walton et al. (2011) argued that the influence of society on children's career development emerges from gender-role stereotyping of career aspirations and emanates from social influences.

Owing to South Africa's socio-political history, the process of career development is quite challenging (Watson et al., 2011). Very little literature focuses on the career development of South African children. Stead et al. (2010) conducted a study on the psychometric validation of the childhood career development of middle-class, urban primary school children. Watson et al. (2011) cross-national study on the professional aspirations of predominantly middle-class, English speaking children established that school children perceived extra-curricular to influence their career aspirations. Stead et al. (2006), Watson et al. (2009) argued that the indiscriminate adaptation of western career development practices might be unsuitable for South Africa, with these practices benefiting career choices of the privileged middle-class White population.

Watson et al. (2011) noted that the career development of the black population, most especially black children remain under-researched. Inbred inequalities as it relates to education and employment, influence career development research, theories, and practice. De Lannoy et al. (2009) observed that school children displayed an unsatisfactory low progression rate, with children from low socioeconomic backgrounds, whose parents possess meagre educational qualifications being most disadvantaged. Watson et al. (2011) identified a connection between the influence of parents on the vocational aspirations of children and the occupations of parents. Children aspire to careers related to those of their parents. However, there is a consensus that the level of their aspirations is facilitated by the level of job satisfaction of their parents (Ibid).

Watson et al. (2010) study on vocational aspirations of Black South African urban, Xhosa-speaking schoolchildren found gendered differences in responses. The study demonstrated that boys aspired to investigative careers while girls aspired more to social occupations. Elvitigala et al. (2008) argued that unlike men, the career development of women is usually influenced by family responsibilities and commitments. De Lannoy et al. (2009) proposed a career development theory based on five constructs that distinguished women's career from that of men and moulds the career process of women. Factors such as

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sex-role stereotyping, work motivation, job distribution structure and work expectations must be considered in women's career development (Ibid). Gutek and Larwood (1987) concluded that marriage, career preparation, availability of opportunities, pregnancy, marriage, age, and timing must be considered in the career development of women.

4.5 Career Choice and Socio-economic Status

Socio-economic status (SES) is the position of a person based on their access to wealth, power, and prestige (Ali and McWhirter, 2006; Taylor and Yu, 2009). SES is also conceived with regards to a family or a person's income, occupation, level of education and social rank (Bécares and Priest, 2015; Xin et al., 2020).

In South Africa, the hierarchical structure of society, including access to wealth, prestige, and power, was constructed to be based on ethnicity through decades and even centuries of institutionalized inequality (Ali and Saunders, 2006; Taylor and Yu, 2009). Restriction was placed on the type of education people had access to, where people could live, and the kind of work they could engage in (Taylor and Yu, 2009).

Subsequent research has widened the consensus regarding SES as a strong predictor of educational and career outcomes in South Africa- a highly unequal society (Taylor and Yu, 2009). Studies have shown that the SES of a person has a significant influence on their educational achievement and career choices (Ali and Saunders, 2006, Patton and Creed, 2007, Taylor and Yu, 2009). Becares and Priest (2015) investigated the inequalities of educational opportunity, with the assumption that ethnicity could be the primary cause of inequalities. However, findings from the study suggested that neither did ethnicity and funding predict educational and career choice. Instead, family and socio-economic background were found to determine academic and career outcomes substantially.

Lee and Burkham (2002) found significant differences in the cognitive ability of students could be associated with their SES backgrounds. (Cheng and Starks, 2002; Kao and Tienda, 1998) reported lower educational and occupational aspirations for students from lower socioeconomic status compared to advantaged students. In many studies, family support has been identified as a direct influence, bearing in mind that parental education and occupation are an indicator of SES (Ali, McWhirter and Chronister, 2005, Taylor and Yu, 2009). Highly educated parents may offer better support to their children, as they have better access to information that could feed into the educational and career achievement of the children (Taylor and Yu, 2009).

In addition to the disparities among people from socio-economic backgrounds, different patterns in education and career outcomes among women with varying SES has also received longstanding attention (Becares and Priest, 2015). These differences have been attributed to the socialization process and gender role stereotyping within families, schools, and communities (Bécares and Priest, 2015; Cvencek et al., 2011). These socialization and stereotyping processes are also significant causes of educational and occupational inequalities (Bécares and Priest, 2015; Kelly, 2009;Sinclair et al., 2006).

Although substantial evidence in the literature has suggested a variety of channels through which SES can significantly influence educational and career choices, samples have been bias towards higher SES categories (Bécares and Priest, 2015; Breen and Jonsson, 2005). Studies of women's career choices in male-dominated occupations have been found to rarely include women from low SES categories (Nieva and Gutek, 1981). To adequately examine SES differences among women, it is crucial to consider samples from a diverse range of SES backgrounds. Since men rarely undertake career s in female-dominated professions, the relationship between SES and career prestige has been adequate for the study of the career choices of men (Hannah and Khan, 1989). Betz and Fitzgerald (1987) suggest that the study of women's career choices are more complex, and the influence of SES on choices should be examined.

Comparisons have revealed that in lower SES categories, homogeneity and lack of exposure were found to hinder women's ability to contest gender norms, limiting their awareness to unconventional gender roles (Pozarny et al., 2016). Women from higher SES backgrounds are less pressured to conform to socio-cultural restrictions compared to their counterparts from disadvantaged backgrounds (Kilroe, 2009; Reichlin and Shaw, 2015).

Unterhalter et al. (2010) noted that issues of social exclusion concerning ethnicity and socioeconomic background, family composition and gender, strongly influenced educational attainment and career decisions of girls. The academic level of parents influenced their gender role perceptions. Sandıkcı (2018) associated social class to the value of higher education in high SES families. Families from high social classes have less traditional perceptions of gender roles for boys and girls. Lewis and Lockheed (2006) found that communities where ethnicity was a prominent part of the social structure displayed gender divisions regarding women's education.

Regarding education and gender role perceptions of women (Sandıkcı, 2018) emphasized that discriminatory policies on women's education hinder the educational progression of most women with lower SES. Educating the girl child is given low priority, particularly in households where assistance is required in carrying out domestic chores and income generation Chant et al. (2016). Majority of women do

not make it beyond primary education and are usually encouraged to prioritize their families rather than pursue higher education. However, their counterparts from higher SES backgrounds have access to more significant educational opportunities and are encouraged to take up careers in engineering and business, which places at an advantage of attaining higher social status (Lombard and Wairire, 2010). Parents from higher SES backgrounds might possibly encourage their daughters to break gender stereotypes and undertake careers in traditionally male-dominated environments (Andres et al., 2007; Chant et al., 2016; Lombard and Wairire, 2010).

Sonnert (2009) reported in high socioeconomic backgrounds, mothers with careers adopted more egalitarian gender roles for their daughters compared mothers in traditional families. Daughters were also found to consult with their fathers concerning career choices. Watson et al. (2011) found that female students from higher SES backgrounds chose their preferred course of study without considering the professional value of such a field. However, girls from lower SES backgrounds were more concerned with areas of studies that would provide them with financial security in the future (Watson et al., 2011). Andres et al. (2007) concluded that regardless of whether the gendered reality of the labour market is accepted, career choices of women are strongly associated with their social background.

4.6 Socio-cultural Influences on Women's Career Choices

In most societies, socio-cultural perspectives determine power structures, where men and their values are superior to those of women (McKeever, 2017). The role and status of women are undermined by several cultural practices and patriarchal principles. Women who are still part of the patriarchal system find it difficult to evade cultural and traditional beliefs regarding their roles and status in society for fear that they will be ostracized (Kiamba, 2008). Kilroe (2009) identified culture, religion, and family as significant constructs in the perpetuation of traditional gender role ideologies. In most cultures, cultural norms have a physiological influence on the roles and positions women assume. Women are highly regarded in traditional roles associated with qualities such as supportiveness, submissiveness, and subservience (Moodley, 2012). Therefore, career women are often conflicted, since conventional attributes that make them acceptable can undermine their assertiveness and self-confidence.

Sociocultural beliefs and ideologies hinder opportunities for women to pursue higher education and explore careers in STEM fields (Kilroe, 2009). For every individual, expectations regarding values, beliefs, ideals and aspirations appropriate to their gender are defined from birth (McKeever, 2017). The socialization process of an individual in most homes from childhood based on the concept of role expectancy developed over a period enforces the perception that women are inferior to men (Bradley and Healy, 2008 ; Bradley

and Healy, 2008). Consequently, this interferes with the achievements and advancements of the girl child (Kirai et al., 2012). De-Leon's (1996) study on the career development of African American and Latino women found that socialization processes that do not prepare women for challenges associated with non-traditional activities played a significant role in the inability for women to thrive in male-dominated careers. Women's lack of academic skills, professional experiences and restricted career opportunities were also attributed to the socialization process.

Social and parental expectations limit the aspirations and career choices of women (Watts, 2009). Borchert (2002) revealed parents are a significant source of information and support to the career and educational aspirations of their children. Family beliefs, attitudes and interactions influence a child's perception of work and work experiences. Investigating parental influence on gender socialization, Sonnert (2009) revealed that apart from parent's profession, their level of education also influenced the gender role perception of children as it relates to making a career decision. Ozlem (2018) found that the career choices of children whose parents had attained high educational qualifications were more likely to be influenced. Furthermore, girls reported that their fathers rather than their mothers influenced their career choices.

Domenico and Jones (2006) argued that the career aspirations of female students were greatly influenced by the educational achievement and social status of their mother's professions rather than the educational achievement and social status of their father's occupations. This finding was attributed to the fact that in most homes, mothers display a greater presence (Mohammaden and Enhassi, 2013). In an early study of female university students, Burlin (1976) found that girls were significantly predisposed to choose a life pattern like their mother's compared to their father's. The study emphasized the importance of mothers as role models and the part they play in developing the career aspirations of girls.

Although the majority of university students are women, they are less unlikely than men to undertake professions in STEM-related professions (Hill, Cobertt and Rose, 2010). In Westaway and Skuy's (1984) survey of adolescent white girls, it was found that over 50% had high educational aspirations, but only a few had vocational aspirations. This inconsistency between academic and vocational aspirations reveals the prevalent societal attitudes towards girls. Although girls are encouraged to achieve success at school, they are usually discouraged from having high professional ambitions because of the adverse effects such ambitions may have on the traditional roles assigned to women (Moodley, 2012).

Agapiou (2002) investigated the attitudes of parents and educators regarding the career decisions of girls in construction. The study revealed that there were concerns about the social implication of undertaking a

profession in a male-dominated environment. Female entrants into the construction industry are more likely to be influenced by family members, teachers or role models who have some experience of working in construction, (Jimoh et al., 2016). (Elvitigala et al., 2008) found that in many cases, girls were discouraged by family and friends to join the construction industry because of the perceived difficulties of working in a male-oriented environment. Findings from Hill et al. (2010) revealed that when parents and teachers assured girls of their capabilities in maths, girls tend to perform better at it and aspire of entering maths- related fields in future. This suggests that having confidence in the potential for intellectual growth enhances outcomes. In the case of girls, where negative stereotypes about their abilities persist, this approach has proven to be helpful (Hill et al., 2010). By creating an environment that promotes growth, teachers and parents can encourage girls to take up careers in male-dominated professions.

Despite laws and legislations promoting gender inclusivity, gender-based discrimination remains rooted in society through socio-cultural beliefs, attitudes and perceptions, which exclude and devalue the achievements of women (Kirai and Kobia, 2012). Jamali et al. (2005) revealed that the socio-cultural factors influence the career progression of women; therefore, it is crucial to investigate the role the cultural environment plays in the career decisions women make. Men are usually brought up to seek professional success, while women are expected to take up the traditional role of becoming mothers and nurturers (Jimoh et al., 2016). Also, women carry out productive tasks, which in most cases are voluntary and unpaid. The time-consuming role of women as caretakers of the household is often used as justification as to why women are unsuitable for masculine jobs Amaratunga et al. (2007).

Achieving professional status has been difficult for women due to family obligations (Kiamba, 2008). Hill (2010) cited that problem of balancing work and family responsibilities was an obstacle to women's entry to and aid to their exit of STEM professions. However, Xu (2008) observed a subtle relationship between family obligations and academic STEM careers. The study showed that single women were more likely to be hired and get promoted for tenure positions compared to married women. However, marriage is a requirement for both men and women to be employed as an assistant professor. Xie et al. (2003) found that married women with children were disadvantaged compared to married men in terms of tenure-track jobs decisions. While marriage does not seem to deprive women of opportunities, childbirth and care do appear to affect their chances for promotion and advancement.

Women are expected to attend to family duties and work responsibilities simultaneously. Amaratunga et al. (2007) observed that women in the construction profession had mixed feelings about choosing between work and family demands compared to men. Although it is perceived that both men and women identify

having a family to likely hinder their career success, women are differently affected by this circumstance (Ehnassi and Mohammaden, 2013). Kirai and Kobia (2012) concluded that motherhood may put women's career opportunities at a disadvantage, while opportunities for men are enhanced. Therefore, this creates an argument on whether taking on family responsibilities as well as a career eventually has an impact on women's career growth and advancement. A study on retention found that women in STEM were more likely to married to people in similar professions as them, who had similar demanding work schedules. In situations where family duties needed to be attended to, the man's career is usually given a priority (Hewlett et al., 2008).

Ehnassi and Mohammaden (2013) revealed that the challenge of being a family caretaker and a working woman left women feeling unsupported and unacknowledged and with inadequate time to spend with their families. They have insufficient time to attend to household duties, as most of their time is devoted to work roles (Hewlett et al., 2008). However, time spent on satisfying work demands consequently results in work-family conflict, stress, guilt, and frustration (Sangweni, 2015). Additionally, many employers are less accommodating with alternating roles and often fail to recognise that the multiple role pressures could affect the job performance of women (Ehnassi and Mohammaden, 2013).

The perception and opinions of men concerning issues related to women's work-life balance in male-dominated environments are often excluded in literature. Numerous studies have argued that stress related to work-life balance is experienced by both and women (Chou and Cheung, 2013; Karkoulian et al., 2016). However, gender differences exist concerning the dual roles of men and women at work and in the family (Tan-Wilson and Stamp, 2015). These differences are associated with internalized divergent heteronormative gender role societal expectations, which place women at a disadvantage of taking primary responsibilities for housework and childcare alongside full-time employment (Parker and Wang, 2013; Parker and Wang, 2013; Pillay, 2017). (Dasgupta et al., 2014; Tan-Wilson and Stamp, 2015) recommended the intervention of men, encouraging organisations to shift from traditional stereotyped roles, which places men with the primary responsibility for work and women for family. Karkoulian et al. (2016) suggested that the introduction and improvement of company paternal policies may promote a more accommodating workplace culture and supress issues of maternal profiling.

4.7 Chapter Summary

This chapter presented issues of gender roles in relative to education and career choices of women. The formation of gender role perception was discussed by exploring the influence of gender role stereotyping on women's status and career decisions in male-dominated environments. Gender role perceptions

concerning the career progression of women and socio-cultural factors that facilitate the development of these perceptions were also reviewed. The next chapter presents the theoretical framework for this study.

CHAPTER FIVE

THEORETICAL FRAMEWORK

5.1 Introduction

The following section discusses the theoretical framework underpinning the study. The postmodern feminist perspective, concerning the career choices of women in male-dominated professions such as construction, is the primary theory that framed this study. Related theories such as the social cognitive theory as it relates to gender roles and the social cognitive career theory as it relates to the career choices of women based on social influences were also discussed. This chapter demonstrates the relationship between these theories in issues pertaining to women in male-dominated professions.

5.2 Feminist Theoretical Approach: Overview and Background

Like any social environment, individuals strive to find a balance between conforming to the standards of society and retaining individual identity in the workplace (Charity-Leeke, 2012). In the context of this study, women strive to conform to the construction workplace culture as well as to the culture of male-dominated professions. The workplace culture that enforces male hegemonic agency puts women at a disadvantage, as they are usually unable to balance socio-cultural gender roles and their identities with the expectations of the workplace (Powell et al., 2009). This study explores the social-cultural experiences and career choices of women in construction through a feminist theoretical framework.

Feminist theories have gained attention through women feminists contesting for recognition and visibility in society (Vainikolo, 2017). According to (Krolokke and Sorensen, 2006; Wright, 2014), three strands of feminism have shaped contemporary feminism.

The first is liberal or rights feminism which occurred between the late 19th century and early 20th century. The liberal feminist tradition was initiated to provide equality for women, access to similar opportunities as their male counterparts and to promote their inclusion in all areas of public life (Cockburn, 1991; Evans and Chamberlain, 2015). The liberal tradition advocated for the extension of the rights held exclusively by men to women, including the rights to vote, rights in marriage, rights to occupy positions in government and to own property (Wright, 2014). Liberal feminists sought no preference for women demanding only that every person received equal treatment without discrimination based on sex (Handelsman et al., 2005).

The second stream of feminism was the radical feminism which occurred in the early 1960s and highlighted the discriminations and oppressions experienced by black women and demanded all women to have access to the labour market (Krolkke and Sorensen, 2006). Radical feminists criticized the liberal feminist

approach and argued that it focused mainly on issues of white middle-class women and only sought to accommodate the needs of a specific group of women (Wright, 2014). This strand of feminism emphasized the role of women in procreation, focused on sexuality, objectification of women's bodies and issues concerning violence against women (Ibid). For many feminists, this typically involved seclusion of women from men, which meant living and working in communities separate from men (Evans and Chamberlain, 2015). Women's differences from men are identified by emphasizing the reproductive and sexual differences between both groups, with the perception that the destiny of women is determined by physiology (Phillips and Hardy, 2002). Furthermore, it creates a sisterhood among women by marginalising their differences to the exclusion of men, especially class and ethnic differences (Evans and Chamberlain, 2015).

The third stream which occurred in the mid-1990s emphasized diversity and was referred to as social or Marxist feminism which was a more liberal approach to radical feminism (Wright, 2014). This approach focused on the confidence of women in themselves and their acceptance of racial differences, especially between black and white women (Krolkke and Sorensen, 2006). Marxist or socialist feminists considered class oppressions and the position of women concerning production (Wright, 2014). In Marxism, economic aspects of gender are considered, and the importance of positioning women in the labour market is emphasized (Philip and Hardy,2002). Radical feminists criticized this approach to feminism by identifying its failure to examine other aspects of women's segregation apart from economic oppression, such as violence against women and sexuality (Wright, 2014).

Overall, the feminist theoretical approach focuses on the experiences of women as it relates to gender discrimination and patriarchy (Ramazanoglu and Holland, 2011). Grant and Giddings (2002) posited that feminist research is targeted at eradicating inequality and providing a voice for women as disadvantaged and oppressed groups in society. Feminism explores how women comprehend their gender and deal with social issues such as affirmative action, agency, and equality (Charity-Leeke, 2012; Beckman, 2014). The feminist theoretical perspective aims to amend the hidden and misrepresented experiences of women by ending their inequality in society (Vainikolo, 2017).

Since feminism focuses on women (Philip and Hardy, 2002), the fundamental principle is that men are identified as a benchmark for performance and those in society who do not conform to this benchmark or standard of performance, mentality and culture in society are regarded as being different and viewed negatively (Vainikolo, 2017). Feminism challenges the basis of such thinking and emphasizes the masculinist bias and the exclusion of the experiences of women (Wright, 2014).

Descartes is said to have established the principles of the modern scientific method in the seventeenth century by proposing that knowledge of the natural world can be gained only through the mind or reason,

rather than the senses or intuition (Ramazanoğlu and Holland, 2002). His dualism of mind (conscious being) and matter (objects of knowledge) has become embedded in Western ways of thinking that employ taken-for-granted dualisms. For example, reason and rationality is pitted against emotion, mind against body, subject versus object and male against female, with the second half of the pair consistently devalued (Maynard, 1994). Feminists have revealed the influence of such perceptions in popular views that position women as mistresses of passion and emotion, and closer to nature than men, who can use their superior capacity for reason to master their passions and bodies (Ramazanoğlu and Holland, 2002).

Revealing the prevalence of these dominant ways of thinking, the feminist theory seeks to reposition women as possessors of equal valid knowledge (Sarseke, 2018). Wright (2014) argued that the relations of the ruling are formed by the creation and dissemination of the perceptions of society cutting across forms of societal relations, based on capital relations and the gender factor. Therefore, "men exclusively occupy powerful positions, while our forms of thought construct a view of the world from a place woman do not occupy" (Smith and Watson, 1988: 19). Esmonde (2012) claimed that implications for these perceptions are inequality and gendered work stereotypes. These stereotypes are a major component of the feminist theory and are targeted at understanding historical inequalities between genders. It is argued that gender role stereotypes concerning work and everyday life form the basis for inequality within society at large (Enhassi and Mohammaden, 2013; Saucerman and Vasquez, 2014). To rectify this inequality, Smith and Watson (1998) proposed viewing women issues from the standpoint of women by examining their actual daily experiences. However, the claims of feminists to produce a better of understanding that incorporates the experiences of women is affected by epistemological challenges in defining of the relationship between knowledge and reality (Wright, 2014). Ramazanoğlu and Holland (2002) described four positions that can be taken by modernist feminists on connecting knowledge and truth and the relationship between objectivity and subjectivity.

Firstly, objectivity is seen as separate from, and superior to, subjectivity, and to be objective, the findings of researchers must be impartial, general, and free from personal and political biases (Ramazanoğlu and Holland, 2002). From the argumentsalready made, it will be apparent that few feminists would argue that reason is productive of objective or unbiased knowledge, and a political commitment to research for women precludes claims to neutrality in any case. Peel et al. (2004), though, has tried to resist relativism by retaining a notion of objectivity in feminist research, arguing for a 'strong objectivity' that includes a critical reflection on the knowledge production process. Ramazanoğlu and Holland (2002) argued that Harding reflects a common confusion between objectivity (referring to knowledge that is free from bias or subjectivity) and validity (telling a better story of the experiences of women and therefore making connections between ideas and reality). Harding's steps for 'maximising strong objectivity' include critical reflection on the production of

knowledge and grounding research questions based on the standpoint of the marginalised - women. But Ramazanoğlu and Holland (2002) argued that reframing objectivity in this way cannot escape the dualism of subject and object. Harding is trying to "strengthen objectivity in the service of validity".

A second position on the relationship between objectivity and subjectivity sees subjectivity as separate from, and superior to, objectivity (Ramazanoglu and Holland, 2002). Some radical feminists have been accused of reversing the duality between subjectivity and objectivity by arguing that the close relationship of women with their bodies gives them feminine powers of thought and therefore access to feminine sources of knowledge. Such views have been criticised as essentialist, although Ramazanoğlu and Holland (2002) pointed out that valuing personal experience is an important contribution of feminist thought and is not the same as viewing subjectivity as being superior to objectivity.

A third position views objectivity, subjectivity as inseparable, and draws on the Marxist view of material dialectics in which subjectivity and objectivity are problematically inseparable. This view sees all efforts to describe social reality as political but argues that it is still possible to be scientific in connecting ideas to underlying realities. Therefore, Marx conceptualised actual connections between observations of the lives of workers and his theories of exploitation and capitalism. The Marxist notion that political commitment is inevitably part of the process of knowledge production is shared with feminist thought and has been influential in the development of the feminist standpoint (Peel et al., 2004).

A fourth position, relativism, argues that valid knowledge of an external social world is neither directly nor indirectly accessible. In this view, all that can be known is interpreted within a language of knowing, and there is, therefore, no way of judging between competing claims to truth. There are only multiple and contingent truths. Ramazanoğlu and Holland (2002) however, believed that a wholly relativist position is incompatible with feminist politics and ethics based on the principles of emancipation and justice: "It matters which accounts of reality are believed and acted on; it matters who has the power to determine what counts as authoritative knowledge; it matters how knowledge claims are expressed and what weight they carry (Ramazanoğlu and Holland, 2002: 53).

In relation to this study, Wright (2014) described three major categories of the feminist theory; feminist empiricism, feminist standpoint epistemologies; and feminist postmodernism. Anderson et al. (2012) opined that feminist empiricism is a defence of observational information which is the only legitimate basis for testing a theory. Feminist standpoint epistemology proposed that starting enquiry from the socio-political experiences of marginalized people would generate a fair account of social life by providing clear grounds for knowledge (Harding, 2004). The theory believes that because women have a less distorted vision of social relations unavailable to men, discovering and testing the experiences of women is a

necessary starting point for accounts of social reality. Evans and Chamberlain (2015) defined feminist postmodernism as a catch-all phrase for an incredibly wide variety of perspectives of feminist thought. The postmodernist element of the feminist theoretical approach believes in deconstructing categories, especially dual oppositions such as man/woman in which the woman is defined in opposition to the dominant group being 'man', describing the woman as inferior (Wright, 2014). Postmodern epistemologies are submerged between standpoint perspectives and proponents of deconstructionism (Vainikolo, 2017).

Johnson-Bailey and Class (2003) contended that the feminist research approach allows for active participation of subjects in the research and establishes collaborative relationships by placing the researcher within the study to avoid objectification (Creswell et al., 2011). The feminist approach is multifaceted, in that it emphasizes the differences between and among groups of women (Charity-Leeke, 2012). An influential contribution of feminist thought is that it questions traditional philosophies and interacts with discriminations based on race, class, and gender, which are the areas in which most women experience oppression (Wright, 2011). Other factors, which interplay with feminism, are religion and sexual orientation (Sarseke, 2018).

According to Sarseke (2018), feminists are struggling to 'feminize' careers in male-dominated fields. Despite the initiation of strategies targeted to increase the participation of women in construction, the success of such initiatives has been limited (Phillips 2002; Wright, 2011). Feminists have questioned whether the underrepresentation of women in male-dominated careers results from their inadequacy or the influence of social and cultural beliefs (Sarseke, 2018). With reference to this position, the feminist theoretical perspective becomes a suitable framework for exploring the career choices of women in construction and the socio-cultural determinants. The experiences of women of diverse cultures and race are either missing or rarely raised in the literature, and findings from this study may contribute to the constructed knowledge that educators require to attract more women to the education profession. The study, therefore, focuses on the social and cultural environment, emphasizing on the knowledge that gender is socially constructed and explores the participation of women in construction careers to understand the relationship between gender and the socio-cultural environment.

5.2.1 Postmodern Feminist Perspective

The postmodern feminist theory is founded on the notion that modern society is driven by the differences that exist between men and women (Pomeroy et al., 2004). According to Evans and Chamberlain (2015), diversity and the truths regarding roles and realities are embraced in the postmodern feminist theoretical approach. The structure of the society where men are naturally placed in positions of power is questioned. Therefore, the focus is on the strengths of women rather than their subjugation (Drummond et al., 2008; Jackson and Scott, 2002).

According to Fairclough (2004), the articulation and representation of the physical, social and psychological world is a noteworthy feature of postmodernism. Attention to discourse, and discursive levels of analysis, have recently been widely taken up within sociological study, and have been influential in analysis of gender (Wright, 2014). Also implicit in the postmodern approach is a rejection of the 'grand narratives' characteristic of much social theory, such as Marx's theory of capitalism, or indeed systems such as patriarchy, viewing it as an impossible task to explain societies in totality. Instead, the focus is on 'local narratives' – studies of interaction in specific contexts and of actors' accounts of how they make sense of the interaction (Bradley and Healy, 2008). Therefore, postmodernist influences are essential in trying to understand how unequal relations are represented at the level of discourse and representation, or in focusing on local, contextualised interactions and processes rather than seeking grand structural explanations for society (Fairclough, 2004).

In postmodernism, the self is no longer regarded as "masterful, universal, integrated, autonomous, and self-constructed; rather it is socially constructed by ideology, discourse, the structure of the unconscious, and/or language" (Rothfield, 1990: 132). Socially constructed gender roles are continually influenced by continually changing demographics, globalisation, and digitalisation (Charity-Leeke, 2012). Postmodernism eliminates the universal subject and likelihood that all women are the same and can be universally addressed (Rosser, 2005). As a result of the specific race, class, nationality and cultural identities, the category of a woman is no longer regarded as smooth, equal, and homogenous (Wright,2014). Postmodern feminists posit that no universal perspective will be appropriate for women, as women will have different reactions and experiences in male-dominated environments depending on their socio-economic status, ethnicity, nationality, and sexuality (Nash, 2008; Wright, 2014). Although women may share certain traits and experiences, their race, class, and sexual orientation create differences. This description of postmodern feminism aligns with the complex and diverse coevolution of women (Evans and Chamberlain, 2015).

Establishing a link between the needs of women and desirable features of male-dominated professions has been much debated and is often handled in an essentialist manner regarding the purportedly universal characteristics of women engineering workers, such as lack of confidence and being caring and sociable rather than rational and technical (Vainikolo, 2017). Feminist's initiatives have focused on addressing this generalization by emphasizing the processes of permanently redefining the role of women in male-dominated environments (Charity-Leeke, 2012). As initiatives to promote the participation of women in Science Technology Engineering and Mathematics (STEM) increase in number, administrators have become cautious in suggesting that strategies developed to attract and retain a specific group of women and girls are suitable for all women (Sarseke, 2018). Since postmodern feminism disregards the notion of

women as a monolithic group, it posits that there is no general approach or solution to attracting women and girls to STEM.

Experiences and perspectives that shape the career decisions of women and girls are influenced by a multitude of factors such as gender, race, ethnicity, social class, family dynamics, education, and intellectual abilities (Nash, 2008). Given that most initiatives adopt a variety of approaches, they can be considered as operating from the postmodern feminist perspective (Pomeroy et al., 2007; Tong, 2009). In the context of the present study, postmodern feminism argues that, due to the distinct and unique experiences and backgrounds of women, retention is best achieved by adopting a variety of strategies within a comprehensive "interdisciplinary umbrella" (Wright, 2012, Evans and Chamberlain, 2015)

Through the postmodern feminist perspective, the study aims to lend a voice and project the experiences of women in the masculine construction climate. This study specifically seeks to investigate how socio-cultural gender roles influence the career decisions of women of diverse cultures in construction. The feminist postmodern perspective allows flexibility in the search for truth, and therefore it is appropriate for this study. The postmodern perspective allows for the deconstruction of socially constructed characteristics that shape the identity of women such as gender, race and social class. It examines the power relations associated with race, class, and gender while acknowledging the dynamics of individuals' truths as they evolve through life (Tisdell, 2002).

5.3 Feminism and Women in Construction

The study is mindful of the notion held by some feminists who emphasize the importance of acknowledging the differences between men and women in learning and work interactions while rejecting stereotypes that imply that women are unsuitable for construction professions. The study believes that women are competent and can thrive in construction work.

The study acknowledges the various feminist arguments regarding the experience of women. (Collins, 1996) recognised the different feminist viewpoints based on factors that influence the life experiences of women as well as individual personality traits. Additionally, the evolution of feminism from colonialism to postmodernism has influenced women's roles, rights, interests, and opportunities (Charity-Leeke, 2012). All these factors have been found to affect the subjective realities that define the phenomena of the life experiences of women.

Feminist pedagogy, "encourages personal transformation of individual knowers by attempting to expand consciousness, capacity for voice, and self-esteem as knowers construct and express new knowledge and become more fully authors of their own lives. It encourages social transformation by inviting knowers to

be actors in the world through participation in social change movements and public policy discussions that keep the interests of women in mind" Tisdell (2002).

With reference to the feminist pedagogy, the study aims to facilitate the transformation of the self-identities of women and girls; and aid the deconstruction of social gender role constructs that define what it means to be feminine, feminine work and discriminatory stereotypes which deter women from undertaking careers in construction. Similarly, the study intends to provide information to promote the transformation of the male hegemonic construction industry to become a more inclusive workplace.

5.4 Social Cognitive Career Theory

In addition to the feminist theory, this study was framed by the Social Cognitive Career Theory (SCCT) as it relates to the career decisions of women in the construction industry. The SCCT conceptualized by Lent et al. (1994) and derived from Bandura's social cognitive theory, is founded from the social cognitive theory which argues that a person is not entirely controlled by their environments, nor are they able to apply complete free will. Instead, a person's behaviour and thoughts influence the environment and are likewise influenced by personal factors and the social environment (Bandura, 1986; Charity-Leeke, 2012). Bandura (1986) referred to the relationship between person factors, external behaviour, and the environment as "triadic reciprocity" (p. 18). Further, neither the person nor the environment is static (Kelly, 2009). Bandura noted that the three factors have different strengths, depending on the situation. Since there is a dependence on the person and contextual variables, along with the assertion that the person and environment are not static, Bandura's social cognitive theory has proven to be reasonable from upon which to develop a theory of career development, as done by Lent et al. (1994) with SCCT.

SCCT (Lent et al. 1994) is a direct application of the social cognitive theory by Bandura (1986) and elaborates exclusively on the educational interest formation, career development, performance, and persistence of individuals in their career endeavours. Lent et al. (1994) attempted to combine elements of various theories developed and modified by several other theorists such as person-environment correspondence (Dawis and Lofquist, 1984), personality typology (Walsh and Holland, 1992), social learning (Krumboltz et al., 1976), lifespan, life-space (Super, 1980), and developmental theory (Vondracek and Schulenberg, 1986). Therefore, an inclusive and comprehensive individual career choice model was produced (Lent et al., 2002). Processes whereby the educational and professional interest of individuals are developed; the influence of interests and other socio-cognitive mechanisms on career choices and the attainment of different levels of career performance and persistence are outlined in the SCCT (Lent et al., 1994; Ali and McWhirter, 2006).

Previous studies have demonstrated the function of the SCCT in the career outcomes of a person (Ali and McWhirter, 2006; Pio et al.,2013; Hunt et al., 2017). These studies have shown that SCCT can be adapted to encapsulate the cultural characteristics of diverse environments, and therefore provide an ideal framework for understanding the social and cultural factors that influence the occupational choices, interests and aspirations of girls and women (Mau et al., 2000, Pio et al., 2013). SCCT applies the social cognitive theory to academic experiences and career development and emphasizes that career decisions are controlled through the interaction of cognitive process with environmental influences (Chronister et al., 2003; Ali and McWhirter, 2006, Kelly, 2009). The social-cognitive theoretical framework consists of interrelated processes of choice, motivation, interests and performance (Taasoobshirazi,2008; Kelly, 2009). According to Hackett and Lent (1992), social cognitive theory incorporates an agency approach to human behaviour. As students take formative decisions, they may intentionally produce desired outcomes through their actions and within the confines of their social environments (Bandura, 1989, Chronister et al., 2003; Lent et al., 2008).

SCCT focuses on the role of cognitive factors such as self-concept, self-efficacy, goal representations, interests, outcomes and expectations in the career development of an individual and how these factors interact with internal and individual variables such as gender, ethnicity, belief systems and social supports to influence the career behaviour of adolescents (Lent et al., 2000, Lent et al., 2008, Ali and Saunders, 2006, Kelly, 2009, Pio et al., 2013). Biological, situational and contextual factors such as race, sex, intelligence, and culture and gender role socialization are moderators of the formulation of choice goals and have a significant influence on career development (Ali and McWhirter, 2006, Kelly, 2009).

Self-efficacy has been found to play a crucial role in the career choices of individuals (Charity-Leeke, 2012; Hackett and Betz, 1981; Sawtelle et al., 2012). Self-efficacy belief which is the core construct SCCTand typically influences a person's academic and professional aspirations is influenced by learningexperiences (Pio et al., 2013). In the context of SCCT, outcome expectations are anticipations of possible consequences from chosen actions and work-related behaviours (Lent et al., 2008; Kelly, 2009). Goal representations are achievement-related choices (Lent and Brown, 2006). All these factors in combinationwith background factors and personal inputs such as gender, race and ethnicity are the most prevailing predictors of career decision making as they are also suggested to influence learning experiences (Kelly, 2009, Charity-Leeke, 2012). From the SCCT perspective, learning experiences are verbal encouragements,supports and modelling from significant others used to maximise the performance accomplishment of a person (Flores et al., 2010).

Lent et al. (1994) theorized that self-efficacy and outcome expectations lead to the formation of career interest, which results in the intention of getting involved in corresponding activities with those interests.

Interests are hypothesized to result in actual engagement in activities which lead to performance outcomes (Kelly, 2009). Self-efficacy beliefs are influenced by a person's success at a given task, as this information is integrated into the person's self-concept in that specific domain. However, Lent et al. (1994) also suggested that self-efficacy beliefs and outcome expectations may directly result in a person's engagement in an activity, irrespective of whether the person develops interests in a specific career.

Several researchers have adopted the SCCT to investigate the career behaviours of students and have indicated the importance and richness of this theory. For example, through a path analysis and choice model, Lent et al. (2008) examined the relationship between self-efficacy, outcome expectations, intentions and interests of engineering students. Rogers et al. (2008) extended the SCCT career choice model to investigate the role of personality, self-efficacy, social supports, outcome expectations and intentions in the career readiness and planning of students. Rajabi et al. (2012) investigated the factors that influence the career choice intentions of Iranian agriculture students based on SCCT, using an artificial neural network. Jin et al. (2009) examined the influence of self-efficacy beliefs and personality traits such as extraversion, openness, agreeableness, and conscientiousness on the career decisions of Chinese postgraduate students. Kelly (2009) examined the extent to which self-efficacy, outcome expectations, self-and environment exploration, overall life satisfaction, and socioeconomic status (SES) would determine student's adaptive transformation from school to the workplace. Ochs and Roessler (2004) examined the career exploration intentions of students and found that outcome expectation and self-efficacy beliefs play a significant role in the explanation of student's career intentions.

5.4.1 Gender and Social Cognitive Career Theory

Studies have demonstrated the influence of gender on the social cognitive variables in the SCCT model. Pio et al. (2013) examined the role of SCCT, including social and contextual variables in the persistence of undergraduate university students in engineering. SCCT was perceived as an ideal theory for the understanding of gender differences in career decisions and outcomes of women in engineering. Self-efficacy was found to be the most important predictor of persistence in engineering. Lent et al. (2005) suggested that gender differences exist in the influence of socio-cognitive factors. Although, there were no significant differences among women and men engineering students in most of the social cognitive factors. However, women perceived fewer social supports and more barriers than men. Gainor and Lent (1998)examined the choice intentions of black university mathematics students and found that men reported higher self-efficacy compared to women. Similarly, Byars et al. (2010) reported that men possessed higher self-efficacy and outcome expectations in maths and sciences compared to women.

In other instances, studies have revealed an indirect influence of gender on outcome expectations and self-efficacy through the mediation of previous learning experiences (Hackett et al., 1991; Lent et al., 2001). Further, the predictive utility of the SCCT is not moderated by gender. This means the SCCT variables may help understand the career and educational choice process for men as well as women (Lent et al., 2005; Lent et al., 2011).

5.4.2 SCCT and Women's Career Choice

Although SCCT can be adopted for men and women, many studies chose to apply the theory to the career development of women due to the fact the process is challenging for women given the barriers they are likely to encounter at the workplace (Ali and McWhirther, 2006, Charity-Leeke, 2012). SCCT has been identified as a valuable approach for examining academic and career choices of girls and reasons for their disproportionate low participation rate in male-dominated work (Wang and Degol, 2017). Research trends on women in male-dominated work suggest that personal preferences, social and environmental factors play a major role in shaping the attitudes, motivations and career choices of women (Ceci et al., 2009, Kelly 2009, Pio et al. 2013).

Numerous studies on engineering education have shown that social cognitive factors may explain the reason for the low participation of women and how targeted interventions may likely mitigate the issue (Kelly, 2009, Aguilar et al., 2014). Bandura (1983) reported that women's career decisions in male-dominated disciplines are sometimes limited by a sense of inefficacy, resulting in alternative career choices. Research on career development of black women from the social cognitive theory perspective showed that self-efficacy was a strong predictor of the career choices of women pursuing non-traditional careers (Lent and Sheu, 2010, Pio et al., 2013). Specific to male-dominated occupations, research has revealed that women tend to possess perceived self-efficacy that re-enforces their persistence to undertake careers and succeed in their profession (Ryan and Deci, 2000, Charity-Leeke, 2012).

Flores et al. (2010) adopted the SCCT to identify the variables that hinder the career development of Mexican American adolescent women. The study focused on the relationship between non-traditional self-efficacy and contextual factors such as mother's level of education, level of assimilation, perceived parental supports, perceived barriers and attitudes such as gender role stereotypes and feminist attitudes and their influence on career aspirations. The study revealed that career interest in non-traditional occupations was predicted by non-traditional career-self-efficacy, which supports the effectiveness of self-efficacy as a predictive factor for career aspirations. Contextual factors may affect opportunities for learning experiences; therefore, indirectly influence self-efficacy. Lent et al. (1994) argued that contextual factors

are socially constructed, and differences in learning experiences may hinder self-efficacy and career opportunities for underrepresented groups such as women.

Lent et al. (2002), Chronister et al. (2003) considered the deficiencies and strengths of the SCCT in terms of addressing the needs of specific populations categorised as "at-risk" such as African American women (Hackett and Betz, 1995), the LGBTQ community (Morrow, 2007) and women who have been incarcerated (Chartrand and Rose, 1996; Shivy et al., 2019). An at-risk population are individuals with limited academic and career options due to social, cultural, economic and political circumstances (Kelly, 2009). SCCT extolled as particularly favourable because it includes variables that account for differences in environmental opportunities and beliefs. Therefore, within the context of SCCT, Shivy et al. (2019) developed career interventions for female felons, indicating that this population was susceptible to unemployment and underemployment and expressed certainty that SCCT was adequate for application to underserved and disadvantaged populations.

Although the SCCT theory was adopted in this research to examine the career choices of the population in this study, some criticisms of its use have been noted. A major one is the applicability of the theory to diverse groups and cultures. In examining career choice theories and models, cultural peculiarity refers to the ability of a theory ability to incorporate individual cultural constructs to account for academic and occupational behaviours in specific racial and ethnic groups (Leong et al., 1995). Byars and McCubbin (2001) echoed the criticism that the cultural peculiarity of the SCCT is yet to be established, in that the unique cultural contexts and experiences of ethnic and minority groups have been entirely omitted from academic and career research. The current study intends to address this oversight. It is essential to recognize these omissions, as this study adopts SCCT to examine the influence of socio-cultural and contextual factors on the career choices of a diverse group of students in construction-related programs. It is assumed that the factors that influence their career choices are different, and these factors may significantly influence their career choices in the construction industry.

5.5 Chapter Summary

This chapter discussed the theoretical framework for the study and set a direction for the study. The feminist and social cognitive career theories were examined in relation to the low representation of women and career choices of men and women in construction. The next chapter presents the research methodology for the study.

CHAPTER SIX

RESEARCH METHODOLOGY

6.1   Introduction

This chapter presents the research methodology adopted to achieve the aims and objectives of this study. The chapter discusses the research philosophies used, research approaches, research designs, research strategies, techniques, and procedures of data collection, adopted sampling techniques, data analysis methods implemented and the reliability and validity of measures. The research combines both qualitative and quantitative methods (mixed methods), specifically, the Delphi technique and a structured questionnaire survey. The adoption of a mixed-method approach is based on both philosophical and practical reasons as justified in this chapter.

6.2 Philosophical Considerations (Ontology and Epistemology)

The choice of research methodology is usually influenced by a set of assumptions or philosophies underlying each method (Sekaran and Bougie, 2010; Thornhill et al., 2009). A reliable research philosophy consists of a sound and regular set of assumptions which will buttress the research methods, strategies, data collection process and analysis procedures (Thornhill et al., 2009).

Research philosophies refer to a structure of beliefs and assumptions regarding the development of knowledge (Thornhill et al., 2009). They are usually concerned with the expansion of knowledge and pose assumptions or theoretical frameworks about how knowledge should be developed (Bryman and Bell, 2011). Research philosophies though varied, tend to fall under the assumptions of epistemology and ontology (Arthur-Aidoo et al., 2017) while axiology has also been recently considered (Creswell, 2012).

In research, new knowledge is developed by either creating a new theory or addressing a specific problem in a setting (Saunders et al., 2012). At each stage, several kinds of assumptions about human knowledge are made, including epistemological assumptions (about human knowledge), ontological assumptions (about the realities faced during the research) and axiological assumptions (the degree to which an individual's values influence the research procedures) (Sekaran and Bougie, 2010; Saunders et al., 2012). Ontological philosophies include subjectivism and objectivism while epistemological philosophies comprise of phenomenology, positivism, realism, and interpretivism (Thornhill et al., 2009).

6.2.1 Epistemology

Epistemology is associated with an explanation on the nature of acceptable knowledge in a field of study and is concerned with theories of that knowledge (Knight and Turnbull, 2008). The major fundamental

question, epistemological philosophies seek to answer is "whether or not the social world can and should be studied according to the same principles, procedures and ethics as the natural sciences" (Bryman and Bell, 2012: 27). In research, epistemology establishes the approach to inquiry and discovery and provides the grounds for deciding what type of knowledge is adequate and appropriate (Saunders et al., 2012). Furthermore, research methodology is applied epistemology, and therefore methodology must be supported by an epistemology (Remenyi et al., 1998).

6.2.2 Ontology

Ontology is concerned with the nature of reality and assumptions made, as regards how the world operates (Bryman and Bell, 2012). It allows the perception of human nature to reveal the social truth (David and Sutton, 2004). Ontology is concerned with a researcher's assumption about the way the world operates. Lee (1992) promotes two opposite assumptions of reality: objectivity and subjectivity. Objectivity deals with existing reality and is intact and tangible but is independent of individuals' appreciation and cognition (Crotty, 1996). Therefore, regardless of whether individuals perceive and attach meaning to reality, it remains unchanged (Knight and Turnbull, 2008). Objectivists emphasize that to create a better understanding of reality, and there is a need to understand the causal relationships between the variables constituting reality, which is advanced in the current study (Crotty, 1998).

6.2.3   Phenomenology

Phenomenology is concerned with how individuals construe the world (Saunders et al., 2012). It argues that dissimilarity between natural and social science is fundamental; therefore, adopting the same research methods will be inadequate (Bryman and Bell, 2011). The differences between social sciences and natural sciences exist because social reality has a meaning for people and so human action is meaningful, which does not hold true for the natural world (Ibid). Phenomenology covers an array of research approaches resulting from a similar but different philosophical perspective (Saunders et al., 2012).

6.2.4   Positivism

Positivism is an epistemological philosophy that promotes the use of the methods of natural sciences to the study of social reality and beyond (Knight and Turnbull, 2008). It also advocates that knowledge should be created by gathering facts, either inductively or deductively (Creswell, 2014). It proposes that the social sciences are like the natural sciences; thus, follow the logic and rigour of natural sciences in research (Bryman and Bell, 2011; Saunders et al., 2012). Positivism advocates that knowledge should be generated by gathering facts, either inductively or deductively (Bryman and Bell, 2011; Saunders et al., 2012).

Positivism holds the objectivist assumption that reality is independent of human cognition (Guba, 1990). Positivists postulate that the world exists as a system of observable variables waiting to be discovered

(Maguire, 1987). Similarly, positivists believe that the use of scientific methods of inquiry can assist in discovering the true meaning of reality (Crotty, 1998; Guba, 1990).

6.2.5 Realism

Realism depends on the idea of freedom of reality from the human mind and founded on the assumption of a scientific approach to knowledge development (Novikov and Novikov, 2013). It is an epistemological philosophy, which purports to describe the nature of scientific practice. It argues that elementary differences exist between the natural and social sciences, even though similarities exist, and by nature, realism is pro-positivism (Saunders et al., 2012).

6.2.6 Interpretivism

The interpretive philosophy argues that truth and knowledge are subjective, chronological, and culturally situated, owing to lived experiences and perception of them (Bryman and Bell, 2011; Saunders et al., 2012). Like the phenomenological paradigm, the interpretive paradigm is anti-positivist and incorporates human consciousness into a study by allowing researchers to interpret study elements (Myers, 2008). The interpretive philosophy argues that it is essential to use a different logic of research procedures, which reflects the distinctiveness of humans as opposed to natural order (Bryman and Bell, 2011).

6.2.7 Objectivism

Objectivism is an ontological position, which advocates that social phenomena and their meanings have an empirical reality that is independent of social action (Crotty, 1998). It suggests that daily social phenomena exist independently of its actors (Saunders et al., 2012). In other words, objectivism purports that knowledge and understanding of social actors do not influence the existence of the social world (Bryman, 2012).

6.2.8 Subjectivism

This philosophy advocates that social entities are formed by the views and actions of social actors, as a result, objective characteristics of social entities are less significant than the manner by which the social actors affix personal importance to their responsibilities in the social entities and their perception on the performance of such responsibilities (Saunders et al., 2012).

This study followed the epistemological positivist philosophy to empirically test structural relationships among attributes and predictors of career choice behaviour in students in construction studies.

6.3 Research Approach

Research approaches refer to strategies and measures encircling all the research steps from broad assumptions to comprehensive methods of data gathering, analysis and interpretation (Creswell, 2014). A research approach may be inductive, deductive, or abductive.

6.3.1　Deductive

The deductive approach is used to test existing theories (Bryman and Bell, 2011). It operates on the general truth or theory to logically conclude to test on the hypothesis (Saunders et al., 2012). Generally, the deductive approach is the reverse process of inductive approach as it entails discovering a theory, formulating predictions and hypotheses based on the theory, collecting appropriate data to test hypotheses and experimenting to prove or disprove the theory (Bryman, 2008; Sekaran and Bougie, 2010; Saunders et al., 2012). Based on the deductive approach, a research approach can be hypothetico-deductive and involve a broad definition of the problem area, definition of the problem statement, hypotheses development, and development of variable measures, data collection, data analysis and interpretation of data (Sekaran and Bougie, 2010). According to Blaikie (2010), there are six chronological steps to be followed in a deductive approach, namely

i. Proposing a tentative idea, a premise, a hypothesis (a testable proposition about the relationship between two or more concepts or variables) or a set of hypotheses to form a theory.

ii. Deduce testable hypotheses by using existing literature or by stating the conditions under which the theory is supposed to hold.

iii. Examine and compare the logic of the proposed testable hypotheses with existing theories to establish if the hypotheses are sound.

iv. Collecting appropriate data by measuring the concepts or variables to test the hypotheses or premises and analyze them.

v. If the results of the analysis are not consistent with the premises, the theory is false, and must either be rejected or modified, and the process repeated.

vi. If the results of the analysis are consistent with the premises, in that case, the theory is corroborated (Saunders et al., 2012).

However, its limitation is that incorrect generalization, and research bias exists from the evidence collected by researchers to support their ideas or hypotheses (Crotty, 1998). Since it does not manipulate the variables to isolate their effects, information on the effects of the variable becomes insufficient (Ibid).

6.3.2　Inductive

This research approach involves researchers collecting data concerning a phenomenon under investigation to generate or develop a theory from the situation or obtained data (Saunders et al., 2012). Inductive research involves observation, experimentation and measures, generalization and finding patterns, followed by a development of the theory to describe the situation (Bryman, 2008). According to Goddard and Melville

(2004); Sekaran and Bougie (2010), the inductive approach begins with observations and proposition of the theories towards the end of the research process due to those observations. This approach seeks to make meanings from the collected data to discover patterns and relationships to build a theory; nevertheless, the inductive approach does not stop a researcher from using existing theory to create the research question to be investigated (Saunders et al., 2012).

6.3.3 Abductive

Abductive research approach seeks to explain, develop or modify the theoretical framework before, during or after the research process as it switches between inductive and open-ended research settings to further hypothetical and deductive attempts to validate hypotheses (Bryman and Bell, 2011). It is positioned to attend to the weaknesses linked with deductive and inductive approaches, mainly because deductive reasoning is faulted for its lack of clarity on conditions for selecting a theory to be investigated by formulating hypotheses while no amount of verifiable data will essentially facilitate the building of theory using the inductive approach (Saunders et al., 2012). If the set of hypothetical propositions are accurate, then the conclusion is also correct (Ibid). Abductive reasoning essentially involves collecting data to identify patterns or to identify or amend a theory, which is subsequently tested through additional data collection (Ibid). The adoption of a pragmatist perspective using abductive approach provides another alternative in overcoming the weaknesses associated with deductive and inductive approaches (Bryman, 2014).

This study adopted the hypothetico-deductive approach as the research sought to test hypotheses rather than to generate them.

6.4 Research Methods

Research methods can be defined as the whole process of carrying out research such as planning and conducting the research study, illustrating conclusions, and disseminating the findings (Marczyk et al., 2005). Research methods involve a choice of either a quantitative method, a qualitative method, or a mix of both quantitative and qualitative methods (Saunders et al., 2012).

Qualitative research methods seek to acquire detailed opinions from respondents using techniques such as case studies, life history, ethnography, narrative inquiry, field studies, grounded theory, observational studies, document studies, naturalistic inquiry, interview studies, and descriptive studies while quantitative research generates statistics using predominant types of surveys (Benz et al., 2008). The option between the qualitative and quantitative method is founded on the kind of research questions being examined through exploratory studies which are most appropriate to qualitative method while descriptive and causal studies involve the quantitative method (Hair et al., 2010). The main methods employed in this research were

literature review, Delphi method and a questionnaire survey. The study adopted the mixed research method based on the philosophical and theoretical justifications associated with the study.

6.4.1   Qualitative Research Method

The qualitative research method inquiries about human experiences in understanding the basis for behaviour and meaning rooted in their experiences (Marczyk et al., 2005). The research process is descriptive in nature and results in a comprehensive account of the phenomenon (Bryman and Bell, 2011; Saunders et al., 2012). It is an approach for investigating and accepting the meaning individuals or groups attribute to a social or human problem (Creswell, 2014).

Additionally, the qualitative method has a remarkable origin starting from anthropology, sociology, humanities, and evaluation and is usually employed as a rationale for understanding meanings (Benz et al., 2008). This method is generally based on the use of non-quantifiable data and non-random sampling methods (Alharahsheh et al., 2020). According to Liamputtong and Ezzy (2005), qualitative research is based on an interpretive paradigm, which allows a researcher to expand information on a knowledge area where only little is available.

Qualitative methods have been recommended by Bryman (2012) as the more appropriate research method to social science (the study of people and their environment) rather than natural science. Although the qualitative method has its advantages, it is inefficient in its ability to study the relationship between variables with great precision (Sarantakos, 1993).

6.4.2   Quantitative Research Method

This method entails formal objective information gathering concerning the world via the employment of measurement tools, including validating questionnaires, to statistically quantifying the phenomenon under study (Saunders et al., 2012). This method makes use of statistics to describe findings and allow the researcher to make judgements on the study's significance (Bryman, 2012). The quantitative research method is used to describe and assess relationships among a range of factors to study cause and effects (Holland and Rees, 2010). This approach analyzes objective theories by examining the relationship between variables and collecting numerical data that can be subjected to statistical analysis (Creswell, 2014).

Quantitative methods seek to gather accurate data and study relationships between facts and how these facts and relationships agree with theories and existing studies (Fellows and Liu, 2008). It observes relationships between mathematically calculated variables with the application of statistical techniques and is based on structured data collection instruments. Frequently adopted quantitative methods for data collection include closed-ended questionnaires, experiments, correlation, and regression analyses (Bryman, and Bell, 2015).

6.4.3 Combining Qualitative and Quantitative Methods

The combination of quantitative and qualitative methods has been supported theoretically by several scholars (Bryman, 2012; Creswell, 2014). This methodology of logical integration or combination of qualitative and quantitative methods in a single study or continued program of enquiry in research is also known as "mixed methods" (Wisdom et al., 2013). The combined use of qualitative and quantitative methods provides richness and thorough information which is not available when each method is adopted independently (Creswell, 2014). A combination of qualitative and quantitative methods or mixed methods has been found to supplement each other by alleviating the weaknesses associated with using either of the methods in isolation (Bryman, and Bell, 2015). In other words, quantitative and qualitative research methods complement one another to make improved research findings (Jack and Raturi, 2006). Since the use of combined methods compensates for the limitations associated with each method alone, the adoption of combined methods helps to advance the capacity of researchers to depict conclusions from their studies, in this manner, resulting in more robust and comprehensive research findings (Jack and Raturi, 2006).

The use of qualitative and quantitative methods gives a multidimensional approach to the research problem and assists in having an extensive understanding in addition to a factual analysis of the research findings (Creswell et al., 2011). Advantages of combining quantitative and qualitative methods in a single research investigation include a comparison of quantitative and qualitative data, reflection of participant's viewpoint, provision of methodological elasticity and collection of a robust and comprehensive data and analysis (Wisdom et al., 2013). These reasons justify the choice or adoption of a combination of qualitative and quantitative methods in this present study.

The next section presents the research design adopted in this study. As identified in the next section, this study adopted a mixed research methodology to counterbalance the limitations associated with using each method in isolation, as discussed above.

6.4.4 Mixed Research Methods

Based on the philosophical and practical justifications discussed in the previous section, a mixed-method approach was adopted in this study. The quantitative survey provided insight into the relationship between variables and constructs for career choice behaviour, the interview administered to the Delphi experts in the Delphi provided a human subjective understanding of factors that influence career choice behaviour in the South African construction industry to inform qualitative results. (Teddlie et al., 2003) argue that mixed-method research is the right approach to use when it is necessary to:

a) Demonstrate that a variable will have a predicted relationship with another variable, and

b) Answer explanatory questions about how the predicted relationship occurs.

The current study adopted the mixed research method to understand women's career choice behaviour in construction-related professions in South Africa and evaluation of socio-cultural factors that influence women's career choice behaviour while indicating statistical significance in person and contextual factors.

The mixed research method is often associated with the realist and pragmatist philosophies and is likely to combine both inductive and deductive reasoning (Saunders et al., 2012). It is defined in terms of its tendency to enable research to combine breadth and depth in empirical enquiries to improve the validity of research findings through triangulation and to facilitate the mobilization of multiple theories (Wisdom et al., 2013). It was born out of the curiosity to overcome the limitations of both quantitative and qualitative research methods by integrating data from both methods, therefore, engendering a more comprehensive understanding of the study problem as compared to what quantitative and qualitative methods could offer individually (Creswell et al., 2011; Bryman, and Bell, 2015). The advent of mixed research methods has availed researchers the opportunity to better accrue the exploitation of various data collection tools by annihilating restriction to definite data collection tools (Tedddlie and Tashakkori, 2003).

Usually, qualitative data is open-ended with no predetermined responses while quantitative data comprises of closed-ended responses such as found in questionnaires or psychological instruments (Suresh et al., 2016). However, the mixed methods approach combines and utilizes both qualitative data collection methodologies to provide a more comprehensive understanding of a research problem (Bryman, 2012; Creswell, 2014).

Further details on the justification and how mixed research methods were used to collect data in this study are provided in the following section.

6.4.5   Justification of Mixed Methods Approach

It is noteworthy to point out that both qualitative and quantitative approaches have their strengths and weaknesses (Fellows and Liu, 2014; Bryman, 2012). Research problems and contextual features are some of the vital factors to consider while choosing the most suitable research design to use in research (Creswell et al., 2011). In studying the influence of socio-cultural factors on the underrepresentation of women in the South African construction industry and relationships between variables determining women's career choice behaviour in the construction industry, adopting one approach is considered limiting as other issues relating to construction career choice behaviour in a broader sense had to be explored from the perspective of different stakeholders (Delphi Study). Therefore, the mixed-method approach was required due to its practical, transformative and emancipatory theoretical positions and was considered to provide the most suitable approach to adopt in this study (Suresh et al., 2016). Also, the mixed-method research that

incorporates both qualitative (a research method that leverages human subjects or people for providing pragmatism and facts required for generating and building hypothesis) and quantitative methods (a research method that allows the compilation of detail-rich data for generalization) is a preferred method to adopt owing to its direct engagement in the complexity faced by researchers in a culturally diverse community while work is channelled towards a social justice course (Tashakkori and Teddie, 2003).

Further, the adoption of a mixed research method allows the researcher to discover and justify model components in a single study (Aigbavboa et al., 2018). The method was adequate because it provides for the use of all possible methods to address the research problem. It also provided more substantial evidence for a conclusion through convergence and verification of findings.

In this study, the Delphi technique was combined with the survey method, which provided the basis for the validation of the conceptual model for the development of a holistic construction career choice model in South Africa. The qualitative research process provided the realism and details for hypothesis generation and theory building, while the quantitative approach allows the gathering of detailed data for generalization.

6.5   Research Design

A research design is a process or framework for researching to accomplish the proposed aims of the research (Churchill et al., 2001). It refers to the overall strategy or general plan employed in responding to research questions and includes the selection of quantitative design, qualitative design, or a combination of both quantitative and qualitative designs (Saunders et al., 2012). It justifies decisions or choices made concerning the research procedures (Aigbavboa et al., 2018). Typically, the selection of a design is primarilydetermined by the philosophical underpinnings as well as the approaches adopted by the study (Churchill et al., 2001). Therefore, the epistemological, ontological, and axiological assumptions often influence the choice of any research design adopted in a study (Aigbavboa et al., 2018). As shown in Figure 6.1, a research design process can be viewed as a connection starting with the philosophical perspectives, to the methodology, and then connects to the instruments of data compilation and finally, analysis (Saratankos, 1993). The research design is guided by the aims and objectives of the research.

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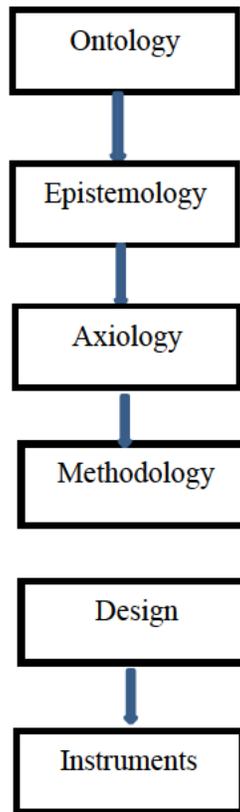
Figure 6. 1: Steps in the research design process

(Adapted from Sarantakos, 1993:29)

6.6 Research Methods used in the study

The detailed description of the methods used in the achievement of the research objectives is provided in this section. The main techniques used were a literature review, the Delphi method, and a questionnaire survey. Figure 6.2 gives a detailed outline of how the study was conducted and provides a clearer picture of the methods adopted in this study.
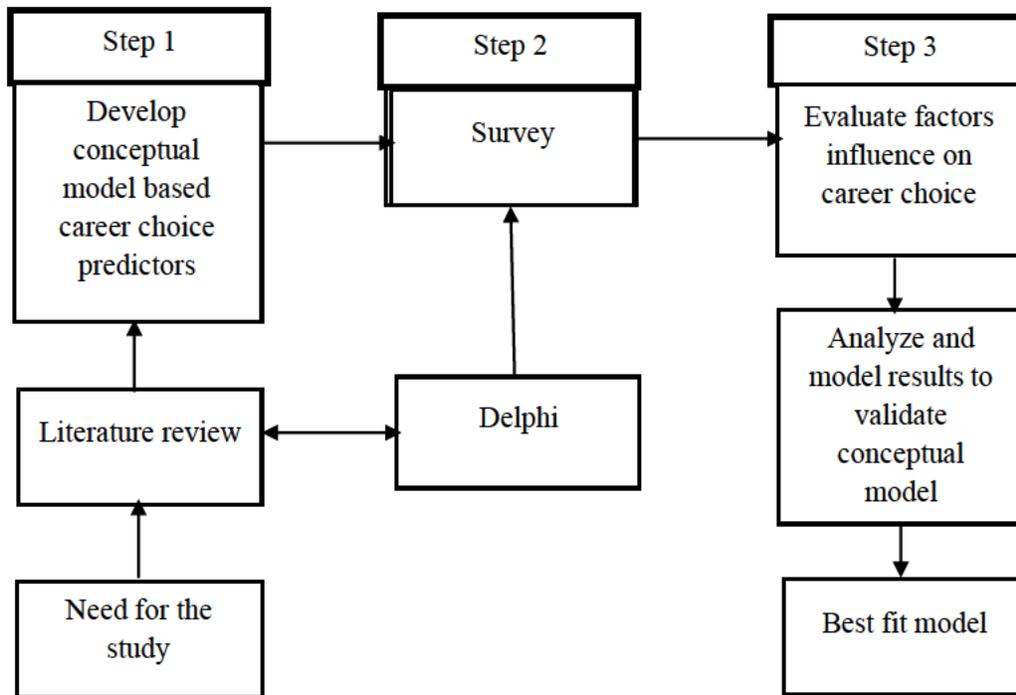
Figure 6. 2: Research design outline

Source: Aigbavboa (2014)

6.5.1 Literature Review

Literature is the basis on which research is built (Aigbavboa, 2014; Boote and Beile, 2005). A literature review involves an adequate and systematic evaluation of existing knowledge about the subject area, methods that have been adopted in examining similar concepts, identification of trends in similar concepts and solutions proposed to solve a particular problem (Aigbavboa et al., 2018). The main objectives of conducting a literature review are to be updated on studies that have previously been carried out and understand the current state of knowledge in a research topic area (Marczyk et al., 2005). Rugg and Petre (2007) stressed that a literature review should be conducted broadly and logically. The literature review was a crucial element of this study because it provided the foundation to develop a conceptual model for the study. Descriptive and analytical approaches were employed during the literature review. The descriptive approach entails the description of documented knowledge by preceding authors while analytical approach involves critical analysis of the contribution of others (Nuramo, 2016). For the current study, relevant literature was reviewed to establish the following, namely:

a) Women's education and career options in South Africa;

b) Current status of women in the construction industry and barriers to their participation;

c) Gender roles and sociocultural influences regarding women's career decisions and

opportunities;

d) Theories and models on feminism and career choice.

Three categories of literature sources were used in this study, namely primary sources, secondary sources, and reference guides. Primary literature sources mainly provided accurate and trustworthy information which include peer-reviewed academic journals, refereed conference proceedings, government publications and technical reports. Secondary resources consisted of textbooks, magazines, trade journals and newspaper while reference guides such as dictionaries, glossaries, handbooks, and encyclopedias provided necessary information about a subject area promptly and in a concise manner (Boote and Beile, 2005). In a bid to guarantee the integrity of this study and to avoid vagueness and misinterpretation, operational definitions of essential concepts and terms used in the context of this research were presented in respective chapters.

The literature review revealed that there are various factors, which determine and influence career choice in construction in the South African context. It was also discovered that there were other factors and key constructs, which influence career decisions but have not been considered in previously developed models. Therefore, theories were developed focusing on the influence of the missing attributes and their relationship with other attributes, which had been identified in the literature to determine career choice behaviour. These then had to be tested to determine whether these factors would influence career choice behaviour in construction and the extent of the influence. To achieve this objective, the Delphi process was adopted, and the details of the Delphi process are described in the next section.

6.5.2   The Delphi Method

The Delphi technique was used in this study, first as a tool to achieve consensus on the key factors that influence career choice behaviour in the South African construction industry. The technique was also used to obtain experts' views on the extent to which these factors/attributes influence and impact career choice behaviour in construction in South Africa.

The history of the Delphi method dates to the 1950s (Dalkey and Helmer, 1963). It was developed by the American Air Force at Rand Corporation in defence research in which the objective of the original study was to obtain the most reliable consensus of a group of experts by a series of intensive questionnaires interspersed with controlled feedback (Ibid). The Delphi technique has been defined as a multi-staged survey which seeks ultimately to achieve consensus on an important issue (McKenna, 1994). With rising use, broader definitions have been put forward, for example, Reid (1988) opined that Delphi is used for the systematic collection and aggregation of informed judgement from a group of experts on specific questions

and issues. Brill et al. (2006) defined the Delphi technique as an iterative process designed to combine expert opinion into group consensus.

The Delphi technique is used for the structuring of a group communication process to ensure that the process is effective in allowing a group of individuals to deal with a complex problem (Rikkonen et al., 2006). All definitions of the Delphi technique confirm that the purpose of the method is to achieve agreement among a group of experts on a certain issue where none previously existed. The Delphi method has been validated in the literature as a reliable empirical method for reaching consensus in several areas (Brill et al., 2006). Owing to the extensive usage of the technique over time, the Delphi method is an accepted practice in research; however, it is not appropriate for all research activities (Linstone and Turoff, 2002).

The Delphi method exists in two different forms: Delphi exercise and Delphi conference. The Delphi exercise is a paper and pencil version and is regarded as the most used form (Linstone and Turoff, 2002). It involves the administration of a questionnaire to a higher group of respondents. After the respondent group might have filled the questionnaire, they then return the completed questionnaire to the researcher or monitor team that will re-design a new questionnaire based on the results obtained from the initial assessment for the study participant group. Therefore, availing the participants another opportunity to re-assess their original or initial responses.

On the other hand, the Delphi conference is a newly discovered form which operates by bypassing the monitor test used in the Delphi exercise. This form of Delphi technique uses a highly programmed computer to compile the gathering of a group response or results. It is crucial to emphasize that this process offers the advantage of forestalling interruption or delay that may result while summarizing each round of Delphi and providing an instantaneous communication system (Linstone and Turoff, 2002).

6.5.2.1 When to use the Delphi technique

The Delphi technique is used when the following types of problems are encountered, namely:

a) The problem does not lend itself to precise analytical techniques but can benefit from subjective judgments on a collective basis;

b) The individuals required to contribute to the examination of a broad or complex problem have no history of adequate communication and may represent diverse backgrounds concerning experience or expertise;

c) More individuals are needed than can effectively interact in a face-to-face exchange;

d) Time and cost make regular group meetings non-feasible;

e) The efficiency of face-to-face meetings can be improved by a supplemental group communication process;

f) Disagreements among individuals are so rigorous or politically unpalatable that the communication process must be refereed and/or anonymity assured; and

g) The heterogeneity of the participants must be conserved to confirm the validity of the results, that is, avoidance of domination by quantity or by the strength of personality or "bandwagon effect" (Linstone and Turoff, 2002; Aigbavboa, 2013).

6.5.2.2 Components of the Delphi technique

The main components of the Delphi technique consist of five significant characteristics Loo (2002), namely:

i. The study should include a panel of carefully selected experts representing a broad spectrum of opinions on the subject or topic being examined;

ii. The participants are usually anonymous;

iii. The researcher (coordinator) constructs structured questionnaires and feedback reports for the panel throughout the Delphi process;

iv. It is an interactive process often involving three to four interactions called 'rounds' of questionnaires and feedback reports; and

v. There is an output, usually in the form of a research report containing the Delphi results, the forecasts, policy and program options (with their strengths and weaknesses), recommendations to senior management and possibly an action plan for developing and implementing the policies and programs.

6.5.2.3 Designing, Constructing and Executing the Delphi Study

A sequential process is adopted in designing, construction, and implementation of the Delphi study (Loo, 2002) and therefore, four fundamental planning and execution activities should be followed, which are, namely:

i. Problem definition

ii. Panel selection

iii. Determining the panel size and

iv. Conducting Delphi interactions.

6.5.2.4 Computation of data from the Delphi study

Data computation was done using a spreadsheet software programme (Microsoft Office Excel). At the initial stage of the computational process, analysis of respondents' perceptions in achieving consensus regarding factors and attributes that influence career choice behaviour in construction as presented in the questionnaire. The study used group median responses for each item in the questionnaire. After the second round of Delphi, the absolute deviations (denoted as D_i) of the group median [represented as m(X)] of each rating for only the pertinent questions were calculated using the following equation:

$D_i = [x_i - m(X)]$...eq.1

Where D_i = Absolute deviation

X_i = Panelist rating

m(X) = The measure of central tendency

Computation of each element in the questionnaire was carried out for all sections. The group median values for each round of response were computed as a measure of central tendency to determine the degree of consensus. The group median value was used as a measure of central tendency to reduce the effects of potentially biased individuals and to summarize the variableness of data.

6.5.2.5 Determination of Consensus

In a Delphi study, it is required that consensus should be reached on all questions asked. Depending on the nature of the study, a lack of consensus on a few questions could also be instructive. Some authors suggest consensus is assumed to be reached on a given question when a certain number of respondents fall within a pre-determined range of mean, median or standard deviation value, indicating a central tendency of the group response (Hasson et al., 2000; Giannarou and Zervas, 2014).

Christie and Barela (2005) suggested that for consensus to be reached, at least 75% of the respondents should rank the item two marks above and below the group mean on a 10-point scale. Raskin (1994) reported that for consensus to be reached, the deviation of all responses regarding the group median must not exceed than 1 unit. Prayens and Hanns (2000) adopted the mean and standard deviation to determine consensus in a Delphi study.

Consequently, in this study consensus on the key factors that influence career choice that would be incorporated in the refined conceptual model was reached when

- The item had a median of 7, 8, 9, 10, and at least 50% of the respondents ranked the element from 7 to 10, on an important scale.

- The item had a median of 7, 8, 9, 10, and at least 50% of the respondents ranked the element from 7 to 10, on the impact scale.

6.5.2.6 Reliability and Validity of Delphi Technique

Consideration should be given to the subject of reliability and validity when undertaking any research study (Linstone and Turoff, 2002). Reliability is the degree to which a procedure produces a similar outcome under the same circumstances at every given instance (Hasson et al., 2000). The scientific community has acknowledged the Delphi study as a technique with present-day validity and use (Landeta, 2006). The use of expert knowledge in a study area helps to establish the content validity of a Delphi study (Goodman, 1987). It is argued that group opinions are more reliable than individual opinions, accompanied by the fact that decisions are supported by reasoned argument purports its validity of the Delphi technique (Hasson et al., 2000; Landeta, 2006).

To ensure the reliability of the Delphi study, the researcher carefully selected panel members and ensured that consistency and conformability of responses were exhibited in the rounds. Credibility was also assured during the selection of the participants. The participants distinguished themselves based on their depth of knowledge and experience.

Validity was boosted by the removal of preconception or influence from other members by keeping all members completely anonymous from each other and hence, eliminating the 'bandwagon' effect, which is one of the strengths of the Delphi method. Furthermore, the number of iterations that were implemented in the Delphi study also enhanced the internal validity. Thus, expert panellists were given a chance to change their opinion or maintain it with a written explanation or argument for dissenting views. Feedback to the researcher and constant email communication between the researcher and the panellists individually was another way of ensuring internal validity of the study.

The external validity of a study deals with the extent the results from the study can be generalised to a larger population. This is usually determined by how participants are selected to be part of the study. This process was, however, not necessary as the validation process of the conceptual model has been done using the questionnaire survey. Nevertheless, the selection of participants for the Delphi study guaranteed external validity as scientific criteria as predetermined based on previous scholarly works were adopted. The panel comprised of members from various sectors, all with in-depth knowledge on the construction industry and academic and career in the industry. All members were highly experienced and with a good publication history. The study, therefore, fulfilled requirements for external validity in line with standard research ethics.

6.5.3 Survey Methods

Surveys use statistical sampling to acquire a representative sample of a study population when a census of the population is perceived as impossible (Creswell et al.,2011). This approach offers the possibility to unravel the present condition of a variable in an entity while failing to emphasize the unique way in which each variable fits in the pattern within the collective averages (Hair et al., 2010). Survey data can be analyzed using inferential, and descriptive statistics and the association between variables can be unveiled in a model of the relationships of the variables (Saunders et al., 2012).

6.5.3.1 Questionnaire Survey Instrument

A questionnaire refers to a set of questions arranged logically for gathering information on a research problem from a study population or respondents (Creswell, 2009). The administration of a questionnaire offers the opportunity to gather a large amount of information or data within a short duration and exposes all respondents to a similar set of questions (Brace, 2008). In this study, a standardized well-structured close-ended questionnaire was utilized to retrieve information during the field survey. The questionnaire was developed based on the information retrieved from the literature coupled with the findings from Delphi study.

Career choice behaviour is evaluated as a multidimensional construct, which is determined, by self-efficacy, outcome expectations, goal representations, social supports, learning experiences, interest, perceived barriers and person and contextual factors. Therefore, validating the findings of the Delphi study, the specific objectives of the questionnaire survey were the following:

1. To identify the factors that influence career choice in construction;

2. To identify the predictors of women's career choice in the South African construction industry;

3. To identify the critical barriers to women's participation in the South African Construction industry;

4. To determine the goodness of fit of the hypothesized model and the validity of the conceptual career choice model; and

5. To determine the validity of the conceptual career choice model.

The conceptual model shown in Figure 8.1 has the following interrelationships;

- a) Self-efficacy beliefs has a direct influence on career choice.
- b) Outcome expectations has a direct influence on career choice.
- c) Goal representations has a direct influence on career choice.
- d) Interests has a direct influence on career choice.

e) Social supports has a direct influence on career choice.

f) Learning experiences has a direct influence on career choice.

g) Perceived barriers has a direct influence on career choice.

h) Gender stereotypes has a direct influence on career choice.

i) Access to opportunity structures has a direct influence on career choice.

j) The career choice model describes the predictors (constructs) of career choice behaviour in the construction industry.

Considering these objectives, the survey was the most appropriate method for this study at this stage. The advantages offered by the questionnaire survey, include lower cost, greater anonymity, and objectivity further accrue its worldwide exploitation (Saunders et al., 2012).

6.5.3.2 Justification for Adopting a Survey Method as the Quantitative Component of the Research

The survey method was favoured for the following reasons, namely:

1) The philosophical underpinning of the method is founded on positivist theory;

2) Validation of the conceptual model developed from an extensive review of literature and Delphi requires an alternative;

3) Interpretation and presentation of data can be easily undertaken with this method;

4) Many research questions can be asked, and answers obtained succinctly;

5) Data entry and analysis can be done using computer software packages such as IBM SPSS and AMOS; and

6) Results obtained can be generalized to the population of the study.

6.5.3.3 Data Collection

There are two main data collection approaches to data collection (Agumba, 2013). These are primary and secondary sources. Primary data sources include empirical data, which utilize interviews and questionnaires. Secondary sources include data obtained from journal publications, conference papers, reports, editorials, and books. The study used a close-ended questionnaire in a survey of university students enrolled in construction-related programs in South Africa. The questionnaire administered was developed from the Delphi study and supported by the review of the literature.

Further, the questionnaire had ten sections (as shown in Appendix 5). In section A, respondents were required to provide their biographical information, which includes gender, programme of study, marital status, ethnicity, living arrangement, household income, occupation, and highest qualification of the breadwinner of the household. Section B to I required respondents to indicate their level of agreement with statements on self-efficacy, outcome expectations, goal representations, social supports, interests, learning experiences, gender stereotypes and access to opportunity structures, using a five-point Likert scale.

6.5.3.4 Questionnaire Pre-testing

Before the survey, the questionnaire was pretested through a pilot study. To ensure clarity, achievability and comprehensiveness of the survey, it crucial to conduct a pre-test or pilot survey, so that errors can be fixed and adjustment can be made to the questionnaire before the actual survey (Hair et al., 2010; Creswell, 2009; Saunders et al., 2012).

A pilot study was conducted, and the draft questionnaire was pre-tested with a sample of the population of interest to assess its validity and reliability. The pilot study allows the researcher to make amendments to the questionnaire to ensure the respondents do not have trouble when completing the questionnaire in the main survey. The resulting data was analyzed, and feedback from the pilot study was used to revise the final questionnaire.

A total of 30 questionnaires were distributed for the pilot study.

6.5.4   Variables

A variable refers to any characteristic that can vary across a group or situation (Creswell, 2009). Nine variables were measured in the present study, and these include Self-Efficacy (SEF); Outcome Expectations (OTX); Social Support (SSP); Learning Experience (LEX); Goal Representations (GRP); Interests (INT), Gender Stereotypes (GST), Access to Opportunity Structures (AOP) and Perceived Barriers (PRB). These variables, coupled with the person and contextual characteristics of the participants, collectively constituted the questionnaire items.

6.5.5   Study Population

A study population refers to a group of individuals or items in which the researcher has an interest (Cooper and Schindler, 2006; Wahyuni, 2012). A population is an accessible group of people or things being studied (Asamoah, 2014). The population of this study comprised of students enrolled in construction-related programmes at universities in South Africa. The number of potential participants is therefore infinite as there are 26 universities in South Africa which offer construction-related programs. It is, therefore, impracticable to administer questionnaires to students at all the universities. Hence, the need to adopt a suitable sampling technique.

6.6   Sampling Method

A sample refers to a subgroup of objects selected by an investigator from a specific population (Wahunyi, 2012). Sampling refers to the process of choosing a sample consisting of units, such as an organization or individuals from a preferred population (Trochim and Donnelly, 2001). A good sample should be an accurate representation of the population from which the sample is drawn (Sekaran, 2010).

Probability and non-probability sampling techniques are the most extensively adopted sampling methods documented, and they are frequently distinguished by their randomness (Sekaran, 2010; Saunders et al., 2012). In non-probability sampling, samples are selected via an approach that is not based on the suggestion of probability theory. In other words, sampling elements are chosen via the exploitation of something different from a mathematically random process (Hair et al., 2010; Wahunyi, 2012). The main advantage of the non-probability sampling method is that it saves time and economical, which outweighs the benefit of the probability sampling method (Hair et al., 2010; Saunders et al., 2012). Purposive sampling, convenience sampling and accidental sampling are the significant types of non-probability techniques (Denscombe, 2010; Hair et al., 2010).

Purposive sampling falls in the quota and convenience sampling and involves collecting data from respondents who best fulfil the purpose of the study (Sekaran, 2010; Hair et al., 2010). Convenience sampling consists of selecting participants who are closest and more convenient to access (Neutens and Rubinson, 2001; Sekaran and Bougie, 2010). Accidental sampling involves the selection of participants based on their availability and continuing such selection until the required sample is reached (Saunders et al., 2012).

Probability sampling gives room for the representation of each segment of the population in the sample. In addition, it provides the opportunity to select samples from a larger population through the random selection process (Cooper and Schindler, 2006). To successfully establish a probability sample, sampling approaches including stratified random, simple random, cluster and systematic sampling techniques are employed. The major types of probability sampling available are simple random sampling and stratified random sampling.

Stratified random sampling is employed when dealing with a population occurring in strata or group (Sekaran and Bougue, 2010; Hair et al., 2010; Saunders et al., 2012). To achieve equal representation in a stratified sample, samples are selected equally from every stratum or group. In simple random sampling, every individual in the population has an equal chance of being chosen as the sampling method allows researcher or statistician to select the sample by simple random selection technique (Kerlinger and Lee, 2000). Although simple random sampling has the least bias and offers the most generalisability, it is cumbersome, time-consuming and costly (Sekaran and Bougue, 2010; Hair et al., 2010).

Based on the advantages of the non-probability sampling method, the study used a conveniently selected two public universities in the KwaZulu-Natal province of South Africa to participate in the study. The two universities were conveniently chosen because of their proximity to the researcher.

6.6.1 Sample Frame

A device or source material from which a sample is drawn is referred to as a sampling frame. It is the aggregation of folks, including individuals, institutions or households within a population that can be sampled (Saunders et al., 2012). In the current study, undergraduate students enrolled in construction-related programmes such as construction management, land surveying, building, civil engineering, quantity surveying and architecture in South African Universities were chosen as the sample frame.

6.6.2 Sample Size

The sample size is the total number of replicas or observations that a researcher or statistician intends to use in a numerical sample (Saunders et al., 2012). It is a significant part of an empirical study and creates inferences regarding a population from a sample. According to Wahunyi (2012), the type of data analysis to be used by a researcher, population features, or characteristics and the level of accuracy are the major factors that determine sample size (Sekaran and Bougie, 2010). Wahunyi (2012) posited that the sample size is dependent on the data analysis technique, finance, and access to the sampling frame.

According to Teo et al. (2013), the sample size significantly affects the model fit in structural equation modelling (SEM) analysis and model testing. The SEM was used to evaluate the structural component of the proposed model in the study, owing to its enhanced sensitivity in the sample size coupled with its reduced stability when estimated from a small sample size (Tabachnick and Fidell, 2013). Determining an adequate sample size in the use of SEM is a subject of debate (Leedy and Ormrod, 2010). While some studies suggest large sample sizes, others argue that less than a hundred cases could be used to achieve a satisfactory result (Teo et al., 2013). However, as a rule of thumb, the sample size for SEM is at least 200 cases (Tabachnick and Fidell, 2013).

In this study, a sample size of 229 was used for the analysis. The sample size reduced the chance of arriving at negative results and determined the truth while engendering reproducibility of results.

6.7 Ethical Considerations

Research involving human participants is saddled with the responsibility to protect the interest of the study respondents. In this regard, informed consent was obtained from all the participants before recruiting them in the study through the administration of a questionnaire, while the participants were fully briefed about the essence of the research coupled with the reason why they were chosen. Aside from the fact that the

participants willingly gave their consent, sensitive information that may disclose the identity of the participants were treated with confidentiality. In addition, the anonymity of the participants was assured before the commencement of the study and the data collected were used only for the study.

Concerning plagiarism, all existing materials and studies previously published were referenced and acknowledged properly in this research. The present study was also conducted under the research rules and regulations of the University of KwaZulu-Natal.

6.8 Conducting the Fieldwork
6.8.1 Questionnaire Administration

In quantitative research, questionnaire administration is a critical phase. The success of the data collection process is dependent on numerous factors such as identifying suitable potential participants, establishing and describing the appropriate sampling frame, the mode of conducting the fieldwork and how the data is obtained, received, edited, coded and analysed (Creswell, 2009; Leedy and Ormrod, 2010).

In this study, the administration of the questionnaire to respondents begun after the pilot study. The survey questionnaire was administered for five weeks. The questionnaires were designed using Google forms and administered electronically by sending out hyperlinks to the questionnaire via email and the WhatsApp platform. Google forms is a cloud-based and online tool used to create and customize questionnaires.

Following the completion of the questionnaires by the respondents, the procured information was thereafter captured and analyzed.

6.8.2 Data Analysis from the Questionnaire Survey

Choosing the right statistical technique is without a doubt critical for data analysis since it engenders the representation of theories systematically for ease of data acquisition and analysis (Abowitz et al., 2010). Saunders et al. (2012) suggested that since raw data yields very little meaning, it must be subjected to processing and analysis to arrive at more meaningful information.

In research, data analysis consists of processes such as categorization, examination, tabulation, interpretation, and the testing of data obtained from respondents and, that focuses on the research questions. Data analysis could be bivariate, multivariate, or univariate. The bivariate analysis seeks to establish a relationship between two variables, while multivariate analysis provides a concurrent analysis of three or more variables (Hair et al., 2010; Bryman and Bell, 2011). The univariate analysis focuses on one variable at a time and is usually in the form of a histogram, the measure of central tendency, dispersion, and frequency tables. The multivariate, bivariate and univariate analysis were adopted because the study considered several research variables. The Mann-Whitney U and Kruskal Wallis non-parametric tests were

the bivariate analysis conducted in this study. Structural Equation Modelling (SEM) was the most preferred multivariate analysis.

Before using SEM, exploratory factor analysis was (EFA) used after which the data were assessed for reliability and validity. The data was then screened for missing data, outliers, and disengaged responses.

6.8.2.1 Data Screening and Preparation

To improve the quality of data and minimize errors in research findings, field data need to be edited and screened before statistical analysis is performed (Hair et al., 2010; Wahunyi, 2012). To ensure a detailed analysis of the proposed model to determine the fit, it was essential to screen the data in this study. Pre-analysis data screening focused on identifying any missing data and outliers.

6.8.2.2 Missing Data and Outliers

In any research involving the administration of questionnaires, missing values and incomplete questionnaires are common. Therefore, it is important to check for missing values and determine the pattern of distribution in the study variables (Pallant, 2020).

Missing values are found when respondents either mistakenly or purposely omit a response to a question. It could also occur through errors in data entry. Missing data can affect the validity of the findings (Hair et al., 2010). In the instance, that the proportion of missing data is greater than 10% of missing data points, it is recommended to exclude the respondent from the analysis and if less than 10%, the missing data points may be estimated by substituting with the mean scores for each of the data points (Ibid).

Outliers are distinctly different responses from the majority of the responses in a data set and may represent an error in data entry (Hair et al., 2010; Pallant, 2020). Outliers may affect research results, by the mean from the median. Hair et al. (2010) suggested that an outlier should be removed if it cannot be determined that an outlier constitutes a valid, distinctly different response.

6.9 Exploratory Factor Analysis

Exploratory Factor Analysis (EFA) is a statistical analysis technique that operates by evaluating the factorial structure of measuring an instrument through data reduction (Byrne, 2010; Laher, 2010;Matsunaga,2010). EFA was used to determine the coherence of subsets of data that are independent of each other, therefore giving rise to distinct constructs that will, in turn, form the basis of the variables for analysis. These constructs then formed the basis of the variables for analysis. EFA was also used to determine the construct validity of an instrument (Laher, 2010). As suggested by Bentler (2007), the EFA analysis assisted in exploring the possible primary factor structure of a set of observed variables without imposing a preconceived structure on the outcome. EFA was used to group all the ten latent variables in the integrated

model of career choice behaviour. These are self-efficacy (SEF); outcome expectations (OTX); social support (SSP); learning experience (LEX); goal representations (GRP); interests (INT); gender stereotypes (GST); perceived barriers (PRB); access to opportunity structures (AOP).

To achieve a reliable EFA, it is important to determine the adequacy of the sample sizes. In this study, the Barlett`s test of sphericity and KMO measure were used to assess the adequacy of samples for a reliable EFA. This was followed by the interpretation of communalities of items and deciding the number of factors to retain for the EFA. The eigenvalue greater than 1 supported by the pattern matrix, which indicates Promax rotation was specified as the analysis for this method.

The exploratory factor analysis was conducted using SPSS version 27.

6.10   Structural Equation Modelling (SEM)

Structural Equation Modelling is a multivariate tool that assesses complex interrelationships between two or more constructs (observed and latent variables) by graphically modelling hypothesized relationship among constructs with structural equations (Byrne, 2006). Observed variables possess data that can be measured directly with the use of numerous responses to rating scaled items on a questionnaire while latent variables contain data that cannot be measured directly (Bagozzi, 2010; Livote and Wyka, 2009).

SEM is a perfect tool for analyzing causal relationships among endogenous and exogenous variables. It reveals the degree of support provided by empirical data for a theoretical model using the goodness of fit indices (Byrne, 2006). To achieve an excellent evaluation of model fitness, several model fit indices are required. SEM could be either covariance-based (CB-SEM) or Partial Least Square-based (PLS-SEM). CB-SEM works by testing or confirming theory when error terms need co-variation amidst other reasons (Hair et al., 2010). PLS-SEM seeks to identify significant predictor constructs, small or non-normal samples, and complex structural models (Ibid).

Although the structural model for this study was complex and predicting important constructs (which is a speciality of PLS-SEM), CB-SEM was preferred because IBM AMOS which was the available software for data analysis, uses a CB-SEM.

6.11   Reliability and Validity of Measures

To ensure the reliability and validity of a research instrument, it is important to ensure that the basic constructs are measured accurately (Hair et al., 2010; Kline, 2015; Yilmaz,2013).

6.11.1 Reliability

Reliability is the degree to which a measuring instrument is consistent or accurate (Hair et al., 2010; Saunders et al., 2012). It shows the degree of accuracy of research measuring instruments by revealing the

extent to which the scores of a test remain the same for the same unit of analysis over time (Hair et al., 2007). It is crucial to state that any instrument that remains consistent for the same unit of analysis with little or no error could be said to be reliable (Byrne, 2006).

Two types of reliability have been documented, namely, stability and consistency. Stability is the ability of a measure to remain the same over time and is determined by test-retest reliability. Test-retest reliability is measured by the correlation between scores of the same test administered by a researcher to a single group at different time intervals (Hair et al., 2010; Sekaran, and Bougie, 2010). Two sets of scores from the same test should be correlated for the researcher to claim they are consistent. Stability can also be ascertained by parallel-form reliability, which is used when two comparable sets of measures for the same construct are highly correlated (Yilmaz, 2013).

Consistency is the internal correlation of items in a construct. Items measuring the same thing should be highly correlated (Hair et al., 2010). This is ascertained using the inter-item consistency reliability or the split-half reliability (Hair et al., 2010; Sekaran and Bougie, 2010). Inter-term reliability uses Cronbach's alpha for measures with multiple items and Kuder-Richardson formula for dichotomous items and the split-half reliability. A correlation between two halves of a scale is for determining consistency.

To ensure the reliability of this study, the Cronbach's coefficient alpha was used to measure the reliability of constructs. The average of all viable split-half coefficients is importantly calculated with Cronbach's coefficient alpha (Bryman, 2012). Variation of the alpha co-efficient will be between 1 (indicating perfect internal reliability) and 0 (representing no internal reliability). Hair et al. (2010) opined that the acceptable common lower limit for the Cronbach alpha is determined with an alpha of 0.70. In this study, the cut-off 0.70 was used to represent a sustainable level of internal validity. All values below 0.7 were eliminated.

6.11.2 Validity

Validity refers to the accuracy of research data (Hair et al., 2010; Saunders et al., 2012; Pallant, 2020). To further justify the efficiency of a measuring instrument or the goodness of a measure, consideration of validity is very paramount since reliability is not in itself a sufficient condition for affirming the goodness of a measure (Yilmaz, 2013). The validity of a measuring instrument is the degree to which it measures what it is supposed to measure while maintaining consistency (Hair et al., 2010; Bryman and Bell, 2011).

There are four types of validity: internal validity, external validity, construct validity and conclusion validity (Bryman and Bell, 2011; Yilmaz, 2013; Pallant, 2020). Internal validity determines the causal relationship between the treatment and outcome. External validity refers to the degree to which research results can be generalized or the effects of the treatment beyond the present conditions of testing. Lastly,

conclusion validity determines whether there is a relationship between the independent variable and the dependent variable or outcome (Sekaran and Bougie, 2010; Hair et al., 2010). Construct validity reflects the degree to which scale items represent the construct and conclusions. It also measures the degree to which the outcomes of a measure suit the concept from which a scale is designed, and hence accurately depicting the construct of interest (Bryman and Bell, 2011; Hair et al., 2010; Sekaran and Bougie, 2010). It has two aspects, namely convergent validity and discriminant validity. Convergent validity occurs when two different scales required to measure the same construct are highly correlated. Discriminant validity occurs when two scales predicted not to be correlated are found to correlate (Hair et al., 2010).

6.12   Chapter Summary

This chapter discussed the research methodology adopted for this study. It also provided the justifications for the philosophical position and methods of data collection. The research design for the study covered three important elements of research methodology, namely, philosophical considerations: the research methods and questionnaire administration process, as well as an introduction to the data analysis. Finally, ethical considerations regarding data collection and issues of reliability and validity of measures were discussed. Results of the analysis from the Delphi study are presented in the next chapter.

CHAPTER SEVEN

RESULTS FROM THE DELPHI STUDY

7.1 Introduction

A Delphi study was conducted to solicit expert views on the influence of socio-cultural factors on the underrepresentation of women and to identify key factors that influence the career choices of women in the South African construction industry. Two rounds of the Delphi process were conducted because the consensus was reached at the second stage of the Delphi, based on criteria that were set.

This chapter presents demographic information of the participants and the descriptive results of each Delphi round. Further details regarding the Delphi process are also discussed.

7.2 Background to the Delphi study

The main aim of the Delphi study was to determine the key socio-cognitive and contextual factors that influence career choice. In the development of the Delphi instrument, the main research question was split into two sections of importance and impact, namely;

a) What are the major factors that are perceived to be extremely important in predicting career choice in the South African Construction industry?

b) What are the major factors that are perceived to have an extreme impact on predicting career choice in the South African Construction industry?

7.2.1 Identification of Research Problem

The first step to using the Delphi technique in research is to identify the research problem. Not all research problems can be investigated using the Delphi technique. Therefore, the nature of the problem guides the decision to adopt a Delphi (Keeney et al., 2006). Turrof and Linestone, Grisham, 2009b) opines that the decision to use a Delphi must be on the basis that the research area is new, and studies in this area have rarely used the Delphi technique. It has been previously established that career choice behaviour in construction in South Africa is an emerging study area, and the Delphi technique has not been adopted in this area. Furthermore, the Delphi technique allows for the examination of the cross-disciplinary nature of the phenomena being studied.

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7.2.2 Selecting the Panel Members

Arguably, carefully identifying and selecting participants as experts is an essential aspect of the Delphi process, as the output of the study is dependent on the experts serving on the Delphi panel (Grisham, 2009b; Hasson et al., 2000; Skulmoski et al., 2007). Participants in the Delphi study are called a panel of experts or panellists. Strauss and Ziegler (1975) argued that participants serving on a Delphi panel should be impartial, interested in the topic and have relevant knowledge and experience on the subject matter (Grisham, 2009a; Hasson et al., 2000; McKenna, 1994;Skulmoski et al., 2007). Potential panel members could be identified through recommendations from other experts, literature, or internet search and snowball sampling (Bryman and Bell, 2011; Giannarou and Zervas, 2014).

The Delphi technique adopted the non-probabilistic purposive sampling technique to select participants that meet a list of identified criteria (Turoff and Linstone, 2002; Okoli et al., 2004). Identifying and choosing panel members for this study involved consideration of the following criteria, namely

a) **Academic qualification:** A minimum of a Master's degree in construction, engineering, and management-related field.

b) **Experience:** The participants must have a minimum of 5 years of relevant industry or research experience.

c) **Knowledge and Specialization:** Each member must have sufficient knowledge of construction, management, engineering, and social sciences.

d) **Research and Authorship:** The participant must be actively engaged in research and is an author or co-author of peer-reviewed publications in a field related to the research topic.

e) **Willingness:** Panellists must be interested and willing to participate throughout all the iterations.

Adopting these criteria helped to ensure quality contributions from the panellists. Section 7.3 provides detailed information on the characteristics of the panel members.

The panel members were identified via purposive sampling. The experts were identified from published articles in research databases and industry experts and were recruited via email, which provided a brief overview of the study, and the objectives were explicitly stated in the attached invitation letter. Individuals who expressed interest in participating in the study were sent letters requesting them to provide their CVs to confirm that they meet the specified criteria for participation in the Delphi study. A total of 27 e-mail invitations were sent, but only 24 responses were obtained.

7.2.3 Determining the Number of Panel Members

Because a Delphi study is a qualitative research technique, it is expected to have fewer participants compared to a qualitative approach. Determining the number of panellists is a decision that must be taken at the beginning of the study. The adequate number of Delphi panellists has been a topic of debate. Numerous studies have argued that although there is no prescribed number for a Delphi panel, there are recommended minimum numbers (Grisham, 2009a; Hasson et al., 2000; Skulmoski et al., 2007). Linstone (1978) posited that seven panellists are sufficient for a Delphi study. Rowe and Wright (1999) suggested a range of three and eight panel members, depending on the nature of the study.

Hallowell et al. (2010) recommended a minimum of between eight and sixteen panel members. Dalkey and Helmer (1963) suggested that panellists could range between seven and thirty. For a homogenous group, (Delbecq et al., 1975; Skulmoski et al., 2007) claimed that a sample size of between ten and fifteen is adequate. In the case of a heterogeneous group, such as in international and cross-national studies, more panel members are required. Further, a large sample size decreases group errors and increases the possibility of achieving reliable results (Skulmoski et al., 2007). Although large sample sizes could reduce group errors, retaining all respondents until the completion of the study might be difficult.

Since there is no recommended consensus as to the acceptable number of panellists in a Delphi study, 18 expert panel members were deemed acceptable for the current study.

7.2.4 Delphi questionnaire development

An essential part of the Delphi process is the development of the Delphi questionnaire. The questionnaire must be formulated in a manner that is easily understood by the experts. Considering the busy schedule of the panellists, it was attempted to make the questionnaire concise and clear. Clarification was provided when required, and adjustments were made at different stages of the study.

The questionnaire had two sections. The first section focused on the importance, while the section focused on the impact of key factors and influences on career choice. A copy of the questionnaire used in the three rounds can be found in Appendix 2. Panel members were required to rank the importance and impact of the presented items using a 10-point Likert scale with 1, representing 10% importance and 10 representing 100% importance rankings. For impact, 1 and 10 represented 10% impact and 100% impact rankings, respectively.

7.2.5 Conducting the Delphi iterations

The strength of the Delphi technique lies in the use of iterations to reach consensus among the panellists on the various issues being investigated (Linstone, 1978). The number of iterations to be conducted depends

on the research purpose and homogeneity of the panel. While there is no rule as to the number of rounds to be conducted in a Delphi study, a minimum of two rounds is recommended (Giannarou and Zervas, 2014). Skulmoski et al. (2007) recommend two to ten rounds while Critcher and Gladstone (1998) propose two to five rounds. To achieve the required consensus in this study, two rounds of the Delphi questionnaire were administered to panel members via email in two rounds from April to June 2020.

The questionnaire designed for the first-round survey was based on an extensive review of literature on women's career choices in construction in South Africa and factors that influence their career choice. The questionnaire was the second round developed based on the responses of the panellists in the first round. The first-round questionnaire was sent to 24 experts, and 18 of them responded, representing a response rate of 75%.

The second round allowed for convergence and for the panellists to review their previous responses, given the group median of the responses provided. The panellists may either maintain their previous responses, change their responses based on the given group medians, or select a different option. Responses from the first round were analysed using median and percentage groups of responses, and the questionnaire for the second round, including a summary of the results from the first round, was distributed to the 18-panel members. Only 14 experts of the 18 participated in the second round, representing a response rate of 77.78%. Content analysis was used to analyse responses to open-ended questions.

By the second round, consensus had been achieved on most of the items; therefore, the Delphi study was complete on the second iteration. Calculations for the second round indicated there was no need for further rounds.

7.3 Demographic Information of the Delphi Experts

This study used a non-probabilistic purposive sampling to identify 33 potential participants. Out of 33 invited experts, 18 expressed interest and agreed to serve on the Delphi panel. All the 18 experts participated in the first round of the Delphi study while 14 participated in the second round. The rest of the four experts were eliminated from the study, as panel members were required to participate in all rounds of the Delphi iterations.

As indicated in Table 7. 1, eight (8) of the panellists were men, and seven (6) were women. Table 7.2 shows that ten (10) of the participants resided in South Africa, while eight (8) of them were based in the United Kingdom.

Table 7. 1: Gender composition of experts

Gender	Number of participants
Man	8 (57.1%)
Woman	6 (42.9%)
Total	14 (100.0%)

Table 7. 2: Residential location of participants

Country	Number of participants
South Africa	9
United Kingdom	5
Total	14

Table 7.3 presents the highest qualifications possessed by the Delphi participants. All fourteen (14) of the experts held a Doctorate (PhD). The experts were from different sectors of the construction industry. Six (6) of the experts were involved in engineering and construction work, while eight (8) were academics in higher learning institutions, as illustrated in Table 7.4.

Table 7. 3 Highest Qualification of experts

Qualification	Number of participants
Doctorate (PhD)	14
Masters Degree	0
Bachelors Degree	0
Total	14

Table 7. 4: Participants' field of specialization

Field of Specialization	Number of participants
Engineering and Construction	6
Higher Education and Training	8
Total	14

Table 7.5 shows that there were three (3) architects on the panel, three (3) construction managers, two (2) quantity surveyors, one (1) building contractor, two (2) civil engineers, one (1) quarryman and two (2) project management experts. The participants were fully registered with professional organizations such as the Chartered Institute of Building (CIOB), the South African Council for the Project and Construction Management Professions (SACPMP), the South African Association for the Quantity Surveying Profession (SACQSP), Institute of Quarrying (IQ), British Academy of Management (BAM), the Royal Incorporation of Architects in Scotland (RIAS) and the Chartered Institute of Architectural Technologist (CIAT).

Table 7. 5: Professional qualifications of experts

Professional Qualification	Number of participants
Quantity Surveying	2
Quarrying	1
Architecture	3
Construction Management	3
Building	1
Civil Engineering	2
Project Management	2

As shown in Table 7.6, more than half of the experts had between 1 – 15 years (9 persons) or 16-30 years (6 persons) of work experience. The average number of years of the experts was about 19 years, while the median was 20 years. The cumulative number of years of work experience of the panel members was 302 years. This indicates that the Delphi panel possessed sufficient experience and knowledge to participate in the study.

Table 7. 6: Years of experience of participants

Years of experience	Number of participants
1-15 years	7
16 – 30 years	5
Above 31 years	2
Cumulative years of experience	**302**

7.4 Findings from the Delphi study

7.4.1 Round One

In the first round, questionnaires were sent to 24 panel members, and 18 questionnaires were returned, representing a 75% response rate. Panel members were provided with two main questions, with 68 career choice influencing factors to be rated using a 10-point Likert scale. A sample of the questionnaire in the first round of the Delphi is presented in Appendix 2. Panel members were required to rate these factors based on their importance and impact. Table 7.7 presents a summary of responses from the first round of the Delphi study. Responses were analysed the statistical median and percentage responses. To measure consensus and to identify the main factors that influence career choice behaviour that would be included in the conceptual model, two criteria were considered;

a) **Importance scale:** Median of 7 and above on a 10-point Likert scale rating and at least 50% of the respondents rating the factor from 7-10.

b) **Impact scale:** Median of 7 and above on a 10-point Likert scale rating and at least 50% of the respondents rating the factor from 7-10.

Table 7. 7: Round-1 Delphi results summary

	Importance			Impact		
	Median	% Response (7-10)	Consensus Achieved	Median	% Response (7-10)	Consensus Achieved
Social Cognitive Factors						
Self- Efficacy	8	72.22	Yes	8	77.78	Yes
Outcome Expectations	8	66.67	Yes	9	83.33	Yes
Goal Representations	9	88.89	Yes	8	83.33	Yes
Learning Experiences	8	72.22	Yes	8	66.67	Yes
Social Supports	7	50.00	Yes	9	72.22	Yes
Interests	10	88.89	Yes	10	83.33	Yes
Person and Contextual Factors						
Gender	7	77.78	Yes	7	55.55	Yes
Ethnicity	5	33.33	No	6	44.44	No
Socio-economic status	7	55.56	Yes	7	50.00	Yes
Gender role stereotypes	7	55.56	Yes	8	72.22	Yes
Access to opportunity structures	10	88.89	Yes	8	88.89	Yes
Barriers	7	55.56	Yes	8	66.67	Yes
Access to support structures	8	88.89	Yes	9	83.33	Yes
Self-Efficacy						
Accurate Self-Appraisal (Identify resources, constraints, and personal characteristics that might influence career choices)	8	83.33	Yes	8	83.33	Yes
Gathering Occupational Information (collect information on training and employment opportunities and manage them effectively)	8	88.89	Yes	8	83.33	Yes
Goal Selection (develop lists of priorities on the effective actions to successfully manage their professional development)	8	83.33	Yes	8	88.89	Yes
Planning (plan the steps needed to realize a vocational project)	8	77.78	Yes	8	72.22	Yes
Problem Solving (address difficulties related to their career)	8	88.89	Yes	8	72.22	Yes
Outcome Expectations						
Favourable income/wages	9	83.33	Yes	9	83.33	Yes
Job opportunities	9	83.33	Yes	9	88.89	Yes
Promotion and professional development	8	61.11	Yes	9	72.22	Yes
Favourable work conditions	8	77.78	Yes	9	88.89	Yes
Job security	9	88.89	Yes	9	88.89	Yes
Stable career and guaranteed employment	9	88.89	Yes	9	88.89	Yes
Family approval of career choice	6	44.48	No	7	55.55	Yes
Respected image and status in society	8	66.67	Yes	8	66.67	Yes
Satisfying lifestyle	8	77.78	Yes	9	83.33	Yes
Happy future	9	88.89	Yes	9	88.89	Yes
Job satisfaction	9	94.44	Yes	9	88.89	Yes
Achievement of career goals	9	88.89	Yes	9	88.89	Yes
Use of skills and talents	9	88.89	Yes	9	94.44	Yes
Attainment of career success	9	88.89	Yes	9	88.89	Yes
Goal Representations						
Technical/functional skills	8	72.22	Yes	8	72.22	Yes
Opportunities for training and development	8	77.78	Yes	9	88.89	Yes
Opportunities for interesting work	9	88.89	Yes	8	88.89	Yes
Financial Success	8	83.33	Yes	9	94.44	Yes
Leadership position	8	61.11	Yes	8	66.67	Yes
High social status	8	72.22	Yes	8	66.67	Yes
Career success	9	88.89	Yes	9	88.89	Yes
Social Supports						
Parental Support	8	72.22	Yes	8	94.44	Yes

Teacher Support	8	88.89	Yes	8	77.78	Yes
Family Support	8	77.78	Yes	8	72.22	Yes
Peer-group Support	8	88.33	Yes	8	72.22	Yes
Mother's support	8	94.44	Yes	8	72.22	Yes
Father's support	8	94.44	Yes	8	72.22	Yes
Support from significant other	7	66.66	Yes	8	61.11	Yes
Learning Experiences						
Verbal encouragements	8	83.33	Yes	9	72.22	Yes
Vicarious learning	8	77.78	Yes	8	77.78	Yes
Emotional arousal	8	77.78	Yes	8	72.22	Yes
Performance accomplishment	8	100	Yes	9	83.33	Yes
Interests						
Personal interest	10	100	Yes	10	94.44	Yes
Financial interest	9	88.89	Yes	9	94.44	Yes
Social interests	8	88.89	Yes	8	77.78	Yes
Perceived Barriers						
Discriminatory attitudes	9	88.89	Yes	9	72.22	Yes
Work-life conflict	9	83.33	Yes	8	77.78	Yes
Wage gap	8	77.78	Yes	8	61.11	Yes
Masculine workplace culture	9	66.67	Yes	8	68.67	Yes
Lack of access to opportunities	8	77.78	Yes	8	83.33	Yes
Challenges in career progression	8	72.22	Yes	8	61.11	Yes
Poor working conditions	7	72.22	Yes	8	72.22	Yes
Long work hours	8	72.22	Yes	7	61.11	Yes
Glass ceiling	8	66.67	Yes	7	66.67	Yes
Gender stereotypes	9	72.22	Yes	8	61.11	Yes
Lack of knowledge and career information	7	55.55	Yes	8	61.11	Yes
Lack of role models	7	61.11	Yes	8	66.67	Yes
Lack of education and training	8	61.11	Yes	8	72.22	Yes
Lack of opportunities	8	61.11	Yes	8	83.33	Yes

NOTE: Highlighted elements did not reach consensus, and the rest of the elements reached consensus

As indicated in Table 7. 7, the experts did not reach a consensus on ethnicity and family approval of choice. Based on the pre-set criteria, the group median of these factors were less than seven and less than 50% of the respondents rated their importance and impact below 7 on a 10-point Likert scale.

Under *Person and Contextual Factors* Category

- Ethnicity

Under *Outcome Expectations* Category

- Family of approval of the choice

First round responses were analysed, and the second round survey instrument was sent out to the 18 respondents with summarized group response results of the first round.

7.4.2 Round Two

In the survey instrument for the second round, respondents were provided with their responses and the group median from the first round so they would have an overview of the central tendency of the group response. The panellists were required to review their responses from the first round based on the group median, as they deemed fit. A sample of the questionnaire in the second round of the Delphi is presented

in Appendix 3. In instances when respondents significantly deviated from the round 1 group median, they were asked to provide explanations for the deviations. Table 7.8 presents a summary of responses from the second round.

Of the 18 panel members who participated in the first round, only 14 responded to the second survey request.

Table 7. 8: Round-2 Delphi results summary

	Importance			Impact		
	Median	% Response (7-10)	Consensus Achieved	Median	% Response (7-10)	Consensus Achieved
Social Cognitive Factors						
Self- Efficacy	8	92.86	Yes	8	85.71	Yes
Outcome Expectations	9	64.29	Yes	9	92.86	Yes
Goal Representations	9	92.86	Yes	8	92.86	Yes
Learning Experiences	9	71.42	Yes	8	71.43	Yes
Social Supports	7	50.00	Yes	9	78.57	Yes
Interests	10	92.86	Yes	10	92.86	Yes
Person and Contextual Factors						
Gender	8	92.86	Yes	7	64.29	Yes
Ethnicity	5	42.85	No	6	50	No
Socio-economic status	7	57.14	Yes	7	64.29	Yes
Gender role stereotypes	8	64.29	Yes	8	85.71	Yes
Access to opportunity structures	10	85.71	Yes	9	92.86	Yes
Barriers	8	71.43	Yes	8	85.71	Yes
Access to support structures	9	92.87	Yes	9	100	Yes
Self-Efficacy						
Accurate Self-Appraisal (Identify resources, constraints, and personal characteristics that might influence career choices)	8	85.71	Yes	8	92.86	Yes
Gathering Occupational Information (collect information on training and employment opportunities and manage them effectively)	8	92.86	Yes	9	92.86	Yes
Goal Selection (develop lists of priorities on the effective actions to successfully manage their professional development)	8	92.86	Yes	8	100	Yes
Planning (plan the steps needed to realize a vocational project)	9	78.57	Yes	8	85.71	Yes
Problem Solving (address difficulties related to their career)	8	92.86	Yes	8	78.57	Yes
Outcome Expectations						
Favourable income/wages	10	92.86	Yes	9	92.86	Yes
Job opportunities	9	92.86	Yes	9	92.86	Yes
Promotion and professional development	9	71.42	Yes	9	78.57	Yes
Favourable work conditions	9	85.71	Yes	9	100	Yes
Job security	10	92.86	Yes	9	92.86	Yes
Stable career and guaranteed employment	9	85.71	Yes	9	92.86	Yes
Family approval of career choice	7	50.00	Yes	7	57.14	Yes
Respected image and status in society	8	85.71	Yes	8	71.42	Yes
Satisfying lifestyle	9	85.71	Yes	9	85.71	Yes
Happy future	9	92.86	Yes	9	92.86	Yes
Job satisfaction	9	92.86	Yes	9	92.86	Yes
Achievement of career goals	9	92.86	Yes	9	92.86	Yes
Use of skills and talents	9	92.86	Yes	9	100	Yes
Attainment of career success	9	100	Yes	9	92.86	Yes
Goal Representations						
Technical/functional skills	8	92.86	Yes	8	78.57	Yes

Opportunities for training and development	9	85.71	Yes	9	100	Yes
Opportunities for interesting work	9	92.86	Yes	8	100	Yes
Financial Success	9	85.71	Yes	9	100	Yes
Leadership position	8	64.29	Yes	8	85.71	Yes
High social status	8	71.42	Yes	8	78.57	Yes
Career success	9	92.86	Yes	9	100	Yes
Social Supports						
Parental Support	9	78.57	Yes	8	78.57	Yes
Teacher Support	8	85.71	Yes	8	78.57	Yes
Family Support	8	71.42	Yes	7	71.45	Yes
Peer-group Support	7	78.57	Yes	8	78.57	Yes
Mother's support	8	92.86	Yes	8	78.57	Yes
Father's support	8	92.86	Yes	8	78.57	Yes
Support from significant other	7	64.29	Yes	8	64.29	Yes
Learning Experiences						
Verbal encouragements	8	78.57	Yes	9	78.57	Yes
Vicarious learning	8	71.42	Yes	8	85.71	Yes
Emotional arousal	7	71.42	Yes	7	71.43	Yes
Performance accomplishment	8	100	Yes	8	85.71	Yes
Interests						
Personal interest	10	100	Yes	10	100	Yes
Financial interest	9	92.86	Yes	9	100	Yes
Social interests	8	71.42	Yes	8	85.71	Yes
Perceived Barriers						
Discriminatory attitudes	9	92.86	Yes	9	78.57	Yes
Work-life conflict	9	85.74	Yes	8	78.57	Yes
Wage gap	8	78.57	Yes	8	64.29	Yes
Masculine workplace culture	9	71.42	Yes	8	78.57	Yes
Lack of access to opportunities	8	85.71	Yes	8	85.71	Yes
Challenges in career progression	8	85.71	Yes	8	78.57	Yes
Poor working conditions	8	92.86	Yes	8	85.71	Yes
Long work hours	8	85.71	Yes	8	78.57	Yes
Glass ceiling	8	57.14	Yes	7	71.43	Yes
Gender stereotypes	9	71.42	Yes	9	78.57	Yes
Lack of knowledge and career information	8	64.28	Yes	8	78.57	Yes
Lack of role models	8	78.57	Yes	8	78.57	Yes
Lack of education and training	8	64.28	Yes	8	71.43	Yes
Lack of opportunities	8	71.43	Yes	9	78.57	Yes

NOTE: Consensus was not reached on highlighted factors

As indicated in Table 7. 8, 1 factor did not satisfy the consensus criteria. Based on the pre-set criteria for a factor to have a median of 7 and above on a 10-point Likert scale rating and at least 50% of the respondents rating the factor from 7-10, the group median of this factor was less than 7 and less than 50% of the respondents rated its importance and impact below 7.

Under *Person and Contextual Factors* Category

- Ethnicity

The results of the second-round survey showed that the panellists reached consensus. Since consensus was reached, "ethnicity" was eliminated from the list, and the conceptual model for the study was developed based on the constructs retained in the Delphi study. The constructs presented in Table 7.9 were considered in this study.

Table 7. 9: Final Delphi study result summary

	Round 1	Round 2
Social Cognitive Factors		
Self- Efficacy	Accepted	Included
Outcome Expectations	Accepted	Included
Goal Representations	Accepted	Included
Learning Experiences	Accepted	Included
Social Supports	Accepted	Included
Interests	Accepted	Included
Person and Contextual Factors		
Gender	Accepted	Included
Ethnicity	Not Accepted	Not Included
Socio-economic status	Accepted	Included
Gender role stereotypes	Accepted	Included
Access to opportunity structures	Accepted	Included
Barriers	Accepted	Included
Access to support structures	Accepted	Included
Self-Efficacy		
Accurate Self-Appraisal (Identity resources, constraints, and personal characteristics that might influence career choices)	Accepted	Included
Gathering Occupational Information (collect information on training and employment opportunities and manage them effectively)	Accepted	Included
Goal Selection (develop lists of priorities on the effective actions to successfully manage their professional development)	Accepted	Included
Planning (plan the steps needed to realize a vocational project)	Accepted	Included
Problem Solving (address difficulties related to their career)	Accepted	Included
Outcome Expectations		
Favourable income/wages	Accepted	Included
Job opportunities	Accepted	Included
Promotion and professional development	Accepted	Included
Favourable work conditions	Accepted	Included
Job security	Accepted	Included
Stable career and guaranteed employment	Accepted	Included
Family approval of career choice	Not Accepted	Included
Respected image and status in society	Accepted	Included
Satisfying lifestyle	Accepted	Included
Happy future	Accepted	Included
Job satisfaction	Accepted	Included
Achievement of career goals	Accepted	Included
Use of skills and talents	Accepted	Included
Attainment of career success	Accepted	Included
Goal Representations		
Technical/functional skills	Accepted	Included
Opportunities for training and development	Accepted	Included
Opportunities for interesting work	Accepted	Included
Financial Success	Accepted	Included
Leadership position	Accepted	Included
High social status	Accepted	Included
Career success	Accepted	Included
Social Supports		
Parental Support	Accepted	Included
Teacher Support	Accepted	Included
Family Support	Accepted	Included
Peer-group Support	Accepted	Included

Mother's support	Accepted	Included
Father's support	Accepted	Included
Support from significant other	Accepted	Included
Learning Experiences		
Verbal encouragements	Accepted	Included
Vicarious learning	Accepted	Included
Emotional arousal	Accepted	Included
Performance accomplishment	Accepted	Included
Interests		
Personal interest	Accepted	Included
Financial interest	Accepted	Included
Social interests	Accepted	Included
Perceived Barriers		
Discriminatory attitudes	Accepted	Included
Work-life conflict	Accepted	Included
Wage gap	Accepted	Included
Masculine workplace culture	Accepted	Included
Lack of access to opportunities	Accepted	Included
Challenges in career progression	Accepted	Included
Poor working conditions	Accepted	Included
Long work hours	Accepted	Included
Glass ceiling	Accepted	Included
Gender stereotypes	Accepted	Included
Lack of knowledge and career information	Accepted	Included
Lack of role models	Accepted	Included
Lack of education and training	Accepted	Included
Lack of opportunities	Accepted	Included

7.5 Discussion of the Delphi results

As shown in Table 7. 9, 67 items were considered for the subsequent phase of the study.

The following subsections discuss the results of the Delphi study under each major construct.

7.5.1 Social Cognitive Factors

The socio-cognitive theory highlights the influential role of social cognitive factors on career choice. According to Bandura (1989), the formation of academic interests, career development, performance, and persistence of individuals in their career endeavours are predicted by a range of social cognitive factors. (Aguilar et al., 2014; Kelly, 2009) claim that social cognitive factors may provide reasons as to why women are underrepresented in male-dominated professions and provide insights into how targeted strategies to increase their participation may mitigate the problem of under-representation.

All the six variables included in the Delphi study under social cognitive factors were retained.

7.5.2 Person and Contextual Factors

Situational and contextual factors such as ethnicity, sex, intelligence, and culture and gender role socialization are moderators of the formulation of choice goals and have a great influence on career choice (Ali et al., 2005; Ali and McWhirter, 2006; Kelly, 2009; Pio et al., 2013;Posel et al., 2011). Of the eight

constructs included in the Delphi survey under the person and contextual factors, all except one were retained. The Delphi panellists did not reach a consensus on ethnicity; therefore, it was eliminated. Although existing literature argued that ethnicity is a socially constructed aspect of the experience that helpsto shape the career choice process of individuals (Hackett and Betz, 1981; Hackett and Lent, 1992), the Delphi panel concurred that ethnicity has no significant importance and impact on the career choice of individuals.

7.5.3 Self-Efficacy

Self-efficacy has been found to play a crucial role in the career choices of individuals and is a major predictor of choice of career choice behaviour (Charity-Leeke, 2012; Lent and Sheu, 2010;Lent et al., 2008;Pio et al., 2013;Sawtelle et al., 2012). Five measures of self-efficacy were presented to the Delphi panel members, and all of them were retained. The Delphi survey showed that all the self-efficacy factors listed had significant importance and impact on career choice.

7.5.4 Outcome Expectations

It argued that career decisions are significantly dependent on the likelihood that a particular action will yield a certain outcome based on the value a person places on those outcomes (Locke et al., 1986; Wanous et al., 1983). Outcome expectations have been identified as one of the most salient predictors of a career choice as individuals have positive expectations from engaging in the behaviour (Fouad and Guillen, 2006; Kelly, 2009). All fourteen variables included in the Delphi study under outcome expectations were retained.

7.5.5 Goal Representations

Several factors related to goals, influence career choice behaviour (Ali and McWhirter, 2006; Pio et al., 2013). Goals are the determination to undertake a particular action or to initiate a specific future outcome (Bandura, 1989). It is expected that firmly held goals will more likely influence a person's choice to undertake a particular career (Leung et al., 1994). All measures included in the Delphi survey under goal representations were retained.

7.5.6 Social Supports

As documented in the literature, support from parents, teachers, and peers as crucial social supports in the career aspirations, decision making, and persistence of an individual (Mau et al., 2000; Pio et al., 2013). All items presented in the Delphi survey satisfied the consensus criteria, and experts indicated that all the social support constructs were important and had an impact on career choice.

7.5.7 Learning Experiences

Previous learning experiences promote future career behaviours and that an accumulation of different kinds of reinforcements is responsible for career choices and that these prior experiences influence future career choices (Lent et al., 2008; Pio et al., 2013). Interactions with family members, teachers, peers, role models, cultural and religious institutions, and media sources influence personal values and standards, which may consequently influence an individual's career choice (Charity-Leeke, 2012). The three items presented in the Delphi survey under learning expectations were retained.

7.5.8 Interests

Interests are strongly linked to the selection of a life career (Bojuwoye and Mbanjwa, 2006; Gokuladas, 2010; Lent and Sheu, 2010). Interest is an essential motivating factor in the career decision-making process (Humayon et al., 2018). A person is more likely to consider their interests when making a career choice (Bojuwoye and Mbanjwa, 2006; Humayon et al., 2018). Three measures of interest were presented to the Delphi panel members, and all of them were retained. The Delphi survey showed that all the interest variables listed had significant importance and impact on career choice.

7.5.9 Perceived Barriers

Several studies detailing the status and participation of women in construction have argued that the barriers they encounter primarily influence the decision of women to take up careers in the field (Amaratunga et al., 2006; Ginige et al., 2007). This signifies that it is vital to examine negative factors that hinder women's career choice in construction.

The Delphi survey revealed that all the fourteen perceived barriers presented had significant importance and impact on career choice.

7.6 Chapter Summary

This chapter presented a summary of the results and discussion of findings from two round Delphi study. The chapter provided demographic information of participants and proceeded to discuss results from the Delphi survey. The next chapter presents the refined career choice behaviour, conceptual model.

CHAPTER EIGHT

CONCEPTUAL MODEL FOR CAREER CHOICE MODEL IN CONSTRUCTION

8.1 Introduction

This chapter presents the conceptual framework for the study. The conceptual model is developed from an in-depth review of relevant literature and adapts the model of contextual and environmental factors influencing career choices developed by (Lent et al., 1994). The identified constructs in the model that determine career choice in construction which are gender, socio-economic status, self-efficacy, outcome expectations, interests, goal-representations, social supports, learning experiences, access to opportunities, access to support structures, socialization process, gender role stereotypes, and perceived barriers are discussed. Hypothesized relationships between the constructs were further presented.

8.2 Proposed Conceptual Model for Career Choice in Construction

A conceptual model presents a structure that best explains the progression of the phenomenon under study (Adom et al., 2016). From a statistical perspective, the conceptual framework describes and categorizes the proposed relationships between the relevant concepts of the study (Rocco and Plakhotnik, 2009). To achieve this objective, relevant theories and empirical research are linked to detect where the overlaps, contradictions, and refinements are (Adom et al., 2016). The researcher must demonstrate the significance and problem of the study by defining the key variables or constructs and networks of relationships between them (Pahl-Wostl, 2009). A conceptual framework grounds the study in the relevant knowledge bases that lay the foundation for the importance of the problem statement and research questions (Young, 2008).

This study builds upon the framework of SCCT's model of career choice developed by (Lent et al., 1994) and integrates both environmental and individual cognitive variables. The model of career choice incorporates person and contextual variables such as, for example, gender, race, age, education and contextual variables and deals with the relationship between various social cognitive mechanisms and their diverse influences on career choice behaviour (Lent et al., 1994).

Numerous studies examining SCCT have emphasized individual cognitive factors, paying little attention to environmental factors. However, this study sought to investigate the significance of environmental variables, which are perceived to have a greater influence on career decisions and focuses specifically on women's decisions in undertaking work in construction-related disciplines as a significant outcome in construction careers.

Table 8.1 shows a comparison of existing literature with regards to the basic constructs of the Social Cognitive Career Theory (SCCT) as applied to the career decision and development process. The predominant elements are related to self-efficacy, outcome expectations, goal representations, social supports, interest, and learning experience.

Table 8 1: Core constructs of the SCCT identified from the literature

SCCT Constructs	Saifuddin *et al.* (2013)	Hunt *et al.* (2016)	Ali *et al.*(2006)	Daniels (2012)	Chronister *et al.* (2003)	Kelly (2016)	Lent *et al.* (2008)	Patton *et al.* (2007)
Self- Efficacy	✓	✓	✓	✓	✓	✓	✓	✓
Outcome Expectations	✓	✓	✓	✓	✓	✓	✓	✓
Goal representations	✓				✓	✓	✓	
Social supports	✓	✓					✓	
Learning Experience	✓	✓	✓					
Interest					✓		✓	
Self-concept						✓		

Based on the most prominent constructs in Table 8.1, the identified variables and notations for this study are as follows;

1. Self- efficacy (SEF)

2. Outcome Expectations (OTX)

3. Goal representations (GRP)

4. Social Supports (SSP)

5. Learning Experience (LEX)

6. Interests (INT)

Consistent with the SCCT model of career choice and extant literature, the study predicts that each of the selected variables will have a positive impact on the career behaviour of women and girls in construction. The proposed conceptual model for the study further expands the model of career choice by capturing

barriers to the participation of women in the construction profession. The model suggests that career choices in construction are related to perceptions of individuals of their ability to perform on various construction-related activities, their goals and their expectations of the consequences of engaging in these activities (Eccles, 1984; Eccles et al., 1985; Meece et al., 1982). It is predicted that such choices are, in many cases, influenced by societal barriers and supports received by an individual and by the individual's judgment of the probability of success of these career options. The model attempts to link contextual factors such as barriers such as, for example, work-life conflict, sexual harassment, glass ceiling, and the gender wage gap, opportunity structures, support structures, socialization process, gender role stereotypes, gender and socioeconomic status from a women's career choice perspective.

Opportunity structures tend to promote or hinder obligatory control in career choice behaviour (Lent et al., 1994). Career development and choice theories acknowledge that although a person acts as a free agent in the selection of a career path, circumstances and external influences may restrict personal career choices (Lent et al., 2008). While the proposed conceptual model permits the practice of personal agency, it also stresses the factors that serve to restrict, promote, invalidate personal obligation in the career choice process. Noteworthy are the differential barriers experienced by men and women, and among women from different socio-economic backgrounds in the career, choice process assumed to result from socialization and learning experiences as it has been highlighted in numerous studies (Charity-Leeke, 2012; Eccles, 1984; Pio et al., 2013).

Opposing trends in the professional development of South African women in construction suggest that contextual and environmental factors play a significant role in shaping their career choices. Sangweni (2015) argued that numerous studies aimed to examine the declining participation in construction among South African women may not fully capture the dynamics of career choices for women aspiring to undertake careers in construction. Therefore, the study attempts to expand the SCCT beyond its individualistic roots to incorporate more social and environmental factors.

Also, the study deals explicitly with the influence of stereotypical sociocultural factors on the career choice behaviour of girls and women to pursue careers in construction in the South African context. Therefore, the conceptual model in Figure 8.1 highlights the interaction of gender and socio-economic backgrounds with learning experiences (LEX), social supports (SSP), outcome expectations (OTX), goal representations (GRP), interests (INT), self-efficacy (SEF), gender role stereotypes (GST), perceived barriers (PRB), access to opportunity structures (AOP) and their influences on women's career choice behaviour in construction. This study predicts that these variables may have differential influences on the career behaviour of women and men as well as among women from different socio-economic backgrounds.

Using the outcomes of the literature review and considering the SCCT model of career choice, a proposed conceptual model for career choice in construction showing the relationship between dependent and independent variables is illustrated in Figure 8.1.
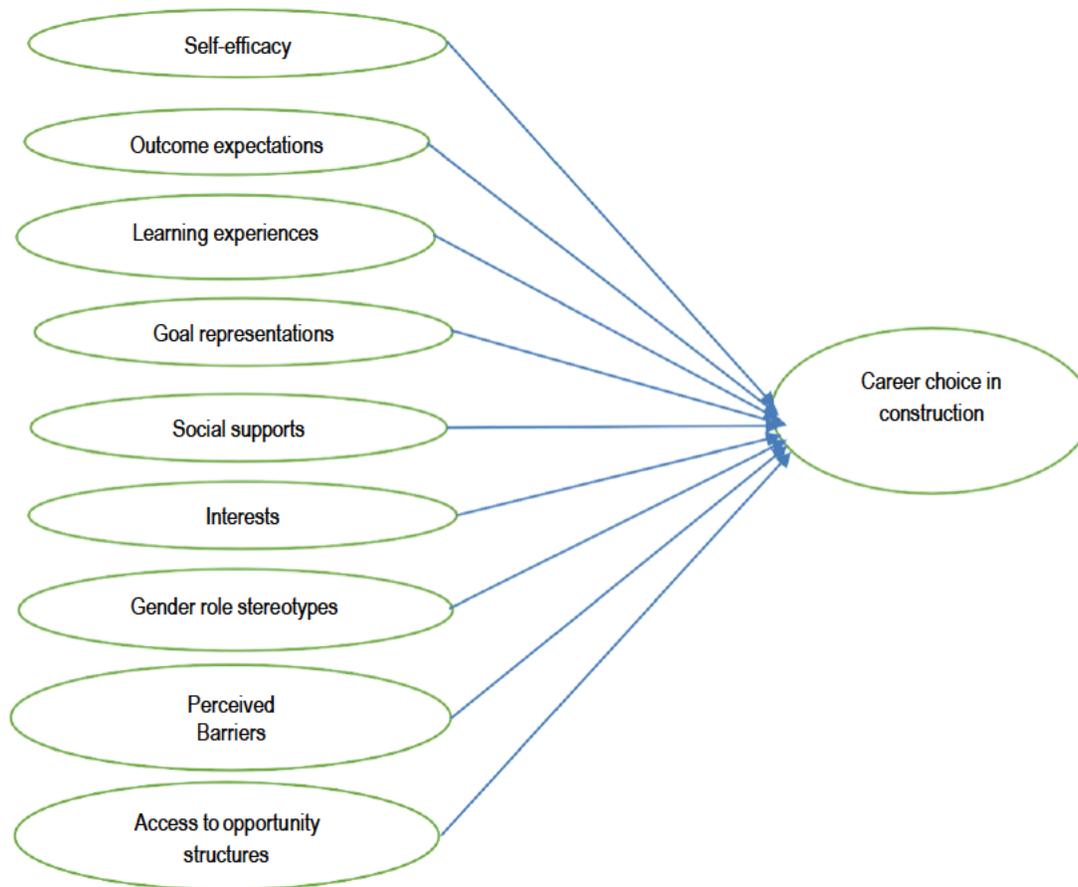
Figure 8.1: Hypothesized Conceptual model for career choice in construction

8.3 Features of the Model

8.3.1 Self-Efficacy

Self-efficacy refers to "people's judgments of their capabilities to organize and execute courses of action required attaining designated types of performances" (Bandura, 1989). From the social-cognitive perspective, self-efficacy is a set of beliefs concerned with specific performance domains and interact complexly with external and contextual factors (Shumba and Naong, 2012). These beliefs help to determine the choice of activities, environments, persistence, and emotional reactions to certain events (Malach-Pines and Kaspi-Baruch, 2008). (Ali and McWhirter, 2006; Kelly, 2009; Lent and Sheu, 2010) described self-efficacy as a person's perception of their capabilities and ability to perform at certain levels in a specific domain, that influence certain events which have an impact on their lives. It is a conviction by a person that a target can be achieved (Hunt et al., 2017). Self-efficacy beliefs are predominantly determined by four

sources: performance accomplishments, vicarious learning, social persuasion, and emotional arousal (Hunt et al., 2017). Commonly, a person has a higher level of self-efficacy when they believe they have the required competency and efficacy to obtain necessary results (Bandura, 1977). Elements of self-efficacy are perceived to assist a person in determining their choice of activities, degree of persistence, and emotional reaction to situations (Peña-Calvo et al., 2016). Introduced to career development literature by Hackett and Betz (1981), self-efficacy has received wide attention in career literature and has been identified as a major predictor of choice to undertake and remain in a male-dominated career such as construction (Lent and Brown, 2006; Lent and Sheu, 2010).

8.3.2 Outcome Expectations

Outcome expectations refer to a person's beliefs relating to probable response outcomes and consequences of performing certain actions (Lent and Brown, 2006). Career choice behaviour is perceived to be significantly dependent on the subjective likelihood that a particular action will yield a certain outcome as well as the value a person places on those outcomes (Locke et al., 1986; Wanous et al., 1983). According to Bandura (1989), "people act on their judgments of what they can do, as well as on their beliefs with regards to the likely consequences of their actions." Physical outcomes (money), social outcomes (approval), and self-evaluative outcomes were highlighted as the types of outcome expectations (Bandura, 1989). Outcome expectations have been identified as one of the most salient predictors of career choice behaviour as individuals have positive expectations from engaging in the behaviour (Kelly, 2009). Career development theories emphasizing the consequences of decision making have also acknowledged the significance of outcome expectations (Peña-Calvo et al., 2016). Locke et al. (1986) perceived career choice behaviour as highly dependent on the likelihood that certain actions will produce outcomes.

8.3.3 Goal representations

Goals play a significant role in the career behaviour mechanism (Lent et al., 1994). Goals are the determination to undertake a particular action or to initiate a specific future outcome (Bandura, 1989). Goal representations result in extra input by a person in the relevant domain, inspiring the person to proceed energetically, making a career choice in the domain through organized planning (Lent et al., 1994). In most cases, a person defines some criteria for certain behaviours depending on their expectations and beliefs, and these criteria are referred to as goals (Ali and McWhirter, 2006; Peña-Calvo et al., 2016).

Numerous studies have suggested that several factors related to goals, influence career choice behaviour (Ali and McWhirter, 2006; Peña-Calvo et al., 2016). It is expected that firmly held goals will more likely influence career entry choice behaviours (Lent et al., 1994). Goals are also perceived to have a strong motivational effect on career choice behaviour to the extent that they are specific and clear, although maybe challenging, are attainable and proximal (Hunt et al., 2017). Although social, environmental factors and

personal history shape the career behaviour of a person, goal setting guides behaviour in instances where there are no external reinforcements and increases the likelihood that desired outcomes will be attained (Burke and Mattis, 2007). Goals are considered as an implicit parameter of the career choice and decision-making process (Pio et al., 2013). Career aspirations, choices, and decisions are all significant concepts of goal representations (Kelly, 2009).

8.3.4 Social support

Although numerous studies have adopted the SSCT framework, a majority have emphasized more on individual and cognitive variables, ignoring one of the main constructs of SCCT- the influence of social and contextual variables (Pio et al., 2013). A major influencing variable on career decisions is social support (Hunt et al., 2017; Lent et al., 2001; Vandellen et al., 2011). Support from significant others such as parents, teachers, and peers are crucial social supports in the occupational aspirations career decision making, and persistence of students is well documented in literature (Mau et al., 2000; Pio et al., 2013).

(Lent et al., 1994; Whittock, 2002) have highlighted support structures that may influence career choice. Exposure to role models, networking contacts, emotional and financial support from significant others are key support mechanisms that influence the career choices and progress of women in the construction industry (Burke and Mattis, 2007; Vainikolo, 2017; Yokwana et al., 2016).

8.3.5 Learning Experience

Career choice behaviour is guided by an interaction of learning experiences with person and contextual factors (Hunt et al., 2017). Studies have argued that previous learning experiences promote future career behaviours and that an accumulation of different kinds of reinforcements is responsible for career choices and that these prior experiences influence future career choice behaviour (Lent et al., 2008; Pio et al., 2013). During the socialization process, the environment exposes a person to a range of activities which might be of occupational relevance (Kessels and Taconis, 2012). A person also experiences and observe other people within their environment performing various vocational activities, exposing them directly and indirectly to diverse activities as well as differently reinforcing their aspirations to pursue certain activities (Kelly, 2009). By repetitively performing certain activities, role models, and feedback from models, people refine their career choices (Lent et al., 1994). Learning experiences produce values that are acquired through socialization and fundamental social learning processes, such as vicarious learning and self-evaluative experiences (Alexander et al., 2011). Interactions with family members, teachers, peers, role models, cultural and religious institutions, and media sources influence personal values and standards, which may consequently influence career choice behaviour (Charity-Leeke, 2012).

8.3.6 Interests

Interests are skills developed during a person's socialization process and ideally are translated into career choices, although social and environmental factors often influence the level of career aspirations and choice (Bécares and Priest, 2015). Jin et al. (2009) defined career interests as patterns of likes, dislikes, and indifferences with regards to career-related activities and occupations. Betz and Voyten (1997) considered interests as a state of mind that emerges before and action and is perceived as a principal motivator of career choice behaviour. A person makes continuous choices, which are often regarded as unconscious, without considering how their time and efforts will be spent (Rogers et al., 2008).

8.3.7 Gender role stereotypes

Gender role stereotypes are prescriptive ideologies regarding gender and consist of structures related to role behaviours, occupation, cognitive abilities, and skills (Brown and Henriquez, 2008; Eagly and Johannesen-Schmidt, 2001; Holton et al., 2009; Kalin and Tilby, 1978). The influence of gender-stereotyped beliefs and attitudes on career choice has been a subject of scholarly inquiry among researchers (Blakemore and Hill, 2008; Deemer et al., 2016; Sáinz et al., 2016). The career choice a person may be hindered by socio-cultural and stereotypical beliefs that undertaking certain careers are a violation of traditional gender norms (Blakemore and Hill, 2008). Individuals are mandated to compromise their stance regarding a career choice, by undertaking careers that are perceived as more realistic than ideal (Blanchard and Lichtenberg,2003; Junk and Armstrong, 2010; Tsousides and Jome, 2008). Numerous studies have argued that the under-representation of women in male-dominated occupations could be because of continued gender-role stereotyping of careers (Leung et al., 1994; Mendez and Crawford, 2002). Women's abilities to undertake certain careers are elaborated through assumed stereotypes and stereotypical roles that exist in non-traditional occupations (Arditi et al., 2013; Bradley and Healy, 2008; Francis, 2017).

8.3.8 Access to Opportunity Structures

Lack of information on career opportunities may likely influence the career advancement and value individuals place on various educational and career options (Ali et al., 2005; Jamenya et al.). Reduced access to educational and vocational job-training opportunities have implications on opportunities for women to choose careers in construction (Vainikolo, 2017). Numerous studies have emphasized on the unequal accessto training and development programs, networking opportunities and educational programs, and as a result,there is unequal awareness of a variety of career options that could broaden the career choices of women, with construction as a viable option (Aulin and Jingmond, 2011; Charity-Leeke, 2012).

8.3.9 Perceived Barriers

Individuals may perceive numerous barriers or hindrances to undertaking a career in the construction industry (Aulin and Jingmond, 2011; Everhart et al., 1998; Lowe and Woodcroft, 2014). These barriers include discriminatory attitudes, work-life conflict, the wage gap, workplace culture, lack of access to opportunities, challenges in career progression, poor working conditions, long work hours, glass ceiling, gender stereotypes, lack of knowledge and career information, lack of role models, sexual harassment, lack of education and training and lack of opportunities (Mendez and Crawford, 2002; Fraser et al., 2013; Hoobler et al., 2009; Kaewsri et al., 2013).

8.4 Hypothesis Development

Hypothesis development details the rationale behind the proposed hypotheses. In the original SCCT model, Lent et al. (1994) outlined 12 sets of propositions, which developed 32 hypotheses. The hypotheses tested in the current study were adapted from Lent et al. (1994) career choice model, integrating person, contextual, and socio-cognitive variables. This study proposes 9 hypotheses, whereby each construct has hypothesized relationships between the different variables in the conceptual model presented in Figure 8.1.

H1: Self-efficacy beliefs has a direct influence on career choice.

H2: Outcome expectations has a direct influence on career choice.

H3: Goal representations has a direct influence on career choice.

H4: Interests has a direct influence on career choice.

H5: Social supports has a direct influence on career choice.

H6: Learning experiences has a direct influence on career choice.

H7: Perceived barriers has a direct influence on career choice.

H8: Gender stereotypes has a direct influence on career choice.

H9: Access to opportunity structures has a direct influence on career choice.

8.5 Chapter Summary

This chapter presented the proposed conceptual model for a career choice in construction, which was based on the review of the literature and established by the Delphi study. The hypothesized relationships among the different constructs were presented.

The next chapter presents the results and analysis of the survey intended to validate the conceptual model.

CHAPTER NINE

PRESENTATION OF SURVEY RESULTS

9.1 Introduction

This chapter presents the results of the survey conducted in terms of the hypothesis testing of questionnaire results and to validate the conceptual model developed in the previous chapter. Descriptive statistics and corresponding validity and reliability tests were conducted. The data from the questionnaires were analysed using the Statistical Package for Social Sciences (SPSS) for the descriptive statistics and multivariate correlational data analysis including Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA). The results were subsequently imported into the IBM AMOS Structural Equation Modelling Software for further analysis.

9.2 Questionnaire Pre-test Survey

A pilot study is a mini version of a full study and is conducted to pre-test the adequacy, clarity, and completeness of the research instrument (Van Teijlingen and Hundley, 2002). An advantage of conducting a pilot study is that it gives early indications of areas of where the full-scale may fail or whether the proposed methods and research instrument are appropriate (Field, 2013; Neutens and Rubinson, 2001). According to Field (2013), the sample size for a pilot study should depend on the objectives and nature of the study. While there are several rules of thumb for the sample size for a pilot study, 10 to 35 representative participants have been identified as the adequate sample size (Cocks and Torgerson, 2013; Whitehead et al., 2016).

In this study, a sample of 30 participants was adopted for the pilot study. The pilot was electronically administered via WhatsApp to thirty 1st to 4th-year students enrolled in construction programmes on August 2, 2020, and 22 responses were received. The response rate of the pilot study was 73.3%, as shown in Table 9.1.

Table 9 1: Respondent composition for pilot study

Students	Frequency	Percent	Responses	Response Rate
1st year	10	33.3	7	70.0
2nd year	8	26.7	7	87.5
3rd year	7	23.3	5	71.4
4th year	5	16.7	3	60.0
Total	30	100	22	73.3

Based on responses from the pilot study, the following modifications were made to the final questionnaire survey;

- Participants in the pilot study indicated that it took 10 to 20 minutes to complete one questionnaire. A median value was adopted, and the final questionnaire survey was estimated to be completed in 15 minutes on average.
- The demographic section in the pilot survey included open-ended questions. In the development of the final survey, they were changed to close-ended questions.

Following the restructuring of the questionnaire, the final questionnaires were developed and administered to the students electronically using google forms. A sample of the cover letter and the final questionnaire are enclosed in Appendix 4 and 5.

9.3 Descriptive Analysis

To ensure the validity and reliability of research findings, it is essential to ensure the validity and reliability of demographic characteristics of the survey respondents. In this section, the demographic information of the respondents is presented. For a proper understanding of the nature of the data, descriptive statistics in the form of central measures of tendency such as percentages, means and standard deviations were used to analyse the data.

9.3.1 Response Rate

While there is a rule of thumb for an acceptable response rate, numerous studies have suggested a response rate of 50% is generally adequate (Babbie, 2013). Hair et al. (2010) recommended sample size of not less than 100 and a minimum of 5 times the number of variables, as an appropriate sample size for factor analysis. Kline (2015) suggested a sample size of 200 as acceptable for Structural Equation Modelling (SEM).

The distribution of responses across years of study for each of the two universities is presented in Table 9.2. The target population for the survey was 461 which is the number of students enrolled in construction related programmes in the two universities and was used for data collection. A total of 229 responses were received.

Table 9 2: Response Rate

University	Population Size	Sample Size	Sample/Population Percentage
University One			
1st Year Construction Management	92	48	52%
2nd Year Construction Management	70	42	60%
3rd Year Construction Management	33	16	48%
1st Year Civil Engineering	21	2	10%
1st Year Quantity Surveying	34	22	65%
2nd Year Quantity Surveying	30	23	76%
3rd Year Quantity Surveying	11	4	36%
4th Year Quantity Surveying	9	1	11%
Total	**300**	**158**	**52%**
University Two			
2nd Year Land Surveying	11	4	36%
1st Year Civil Engineering	22	4	18%
3rd Year Civil Engineering	10	2	20%
4th Year Civil Engineering	15	9	60%
4th Year Construction Management	19	4	21%
4th Year Architecture	8	1	12%
1st Year Building	30	18	60%
2nd Year Building	22	18	81%
3rd Year Building	15	8	53%
4th Year Building	9	3	33%
Total	**161**	**71**	**44%**

9.3.2 Demographic Statistics

Table 9.3 shows the demographic distribution of the respondents. There were 116 men (50.7%) in the sample. First year students had the largest number of participants with 94 students (41%), followed by 2nd year students at 87 (38%).

Table 9 3: Demographic Distribution

Gender	Frequency	Percent
Man	116	50.7%
Woman	113	49.3%
Total	**229**	**100.00%**
Year of Study		
1st year	94	41.0
2nd year	87	38.0
3rd year	30	13.1
4th year	18	7.9
Total	**229**	**100.00%**
Programme of Study		
Construction Management	110	48.0
Land Surveying	4	1.7
Quantity Surveying	50	21.8
Civil Engineering	17	7.4
Building	47	20.5
Architecture	1	0.4
Total	**229**	**100.00%**

This rate of participation is possible because of the 1st year cohort of students at South African Universities being usually larger than the later years or more advanced levels of study.

Most respondents were enrolled in the discipline of Construction Management (n= 110; 48%), which also accounted for the largest number of participants because of both of the participating universities offering the programme. Architecture had the lowest number of students (n=1; 0.4%) in the sample because only one of the universities offered the programme and typically had smaller numbers of students compared to the other disciplines and programmes.

To determine the socio-economic background of the respondents, participants were required to indicate the current or last occupation and the highest qualification of the breadwinner of their household.

Table 9.4 presents the weightings assigned to each measure under occupation and qualification. The weightings were then used to group the respondents into high, medium and low SES categories. Values less than 3 were assigned to low SES while those less than 6 but greater than 3 were assigned to medium SES categories. Finally, values greater than 6 were assigned to high SES categories.

Table 9 4: Interpretation of Scales for Socio-Economic Background

Occupation	Weighting	Qualification	Weighting	SES	Weighting
Unskilled	1	Post- Matric	4	Low	<3
Skilled	2	Matric	3	Medium	<6>3
Graduate	3	High School	2	High	>6
Specialist	4	Primary School	1		

Table 9.5 presents results relating to the socio-economic data of the participants. Most of the household breadwinners were unskilled workers such as housekeepers, farmers, waiters and gardeners (n= 161; 70.3%), followed by graduate workers such as teachers, nurses, and police officers (n=39; 17%).

Table 9 5: Socio-Economic Background

Occupation of the breadwinner of the household	Frequency	Percent
Unskilled	161	70.3
Skilled	21	9.2
Graduate	39	17.0
Specialist	8	3.5
Highest qualification of the breadwinner of the household	Frequency	Percent
Post- Matric	59	25.7
Matric	54	23.7
High School	59	25.7
Primary School	57	24.9
Socio-economic Category	Frequency	Percent
High SES	42	18.3
Medium SES	54	23.6
Low SES	133	58.1
Total	229	100.00%

Concerning the highest qualification of the household breadwinner, 59 (25.7%) had Post-matric education, 54 (23.7%) had matric education, 59(25.7%) had high school education, and 57(24.9%) had primary school education. Based on the occupation and the highest qualification of the breadwinner of the household, 133 (58.1%) of the students were categorised to be of low socioeconomic status.

A cross-tabulation of the demographic statistics was conducted to establish the distribution of the demographic statistics. Table 9.6 presents the cross-tabulation results of year of study and gender. Men accounted for between 43% and 67% of each year of study. Of the men, 40 were in the 1st year (34.5%), 44 (37.9%) were in the 2nd year, while 20 (17.2%) and 12 (10.3%) were in the 3rd and 4th year, respectively. Of the women, 54 (47.8%) were in the 1st year, 43 (38.1%) were in the 2nd year, while 10 (8.8%) and 6 (5.3%) were in the 3rd and 4th year of study, respectively. The distribution of women across the years of study was almost similar to the men. The ratio of gender distribution across the different years of study was 50.7% for men. Therefore, in terms of gender distribution across years of study, the sample is a fair representationof the population of interest.

Table 9 6: Cross-tabulation of Year of Study and Gender

Year of Study			Gender		Total
			Man	Woman	
Year	Year 1	Count	40	54	94
		% within year	42.6%	57.4%	100.0%
		% within gender	34.5%	47.8%	41.0%
	Year 2	Count	44	43	87
		% within year	50.6%	49.4%	100.0%
		% within gender	37.9%	38.1%	38.0%
	Year 3	Count	20	10	30
		% within year	66.7%	33.3%	100.0%
		% within gender	17.2%	8.8%	13.1%
	Year 4	Count	12	6	18
		% within year	66.7%	33.3%	100.0%
		% within gender	10.3%	5.3%	7.9%
	Total	Count	116	113	229
		% within year	50.7%	49.3%	100.0%
		% within gender	100.0%	100.0%	100.0%

Table 9.7 presents the cross-tabulation results of the programme of study and gender. Men accounted for between 1% and 75% of the students across the programmes of study. This is consistent with the expected proportion of men to women enrolled in public universities in South Africa. The ratio of gender distribution across the different programmes of study was 49.3% to women, which is similar to the trend displayed across the years of study.

Table 9 7: Cross-tabulation of Programme of Study and Gender

Programme of Study			Gender		Total
			Man	Woman	
Programme	Construction Management	Count	52	58	110
		% within programme	47.3%	52.7%	100%
		% within gender	44.8%	51.3%	48.0%
	Land Surveying	Count	3	1	4
		% within programme	75.0%	25.0%	100.0%
		% within gender	2.6%	0.9%	1.7%
	Quantity Surveying	Count	25	25	50
		% within programme	50.0%	50.0%	100.0%
		% within gender	21.6%	22.1%	21.8%
	Civil Engineering	Count	10	7	17
		% within programme	58.8%	41.2%	100.0%
		% within gender	8.6%	6.2%	7.4%
	Building	Count	25	22	47
		% within programme	53.2%	46.8%	100.0%
		% within gender	21.6%	19.5%	20.5%
	Architecture	Count	1	0	1
		% within programme	0.9%	0.0%	100%
		% within gender	0.9%	0.0%	0.4%
	Total	Count	116	113	229
		% within programme	50.7%	49.3%	100.0%
		% within gender	100.0%	100.0%	100.0%

Table 9 8: Cross tabulation of Programme of Study and Year of study

Programme of Study			Year				Total
			Year 1	Year 2	Year 3	Year 4	
Programme	Construction Management	Count	48	42	16	4	110
		% within programme	43.6%	38.2%	14.5%	3.6%	100.0%
		% within year	51.1%	48.3%	53.3%	22.2%	48.0%
	Land Surveying	Count	0	4	0	0	4
		% within programme	0.0%	100.0%	0.0%	0.0%	100.0%
		% within year	0.0%	4.6%	0.0%	0.0%	1.7%
	Quantity Surveying	Count	22	23	4	1	50
		% within programme	44.0%	46.0%	8.0%	2.0%	100.0%
		% within year	23.4%	26.4%	13.3%	5.6%	21.8%
	Civil Engineering	Count	6	0	2	9	17
		% within programme	35.3%	0.0%	11.8%	52.9%	100.0%
		% within year	6.4%	0.0%	6.7%	50.0%	7.4%
	Building	Count	18	18	8	3	47
		% within programme	38.3%	38.3%	17.0%	6.4%	100.0%
		% within year	19.1%	20.7%	26.7%	16.7%	20.5%
	Architecture	Count	0	0	0	1	1
		% within programme	0.0%	0.0%	0.0%	100%	100%
		% within year	0.0%	0.0%	0.0%	5.6%	0.4%
	Total	Count	94	87	30	18	229
		% within programme	41.0%	38.0%	13.1%	7.9%	100.0%
		% within year	100.0%	100.0%	100.0%	100.0%	100.0%

Table 9.8 shows the cross-tabulation results for programme of study and year of study. The sample had 1st to 4th year Construction Management, Quantity Surveying and Building students. Land Surveying had only

2nd year students while Architecture had students only in the 4th year of study. Civil engineering had students in the 1st, 3rd, and 4th year of study.

9.3.3 Descriptive Statistics and Normality Test for Factors and Influences on Construction Career Choice

Table 9.9 presents the normality test and descriptive results for the factors and influences on career choice in construction. The assessment of the influence of the predictors on student's career choices revealed that the item "*I would like to perform well at my job*" with a mean score of 4.62 had the most influence on student's career choices. The statistics showed that the item "*Because of my gender, I will earn a lower salary than my counterparts for similar work*" had the lowest mean score (1.89), indicating least influence on the career choice of students.

Kolmogorov-Smirnov Z and Shapiro-Wilk were adopted for the normality tests of the elements. The Shapiro-Wilk test and Kolmogorov-Smirnov test makes comparisons between the scores obtained from a sample to normally distributed score sets with the same mean and standard deviation. The tests assess the normality of the distribution of scores. A non-significant test result, namely the test significance is greater than .05, means that the difference is insignificantly different from a normal distribution, therefore indicating normality. Numerous studies have asserted that the Shapiro-Wilk test is the most effective test for normality compared to other tests (Razali and Wah, 2001).

As shown in Table 9.9, the Kolmogorov-Smirnov Z and Shapiro-Wilk tests indicated a non-normal distribution at 0.000 for all the variables. Maximum likelihood estimation with robust standard errors and chi-square was employed to account for the non-normal distribution of data.

Table 9 9: Key factors and test for normality

		Mean	Std. Dv.	Rank	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
					Stat	df	Sig.	Stat	df	Sig.
Self-Efficacy	I have confidence in my ability to identify resources, limitations, and personal characteristics that might influence my career choices.	3.97	.982	**30**	.292	229	.000	.793	229	.000
	I am confident about being able to collect information about training and employment opportunities for myself and manage them effectively.	4.05	.923	**26**	.222	229	.000	.832	229	.000
	I am confident about being able to develop lists of priorities on the effective actions to successfully manage my own personal professional development	4.02	.908	**28**	.253	229	.000	.826	229	.000

	I am confident about being able to plan the steps needed to realize a project related to my profession	4.02	1.02	**28**	.277	229	.000	.805	229	.000
	I am confident about being able to address any difficulties related to my career	4.01	1.06	**29**	.231	229	.000	.820	229	.000
Outcome Expectations	I expect to earn a good and satisfactory salary	4.37	.862	**11**	.304	229	.000	.697	229	.000
	I expect to get experience and get better jobs in future	4.45	1.007	**6**	.357	229	.000	.616	229	.000
	I expect to get promoted and get regular salary increases	4.23	.961	**19**	.281	229	.000	.755	229	.000
	I expect to work in a decent and satisfying work environment	4.33	.933	**14**	.315	229	.000	.713	229	.000
	I expect to have a stable and secure job	4.32	1.018	**15**	.315	229	.000	.698	229	.000
	I expect to have a stable career and guaranteed employment	4.29	1.007	**17**	.300	229	.000	.697	229	.000
	I expect to have a positive image and contribute to the society	4.39	.947	**9**	.329	229	.000	.648	229	.000
	I expect to have a satisfying lifestyle	4.34	.949	**12**	.302	229	.000	.704	229	.000
	I expect to have a happy future	4.45	.870	**6**	.337	229	.000	.657	229	.000
	I expect to feel productive and have a sense of purpose and worth	4.44	.919	**7**	.340	229	.000	.618	229	.000
	I expect to achieve my career goals	4.49	.989	**4**	.387	229	.000	.560	229	.000
	I expect to be successful in my career	4.50	.958	**3**	.386	229	.000	.568	229	.000
	I expect to learn new skills and be able to use these skills and talents in my job	4.53	.929	**2**	.393	229	.000	.549	229	.000
Goal Representations	I will obtain technical/functional skills in my chosen career	4.17	.965	**20**	.281	229	.000	.741	229	.000
	I will have opportunities for training and development in my chosen career	4.08	.984	**25**	.289	229	.000	.776	229	.000
	I will have the opportunities for interesting work in my chosen my career	4.09	1.009	**24**	.273	229	.000	.772	229	.000
	My chosen career will allow me to meet my financial obligations	4.12	1.0179	**21**	.287	229	.000	.753	229	.000
	I will be successful in my chosen career	4.33	.952	**13**	.306	229	.000	.695	229	.000
	I will occupy leadership positions in my chosen career	4.09	.992	**23**	.233	229	.000	.799	229	.000
	My chosen career will make my family, friends and society have a good and positive opinion of me	4.30	1.000	**16**	.325	229	.000	.707	229	.000
Social Supports	I receive support from both my parents	3.17	1.480	**43**	.191	229	.000	.863	229	.000
	I receive support from my teachers	3.21	1.158	**40**	.202	229	.000	.908	229	.000
	I receive support from my family members	3.64	1.178	**33**	.231	229	.000	.874	229	.000
	I receive support from my peers (e.g. friends, colleagues)	3.50	1.137	**34**	.237	229	.000	.875	229	.000
	I receive support from my father	2.86	1.663	**49**	.223	229	.000	.809	229	.000
	I receive support from my mother	3.90	1.435	**31**	.306	229	.000	.738	229	.000
	I receive support from my significant other (e.g. husband, wife, partner)	2.83	1.369	**50**	.159	229	.000	.889	229	.000
Learning Experiences	I receive positive feedback and encouragement, especially from influential people in my life such as my parents and teachers	4.04	.999	**27**	.234	229	.000	.812	229	.000
	I learn through observing others perform tasks related to my own career	4.01	1.002	**2**	.268	229	.000	.808	229	.000
	I experience feelings of anxiety, nervousness and fear of failure when	3.67	1.117	**32**	.218	229	.000	.882	229	.000

Category	Item	Mean	Std. Dev	Rank	Statistic	df	Sig.	Statistic	df	Sig.
	performing tasks and activities related to my career									
	I successfully complete tasks and activities related to my career	4.10	.970	**22**	.271	229	.000	.784	229	.000
Interests	I enjoy performing tasks and activities related to my choice of profession	4.24	.901	**18**	.275	229	.000	.726	229	.000
	I would like to make a lot of money	4.48	.846	**5**	.361	229	.000	.641	229	.000
	I would like to receive recognition in the society	4.17	1.061	**20**	.271	229	.000	.743	229	.000
	I would like to perform well at my job.	4.62	.832	**1**	.421	229	.000	.491	229	.000
	I enjoy thinking and solving problems	4.38	.883	**10**	.318	229	.000	.691	229	.000
	I like highly challenging activities and taking risk	4.12	1.039	**21**	.255	229	.000	.777	229	.000
Perceived Barriers	Discriminatory attitudes	2.51	1.289	**57**	.169	229	.000	.881	229	.000
	Work-life conflict	2.65	1.112	**56**	.179	229	.000	.909	229	.000
	Wage gap	3.03	1.088	**46**	.198	229	.000	.914	229	.000
	Masculine workplace culture	2.95	1.043	**48**	.237	229	.000	.898	229	.000
	Lack of access to opportunities	3.14	1.358	**45**	.155	229	.000	.897	229	.000
	Poor working conditions	2.95	1.323	**48**	.165	229	.000	.899	229	.000
	Long working hours	3.18	1.119	**42**	.227	229	.000	.899	229	.000
	Challenges in career progression	3.21	1.117	**40**	.197	229	.000	.908	229	.000
	Gender stereotypes	2.86	1.337	**49**	.146	229	.000	.899	229	.000
	Glass ceiling (Invisible barrier to career advancement)	2.79	1.107	**51**	.233	229	.000	.898	229	.000
	Lack of knowledge and career information	2.73	1.286	**53**	.151	229	.000	.900	229	.000
	Lack of role models in my chosen career	2.73	1.237	**53**	.170	229	.000	.904	229	.000
	Lack of education and training	2.78	1.340	**52**	.173	229	.000	.892	229	.000
	Lack of opportunities in my chosen career	3.00	1.370	**47**	.159	229	.000	.892	229	.000
Gender Stereotypes	Because of my gender, people will believe I possess lesser abilities in my work	2.70	1.373	**54**	.205	229	.000	.882	229	.000
	Because of my gender, I will have to work twice as hard as my counterparts	2.68	1.376	**55**	.196	229	.000	.881	229	.000
	Because of my gender, I will have to occupy a junior position at work	2.18	1.207	**60**	.224	229	.000	.834	229	.000
	Because of my gender, I will be expected to do administrative work	2.21	1.252	**59**	.243	229	.000	.831	229	.000
	Because of my gender, I will be expected to have a lesser status in the society	2.13	1.239	**62**	.241	229	.000	.811	229	.000
	Because of my gender, I will be expected to possess domestic skills rather than technical skills	2.18	1.291	**60**	.248		.000	.794	229	.000
	Because of my gender, I will be expected to have a low level of education	1.93	1.203	**64**	.290	229	.000	.757	229	.000
	Because of my gender, I will be expected to choose a career different from the one I prefer	2.14	1.614	**61**	.254	229	.000	.687	229	.000
	Because of my gender, people will believe I will perform badly in mathematics and science subjects	1.96	1.215	**63**	.266	229	.000	.761	229	.000
	Because of my gender, I will earn a lower salary than my counterparts for similar work	1.90	1.179	**65**	.293	229	.000	.754	229	.000

Access to Opportunity Structures	I have access to information on organizations and jobs in my chosen career	3.48	.989	**36**	.223	229	.000	.888	229	.000
	I have attended various career orientation programs	3.15	1.138	**44**	.195	229	.000	.911	229	.000
	I have initiated conversations with knowledgeable individuals in my career area	3.36	1.152	**39**	.240	229	.000	.895	229	.000
	I have access to information on the labour market and general job opportunities in my career area	3.18	1.068	**42**	.210	229	.000	.905	229	.000
	I have access to information on specific areas of career interest	3.39	1.075	**38**	.239	229	.000	.894	229	.000
Career Choice	I will choose a career in sciences	3.19	1.276	**41**	.169		.000	.900	229	.000
	I will choose a career in engineering	4.40	0.934	**8**	.320		.000	.633	229	.000
	I will choose a career in humanities	2.50	1.248	**58**	.190		.000	.887	229	.000
	I will choose a career in management	3.41	1.492	**37**	.180		.000	.849	229	.000

9.3.4 Inferential Statistics

Following the result of the normality test, which revealed a non-normal distribution of data, a non-parametric test was deemed suitable to test for significant differences among the gender and SES groups concerning the study constructs. The study adopted the Mann-Whitney U test to the significant differences between the gender groups. Mann-Whitney U test is the non-parametric version of the parametric t-test used to assess independent samples. Unlike the t-test, which compares the means of two different groups, the Mann-Whitney U test compares the median of the two different groups on a continuous measure and converts the scores obtained to ranks. It then determines whether significant differences exist between the two groups (Neutens and Rubinson, 2001; Pallant, 2011). The values to consider after the Mann-Whitney-U test are the Z value and the significance value, which is represented as the Asymp.Sig (2 tailed). A Sig. value of 0.05 or smaller ($p \leq 0.05$) indicates a significant difference between groups.

In this study, the Kruskal-Wallis test was adopted to test for significant differences between the SES groups. Similar to the Mann-Whitney U test, the Kruskal-Wallis test is the non-parametric alternative to the one-way analysis of variance test (ANOVA) and is used to test for significant differences among three or more independent groups by comparing the scores on continuous variables (Field, 2013). An alpha level of 0.05 or less suggests a significant difference between groups.

9.3.4.1 Gender Differences in the Influence of Career Choice Predictors

To test for significant differences between men and women, with regards to the influence of self-efficacy, outcome expectations, social supports, goal representations, learning experiences, interests, perceived

barriers, gender stereotypes and access to opportunity structures on career choice, the Mann-Whitney U test was conducted.

Table 9.10 shows the mean scores for the career choice predictors, their rank orders for men group, women group and men and women combined. The Z-value and the Sig. value obtained from the Mann-Whitney U-test were also presented. The assessment of the career choice predictors revealed that outcome expectations (mean score =57.10), perceived barriers (mean score = 40.46), goal representations (mean score= 29.16), social supports (mean score=23.12) and gender stereotypes (mean score =21.92) had the most influence on career choice for both men and women. The mean scores obtained separately for men and women showed that both groups considered outcome expectations to have the most influence on career choice and learning experiences with the least influence.

To test for the significant differences in the influence of the career choice predictors between men and women, the Mann-Whitney U test was conducted. Table 9.10 shows that significant differences were found for social supports (Z value =-1.653, p=0.041), perceived barriers (z value =-1.805, p = 0.042) and gender stereotypes (z value = 4.000, p= 0.000) as the Sig. values were less than the cut-off value of 0.05.

Table 9 10: Test Statistics for Gender and Career choice predictors

	Men		Women		Overall		Mann-Whitney U	
	MIS	Rank	MIS	Rank	MIS	Rank	Z-value	Sig.
Self-Efficacy	20.51	7	19.64	7	20.08	7	-1.380	0.168
Outcome Expectations	57.75	1	56.44	1	57.10	1	-0.296	0.767
Goal Representations	30.13	3	28.26	3	29.16	3	-1.824	0.068
Social Supports	23.27	5	22.96	5	23.12	4	-1.653	0.041
Learning experiences	15.84	9	15.81	9	15.82	9	0.559	0.576
Interests	22.14	6	21.62	6	21.89	6	-0.626	0.531
Perceived Barriers	33.68	2	41.25	2	40.46	2	-1.805	0.042
Gender Stereotypes	24.03	4	27.07	4	21.92	5	4.000	0.000
Access to Opportunity Structures	16.70	8	16.28	8	16.49	8	-0.763	0.446

9.3.4.2 Differences in SES Categories subjected to the Kruskal-Wallis test (Overall)

Table 9.11 shows the mean scores for the career choice predictors, their rank orders for the high SES, medium SES and Low SES groups. The Chi-square value, degree of freedom (df) and Sig. value obtained from the Kruskal Wallis test were also presented.

To test for the significant differences in the influence of the career choice predictors between the SES groups, the Kruskal Wallis test was conducted. Table 9.11 shows that significant differences were found for self-efficacy (Chi-square =12.361, p=0.002), perceived barriers (Chi-square = 9.773, p = 0.008) and gender stereotypes (Chi-square =9.228, p= 0.010) as the Sig. values were less than the alpha value of 0.05.

An inspection of the mean ranks for the career choice predictors in all the SES groups suggests that learning experiences was the career choice predictor with the most influence.

Table 9 11: Test Statistics for SES and Career choice predictors (Overall)

	High SES		Medium SES		Low SES		Kruskal-Wallis		
	MIS	Rank	MIS	Rank	MIS	Rank	Test Static	Df	Sig.
Self-Efficacy	20.71	7	16.83	7	19.51	7	12.361	2	0.002
Outcome Expectations	54.26	1	57.88	1	57.68	1	5.464	2	0.065
Goal Representations	27.97	3	29.09	3	29.66	3	3.358	2	0.187
Social Supports	23.42	5	24.37	4	22.51	5	4.254	2	0.119
Learning experiences	16.00	9	15.98	9	15.71	9	0.277	2	0.871
Interests	21.23	6	21.72	5	22.16	6	5.059	2	0.080
Perceived Barriers	44.66	2	42.00	2	38.51	2	9.773	2	0.008
Gender Stereotypes	26.23	4	20.09	6	29.56	4	9.228	2	0.010
Access to Opportunity Structures	16.02	8	16.40	8	16.68	8	1.236	2	0.539

A post-hoc procedure was conducted to determine where the significant differences lie between the SES groups.

The results of the Kruskal-Wallis test indicate that there are differences among groups but does not reveal where the differences lie (Field, 2013). The Dunn-Bonferroni post-hoc procedure was adopted in this study. The post hoc test conducts multiple tests and adjusts the p-values by multiplying each p-value by the total number of tests performed. The Bonferroni error correction produces the Adj Sig. which adjusts for multiple testing.

The Dunn's pairwise tests were carried out for the three career choice predictors where significant differences were revealed.

Table 9 12: Analysis of Dunn- Bonferroni Test (Overall)

		Test Static	Std. Error	Adj. Sig.
Self-Efficacy	High-Low SES	18.819	13.556	0.495
	High-Medium SES	39.094	11.662	0.002
	Low-Medium SES	20.275	10.632	0.170
Perceived Barriers	High-Low SES	-20.168	-1.887	0.177
	High-Medium SES	-34.004	-2.901	0.011
	Low-Medium SES	-13.836	-1.016	0.930
Gender Stereotypes	High-Low SES	6.531	10.668	1.000
	High-Medium SES	-38.234	13.602	0.015
	Low-Medium SES	-31.703	11.702	0.020

For self-efficacy, there was substantial evidence (p< 0.002) of a difference between high and medium SES group, as shown in Table 9.12. The mean score for the high SES was 19.51 compared to16.83 for the medium SES group. A significant difference (p < 0.011) was found between the high SES and medium SES group with regards to perceived barriers. The mean score for the high SES was 44.66 compared to 42.00

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for the medium SES group. For gender stereotypes, there was substantial evidence ($p < 0.015$) of a difference between low and medium SES group and difference ($p < 0.020$). The mean score for the high SES was 26.23, the medium SES group (20.09) and the low SES was 29.56.

9.3.4.3 Differences in SES Categories subjected to the Kruskal-Wallis test (Women)

The test for significant differences in the influence of the career choice predictors between the SES groups among women only in Table 9.13 shows that significant differences were found for self-efficacy (Chi-square $=8.703$, $p=0.013$) as the Sig. value was less than the alpha value of 0.05. An inspection of the mean ranks for the career choice predictors in all the SES groups suggests that outcome expectations and perceived barriers were the career choice predictor with the most influence.

Table 9 13: Test Statistics for SES and Career choice predictors (Women)

	High SES		Medium SES		Low SES		Kruskal-Wallis		
	MIS	Rank	MIS	Rank	MIS	Rank	Test Static	Df	Sig.
Self-Efficacy	17.94	7	19.13	7	20.36	7	8.703	2	0.013
Outcome Expectations	52.94	1	56.34	1	57.50	1	0.851	2	0.653
Goal Representations	26.26	4	28.27	3	28.84	3	0.795	2	0.672
Social Supports	22.21	5	24.34	4	22.56	5	2.407	2	0.300
Learning experiences	16.05	8	15.82	9	15.73	9	0.014	2	0.993
Interests	20.63	6	21.37	6	22.03	6	3.738	2	0.154
Perceived Barriers	47.05	2	38.89	2	40.16	2	3.185	2	0.148
Gender Stereotypes	30.57	3	22.72	5	24.50	4	4.205	2	0.122
Access to Opportunity Structures	15.89	9	16.75	8	16.18	8	0.653	2	0.722

Results from the post-hoc test presented in Table 9.14, shows that the only groups that differed significantly ($p < 0.011$) among each other where the high and low SES groups. There was no evidence of significant differences between the other pairs.

Table 9 14: Analysis of Dunn- Bonferroni Test (Women)

		Test Static	Std. Error	Adj. Sig.
Self-Efficacy	High-Medium SES	16.024	9.620	0.287
	High-Low SES	24.784	8.500	0.011
	Medium-Low SES	8.760	1.204	0.686

9.4 Exploratory Factor Analysis

Exploratory Factor Analysis (EFA) was used to test the reliability and validity of constructs in the study's conceptual model. Through the reduction of variables, EFA was used to examine the factor structure of the measurement instrument (Laher, 2010; Matsunaga, 2010; Yong and Pearce, 2013). It is used to identify latent variables and coherent data subsets that are independent of each other (Yong and Pearce, 2013). These

variables will then be used for the analysis. The EFA aims to reduce data by finding the smallest manageable set of common components that will account for the intercorrelations of a set of variables (Laher,2010; Matsunaga, 2010; Pallant, 2011). The steps involved in the EFA include assessment of the suitabilityof the data for factor analysis, determining numbers for factor extraction, retaining and rotation, interpretation of resulting factors. The analysis included the evaluation of reliability (Cronbach alpha and composite), and discriminate and convergent validity of the survey instrument.

9.4.1 Assessment of suitability of the data

To determine the suitability of a data set for factor analysis, the sample size, and the strength of intercorrelation among variables were considered and checked (Pallant, 2011; Tabachnick and Fidell, 2013).

9.4.1.2 Sample Size

A sample is a representation of an entire population and must be sufficient to produce reliable results (Kline, 2015; Pallant, 2011). While there is no rule of thumb concerning the acceptable sample size, a large sample is generally recommended (Pallant, 2011). Field (2013); Matsunga (2010); Tabachnick and Fidell (2013) argued that although a sample size of at least 300 is adequate for a factor analysis a smaller sample size of not less than 150 may be sufficient.

9.4.1.3 Adequacy of Sample Size and Strength of intercorrelation among variables

To determine the strength of intercorrelation among the variables, the Bartlett's Test of Sphericity and the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy test was used to assess the data's factor suitability (Pallant, 2011). Factor analysis is deemed appropriate when the value of the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) is higher than the acceptable minimum limit of 0.6 and a limit of 1 (Pallant, 2011; Tabachnick and Fidell, 2013).

The cut-off value of .05 for the Bartlett's Test of Sphericity indicates the significance and appropriateness of the factor model (Choi et al., 2001; Hair et al., 2010). This signifies potential correlation among the model constructs and therefore indicates a potential for a reasonable cluster of factors to be formed from the variables (Hair et al., 2010; Field, 2013).

9.4.1.4 Factor Extraction

Dimensionality and significance of factors were determined using Maximum likelihood. Maximum likelihood factoring is beneficial for confirmatory analysis and calculates population values for factor

loadings that maximize the likelihood of sampling the observed correlation matrix from a population (Pallant, 2011). As each factor is extracted, the maximum likelihood analysis statistically tests the significance.

The Kaiser's criterion or the eigenvalue rule was adopted to determine the number of factors to retain (Pallant, 2011; Tabachnick and Fidell, 2013). The eigenvalue was used to explain the extent of variance by a factor (Field, 2013; Pallant, 2011). Eigenvalues greater than 1 were considered significant and retained and further investigated (Laher, 2010; Matsunaga, 2010). Eigenvalues of less than 1 were deemed insignificant and were excluded accordingly (Hair et al., 2010). Furthermore, eigenvalues greater than 1 were deemed to be significant and were used to explain the variance obtained by a factor.

Before conducting the Maximum Likelihood analysis, communalities extracted on each variable were assessed and presented. The communalities are critical and useful in deciding the variables that must be finally extracted for improvement and refinement of a scale (Field, 2013). This is because, by connotation, the communalities typify the total amount an original variable share with all other variables included in the factor analysis (Field, 2009; Hair et al., 2013). According to (Field, 2013; Motulsky, 2015; Hair et al., 2010), an average communality of the variables after extraction should be above 0.30 to support reliable results and interpretations in factor analysis. The higher the communality value, the better the fit of that item in the scale (De Vaus, 2004). Low communality values (<.030) indicate that the item is unfit with the other items in the scale. Therefore, dropping items with low communalities from further analysis tend to increase the total variance explained (Pallant, 2011). Values with communalities above or equal to 1, indicate problems with the solutions and that there may very little data or the wrong number of factors are extracted (Pallant, 2011). Addition or deletion of factors may reduce the communality below 1. On the other hand, values with very low communalities may indicate that the items are unrelated to the other items in sub-scale (Pallant, 2011).

The corrected item-total correlation values were calculated, and values above the cut-off value of 0.3 were considered acceptable (Hair et al., 2010; Tabachnick and Fidell, 2013). Factor loadings of constructs were calculated, and values of 0.3 and greater were considered acceptable and indicated the salience of the loading (Kline, 2015; Hair et al., 2010).

9.4.1.5 Factor Rotation

To aid the process of data interpretation, the factors are rotated (Pallant, 2011). There are two main rotation techniques; orthogonal (uncorrelated) or oblique (correlated) factor solutions (Pallant, 2011; Laher,

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2010; Tabachnick and Fidell, 2013). Maximum Likelihood and Promax with Kaiser Normalization rotation (oblique rotational technique) using SPSS were adopted in this study. Orthogonal rotations rotate factors in a way that they are in right angles from each other (Kline, 2011). Oblique rotations take up any position in a factor and allow more opportunity in choosing positions for factors.

9.5 EFA Reliability and Validity

Reliability deals with the degree, which scores, are free from random measurement error (Kline, 2015; Pallant, 2011; Zohrabi and studies, 2013). Sequel to the EFA, a reliability analysis was conducted for the scales confirmed to be unidimensional. In this study, Cronbach's co-efficient alpha was conducted to test the internal consistency reliability and assess the consistency of the indicators that formulate the measurement scale (Hair et al., 2010; Girden and Kabacoff, 2010). Conventionally, a Cronbach's alpha of 0.70 represents a satisfactory and sustainable level of internal consistency and scale reliability (Bryman and Bell, 2011; Field, 2013; Kline, 2015; Pallant, 2011).

9.5.1 Multicollinearity

Multicollinearity identifies variables of a construct that are very highly correlated (>0.90) with each other and influences the parameter estimates and standard errors (Pallant, 2011). Multicollinearity occurs in two instances; one is the high correlation among underlying constructs and the second is when two or more measurement variables are highly correlated as they are both important variables of a latent construct (Pallant, 2011). Checking for multicollinearity helps to eliminate redundant information, which is not needed in an analysis (Tabachnick and Fidell, 2013). The problem of multicollinearity is solved after two or more redundant variables are deleted (Creswell et al., 2011).

By conducting a correlation analysis, relationships between an item to another were measured (Neutens and Rubinson, 2001). The value of correlation co-efficient range from -1.00 to +1.00. A correlation coefficient of 0 indicates no relationship between the variable in question. The closer the coefficient is to 1.00 (positive or negative), the stronger the relationship. To indicate discriminant validity, correlation coefficients should be above the cut-off value of 0.30 and less than 0.90 (Kline, 2015; Pallant, 2011).

9.6 Analysis of Model Constructs

9.6.1 Exploratory Factor Analysis for Self-Efficacy

Five items of the self-efficacy scale were analysed. Inspection of the corrected item-total correlation values were above 0.3, indicating that the items measured the self-efficacy construct adequately. To determine the

strength of the item intercorrelations, the Kaiser-Meyer-Olkin (KMO) for self-efficacy was 0.846 and a Bartlett's test of Sphericity with p<0.000 was obtained as shown in Table 9.15. This indicated that the KMO value is above the cut-off value of 0.60. A Cronbach's alpha of 0.836 was obtained for the self-efficacy scale, indicating adequate internal reliability. The results meet the criteria for factor analysability.

Table 9 15: KMO and Bartlett's Test for Self-Efficacy

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.846
Bartlett's Test of Sphericity	Approx. Chi-Square	414.757
	Df	10
	Sig.	.000

a. Cronbach's alpha =0.836

As shown in Table 9.16, factor loadings for all the five items were above the cut-off value of 0.30. For the communalities, all the factors were less than 0.999, indicating that all the items were within an acceptable range, and could be perceived as key factors determining the influence of self-efficacy on career choice.

Table 9 16: Self-Efficacy Factor Statistics

Item	Element	Factor Loading	Corrected item-total correlation	Communalities	
				Initial	Extraction
SEF1	I have confidence in my ability to identify resources, limitations, and personal characteristics that might influence my career choices.	.693	.629	.406	.480
SEF2	I am confident about being able to collect information about training and employment opportunities for myself and manage them effectively.	.602	.557	.314	.362
SEF3	I am confident about being able to develop lists of priorities on the effective actions to successfully manage my own personal professional development	.622	.575	.333	.387
SEF4	I am confident about being able to plan the steps needed to realize a project related to my profession	.857	.750	.576	.734
SEF5	I am confident about being able to address any difficulties related to my career	.773	.681	.498	.598

Extraction Method: Maximum Likelihood

From the results presented in Table 9.17, one factor with an eigenvalue of 3.024 accounted for 60.478% of the variance. The total variance explained is above the recommended cut-off value of 50% (Field, 2013; Kline, 2015; Motulsky, 2015). Since only one factor was extracted, it was unnecessary to rotate the solution. The solution was therefore considered unidimensional and adequate evidence of convergent and discriminant validity was provided for the self-efficacy construct.

Table 9 17: Initial Eigenvalues for Self-Efficacy

Factor	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	3.024	60.478	60.478
2	.604	12.084	72.562
3	.580	11.593	84.155
4	.479	9.577	93.732
5	.313	6.268	100.000

Table 9.18 presents bivariate correlation analysis result for the five items in the self-efficacy scale. Correlation values between the five items ranged from 0.432 to 0.673, indicating that the items were related to each other. Therefore, the scale meets the criteria for discriminant validity.

Table 9 18: Correlation Coefficient for Self-Efficacy

	SEF1	SEF2	SEF3	SEF4	SEF5
SEF1	1.000				
SEF2	.432	1.000			
SEF3	.434	.417	1.000		
SEF4	.590	.509	.523	1.000	
SEF5	.531	.443	.474	.673	1.000

9.6.2 Exploratory Factor Analysis for Outcome Expectations

The KMO for the outcome expectations items was 0.949, and the Bartlett's test of sphericity was obtained with a significance of $p<0.000$, as shown in Table 9.19. As shown in Table 9.20, factor loadings for all the thirteen items were above the cut-off value of 0.30. Inspections of the corrected item-total correlation values were above 0.3, indicating that the items were a good measure of the self-efficacy construct. The results confirmed that the data met the criteria for factor analysability. A Cronbach's alpha of 0.962 was obtained for the self-efficacy scale, indicating adequate internal reliability. An analysis of the communalities in Table 9.20 showed that item OTX12 was problematic because of high commonalities. The resulting solution was then interpreted with caution.

Table 9 19: KMO and Bartlett's Test for all Outcome Expectations Elements

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.949
Bartlett's Test of Sphericity	Approx. Chi-Square	2988.880
	Df	78
	Sig.	.000

a. Cronbach's alpha =0.962

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Table 9.20: Outcome Expectations Factor Statistics

Item	Element	Factor Loading	Corrected item-total correlation	Communalities	
				Initial	Extraction
OTX 1	I expect to earn a good and satisfactory salary	.552	.569	.484	.470
OTX 2	I expect to get experience and get better jobs in future	.853	.849	.763	.762
OTX3	I expect to get promoted and get regular salary increases	.714	.717	.593	.593
OTX4	I expect to work in a decent and satisfying work environment	.748	.753	.638	.628
OTX5	I expect to have a stable and secure job	.897	.887	.849	.867
OTX6	I expect to have a stable career and guaranteed employment	.831	.827	.767	.778
OTX7	I expect to have a positive image and contribute to the society	.830	.818	.714	.690
OTX8	I expect to have a satisfying lifestyle	.793	.778	.649	.631
OTX9	I expect to have a happy future	.756	.714	.632	.621
OTX10	I expect to feel productive and have a sense of purpose and worth	.806	.790	.699	.652
OTX11	I expect to achieve my career goals	.888	.850	.807	.818
OTX12	I expect to be successful in my career	.946	.903	.885	**.923**
OTX13	I expect to learn new skills and be able to use these skills and talents in my job	.909	.866	.834	.862

Extraction Method: Maximum Likelihood   **High communalities in bold text**

As shown in Table 9.21, two factors with eigenvalues greater than 1 emerged, explaining 76% of the variance. This result suggests likely multidimensionality of the sub-scale.

Table 9 21: Initial Eigenvalues for all Outcome Expectations Elements

Total Variance Explained						
Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	8.949	68.840	68.840	8.644	66.493	66.493	8.159
2	1.012	7.785	76.625	.650	5.002	71.495	7.507
3	.498	3.831	80.455				
4	.425	3.269	83.724				
5	.381	2.929	86.654				
6	.368	2.829	89.482				
7	.324	2.490	91.972				
8	.267	2.051	94.023				
9	.225	1.735	95.758				
10	.210	1.612	97.370				
11	.150	1.153	98.523				
12	.106	.816	99.340				
13	.086	.660	100.000				

To obtain a clear factor solution of the outcome expectations construct, item OTX12 (*I expect to be successful in my career*) was deleted, and the EFA was reiterated. Table 9.22 shows that after the elimination of item OTX12, the KMO was outcome expectations items was 0.942, and the Bartlett's test of Sphericity was obtained with a significance of $p<0.000$. Table 9.23 shows that none of the items indicated high communalities.

Table 9 22: KMO and Bartlett's test for Outcome Expectations after the deletion of item OTX12

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.942
Bartlett's Test of Sphericity	Approx. Chi-Square	2510.407
	Df	66
	Sig.	.000

Table 9 23: Outcome Expectations Factor Statistics after the deletion of item OTX12

Item	Element	Factor Loading	Corrected item-total correlation	Communalities	
				Initial	Extraction
OTX1	I expect to earn a good and satisfactory salary	.585	.577	.480	.342
OTX2	I expect to get experience and get better jobs in future	.864	.849	.758	.746
OTX3	I expect to get promoted and get regular salary increases	.730	.719	.591	.533
OTX4	I expect to work in a decent and satisfying work environment	.767	.756	.638	.588
OTX5	I expect to have a stable and secure job	.907	.887	.848	.822
OTX6	I expect to have a stable career and guaranteed employment	.849	.830	.767	.722
OTX7	I expect to have a positive image and contribute to the society	.832	.814	.710	.691
OTX8	I expect to have a satisfying lifestyle	.791	.773	.640	.626
OTX9	I expect to have a happy future	.737	.704	.630	.543
OTX10	I expect to feel productive and have a sense of purpose and worth	.808	.786	.699	.653
OTX11	I expect to achieve my career goals	.862	.838	.775	.743
OTX13	I expect to learn new skills and be able to use these skills and talents in my job	.879	.853	.798	.773

Extraction Method: Maximum Likelihood   **Rotation Method: Promax with Kaiser Normalization**

Table 9 24: Initial Eigenvalues for Outcome Expectations items after the deletion of item OTX12

	Total Variance Explained					
	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	8.109	67.578	67.578	7.783	64.856	64.856
2	.972	8.104	75.682			
3	.498	4.149	79.830			
4	.425	3.539	83.370			
5	.381	3.172	86.541			
6	.367	3.058	89.599			
7	.311	2.591	92.191			
8	.262	2.183	94.373			
9	.219	1.828	96.201			
10	.204	1.697	97.899			
11	.149	1.242	99.141			
12	.103	.859	100.000			

In Table 9.24, one factor emerged with an eigenvalue greater than 1, explaining 67.5% of the variance. There was a need for further rotation of the solution since only one factor was extracted. The solution was,

therefore, considered unidimensional and adequate evidence of convergent and discriminant validity was achieved for the outcome expectations construct.

The correlation values in Table 9.25 indicate that all items of the outcome expectations scale except between OTX9 and OTX1. The highest correlation was between item OTX 6 and OTX5. Correlation values for the seven items for goal representations were all high and above the recommended cut-off value of 0.30 and therefore confirmed discriminant validity.

Table 9 25: Correlation Coefficient for Outcome Expectations

	OTX1	OTX2	OTX3	OTX4	OTX5	OTX6	OTX7	OTX8	OTX9	OTX10	0TX11	OTX13
OTX1	1.000											
OTX2	.599	1.000										
OTX3	.552	.688	1.000									
OTX4	.568	.639	.619	1.000								
OTX5	.548	.818	.708	.738	1.000							
OTX6	.556	.744	.645	.691	.849	1.000						
OTX7	.487	.683	.564	.682	.728	.660	1.000					
OTX8	.413	.672	.591	.547	.694	.638	.694	1.000				
OTX9	.271	.624	.461	.502	.631	.578	.607	.656	1.000			
OTX10	.440	.683	.510	.603	.668	.703	.727	.672	.593	1.000		
OTX11	.434	.719	.609	.605	.757	.687	.716	.690	.744	.731	1.000	
OTX13	.427	.739	.574	.644	.769	.691	.779	.715	.716	.758	.829	1.000

9.6.3 Exploratory Factor Analysis for Goal Representations

The KMO for goal representations was 0.916, and the Bartlett's test of sphericity was obtained with a significance of p<0.000, as shown in Table 9.26. A Cronbach's alpha of 0.926 was obtained for the self-efficacy scale, indicating adequate internal reliability. Factor loadings for all the seven items were above the cut-off value of 0.30. The corrected item-total correlation values were greater than the recommended cut-off value of 0.30, indicating that the items were a good measure of the construct. The results show that the data meet the criteria for factor analysability. The communalities for the items stabilised, as shown in Table 9.27.

Table 9 26: KMO and Bartlett's Test for Goal Representations

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.916
Bartlett's Test of Sphericity	Approx. Chi-Square	1122.196
	Df	21
	Sig.	.000

a. Cronbach's alpha =0.926

Table 9 27: Goal Representations Factor Statistics

Item	Element	Factor Loading	Corrected item-total correlation	Communalities	
				Initial	Extraction
GRP1	I will obtain technical/functional skills in my chosen career	.724	.681	.519	.524
GRP2	I will have opportunities for training and development in my chosen career	.868	.814	.723	.754
GRP3	I will have the opportunities for interesting work in my chosen my career	.878	.827	.744	.771
GRP4	My chosen career will allow me to meet my financial obligations	.784	.753	.588	.614
GRP5	I will be successful in my chosen career	.797	.781	.622	.635
GRP6	I will occupy leadership positions in my chosen career	.775	.751	.589	.601
GRP7	My chosen career will make my family, friends and society have a good and positive opinion of me	.769	.749	.588	.591

Extraction Method: Maximum Likelihood

Results presented in Table 9.28 show the emergence of a primary factor with an eigenvalue of 4.846, which accounted for a total of 69% of the variance.

Table 9 28: Initial Eigenvalues for Goal Representations

Factor	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	4.846	69.234	69.234
2	.600	8.571	77.805
3	.430	6.145	83.950
4	.353	5.040	88.990
5	.317	4.528	93.518
6	.280	4.007	97.524
7	.173	2.476	100.000

Since only one factor was extracted, there was no need to rotate the solution. The solution was, therefore considered unidimensional and adequate evidence of convergent and discriminant validity was provided for the goal representations construct.

Table 9.29 indicates that the correlation values between the seven items of goal representations were related to each other.

Table 9 29: Correlation Coefficient for Goal Representations

	GRP1	GRP2	GRP3	GRP4	GRP5	GRP6	GRP7
GRP1	1.000						
GRP2	.642	1.000					
GRP3	.678	.824	1.000				
GRP4	.508	.670	.669	1.000			
GRP5	.612	.652	.655	.642	1.000		
GRP6	.516	.636	.650	.629	.681	1.000	
GRP7	.514	.627	.630	.665	.665	.667	1.000

9.6.4 Exploratory Factor Analysis for Social Supports

Table 9.30 shows that the KMO for social supports was 0.724, and the Bartlett's test of sphericity was obtained with a significance of p<0.000. A Cronbach's alpha of 0.926 was obtained for the self-efficacy scale, indicating adequate internal reliability.

Table 9 30: KMO and Bartlett's Test for Social Supports

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.724
Bartlett's Test of Sphericity	Approx. Chi-Square	427.823
	Df	21
	Sig.	.000

a. Cronbach's alpha =0.765

The corrected item-total correlation values were greater than the recommended cut-off value of 0.3, indicating that the items were a good measure of the construct. The results show that the data meet the criteria for factor analysability. As shown in Table 9.31, the analysis of communalities revealed that item SSP1 was problematic due to a high communality while SSP6 and SSP7 due to low communalities. The resulting solution was then interpreted with caution.

Table 9 31: Social Supports Factor Statistics

Item	Element	Factor Loading	Corrected item-total correlation	Communalities	
				Initial	Extraction
SSP1	I receive support from both my parents	.999	.592	.536	.999
SSP2	I receive support from my teachers	.607	.535	.381	.494
SSP3	I receive support from my family members	.521	.506	.328	.380
SSP4	I receive support from my peers (e.g. friends, colleagues)	.670	.528	.376	.546
SSP5	I receive support from my father	.663	.480	.469	.442
SSP6	I receive support from my mother	.398	.436	.227	.235
SSP7	I receive support from my significant other	.461	.363	.227	.238

Extraction Method: Maximum Likelihood   **High/Low communalities in bold text**

Table 9.32: Initial Eigenvalues for Social Supports

	Total Variance Explained						
	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	2.988	42.688	42.688	1.953	27.902	27.902	2.141
2	1.162	16.606	59.294	1.381	19.726	47.628	2.019
3	.837	11.953	71.247				
4	.723	10.322	81.569				
5	.535	7.644	89.213				
6	.477	6.808	96.021				
7	.279	3.979	100.000				

As shown in Table 9.32, two factors emerged with eigenvalues greater than 1 emerged, explaining 59% of the variance. This result suggests likely multidimensionality of the sub-scale.

To obtain a clear factor solution of the social supports construct, item SSP1 (*I receive support from both my parents*), item SSP6 (*I receive support from my mother*) and SSP7 (*I receive support from my significant other*) was deleted, and the EFA was reiterated.

Table 9.33: KMO and Bartlett's test for Social Supports after the deletion of item SSP1, SSP6 and SSP7

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.714
Bartlett's Test of Sphericity	Approx. Chi-Square	161.882
	Df	6
	Sig.	.000

Table 9.33 shows that after the elimination of item SSP1, SSP6 and SSP7, the KMO for social supports was 0.714, and Bartlett's test of Sphericity was obtained with a significance of p<0.000. Table 9.34 shows that none of the items indicated high communalities.

Table 9 34: Social Supports Factor Statistics after the deletion of item SSP1, SSP6 and SSP7

Item	Element	Factor Loading	Corrected item-total correlation	Communalities	
				Initial	Extraction
SSP2	I receive support from my teachers	.671	.487	.304	.450
SSP3	I receive support from my family members	.659	.524	.301	.434
SSP4	I receive support from my peers (e.g. friends, colleagues)	.732	.514	.342	.536
SSP5	I receive support from my father	.341	.297	.095	.116

Extraction Method: Maximum Likelihood　　　　　　　　**Rotation Method: Promax with Kaiser Normalization**

In Table 9.35, one factor emerged with an eigenvalue of 2.097, explaining 52% of the variance.

Table 9 35: Initial Eigenvalues for Social Supports items after the deletion of item SSP1, SSP6 and SSP7

Factor	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	2.097	52.424	52.424
2	.858	21.447	73.871
3	.563	14.082	87.953
4	.482	12.047	100.000

There was a need for further rotation of the solution since only one factor was extracted. Although there was no need for further rotation of the solution, since only one factor was extracted, the researcher eliminated item SSP5 (*I receive support from my father*) because the item had an extremely low

communality value. The solution was therefore considered unidimensional and adequate evidence of convergent and discriminant validity was achieved for the social support construct.

Table 9.36 shows that only SSP2, SSP3 and SSP5 were correlated. Item SSP5 indicated very low correlation with the other items in the social supports scale and was noted. This construct, therefore, fulfilled the requirement for construct validity.

Table 9 36: Correlation Coefficient for Social Supports

	SSP2	SSP3	SSP4	SSP5
SSP2	1.000			
SSP3	.428	1.000		
SSP4	.505	.478	1.000	

9.6.5 Exploratory Factor Analysis for Learning Experiences

Four items of the learning experiences scale were analysed. The KMO for learning experiences was 0.706, and Bartlett's test of Sphericity with p<0.000 was obtained, as shown in Table 9.37. This indicated that the KMO value is above the cut-off value of 0.60. The results meet the criteria for factor analysability. A Cronbach's alpha of 0.765 was obtained for the self-efficacy scale, indicating adequate internal reliability. The corrected item-total correlation value for LEX3 was below the recommended cut-off value of 0.3, indicating that the item may not be a good measure of the construct. Results from the analysis of communalities in Table 9.38 showed that item LEX3 emerged as problematic due to low communalities.

Table 9 37: KMO and Bartlett's Test for Learning Experiences

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.706
Bartlett's Test of Sphericity	Approx. Chi-Square	175.841
	Df	6
	Sig.	.000

a. Cronbach's alpha =0.765

One factor emerged with an eigenvalue greater than 1, explaining 52.5% of the variance, as shown in Table 9.39. Although there was no need for further rotation of the solution, since only one factor was extracted, the researcher eliminated item LEX3(*I experience feelings of anxiety, nervousness and fear of failure when performing tasks and activities related to my career*) because the item had an extremely low communality value. The solution was, therefore considered unidimensional and adequate evidence of convergent and discriminant validity was achieved for the learning experiences construct.

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Table 9 38: Learning Experiences Factor Statistics

Item	Element	Factor Loading	Corrected item-total correlation	Communalities	
				Initial	Extraction
LEX1	I receive positive feedback and encouragement, especially from influential people in my life such as my parents and teachers	.755	.536	.379	.571
LEX2	I learn through observing others perform tasks related to my own career	.685	.543	.333	.470
LEX3	I experience feelings of anxiety, nervousness and fear of failure when performing tasks and activities related to my career	.243	.217	**.054**	**.059**
LEX4	I successfully complete tasks and activities related to my career	.699	.539	.341	.489

Extraction Method: Maximum Likelihood   **Low communalities in bold text**

Table 9 39: Initial Eigenvalues for Learning Experiences

Factor	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	2.101	52.537	52.537
2	.920	23.010	75.547
3	.532	13.302	88.849
4	.446	11.151	100.000

The correlation values between the learning experiences items in Table 9.40 indicated that all three items were correlated. The correlation values ranged from 0.468 to 0.534; therefore, this scale fulfils the requirement for discriminant validity.

Table 9 40: Correlation Coefficient for Learning Experiences

	LEX1	LEX2	LEX4
LEX1	1.000		
LEX2	.521	1.000	
LEX4	.534	.468	1.000

9.6.6 Exploratory Factor Analysis for Interests

A Cronbach's alpha of 0.892 was obtained for the self-efficacy scale, indicating adequate internalreliability. The KMO for interests was 0.865, and the Bartlett's test of sphericity was obtained with a significance of $p<0.000$, as shown in Table 9.41. The results show that the data meet the criteria for factoranalysability. Table 9.42 shows that the communalities for the items were all acceptable. The factor loadings for the items were above the recommended value of 0.30.

Table 9 41: KMO and Bartlett's Test for Interests

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.865
Bartlett's Test of Sphericity	Approx. Chi-Square	800.120
	Df	15

	Sig.	.000

a. Cronbach's alpha =0.892

Table 9 42: Interests Factor Statistics

Item	Element	Factor Loading	Corrected item-total correlation	Communalities	
				Initial	Extraction
INT1	I enjoy performing tasks and activities related to my choice of profession	.773	.714	.538	.597
INT2	I would like to make a lot of money	.769	.713	.579	.591
INT3	I would like to receive recognition in the society	.684	.652	.461	.468
INT4	I would like to perform well at my job.	.886	.810	.704	.785
INT5	I enjoy thinking and solving problems	.805	.759	.656	.647
INT6	I like highly challenging activities and taking risk	.699	.669	.541	.489

Extraction Method: Maximum Likelihood

Results presented in Table 9.43 show the emergence of a primary factor with an eigenvalue of 3.972, which accounted for 66% of the variance. The solution was, therefore considered unidimensional and adequate evidence of convergent and discriminant validity was provided for the learning experiences construct.

Table 9 43: Initial Eigenvalues for Learning Experiences

Factor	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	3.972	66.194	66.194
2	.667	11.120	77.313
3	.500	8.336	85.650
4	.372	6.196	91.846
5	.286	4.774	96.619
6	.203	3.381	100.000

As indicated in Table 9.44, all the correlation values showed a positive and high correlation between the six items in the interest construct. All correlation values were above 0.30 and less than 0.90, indicating that all the scale fulfils the requirement for discriminant validity.

Table 9 44: Correlation Coefficient for Interests

	INT1	INT2	INT3	INT4	INT5	INT6
INT1	1.000					
INT2	.588	1.000				
INT3	.516	.620	1.000			
INT4	.698	.717	.591	1.000		
INT5	.614	.549	.499	.714	1.000	
INT6	.535	.467	.497	.566	.713	1.000

9.6.7 Exploratory Factor Analysis for Perceived Barriers

A Cronbach's alpha of 0.913 was obtained for the perceived barriers scale, indicating adequate internal reliability. Fourteen items of the perceived barriers scale were analysed. The KMO for perceived barriers was 0.903, and Bartlett's test of Sphericity with p<0.000 was obtained, as shown in Table 9.45. The results meet the criteria for factor analysability. The corrected item-total correlation values for the subscales were greater than the recommended cut-off value of 0.3, indicating that the items were a good measure of the construct. The results show that the data meet the criteria for factor analysability. As shown in Table 9.46, the analysis of communalities revealed that item PRB7 was problematic due to a low communality value. The resulting solution was then interpreted with caution.

Table 9 45: KMO and Bartlett's Test for Perceived Barriers

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.903
Bartlett's Test of Sphericity	Approx. Chi-Square	1651.301
	Df	91
	Sig.	.000

a. Cronbach's alpha =0.913

Table 9 46: Perceived Barriers Factor Statistics

Item	Element	Factor Loading	Corrected item-total correlation	Communalities	
				Initial	Extraction
PRB1	Discriminatory attitudes	.635	.560	.529	.787
PRB2	Work-life conflict	.609	.572	.485	.497
PRB3	Wage gap	.598	.586	.534	.400
PRB4	Masculine workplace culture	.528	.515	.396	.311
PRB5	Lack of access to opportunities	.740	.710	.610	.586
PRB6	Poor working conditions	.717	.689	.569	.516
PRB7	Long working hours	.448	.425	**.278**	**.252**
PRB8	Challenges in career progression	.543	.500	.403	.745
PRB9	Gender stereotypes	.673	.646	.529	.477
PRB10	Glass ceiling (Invisible barrier to career advancement)	.684	.665	.491	.517
PRB11	Lack of knowledge and career information	.818	.776	.680	.704
PRB12	Lack of role models in my chosen career	.630	.593	.500	.475
PRB13	Lack of education and training	.792	.735	.674	.748
PRB14	Lack of opportunities in my chosen career	.779	.731	.631	.662

Table 9.47 shows that three factors emerged with eigenvalues greater than 1 emerged, explaining 63.5% of the variance. This result suggests likely multidimensionality of the sub-scale. To obtain a clear factor solution of the perceived barriers construct, item PRB7 (*Long working hours*) was deleted, and the EFA was reiterated.

Table 9 47: Initial Eigenvalues for Perceived Barriers

Total Variance Explained							
	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	6.622	47.300	47.300	6.189	44.204	44.204	5.709
2	1.221	8.719	56.020	.810	5.787	49.991	4.634
3	1.056	7.541	63.561	.676	4.831	54.822	4.012
4	.832	5.943	69.503				
5	.807	5.764	75.268				
6	.651	4.650	79.918				
7	.586	4.183	84.101				
8	.444	3.169	87.269				
9	.388	2.775	90.044				
10	.338	2.413	92.457				
11	.305	2.177	94.635				
12	.285	2.033	96.668				
13	.247	1.767	98.435				
14	.219	1.565	100.000				

Table 9.48 shows that after the elimination of item PRB7, the KMO for the perceived barriers items was 0.902, and the Bartlett's test of Sphericity was obtained with a significance of p<0.000. As shown in Table 9.49, the analysis of communalities revealed that item PRB8 was problematic due to a low communality value.

Table 9 48: KMO and Bartlett's Test for Perceived Barriers after the deletion of item PRB7

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.902
Bartlett's Test of Sphericity	Approx. Chi-Square	1581.214
	Df	78
	Sig.	.000

Table 9 49: Perceived Barriers Factor Statistics after the deletion of item PRB7

Item	Element	Factor Loading	Corrected item-total correlation	Communalities	
				Initial	Extraction
PRB1	Discriminatory attitudes	.603	.562	.529	.620
PRB2	Work-life conflict	.603	.574	.485	.542
PRB3	Wage gap	.592	.587	.533	.435
PRB4	Masculine workplace culture	.533	.528	.389	.338
PRB5	Lack of access to opportunities	.756	.716	.607	.593
PRB6	Poor working conditions	.717	.684	.562	.514
PRB8	Challenges in career progression	.482	.481	.366	**.233**
PRB9	Gender stereotypes	.654	.639	.521	.437
PRB10	Glass ceiling (Invisible barrier to career advancement)	.666	.662	.491	.444
PRB11	Lack of knowledge and career information	.829	.780	.679	.695
PRB12	Lack of role models in my chosen career	.650	.599	.499	.472

| PRB13 | Lack of education and training | .805 | .731 | | .665 | .704 |
| PRB14 | Lack of opportunities in my chosen career | .792 | .733 | | .631 | .672 |

As shown in Table 9.50, two factors with eigenvalues of 6.417 and 1.201 emerged, explaining 58% of the variance. This result suggests likely multidimensionality of the subscale. To obtain a clear factor solution of the subscale, item PRB8 (*Challenges in career progression*) was deleted, and the EFA was reiterated.

Table 9 50: Initial Eigenvalues for Perceived Barriers after deletion of item PRB7

Total Variance Explained							
	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	6.417	49.362	49.362	5.935	45.656	45.656	5.589
2	1.201	9.241	58.603	.764	5.879	51.534	4.523
3	.931	7.162	65.765				
4	.823	6.329	72.094				
5	.732	5.634	77.728				
6	.642	4.937	82.665				
7	.453	3.481	86.147				
8	.389	2.993	89.139				
9	.347	2.671	91.810				
10	.306	2.355	94.165				
11	.285	2.192	96.357				
12	.248	1.904	98.261				
13	.226	1.739	100.000				

Table 9.51 shows that after the elimination of item SSP8, the KMO for perceived barriers was 0.903, and Bartlett's test of Sphericity was obtained with a significance of $p < 0.000$. The communalities for the items stabilised, as shown in Table 9.52.

Table 9 51: KMO and Bartlett's Test for Perceived Barriers after the deletion of item PRB8

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.903
Bartlett's Test of Sphericity	Approx. Chi-Square	1482.017
	Df	66
	Sig.	.000

Table 9 52: Perceived Barriers Factor Statistics after the deletion of item PRB8

Item	Element	Factor Loading	Corrected item-total correlation	Communalities	
				Initial	Extraction
PRB1	Discriminatory attitudes	.611	.577	.509	.641
PRB2	Work-life conflict	.605	.579	.484	.539
PRB3	Wage gap	.587	.578	.511	.422
PRB4	Masculine workplace culture	.532	.531	.388	.335

PRB5	Lack of access to opportunities	.755	.717	.607	.592
PRB6	Poor working conditions	.715	.681	.561	.512
PRB9	Gender stereotypes	.648	.627	.496	.430
PRB10	Glass ceiling (Invisible barrier to career advancement)	.655	.642	.453	.430
PRB11	Lack of knowledge and career information	.832	.786	.679	.700
PRB12	Lack of role models in my chosen career	.650	.600	.499	.473
PRB13	Lack of education and training	.811	.739	.663	.717
PRB14	Lack of opportunities in my chosen career	.791	.732	.626	.669

Results presented in Table 9.53 show the emergence of two factors with an eigenvalue of 6.151 and 1.196, which accounted for 61% of the variance. The pattern matrix is presented in Table 9.54.

Table 9 53: Initial Eigenvalues for Perceived Barriers after deletion of item PRB8

Total Variance Explained							
	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	6.151	51.262	51.262	5.692	47.434	47.434	5.334
2	1.196	9.963	61.224	.768	6.401	53.835	4.394
3	.825	6.874	68.098				
4	.735	6.127	74.225				
5	.669	5.575	79.800				
6	.583	4.857	84.656				
7	.391	3.261	87.917				
8	.353	2.944	90.861				
9	.331	2.762	93.623				
10	.285	2.378	96.001				
11	.251	2.093	98.094				
12	.229	1.906	100.000				

The substantive definitions of the three sub-scales can be inferred from the rotated salient factor loadings loading on three factors almost significantly. Item PRB9 (*Gender Stereotypes*) was deleted because it was cross-loading (refer to Appendix 10). As presented in Table 9.54, factor 1 consists of items PRB5, PRB6, PRB10, PRB11, PRB12, PRB13 and PRB14. Factor 2 comprises of items PRB1, PRB2, PRB3 and PRB4.

Table 9 54: Pattern Matrix for Perceived Barriers

Item		Factor	
		1	2
PRB1	Discriminatory attitudes		.883
PRB2	Work-life conflict		.745
PRB3	Wage gap		.557
PRB4	Masculine workplace culture		.473

PRB5	Lack of access to opportunities	.743	
PRB6	Poor working conditions	.564	
PRB10	Glass ceiling (Invisible barrier to career advancement)	.463	
PRB11	Lack of knowledge and career information	.738	
PRB12	Lack of role models in my chosen career	.752	
PRB13	Lack of education and training	.894	
PRB14	Lack of opportunities in my chosen career	.838	

Extraction Method: Maximum Likelihood   Rotation Method: Promax with Kaiser Normalization

Table 9.55 shows that correlation values for the four items for perceived barriers- factor 1 (Discriminatory Factors) ranged from 0.359 to 0.606, indicating that the scale meets the criteria for discriminant validity.

Table 9 55: Correlation Coefficient for Perceived Barriers - Factor 1 (Discriminatory Factors)

	PRB1	PRB2	PRB3	PRB4
PRB1	1.000			
PRB2	.606	1.000		
PRB3	.443	.530	1.000	
PRB4	.428	.359	.515	1.000

Correlation values for the seven items for perceived barriers-factor 2 (Barriers to Success and Progression) were above the recommended cut-off value of 0.30 and less than 0.90 and therefore confirmed convergent validity. Table 9.56 indicates that the correlation values between the seven items in the scale were related to each other.

Table 9 56: Correlation Coefficient for Perceived Barriers - Factor 2 (Barriers to Success and Progression)

	PRB5	PRB6	PRB10	PRB11	PRB12	PRB13	PRB14
PRB5	1.000						
PRB6	.673	1.000					
PRB10	.478	.487	1.000				
PRB11	.583	.558	.534	1.000			
PRB12	.506	.361	.453	.641	1.000		
PRB13	.654	.589	.483	.715	.567	1.000	
PRB14	.632	.564	.512	.669	.533	.709	1.000

9.6.8 Exploratory Factor Analysis for Gender Stereotypes

Ten items of the gender stereotypes scale were analysed. The KMO for gender stereotypes was 0.931, and Bartlett's test of Sphericity with p<0.000 was obtained, as shown in Table 9.57. The results meet the criteria for factor analysability. A Cronbach's alpha of 0.939 was obtained for the gender stereotypes scale, indicating adequate internal reliability. The corrected item-total correlation values were greater than the

recommended cut-off value of 0.3, indicating that the items were a good measure of the construct. Results from the analysis of communalities in Table 9.58 showed that the communalities for the items were all acceptable.

Table 9 57: KMO and Bartlett's Test for Gender Stereotypes

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.931
Bartlett's Test of Sphericity	Approx. Chi-Square	1943.421
	Df	45
	Sig.	.000

a. Cronbach's alpha =0.939

Table 9 58: Gender Stereotypes Factor Statistics

Item	Element	Factor Loading	Corrected item-total correlation	Communalities	
				Initial	Extraction
GST1	Because of my gender, people will believe I possess lesser abilities in my work	.556	.569	.404	.309
GST2	Because of my gender, I will have to work twice as hard as my counterparts	.654	.653	.512	.428
GST3	Because of my gender, I will have to occupy a junior position at work	.804	.773	.678	.647
GST4	Because of my gender, I will be expected to do administrative work	.902	.851	.801	.813
GST5	Because of my gender, I will be expected to have a lesser status in society	.926	.865	.840	.857
GST6	Because of my gender, I will be expected to possess domestic skills rather than technical skills	.942	.885	.859	.888
GST7	Because of my gender, I will be expected to have a low level of education	.806	.790	.695	.649
GST8	Because of my gender, I will be expected to choose a career different from the one I prefer	.683	.692	.534	.467
GST9	Because of my gender, people will believe I will perform badly in mathematics and science subjects	.742	.748	.631	.550
GST10	Because of my gender, I will earn a lower salary than my counterparts for similar work	.798	.776	.650	.637

From the results presented in Table 9.59, one factor with an eigenvalue of 6.634 accounted for 66% of the variance. The solution was, therefore considered unidimensional and adequate evidence of convergent and discriminant validity was provided for the gender stereotypes construct.

Table 9 59: Initial Eigenvalues for Gender Stereotypes

Factor	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	6.634	66.336	66.336
2	.792	7.917	74.253
3	.678	6.775	81.028
4	.479	4.793	85.821

5	.358	3.578	89.399
6	.310	3.103	92.502
7	.260	2.602	95.104
8	.253	2.526	97.630
9	.139	1.390	99.020
10	.098	.980	100.000

Table 9 60: Correlation Coefficient for Gender Stereotypes

	GST1	GST2	GST3	GST4	GST5	GST6	GST7	GST8	GST9	GST10
GST1	1.000									
GST2	.541	1.000								
GST3	.412	.624	1.000							
GST4	.488	.606	.755	1.000						
GST5	.515	.590	.769	.847	1.000					
GST6	.503	.607	.725	.861	.887	1.000				
GST7	.414	.484	.630	.674	.722	.769	1.000			
GST8	.431	.463	.551	.622	.569	.621	.658	1.000		
GST9	.503	.449	.539	.619	.653	.691	.712	.620	1.000	
GST10	.439	.467	.652	.697	.727	.740	.697	.579	.692	1.000

As indicated in Table 9.60, all the correlation values showed a positive and high correlation between the ten items in the gender stereotypes scale. All correlation values were above 0.30 and less than 0.90, indicating that all the scale fulfils the requirement for discriminant validity.

9.6.9 Exploratory Factor Analysis for Access to the Opportunity Structures

A Cronbach's alpha of 0.826 was obtained for the access to opportunity structures scale, indicating adequate internal reliability. The KMO for access to opportunity structures was 0.798, and the Bartlett's test of sphericity was obtained with a significance of $p<0.000$, as shown in Table 9.61. The corrected item-total correlation values for the subscales were greater than the recommended cut-off value of 0.3, indicating that the items were a good measure of the construct. The results show that the data meet the criteria for factor analysability. Table 9.62 shows that the communalities for the items were all acceptable.

Table 9 61: KMO and Bartlett's Test for Opportunity Structures

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.798
Bartlett's Test of Sphericity	Approx. Chi-Square	421.889
	Df	10
	Sig.	.000

a. Cronbach's alpha =0.826

Table 9 62: Access to the Opportunity Structures Factor Statistics

Item	Element	Factor Loading	Corrected item-total correlation	Communalities	
				Initial	Extraction
AOP1	I have access to information on organizations and jobs in my chosen career	.581	.571	.335	.338
AOP2	I have attended various career orientation programs	.549	.548	.316	.301
AOP3	I have initiated conversations with knowledgeable individuals in my career area	.669	.626	.406	.448
AOP4	I have access to information on the labour market and general job opportunities in my career area	.868	.718	.605	.754
AOP5	I have access to information on specific areas of career interest	.795	.653	.542	.633

Extraction Method: Maximum Likelihood

Results presented in Table 9.63 show the emergence of a primary factor with an eigenvalue of 2.967, which accounted for 59% of the variance. The solution was, therefore considered unidimensional and adequate evidence of convergent and discriminant validity was provided for the learning experiences construct.

Table 9 63: Initial Eigenvalues for Access to the Opportunity Structures

	Initial Eigenvalues		
Factor	Total	% of Variance	Cumulative %
1	2.967	59.338	59.338
2	.722	14.447	73.785
3	.534	10.679	84.464
4	.516	10.321	94.785
5	.261	5.215	100.000

The correlation values between the items in the access to opportunity structures scale in Table 9.64 indicated that all five items were correlated. The correlation values ranged from 0.419 to 0.724, therefore, this scale fulfils the requirement for discriminant validity.

Table 9 64: Correlation Coefficient for Access to Opportunity Structures

	AOP1	AOP2	AOP3	AOP4	AOP5
AOP1	1.000				
AOP2	.467	1.000			
AOP3	.455	.453	1.000		
AOP4	.476	.424	.577	1.000	
AOP5	.419	.415	.481	.724	1.000

9.6.10 Exploratory Factor Analysis for Career Choice

Four items of the self-career choice scale were analysed. Inspection of the corrected item-total correlation values were above 0.3, indicating that the items adequately measured the construct.

To determine the strength of the item intercorrelations, the Kaiser-Meyer-Olkin (KMO) was 0.724 and Bartlett's test of Sphericity with p<0.000 was obtained, as shown in Table 9.65. This indicated that the KMO value is above the cut-off value of 0.60. A Cronbach's alpha of 0.752 was obtained, indicating adequate internal reliability. The results meet the criteria for factor analysability.

Table 9 65: KMO and Bartlett's Test for Career Choice

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.724
Bartlett's Test of Sphericity	Approx. Chi-Square	416.543
	Df	6
	Sig.	.000

a. Cronbach's alpha =0.752

As shown in Table 9.66, factor loadings for all the four items were above the cut-off value of 0.30. For the communalities, all the factors were less than 0.999, indicating that all the items were within an acceptable range.

Table 9 66: Career Choice Factor Statistics

Item	Element	Factor Loading	Corrected item-total correlation	Communalities	
				Initial	Extraction
CRC1	I will choose a career in sciences	.567	.532	.477	.321
CRC2	I will choose a career in engineering	.536	.554	.339	.356
CRC3	I will choose a career in humanities	.687	.607	.567	.550
CRC4	I will choose a career in management	.516	.564	.433	.436

Extraction Method: Maximum Likelihood

From the results presented in Table 9.67, one factor with an eigenvalue of 1.373 accounted for a total of 54.324% of the variance. Since only one factor was extracted, it was unnecessary to rotate the solution. The solution was therefore considered unidimensional and adequate evidence of convergent and discriminant validity was provided for the career choice construct.

Table 9 67: Initial Eigenvalues for Career Choice

Factor	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	1.373	54.324	54.324
2	.959	24.985	79.309
3	.921	13.023	92.332
4	.707	7.668	100.000

Table 9.68 shows that the correlation values for the four items for career choice were below the recommended cut-off value of 0.30 and less than 0.90.

Table 9 68: Correlation Coefficient for Career Choice

	CRC1	CRC2	CRC3	CRC4
CRC1	1.000			
CRC2	0.156	1.000		
CRC3	0.230	0.013	1.000	.
CRC4	0.075	0.127	0.128	1.000

Table 9.69 presents the inter- construct correlation analysis results for the latent constructs for the model. Although the subscales did not necessarily relate to each other, they were all related to factors that influence career choice and correlations were found between the subscales, generally indicating discriminant validity. The next section presents the result of the confirmatory factor analysis. Structural Equation Modelling was used to determine the structural model fit parameters and test the relationship between the constructs in the model.

Table 9 69: Inter-construct Correlations

	SEF	OTX	GRP	SSP	LEX	INT	PRBD	PRBSP	GSP	AOP	CRC
SEF	1.000										
OTX	0.536	1.000									
GRP	0.565	0.748	1.000								
SSP	0.370	0.311	0.359	1.000							
LEX	0.576	0.539	0.537	0.413	1.000						
INT	0.519	0.635	0.624	0.342	0.581	1.000					
PRBD	0.082	0.117	0.129	0.087	0.143	0.141	1.000				
PRBSP	0.038	0.120	0.079	0.082	0.090	0.118	0.623	1.000			
GSP	-0.031	0.039	-0.005	-0.067	-0.013	0.012	0.234	0.208	1.000		
AOP	0.378	0.185	0.324	0.271	0.430	0.298	0.033	-0.020	-0.070	1.000	
CRC	0.102	0.107	0.040	0.005	-0.021	0.045	-0.011	-0.047	0.044	-0.016	1.000

9.7 Structural Equation Modelling

Structural Equation Modelling (SEM) is a multivariate data analysis tool used to examine causality relationships among independent variables and dependent variables (continuous or discrete) in a hypothesized theoretical model (Byrne, 2010; Ullman, 2006). SEM is a combination of exploratory factor analysis (EFA) and multiple regression analyses (Tabachnick and Fidell, 2013). Compared to other tools, SEM allows for controlling measurement error and effectively identifies directionality, association, and isolation of variables. SEM consists of the measurement model and the structural model (Hair et al.,

2010; Tabachnick and Fidell, 2013). The measurement model indicates how latent variables are measured in terms of observed variables and connects the measured variables to the factors.

The structural model specifies hypothesized relationships among latent constructs (Yang and Ou, 2008; Byrne, 2010; Raykov and Marcoulides, 2006; Tabachnick and Fidell, 2013).

The primary goal of SEM is to assess the model fitness against empirical data and estimate the regression parameters (Byrne, 2010; Raykov and Marcoulides, 2006). A model that provides a good fit justifies the casual relationships within the model and establishes how well empirical data support the theoretical model using the goodness of fit indices (Aigbavboa and Thwala, 2018).

SEM consists of a two-step approach (Schreiber et al., 2006). The first approach is the Confirmatory Factor Analysis (CFA), while the second approach is the assessment of the structural relationships among the model variables. The current study used IBM AMOS (Analysis of Moment Structures) version 27 to investigate the adequacy of the measurement model and the goodness of fit of the structural model.

Although there were no missing values in the dataset for the current study, issues of missing data must be considered in SEM. To estimate a successful model, it is essential to handle missing data appropriately (Schreiber et al., 2006; Schumacker and Lomax, 2004). Several estimation methods are available within the AMOS software, namely, maximum likelihood, generalised least squares, unweighted least squares, Scale-free least squares, and asymptomatically distribution-free estimation methods. To determine the construct validity of the measurement methods, this study adopted the maximum likelihood estimation method as a preferred estimation method because of its robustness.

9.7.1 Confirmatory Factor Analysis

Confirmatory Factor Analysis (CFA) is used to assess the strength and appropriateness relationship between a range of measured and latent variables (Tabachnick and Fidell, 2013). In CFA, a theoretical model links a set of observed variables to their corresponding latent variables (Schreiber et al., 2006). In this study, CFA was used to test the strength and appropriateness of the relationship between the latent variables and corresponding measurement indicators (Schreiber et al., 2006).

CFA is a follow-up analysis performed after conducting the EFA (Byrne, 2010; Yale et al., 2015). The CFA allows for assessment of the suitability of data in relation to a proposed theoretical model by providing information on the individual research constructs and fit indices (Hair et al., 2010; Yale et al., 2015). Figure 9.1 shows the initial hypothesized measurement model.

9.7.1.1 CFA Reliability and Validity

To further explore, the reliability and validity of the factors were assessed after the CFA. The CFA differs from the EFA in that it is based on theoretical considerations while the EFA is the data driven. Therefore, further assessment of reliability and evaluation of how adequately the scaled items fit the theory. Item-total correlations, Cronbach's alpha and Composite Reliability, were used to assess the reliability (Hair et al., 2010). The item-total correlation was calculated for the scale items, and values above 0.30 were considered acceptable (Briggs and Cheek, 1986; Hair et al., 2010). Low corrected item-total correlation values indicate that the item is not a good measure of a scale.

CR is used to assess the internal consistency of the scales and is computed from the factor loadings of the scale items using the formula:

Equation 9.1: Composite Reliability

Where:
n= number of items in scale
λ= standardised factor loading
δ= (1 − λ) 2

Hair et al. (2010) proposed a threshold of CR of between 0.60 and 0.70 as appropriate. Although 0.60 is sometimes used as a lower cut-off value, 0.50 is considered acceptable. Some studies have also implemented scales with CR values of less than 0.60.

Factor loadings and AVE were used to assess the validity of the constructs and the comparison of the square root of the highest shared variance. AVE is used to evaluate convergent validity and exists when AVE is above 0.50 (Omoruyi et al., 2016; Worthington and Whittaker, 2006).

AVE was calculated using the formula:
Equation 9.2: Average Variance Extracted
Where:
n= number of items in the scale
λ= standardised factor loading

Table 9.70 presents the reliability and validity statistics, which are based on the factor loadings from the CFA. Table 9.70 shows that the corrected item-total correlation for all the items in the scales were above the recommended cut-off value of 0.30, indicating internal consistency and, that the items measure what they are intended to measure. All the subscales were above the Cronbach alpha cut-off value of 0.70, showing acceptable internal reliability (Byrne, 2010). Outcome expectations had the highest Cronbach co-

efficient of 0.956, while social supports (0.727) had the lowest co-efficient. The factor loadings ranged from 0.556 to 0.943. All items were above the cut-off value of 0.50 (Byrne, 2010; Hair et al., 2010). In addition, the AVE and CR of all the constructs fell within the acceptable threshold of 0.50 and 0.60, respectively, as recommended by (Omoruyi et al., 2016; Worthington and Whittaker, 2006). Therefore, there was no need to delete any items from the sub-scales.

Table 9 70: Reliability and Validity Statistics

		Item Correlation	Factor Loading	AVE	CR	Alpha
Self-Efficacy	SEF1	0.629	0.687	0.508	0.835	0.836
	SEF2	0.557	0.565			
	SEF3	0.575	0.616			
	SEF4	0.750	0.845			
	SEF5	0.681	0.810			
Outcome Expectations	OTX1	0.577	0.580	0.649	0.956	0.956
	OTX2	0.849	0.864			
	OTX3	0.719	0.732			
	OTX4	0.756	0.764			
	OTX5	0.887	0.901			
	OTX6	0.830	0.842			
	OTX7	0.814	0.832			
	OTX8	0.773	0.796			
	OTX9	0.704	0.736			
	OTX10	0.786	0.812			
	OTX11	0.838	0.865			
	OTX13	0.853	0.886			
Goal Representations	GRP1	0.681	0.735	0.640	0.925	0.926
	GRP2	0.814	0.873			
	GRP3	0.827	0.886			
	GRP4	0.753	0.774			
	GRP5	0.781	0.787			
	GRP6	0.751	0.764			
	GRP7	0.749	0.768			
Social Supports	SSP2	0.487	0.777	0.621	0.831	0.727
	SSP3	0.524	0.840			
	SSP4	0.514	0.744			
Learning Experiences	LEX1	0.615	0.730	0.509	0.757	0.755
	LEX2	0.565	0.693			
	LEX4	0.574	0.717			
Interests	INT1	0.714	0.775	0.595	0.898	0.892
	INT2	0.713	0.772			
	INT3	0.652	0.686			
	INT4	0.810	0.892			
	INT5	0.759	0.794			
	INT6	0.669	0.692			

		Item Correlation	Factor Loading	AVE	CR	Alpha
Perceived Barriers (Discriminatory factors)	**PRB1**	0.615	0.716	0.558	0.834	0.786
	PRB2	0.633	0.843			
	PRB3	0.611	0.711			
	PRB4	0.523	0.708			
Perceived Barriers (Success and Progression)	**PRB5**	0.742	0.775	0.575	0.904	0.902
	PRB6	0.672	0.716			
	PRB10	0.602	0.638			
	PRB11	0.781	0.833			
	PRB12	0.628	0.672			
	PRB13	0.790	0.839			
	PRB14	0.764	0.808			
Gender Stereotypes	**GST1**	0.569	0.556	0.624	0.942	0.939
	GST2	0.653	0.654			
	GST3	0.773	0.804			
	GST4	0.851	0.901			
	GST5	0.865	0.925			
	GST6	0.885	0.943			
	GST7	0.790	0.805			
	GST8	0.692	0.683			
	GST9	0.748	0.741			
	GST10	0.776	0.799			
Access to Opportunity Structures	**AOP1**	0.571	0.711	0.580	0.873	0.826
	AOP2	0.548	0.664			
	AOP3	0.626	0.798			
	AOP4	0.718	0.845			
	AOP5	0.653	0.775			
Career Choice	**CRC1**	0.532	0.750	0.556	0.830	0.752
	CRC2	0.554	0.540			
	CRC3	0.607	0.778			
	CRC4	0.564	0.875			

9.7.1.2 Model Goodness of Fit

A model's goodness of fit specifies how well the model fits into a set of observations. Several model fit indices can be used to assess the goodness of fit of a model (Jha et al., 2011). There are three groups of fit indices, namely, absolute, parsimonious, and comparative fit indices (Green, 2016).

Absolute fit indices examine the goodness of fit between the data and the model without depending on a comparison with any other model (Tabachnick and Fidell, 2013). Absolute fit indices consist of Chi-Squared test, Relative Normed Chi-Square value (λ/df), Root Mean Square Error of Approximation (RMSEA), the Standardised Root Mean Square Residual (SRMR) and Hoelter's critical N. The Chi-squared test examines the variance between the sample and the covariance matrix and is very sensitive to sample size (Hooper et al., 2008; Kline, 2015). Instead, the Relative Normed Chi-square is a preferable measure of

good fit than the chi-square in large samples, because it reduces the effect of the sample size on the chi-square statistics (Tabachnick and Fidell, 2013). The SRMR is used to interpret the square root of residuals of the sample covariance matrix when there are different scales in a sample (Hooper *et al*., 2008). Root Mean Square Error of Approximation is preferred for models with fewer parameters (Byrne, 2010; Hooper et al., 2008). Hoelter's N is used to determine a sample sizes adequacy and reports the largest sample size with which the model cannot be rejected (Teo et al., 2013).

Table 9 71: Cut-off Criteria for Model Fit Indices

Model Fit Index	Acceptable Threshold	Interpretation	References
Absolute fit indices			
Chi-Squared test	Low relative df with an insignificant p-value (p>0.05)	Good Fit	Schumacker and Lomax (2004); Hooper et al. (2008); Kline (2011)
Relative Normed Chi-Square value $X2/df$	Ratio of ($X2$) to df ≤2	Good Fit	Schumacker and Lomax (2004); Hooper et al. (2008); Tabachnick and Fidell (2013)
	Ratio of ($X2$) to df ≤ 5	Acceptable Fit	
Root Mean Square Error of Approximation (RMSEA)	Values ≤0.05	Good Fit	Schumacker and Lomax (2004); Schreiber et al. (2006); Hoe (2008); Hooper *et al*. (2008); Hsu, Su, Kao, Shu, Lin and Tseng (2012)
	Values ≤0.06-0.08	Acceptable Fit	
	Values >0.08-0.09	Mediocre Fit	
	Values>0.10	Poor Fit	
Standardised Root Mean Square Residual (SRMR)	Values ≤0.05	Good Fit	Hooper et al. (2008) ; Hair *et al*. (2010); Kline (2011); Hsu et al. (2012)
	Values >0.05 -≤0.08	Acceptable Fit	
	Values >0.10	Mediocre Fit	
Hoelter's critical N (p=0.01)	Values >200	Good Fit	Teo et al. (2013)
Comparative fit indices			
Tucker-Lewis Index (TLI)	Values≥0.95	Good Fit	Schumacker and Lomax (2004); Schreiber et al. (2006); Hooper et al. (2008); Hsu et al. (2012)
	Value is 0.90-0.95	Acceptable Fit	
	Value is 0	No Fit	
	Value is 1	Perfect Fit	
Incremental Fit Index (IFI)	Value ≥ 0.95	Good Fit	Schreiber et al. (2006); Hooper et al. (2008); Hsu et al. (2012)
	Value is 0.90 - 0.95	Acceptable Fit	
Normed Fit Index (NFI)	Value ≥ 0.95	Good Fit	Schreiber et al. (2006); Hooper et al. (2008); Hsu et al. (2012); Tabachnick and Fidell, 2013
	Value is 0.90 - 0.95	Acceptable Fit	
Comparative Fit Index (CFI)	Value ≥ 0.95	Good Fit	Byrne (2006); Hooper et al. (2008); Hsu et al. (2012); Tabachnick and Fidell (2013)
	Value is 0.90 - 0.95	Acceptable Fit	
Relative Fit Index (RFI)	Value ≥ 0.95	Good Fit	Schreiber et al. (2006); Hooper et a*l*. (2008); Hsu et al. (2012)
	Value is 0.90 - 0.95	Acceptable Fit	
Parsimonious fit indices			
Parsimony Goodness-of-Fit (PGFI)	Value > 0.90	Good Fit	Hooper et al. (2008)
	Value > 0.50	Acceptable Fit	
Parsimony Adjusted Normed Fit Index (PNFI)	Value > 0.90	Good Fit	Hooper et al. (2008)
	Value > 0.50	Acceptable Fit	
Parsimony Adjusted Comparative Fit Index (PCFI)	Value > 0.90	Good Fit	Hooper et al. (2008)
	Value > 0.50	Acceptable Fit	

Comparative fit indices assess fit by comparing the chi-square value of the model relative to a null model (Bagozzi, 2010). A null model contains of uncorrelated variables. Comparative fit indices consist of Tucker-Lewis Index (TLI), Incremental Fit Index (IFI), Normed Fit Index (NFI), Comparative Fit Index (CFI), and the Relative Fit Index (RFI). The TLI is also known as the Non-Normed Fit Index (NNFI) is used for sample sizes of less than 200 (Tabachnick and Fidell, 2013). The NFI, RFI and IFI make comparisons between the model chi-square and the chi-square of the null model (Hooper *et al.*, 2008). CFI is a revised version of the NFI and takes into consideration sample sizes, thereby also performing well with small samples (Hooper et al., 2008; Tabachnick and Fidell, 2013).

Parsimonious fit indices were developed to correct the complexity of a model because complex and almost saturated models depend on the sample during estimation (Hooper et al., 2008). Parsimonious indices include the Parsimony Adjusted Normed Fit Index (PNFI), Parsimony Goodness-of-fit (PGFI), and the Parsimony Adjusted Comparative Fit Index (PCFI). The PNFI, PGFI and PCFI penalize for model complexity and are based on adjusting their parent fit indices for loss of degrees of freedom (Ibid). Consequently, their model fit indices are much lower than other indices. Table 9.71 presents the various thresholds for the different model fit indices.

The Relative Normed Chi-square, Root-Mean-Square-Error of Approximation (RMSEA), Standardized Root Mean Square Residual (SRMR), Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Normed Fit Index (NFI), Relative Fix Index (RFI), Parsimony Adjusted Normed Fit Index (PNFI), and Parsimony Adjusted Comparative Fit Index (PCFI) were the fit indices considered in this study.

In this study, no cut-off value was set for the Chi-square values as the fit static varies according to the model's design complexity, amount of data and sample size.

9.7.1.3 Measurement Model Fitness

Table 9.72 indicates that the assessment of the validity of the measurement model produced a chi-square value of 3,328.657 and 2,024 degrees of freedom. The associated p-value was less than 0.005 (p=0.00). Table 9.72 shows that the CMIN/df =1.645 and based on the cut-off criteria was indicative of good fit. The value of RMSEA = 0.053 and SRMR (0.058) showed acceptable fit. The CFI (0.872), RFI (0.714), the TLI (0.864) and NFI (0.730) further suggested a poor fit of the model. The indices for PNFI (0.689) and PCFI (0.823) were above 0.50, indicating an acceptable fit. Figure 9.1 presents the results of the measurement model.

Table 9 72: Goodness of fit indices for Measurement model

Model Fit Index	Threshold	Model	Fit	Model-specification	Fit
Chi-Squared test		3328.657		7.723	
CMIN/df	df ≤2	1.645	**Good Fit**	1.506	**Good Fit**
	df ≤ 5				
RMSEA	Values ≤0.05	0.053	**Acceptable Fit**	0.047	**Good Fit**
	Values ≤0.06-0.08				
SRMR	Values ≤0.05	0.058	**Good Fit**	0.045	**Good Fit**
	Values >0.05 - ≤0.08				
TLI	Values≥0.95	0.864	**Poor Fit**	0.994	**Good Fit**
	Value is 0.90-0.95				
	Value is 1				
NFI	Value ≥ 0.95	0.730	**Poor Fit**	0.755	**Poor Fit**
	Value is 0.90 - 0.95				
RFI	Value ≥ 0.95	0.714	**Poor Fit**	0.902	**Acceptable Fit**
	Value is 0.90 - 0.95				
CFI	Value ≥ 0.95	0.872	**Poor Fit**	0.900	**Acceptable Fit**
	Value is 0.90 - 0.95				
PNFI	Value > 0.90	0.689	**Acceptable Fit**	0.706	**Acceptable Fit**
	Value > 0.50				
PCFI	Value > 0.90	0.823	**Acceptable Fit**	0.842	**Acceptable Fit**
	Value > 0.50				
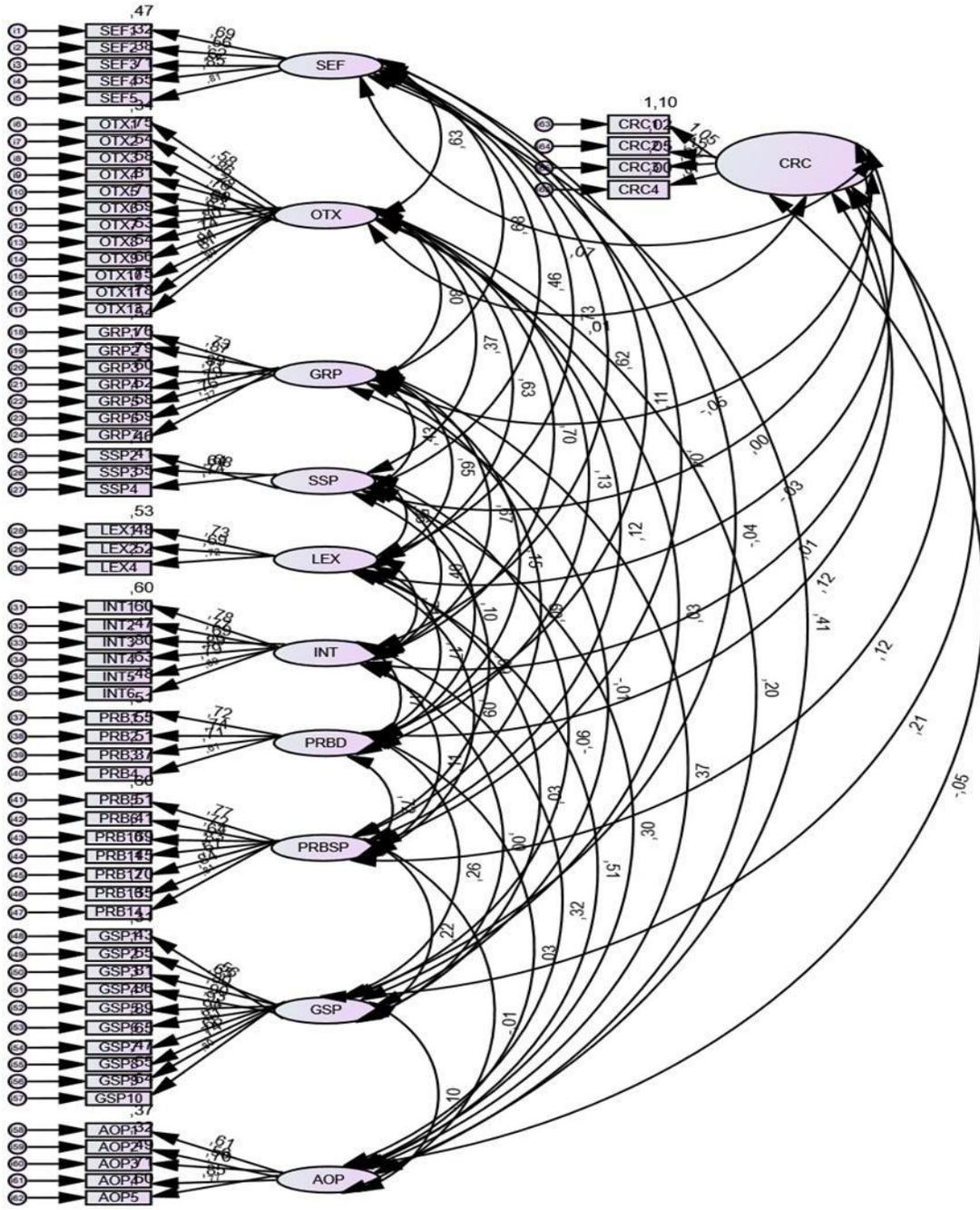
Figure 9. 1: Initial Measurement Model

To improve the fit indices of the measurement model, a model re-specification was conducted. Table 9.72 shows the model fit indices for the refined model. Indicator metrics with the highest residual correlation were identified, and error terms within the factor were correlated.

The absolute fit was assessed using the Chi-square, the Relative Normed Chi-square (λ/df), the RMSEA and the SRMR. The chi-square value was 7.723, and the associated p-value was insignificant (p=0.000),

suggesting poor model fit (Hooper et al., 2008; Tabachnick and Fidell, 2013). However, the Chi-square is always insignificant in most instances, for large samples (Hooper et al., 2008). The CMIN/df value was 1.506, indicating good model fit. The Relative Normed Chi-square (λ/df) =0.047 was less than the cut-off value of 0.05, indicating a good fit. The SRMR (0.045) met the acceptable threshold, therefore indicating a good model fit. Notwithstanding that the Chi-square was insignificant, three out of absolute fit indices met the minimum threshold. Therefore, the measurement model fulfilled the requirements for absolute fitness.

The comparative fit was assessed using CFI, TLI, NFI and RFI. The TLI (0.994), the RFI (0.902) and the CFI (0.900) met the minimum acceptable threshold of 0.90 as suggested by (Arifin, 2018; Hooper et al., 2008; Schreiber et al., 2006; Schumacker and Lomax, 2004; Tabachnick and Fidell, 2013). Notwithstanding that the NFI (0.755) was below the cut-off value, the rest of the three indices fulfilled the requirements for model acceptance. Therefore, the model had an acceptable comparative fit.

Parsimony was assessed using PNFI and PCFI. The indices for PNFI (0.706) and PCFI (0.842) exceeded the cut-off value of 0.50, indicating that the model is not so parsimonious but is still of acceptable fit. However, it may be argued that the most accepted threshold of 0.90 for all other indices might be more appropriate. Figure 9.2 shows the results of the refined measurement model.
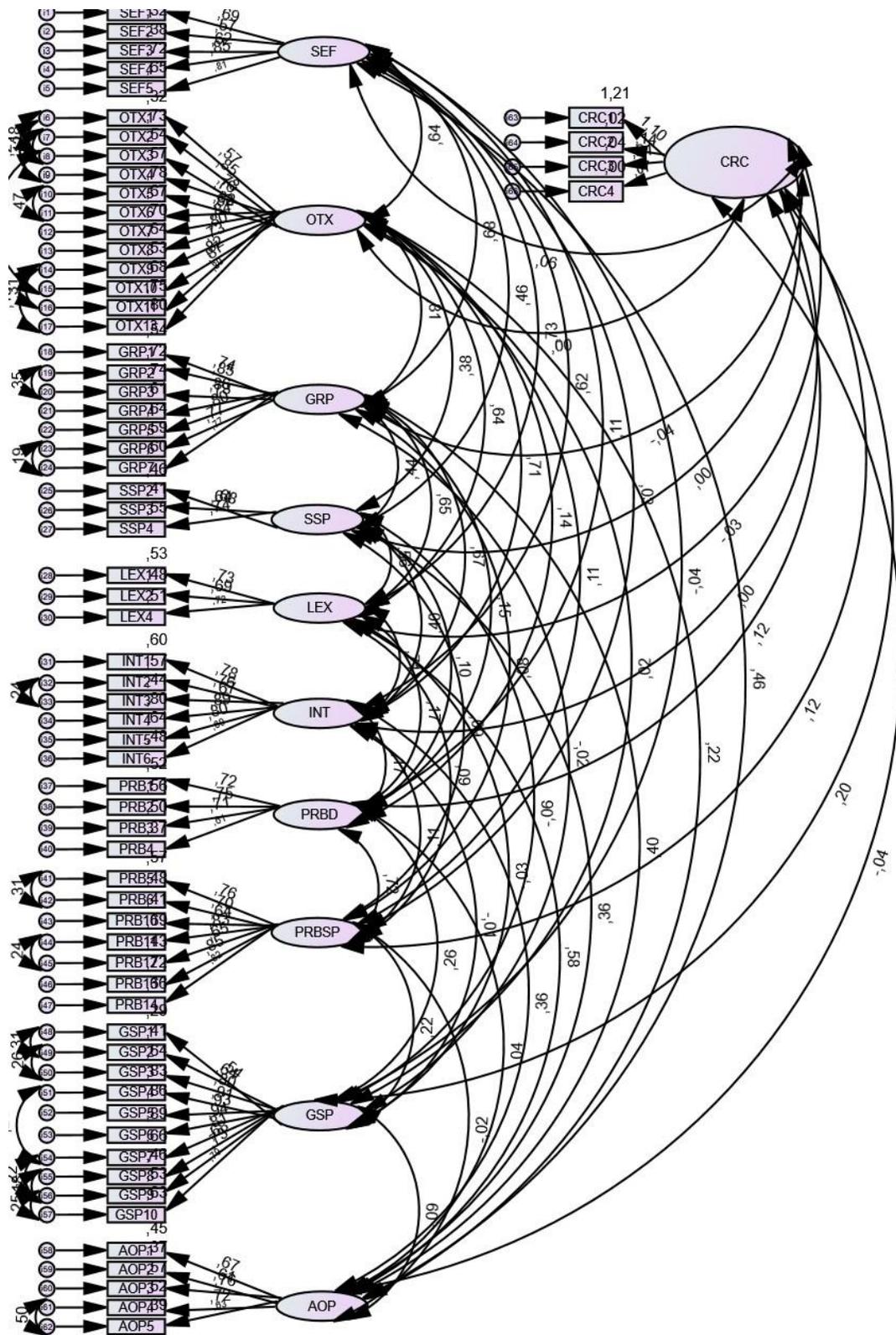
Figure 9. 2: Refined Measurement Model

9.8 Structural Model Fitness

Path modelling is the second stage of SEM and involves linking the latent variables with a series of recursive and non-recursive relationships. Structural modelling allows for the estimation of the structural or regression relationships among the constructs. The goodness-of-fit indices determine the reliability of a research model and its adequacy to test hypothesised relationships among constructs in a study.

Consistent with the measurement model, the structural model exhibited acceptable absolute fit. The chi-square value was 3041.231 and had 2006 degrees of freedom. The associated p-value was less than 0.005 (p=0.00), which, as stated earlier, is expected in the case of large sample sizes (Hooper et al., 2008). Table 9.73 shows that the CMIN/df (1.516) met the threshold of less than 2, indicating good model fit. The value of RMSEA = 0.048 and SRMR (0.037) showed a good fit. Therefore, the measurement model fulfilled the requirements for absolute fitness.

The NFI, RFI, TLI and CFI fell below the cut-off value for acceptable comparative fit.
The PNFI and PCFI used to assess parsimonious fit were less than 0.90 but above 0.50 indicating acceptable fit.

Table 9 73: Structural Model fit indices

Model Fit Index	Threshold	Model	Fit	Model-specification	Fit
Chi-Squared test		3041.231		2905.017	
CMIN/df	df ≤2	1.516	**Good Fit**	1.455	**Good Fit**
	df ≤ 5				
RMSEA	Values ≤0.05	0.048	**Good Fit**	0.045	**Good Fit**
	Values ≤0.06-0.08				
SRMR	Values ≤0.05	0.037	**Good Fit**	0.046	**Good Fit**
	Values >0.05 - ≤0.08				
TLI	Values≥0.95	0.891	**Poor Fit**	0.954	**Good Fit**
	Value is 0.90-0.95				
	Value is 1				
NFI	Value ≥ 0.95	0.754	**Poor Fit**	0.765	**Poor Fit**
	Value is 0.90 - 0.95				
RFI	Value ≥ 0.95	0.737	**Poor Fit**	0.952	**Good Fit**
	Value is 0.90 - 0.95				
CFI	Value ≥ 0.95	0.898	**Poor Fit**	0.953	**Good Fit**
	Value is 0.90 - 0.95				
PNFI	Value > 0.90	0.705	**Acceptable Fit**	0.712	**Acceptable Fit**
	Value > 0.50				
PCFI	Value > 0.90	0.840	**Acceptable Fit**	0.848	**Acceptable Fit**
	Value > 0.50				

To improve the fit indices of the measurement model, a model re-specification was conducted. Indicator metrics with the highest residual correlation were identified, and error terms within the factor were correlated.

Table 9.73 indicates that the assessment of the validity of the refined structural model produced a chi-square value of 2905.017 and 1997 degrees of freedom. The associated p-value was less than 0.005 (p=0.00). The CMIN/df =1.455 and based on the cut-off criteria was indicative of good fit. The value of RMSEA = 0.045 and SRMR (0.046) showed a good fit. Therefore, the measurement model fulfilled the requirements for absolute fitness.

Although the NFI (0.765) indicated poor model fit, the CFI (0.953), RFI (0.952) and the TLI (0.954) suggested good fit of the model, therefore exhibiting acceptance of comparative fit. The indices for PNFI (0.712) and PCFI (0.848) were above 0.50, indicating an acceptable fit. Figure 9.3 presents the structural model. Despite that the model met the threshold for parsimonious fit suggested by Hooper *et al.* (2008), the structural model is not so parsimonious.
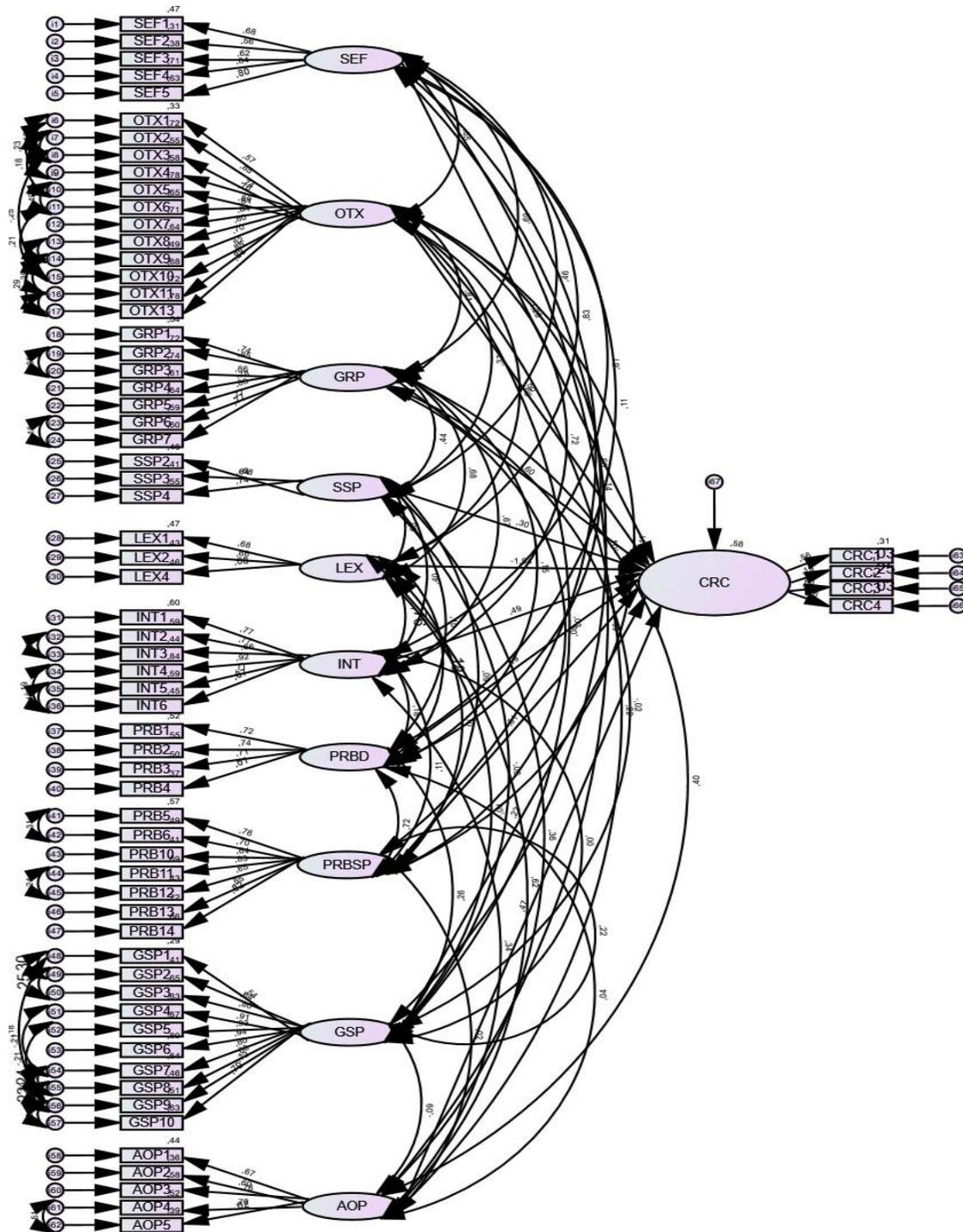
Figure 9. 3: Structural Model

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9.9 Results of Structural Modelling

The relationships among the constructs were estimated from the structural relationships in the structural model. The relationships were hypothesised as follows:

H1: Self-efficacy (SEF) has a significant direct influence on career choice

H2: Outcome Expectations (OTX) has a significant direct influence on career choice

H3: Goal Representations (GRP) has a significant direct influence on career choice

H4: Social Supports (SSP) has a significant direct influence on career choice

H5: Learning Experiences (LEX) has no significant direct influence on career choice

H6: Interests (INT) has a positive direct significant influence on career choice

H7: Discriminatory factors (PRBD) have a significant direct influence on the career choice

H8: Barriers to success to progression (PRBSP) has a significant direct influence on career choice

H9: Gender stereotypes (GSP) has a significant direct influence on career choice

H10: Access to opportunity structures (AOP) has a significant direct influence on career choice

Table 9.74 presents results of the standardised regression relationships from the structural model. The parameter estimate is significant at $p \leq 0.05$. The results of the influence of the exogenous variables on endogenous are further discussed.

Table 9 74: Structural Model Statistics

Proposed Hypothesis				Regression Estimate	P	Rejected/Supported
CRC	←	SEF	H1	0.395	***	Supported
CRC	←	OTX	H2	0.154	0.002	Supported
CRC	←	GRP	H3	0.617	0.030	Supported
CRC	←	SSP	H4	0.126	0.028	Supported
CRC	←	LEX	H5	-0.500	0.088	Not Supported
CRC	←	INT	H6	0.796	***	Supported
CRC	←	PRBD	H7	0.161	0.014	Supported
CRC	←	PRBSP	H8	0.631	***	Supported
CRC	←	GSP	H9	0.518	***	Supported
CRC	←	AOP	H10	0.344	0.011	Supported

9.9.1 Testing Direct Influence of Self-Efficacy on Career Choice

Inspection of the R^2 and p-value for the self-efficacy construct revealed a direct influence of self-efficacy on career choice. The direct influence of self-efficacy on career choice is statistically significant as the p-value (p=0.000) is less than the cut-off value of 0.50. Therefore, the hypothesis cannot be rejected.

9.9.2 Testing Direct Influence of Outcome Expectations on Career Choice

Outcome expectations were hypothesized to have a direct influence on career choice. R^2 was 0.154, and the p-value was 0.002, indicating statistical significance as the p-value was less than 0.50. Therefore, the hypothesis cannot be rejected.

9.9.3 Testing Direct Influence of Goal Representations on Career Choice

Inspection of the R^2 (0.617) and p-value (0.030) for the goal representations construct showed a direct influence of self-efficacy on career choice. A statistically significant relationship was found. Therefore, the hypothesis cannot be rejected.

9.9.4 Testing Direct Influence of Social Supports on Career Choice

Social supports was hypothesized to have a direct influence on career choice. The value of R^2 was 0.126, and the p-value was 0.028, indicating statistical significance as the p-value was less than 0.50. Therefore, the hypothesis cannot be rejected.

9.9.5 Testing Direct Influence of Learning Experiences on Career Choice

Although learning experiences was hypothesized to have a direct influence on career choice, there was no empirical findings to support the hypothesis, as no statistical significance was found ($R^2= -0.500$, p=0.088). Therefore, the hypothesis was rejected.

9.9.6 Testing Direct Influence of Interests on Career Choice

Interests were hypothesized to have a direct influence on career choice. The value of R^2 was 0.796, and the p-value was 0.000, indicating statistical significance as the p-value was less than 0.50. Therefore, the hypothesis cannot be rejected.

9.9.7 Testing Direct Influence of Discriminatory Factors on Career Choice

Inspection of the R^2 (0.161) and p-value (0.014) for discriminatory factors revealed a direct influence of discriminatory factors on career choice. A statistically significant relationship was found. Therefore, the hypothesis cannot be rejected.

9.9.8 Testing Direct Influence of Barriers to Success and Progression on Career Choice

Inspection of the R^2 (0.631) and p-value (0.000) for barriers to success and progression revealed a direct influence of discriminatory factors on career choice. A statistically significant relationship was found. Therefore, the hypothesis cannot be rejected.

9.9.9 Testing Direct Influence of Gender Stereotypes on Career Choice

Gender stereotypes were hypothesized to have a direct influence on career choice. R^2 was 0.518, and the p-value was 0.000, indicating statistical significance as the p-value was less than 0.50. Therefore, the hypothesis cannot be rejected.

9.9.10 Testing Direct Influence of Access to Opportunity Structures on Career Choice

Inspection of the R^2 (0.344) and p-value (0.030) for access to opportunity structure exhibited a direct influence of access to opportunity structures on career choice. A statistically significant relationship was found. Therefore, the hypothesis cannot be rejected.

9.10 Chapter Summary

This chapter presented the results and analysis of the descriptive and inferential statistics, starting with the demographic information of the respondents and the assessment of the factors that influence career choice in the South African construction industry. The EFA was conducted to determine the factor structure of the constructs and further evaluate the reliability and validity of the sub-scales. Subsequently, the CFA was conducted, and after appropriate model refinement, the refined conceptual model indicated substantially good fit. An analysis of the structural model was performed to validate the hypothesized model, and a good fit to the empirical data was exhibited.

The next chapter presents the discussion of the research findings and the hypotheses in relation to existing literature.

CHAPTER TEN

DISCUSSION OF FINDIGS

10.1 Introduction

This chapter presents the results of the data analysis in the previous chapter. It also discusses the results of the career choice structural model which validates that the career choice model is a nine-factor model, rather than the hypothesized nine-factor model illustrated in Figure 8.1. The result from the SEM analysis showed that Self-efficacy (SEF), Outcome Expectations (OTX), Goal Representations (GRP), Interests (INT), Social supports (SSP), Gender Stereotypes (GST), Perceived Barriers-Discriminatory factors (PRBD), Perceived Barriers -Barriers to Success and Progression (PRBSP) and Access to Opportunity Structures (AOP) were found to significantly determine Career Choice (CRC). The discussion of findings is discussed in detail in subsequent sections.

10.2 Questionnaire Survey Results

The results of the descriptive statistics and demographic information of respondents show that despite being conveniently sampled, the percentage of men and women is 50.7% and 49.3% respectively, which is indicative of a fair representation of the population of interest. Respondents were 1st to 4th year students, with the majority of 41% in the 1st year of study. Likewise, the majority of the respondents were registered in the construction management programme. A total of 58.1% of the respondents belonged to the low SES category.

10.2.1 Discussion of Descriptive Results

The survey results presented the evaluation of the factors that influence career choices in construction.
As shown in Table 9.9, the findings revealed that the career choices of the respondents were mostly influenced by the interest in performing well (4.62), expectations of learning new skills and being able to use these skills and talents in their job (4.53), expectations to be successful in their career (4.50), expectations to achieve their career goals (4.49) and the interest to make a lot of money (4.48).

These findings are consistent with previous studies that expectations of achieving a certain outcome are a significant component of the career choice process of young adults and university students and is a strong predictor of their post-university pathways (Ali and McWhirter, 2006; Betz, 1989; Fouad and Guillen, 2006).

10.2.2 Discussion of Inferential Results

10.2.2.1 Gender Differences in the Influence of Career Choice Predictors

Gender has been identified to play a significant role in determining educational and career choices (Andres et al., 2007; Buchmann and Dalton, 2002). By viewing gender as a socially constructed aspect of the experience, it may be emphasized that it is a major sociocultural agent that helps shape career choices (Andres et al., 2007; Pio et al., 2013). Findings from Wynn and Correll (2017) suggested that men and women have different perceptions of the factors that influence their career decisions in male-dominated professions such as construction, as these professions have been resistant to the participation of women.

The Mann- Whitney U test was conducted to test for significant differences in the influence of the career choice predictors between the gender groups. Table 9.10 presents the results by indicating the mean score (MIS) and rank, Z-value, and sig. value. Findings within this study revealed statistically significant differences in the influence of social supports, perceived barriers and gender stereotypes among men and women.

10.2.2.1.1 Gender, Social Supports and Career Choice

The hypothesis that in the context of the South African construction industry, social supports differently influence the career choices of men and women was substantiated. Findings from the study revealed significant differences in the influence of social supports among men and women. The men in this study perceived social supports of greater influence compared to women.

There are similarities in the present study and those described by Serra et al. (2019), confirming that men and women perceive different levels of support from their social environment with regards to their career choices. Consistent with the findings for this study, Buday et al. (2012); Rogers and Creed (2011); Sainz et al., (2010); Serra et al. (2019) examined gender differences in the effect of perceived social support on the career choice process of men and women studying STEM subjects and found that girls received less encouragement and support from their social networks.

Although numerous studies claimed that perceived parental expectations are positively correlated with student's career choices and aspirations (Ali and McWhirter, 2006), these results have been interpreted differently. In the context of social support, experiences of boys and girls are dissimilar in terms of encouragement and support from parents, teachers, and peers (Kelly, 2009). Hazari et al. (2008) found statistically significant differences between male and female students' physiques regarding social support variables such as home environment, encouraging parents and teachers. Leslie et al. (1998); Peña-Calvo et

al. (2016) claimed that women tend to receive less career guidance from trusted networks such as family and peers compared to men.

Enrolments of women in engineering majors have been associated with support from their families compared to their male counterparts (Van Klaveren et al., 2009; Lyons, 2006). Further, compared to men, women have been found to receive less support from teachers compared to men (Esmonde, 2009).

Kelly (2009) claimed that although the experience of women and men in male-dominated majors did not differ across social cognitive variables, perceived social support was significantly higher for women than men. Dabney et al. (2013); Hazari et al. (2008); Richman et al. (2011) cited parental support as a significant influence on the career choices of women in male-dominated fields. Agapiou (2002) investigated the attitudes of parents and educators regarding the career decisions of girls in construction. The study revealed that compared to their male counterparts, female entrants into the construction industry are more likely to be influenced by family members, teachers or role models who have some experience of working in construction (Jimoh et al.,2016). Several studies have argued that women require more social support to persist and overcome barriers to participation in male-dominated fields compared to men (Adya et al., 2005; Pio et al., 2013; Taasoobshirazi and Carr, 2008; Kelly, 2009). Additional social support may be required for women to help them overcome the barriers to their participation.

10.2.2.1.2 Gender, Perceived Barriers and Career Choice

The influence of perceived barriers on career choices and the differences for men and women was evaluated. The hypothesis that perceived barriers differently influence the career choices of men and women in construction was supported. The current study revealed that men and women's career choices were influenced differently by perceived barriers. Women perceived more barriers with regards to making career choices in construction. This finding is consistent with the assertion of Del Puerto et al. (2011) who argued that the barriers to women's career choices in the built environment are not the same for men.

Recent studies have examined gender differences in the barriers to career choices (Lent et al., 2005; Peña-Calvo et al., 2016). Byars-Winston et al. (2010) examined gender differences in perceived career barriers among undergraduate engineering students. The study found that female students perceived more barriers than did their male counterparts.

Moss et al. (2012); Reuben et al. (2014) reported that gender disparities exist in the barriers experienced by students in choosing a STEM career. Studies conducted to examine the barriers toparticipation in construction suggest that women compared to men experience barriers such as

discrimination, harassment, lack of role models, wage gap etc., which hinder their entry and participation in the industry (Adeyemi et al., 2006; Jimoh et al., 2016).

Jimoh et al. (2018) found that women's decisions to enter the construction industry were motivated by access to knowledge and information about the industry, access to role models and training and education. Fouad et al. (2010) reported that unlike women, men considered these factors insignificant to their career choices in the construction industry. Byars-Winston et al. (2010); Mann and DiPrete (2013) found that although an increasing number of women are beginning to undertake careers in non-traditional fields, women and men differ in the hindrances to their career choices and progression, with a lesser likelihood for women to make career choices in male-dominated professions because of these barriers.

Similarly, Ayarkwa et al. (2012) conducted a comparative analysis of perceptions of men and women regarding the challenges experienced in the construction industry and found that women perceived greater barriers to their participation in the industry compared to men. Issues of long working hours, poor working conditions and gender discrimination were identified as the most prominent challenges experienced.

10.2.2.1.3 Gender, Gender Stereotypes and Career Choice

A statistically significant difference was found for the influence of gender stereotypes for men and women. The results illuminated that there are differences between men and women with regards to gender stereotypes and career choice in construction. As shown by the mean scores obtained, the women in this study perceived their career choices to be influenced by gender stereotypes more than the men. Overall, this result is consistent with findings from previous research indicating that genders stereotypes influence the career choices of men and women differently (Mendez and Crawford, 2002).

Gender has been identified as an influential person factor in career choice behaviour, and such indicates that different trajectories may exist with regards to gender stereotypes and career choice process for men and women (Mendez and Crawford, 2002). Numerous studies have been conducted to examine the stereotypical beliefs on career choice in male-dominated occupations and have hypothesized that the underrepresentation of women in the construction industry is because of gender-stereotyping of careers (Ginige et al., 2007; Mendez and Crawford, 2002).

Previous research provides evidence that men and women differ in their perception of gender stereotypes (Betz and Hackett, 2006; Eccles, 2011; Su and Rounds, 2015). Serra et al. (2019) found that there was a higher likelihood for female students than male students to choose careers traditional to their gender. Evidence from literature examining gender stereotyping and the differences in career choice behaviour

reveals that gender differences are because of gender role socialization (Malach-Pines and Kaspi-Baruch, 2008; Patton et al., 2004; Wilmuth, 2016).

Generally, masculine behaviours are socially preferred (Ezzedeen et al., 2015). Stereotypically feminine traits such as gentleness and kindness have been attributed to weakness and are less valued in professions, such as construction (Carver and Candela, 2008). López-Bonilla et al. (2012) assessed the extent to which the decision of men and women to undertake careers in the construction were influenced by gender stereotypes and found that certain stereotypical masculine characteristics were commonly ascribed to men, which were not attributed to women. Similarly, women held stereotypes that expected them to possess less-masculine attributes and assumed stereotypical feminine supportive roles. Differences in the perceptions of men and women regarding gender stereotypes was found to be largely as result of how the men perceived women.

Consistent with these findings, it has been noted that gender stereotypes through how men perceive women in the construction may impact women's decisions to undertake a career in construction (Francis, 2017; Watts, 2009; Wright, 2014).

10.2.2.1.3 SES Differences in the Influence of Career Choice Predictors for Men and Women

Socio-economic status is a person input variable that may influence a person's career choice (Ali and McWhirter, 2006). In this study, socioeconomic status (SES) was determined using a combination of the Nakao-Treas Socio-economic index and the Four Factor Index of Social Status based on ratings of occupation, education, income, and marital status (Nakao and Treas, 1994; Hollingshead, 1975). This index accounts for differentiated and unequal social status. Consistent with Blustein et al. (2015) this study determined the socio-economic status of young adults based on that of their parents or the head of their household, as they had not yet established their own (Ali et al., 2005; Ali and McWhirter, 2006; McWhirter et al., 1998). Diemer and Hsieh (2008) identified social class as a key variable that influences the way in which individuals make their career decisions. Trusty et al. (2000a); Trusty et al. (2000b); Diemer and Hsieh (2008) opined that students from lower SES backgrounds compared to those from higher SES backgrounds may have limited access to information, career guidance and financial resources, which could limit their choice of careers.

The Kruskal-Wallis test was performed to test for significant differences in the influence of the career choice predictors between the SES categories. Table 9.11 presents the results by indicating the mean score (MIS) and rank, Chi-square value, degree of freedom (df) and Sig. value. Findings within this study revealed

statistically significant differences in the influence of self-efficacy, perceived barriers, and gender stereotypes among the high, medium, and low SES categories.

10.2.2.1.4 SES, Self-efficacy, and Career Choice

A statistically significant difference was found for the influence of self-efficacy on career choice among the three SES categories. Further tests revealed that disparities existed between the high SES and medium SES categories. These findings are consistent with previous studies indicating that group differences exist on self-efficacy with career choice (Ali and McWhirter, 2006; Gushue and Whitson, 2006).

Gushue and Whitson (2006) examined the influence of socio-economic background as related to self-efficacy and career decisions in traditionally male-dominated environments high school students and postulated that higher levels of self-efficacy was strongly associated with academic and career choice. Hannah and Kahn (1989) examined the influence of SES on self-efficacy, and on the careers considered by high school students, and found that low SES students reported lower self-efficacy beliefs compared higher SES students.

An investigation of the school-to-work transition of young adults from various SES backgrounds, conducted by (Kelly, 2009) revealed that respondents from high SES backgrounds reported higher levels of confidence in their abilities and career adaptability compared to their counterparts from other SES backgrounds. This finding is also consistent with past studies highlighting the influence of SES backgrounds on career choices (Trusty et al., 2000a; Trusty et al., 2000b). Respondents who aspired to undertake careers in construction-related professions reported higher SES. Consistent with Moore (2006) career choices in the construction industry is perceived as the least option; findings indicate that a career in construction is unappealing to students from impoverished backgrounds.

In the current study, students from high SES backgrounds indicated higher self-efficacy than their lower counterparts, as demonstrated by the mean scores. Empirical findings from (Ali and McWhirter, 2006; Lent et al., 2008) reported that societal issues influence career decisions, and these influences can be differentiated by an individual's personal circumstances such as poverty and parent's professional status. Ali and Saunders (2006) argued that students from lower SES backgrounds may have lower self-efficacy beliefs compared to their counterparts from higher SES backgrounds which has the potential influence their career choices. Lent et al. (2001) also argued that "how individuals construe the environment andthemselves also affords the potential for personal agency and a sense of reliance in one's career development".

10.2.2.1.5 SES, Perceived Barriers and Career Choice

In the current study, the mean scores obtained indicated that differences exist in the influence of perceived barriers on career choices in construction among SES categories. The finding shows that students from different SES backgrounds do not perceive that they will experience similar issues that hinder their decisions to undertake careers in construction. Significant differences were found in the responses between the high and medium SES categories.

Findings from previous studies have revealed that higher SES levels reflect a positive effect on the career choices of students and those students from lower SES backgrounds may experience limited opportunities and lack of necessary support required to make career choices in occupations, such as construction (Patton and Creed, 2007). Compared to their counterparts of higher SES, members of lower SES groups have also cited a lack of financial resources as a significant barrier to their career choices (Perrone et al., 2001).

Lent et al. (2001) argued that certain features of a child's environment may shape perceptions of barriers that may serve as significant obstacles to pursuing careers in a particular profession. Lack of information, limited access to education and training opportunities, poor guidance and limited financial resources are identified as barriers predominantly experienced by students from lower SES backgrounds (Fouad and Guillen, 2006). It is quite possible that differential perceptions of the career choice barriers may be due to personal circumstances of students from lower SES students who may receive little career guidance and information compared to those from higher SES backgrounds (Chronister et al., 2003).

10.2.2.1.6 SES, Gender Stereotypes and Career Choice

A statistically significant difference was found among the SES groups for gender stereotypes, therefore lending support to the assumption that SES differences exist for the influence of gender stereotypes on career choices in construction (Bécares and Priest, 2015).

Poor performance and a low participation rate in construction-related professions has been reported for students of minority and lower SES groups, resulting from gender stereotypes, which are accumulated during the socialization process, and is a major determining factor in making career choices (Bécares and Priest, 2015; Hudley and Graham, 2001; Sinclair et al., 2006).

10.2.2.2 SES differences in the influence of Career Choice Predictors for Women

10.2.2.2.1 Women, SES, Self-efficacy and Career Choice

A statistically significant difference was found for the influence of self-efficacy on career among the high and low SES categories. The follow- up revealed differences lie among the low and high SES groups.

Compared to men, limited research has been conducted on SES differences among women in male-dominated and prestigious occupations. However, the findings in the current are supported by (Burlin, 1976; Garrison, 1979; Henderson et al., 1988; Lueptow, 1981; Hannah and Kahn, 1989). Hannah and Kahn (1989) were mostly supportive, as the results reported that women from high SES backgrounds displayed higher self-efficacy beliefs and were more likely to choose male-dominated professions such as construction, compared to women from low SES groups. Betz and Fitzgerald (1987); Zuckerman et al. (1980) reported SES differences between women who chose to undertake careers in male-dominated occupations and further noted that women in male-dominated occupations were from high SES backgrounds were more likely to have highly educated parents who made them more confident in their career choices. Similarly, (Burlin, 1976; Kenkel and Gage, 1983) found low SES girls with less-educated fathers were too traditional in their career choices and were less likely to choose careers in male-dominated environments. An explanation for this was that girls from high SES backgrounds had more access to family resources compared to low SES girls.

10.3 Discussion on the Career Choice Model

The result of the structural model revealed that the general hypotheses which state that self-efficacy, outcome expectations, goal representations, interests, social supports, perceived barriers, gender stereotypes and access to opportunity structures jointly influence career choice in the construction industry could not be rejected. However, the hypothesis that learning experiences influence career choices in construction was rejected.

In subsequent sections, the discussion of the results is presented considering each endogenous variable in the conceptual model with its associated hypotheses.

10.3.1 Self- Efficacy and Career Choice in Construction

Descriptive statistics of the self-efficacy factors were examined using the means and standard deviation on a 5-point Likert scale ranging from "Strongly disagree to Strongly agree" by evaluating the extent of influence of the factors in determining career choice in construction. The indicator variables were ranked using the mean scores.

Results from the structural model revealed that the influence of self-efficacy on career choice was statistically significant, indicating that self-efficacy is a predictor of student's career choice in construction.

High levels of self-efficacy are related to the extent to which a person intends to undertake a career in a particular profession (Kelly, 2009; Peña-Calvo et al., 2016; Restubog et al., 2010; Schutte and Bhullar, 2017). Since self-efficacy deals with feelings of being capable of executing a specific task, (Betz and Hackett, 1981; Betz and Hackett, 1983; Sheu et al., 2010) suggested that self-efficacy constructs are strong predictors of career behaviours. Consistent with the findings in this study (Lent et al., 2007; Kelly, 2009; Huang, 2013; Stamarski and Son Hing, 2015) reported a positive correlation between the confidence of men and women in their abilities to complete necessary job tasks and educational requirements in construction. Students who had low self-efficacy of their abilities to persist in construction were unlikely to undertake such occupations (Kelly, 2009).

Similarly, Foud and Smith (1996) considered the concept of domain-specific self-efficacy by testing self-efficacy as a predictor for intentions and choice in STEM careers and found that, self-efficacy directly influenced intentions, which resulted to a direct impact on career choice. Also, the study found that there was a strong positive correlation between self-efficacy and career decisions (Foud and Smith, 1996).

10.3.2 Outcome Expectations and Career Choice in Construction

The result from the structural model revealed that the relationship between outcome expectations and career choice in construction was statistically significant. These results confirm that people are more likely to undertake careers if they envision a favourable outcome (Serra et al., 2019). Considerable research has shown that career choices in a field, are predicted mainly by expectations of success (Eccles and Wigfield, 2002; Kelly, 2009; Abraham and Barker, 2015). Typically, students choose career paths in which they perceived higher anticipation to perform well (Abraham and Barker, 2015).

Several researchers have identified outcome expectations as the strongest correlate of career choice (Alexander et al., 2011; Kelly, 2009; Ochs and Roessler, 2004). For example, (Ali and McWhirter, 2006; Kelly, 2009; Lent and Brown, 2012; Lent and Brown, 2006; Lent and Brown, 1996; Blanco, 2011) reported that asides from having the strongest relationship with career choice, outcome expectations are a major career choice predictor particular for people who have difficulties making career choices.

10.3.3 Goal Representations and Career Choice in Construction

The relationship between goal representations and career choice in construction was found to be significant.

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Lent et al. (1994, 2014) suggested that people require goals to plan and direct their actions towards pursuing a certain career path. The level of satisfaction or dissatisfaction felt that these actions may strengthen their resolve to undertake a certain career.

Findings from similar cross-sectional studies with engineering students have indicated goals are strongly predictive of career choices related to engineering, and as also hypothesized by SCCT, goals produced a significant direct path to career choice (Lent et al., 2005; Lent and Sheu, 2010; Peña-Calvo et al., 2016). These findings indicated that people who reported the goals required to complete an engineering degree were more likely to choose a career in engineering. Similar conclusions were obtained in (Byars-Winston et al., 2010) with undergraduate engineering students, in so far as the study found goals were predictive of the career choices of the students.

10.3.4 Social Supports and Career Choice in Construction

In the current study, descriptive statistics of social support factors presented in Table 9.9 show the mean score for the variables indicated ranged from 2.83 to 3.90. Support from mother (3.90), support from family members (3.86) and support from peers (3.50) were the highest-ranked variables of social support. Results of the further analysis conducted using SEM show a statistically significant relationship between social supports and career choice. In agreement with literature, this study indicated that that social supports have a direct influence on career choice in construction.

Numerous studies have identified social supports as a major influencing variable on career decisions (Richman et al., 2011; Hunt et al., 2017; Serra et al., 2019). Support from parents and peers as crucial social supports in the occupational aspirations career decision making and persistence of students is well documented in the literature (Byars-Winston et al., 2010; Concannon et al., 2010; Peña-Calvo et al., 2016; Pio et al., 2013). Among the various kinds of social supports, parental support is considered the most significant in the life of a young person (Pio et al., 2013). Research has revealed that career choices are often dependent on the encouragements or discouragements from family members and peers, and that these influences are key factors in the career development and decision-making process (Taasoobshirazi and Carr, 2008; Kelly, 2009; Fouad et al., 2010).

Ali and McWhirter (2006); Byars et al. (2010); Dabney et al. (2013) found that the influence of parents played a key role in the choice persistence of female students in engineering majors. Similarly, Lent et al. (2003) investigated the relationship between social supports and career behaviour and decisions of

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university students in engineering and found that career choices and expectations of girls were influenced by supports from family members.

Women are more likely to depend on support provided by their social networks, as they are highly sensitive to the opinion and perception of others (Fouad et al., 2010; Taasoobshirazi and Carr, 2008; Geman et al., 2015). Leslie et al. (1998) reported that women perceived social supports as essential, suggesting that the provision of frequent guidance from trusted networks of family and peers may impact their career choices. Familial influences are a significant source of motivation and support for women, as studies have suggested that the presence of successful family role models may increase the probability of one's career choice in the same profession (Koul et al., 2011; van Langen et al., 2006).

10.3.5 Interests and Career Choice in Construction

The relationship between interests and career choice in construction was found to be significant. Interests is a state of arousal that motivates a person to sustain and persist in a behaviour (Glynn et al., 2011). People are more likely to choose a career if they find the subject satisfying and interesting (Kelly, 2009).

Intrinsic and extrinsic interests significantly influence the career choices of students. (Morgan et al., 2001; Ryan and Deci, 2000; Sahin et al., 2015) explained that students are motivated to make certain career choices based on external factors and what they personally find desirable and enjoyable.

Perceived interest has been correlated to performance and persistence in a particular domain (Mujtaba and Reiss, 2013). Interests have been found to be a significant motivating factor for persistence in construction education and professions (Pio et al., 2013; Bécares and Priest, 2015; Akinlolu and Haupt, 2019). Lent et al. (2001) examined the role of perceived interest in the career choice process and found that actual or predicted experience of interest has a significant influence on career choice when engaged in career-related activities. Consistent with this assertion, Serra et al. (2019) suggested that interest in construction-related activities was highly related to women's preference for a career in a particular domain more than other factors.

10.3.6 Learning Experiences and Career Choice in Construction

The study examined the relationship between learning experiences and career choice in the construction industry. Results of the structural model revealed no significant direct relationship between learning experiences and career choice. Although, findings from past studies have suggested that career choices of individuals are generally influenced by some parts of their external environment, which they learn from by observation of the demographic features of that profession (Ericksen, 2013; Lent et al., 1994). This is contrary to the anticipated outcome of learning experiences as a determinant of career choice. According

to (Betz, 1989; Ericksen, 2013) the development of relevant information and skills through learning experiences foster a strong career self-efficacy belief which could result in choosing a career in a specific profession. The non-influence of learning experiences on the career choices of this population can be explained in several ways. A likely explanation for the results in this study is that the sample may be socio-economicallyhomogenous, as a majority of the respondents are from low SES categories and may not have positive or access to any learning experiences at all. Betz (1989) argued that an environment with little or no information and experiences about some careers for young adults, and neither encourages nor discouragesparticipation in these careers constitutes a null environment. Further, such an environment with profound poverty due to its impact on learning experiences is unlikely to foster career aspirations and choice.

Another possible explanation can be related to the theory of locus of control (Layton, 1987). Trice et al. (1989) described locus of control as the extent to which a person believes they are in control of their choices and craft their future career plans. Studies argue that career choices are linked to a sense of taking control and taking responsibility for major events life events (Luzzo and Jenkins-Smith, 1998; Abdinoor, 2020). Therefore, people with a high internal locus of control tend to believe career-related occurrences in their lives such as career choices are as a result of their skills, abilities and internal factors that are within their control. It could be that the respondents in the current study perceive that their career choices are rarely influenced by their experiences.

10.3.7 Perceived Barriers and Career Choice in Construction

The result from the structural model revealed that the relationship between perceived barriers and career choice in construction was statistically significant. This finding corresponds with the results reported by previous studies that career barriers interfere with the career choice process (Amaratunga et al., 2006; Oo et al., 2019; English and Le Jeune, 2012; Rosa et al., 2017).

Koch et al. (2009b) found that women perceived significant barriers which prevented them from choosing construction as a career. Numerous studies have hypothesized that the women in construction a range of discrimination which influences their choices to participate in the industry (Chun et al., 2009; Rosa et al., 2017). Previous researchers have reported that the industry's poor image, which is believed to promote adversarial business relations and poor working conditions is a major factor that often discourages from undertaking careers in construction (Loosemore and Waters, 2004; Dainty and Lingard, 2006).

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10.3.8 Gender Stereotypes and Career Choice in Construction

The SEM analysis showed that the relationship between gender stereotypes and the endogenous variable (career choice in construction) was found to be statistically significant. As established in literature, this result demonstrates the powerful role that gender-related stereotypes play in the career choice process of students.

Many studies have confirmed that continued gender stereotyping of the construction profession influences career choices in the industry (Matsui and Onglatco, 1992; Rosa et al., 2017). Social norms and non-conscious biases have been found to reinforce the perception that construction is more appropriate for men than women (Farenga and Joyce, 1999). In a study by Mujtaba and Reiss (2013), it was revealed that these stereotypes became deeply rooted when girls rarely received encouragements to persist in male-dominated professions.

Matsui and Onglatco (1992) found a relationship between gender-role stereotypes, gender-related career stereotypes and career choices. Findings from the study also supported the hypothesis that gender-role socialization has a significant influence on gender-differences in the career development of men and women.

Studies have suggested that for women, judgements are made on how they are expected to present themselves, with many women reporting that the display of feminine traits has resulted in their exclusion from the construction industry (Hackett and Betz, 1995). Wong et al. (2017) reported that competence for

women in construction is attributed to physical characteristics, self-confidence, and aggressiveness. Considering that the entry of women into male-dominated occupations is said to require traits attributed to masculinity, they are influenced by norms of masculinity as they are expected to act like the men to fit in (Buday et al., 2012; Lent and Brown, 2012; Rios et al., 2017). Gender stereotypes have been found to contribute to the gender imbalance in the industry, which consequently has made construction an undesirable choice for many women (Navarro-Astor et al., 2017). Misconceptions about construction and influence ofsocial and environmental factors have led women to perceive negative stereotypes regarding their abilities to perform in the industry (Charity-Leeke, 2012).

10.3.9 Access to Opportunity Structures and Career Choice in Construction

Results of the SEM analysis showed a statistically significant relationship between access to opportunity structures and career choice. In agreement with literature, this study indicated that access to opportunity structures has a direct influence on career choice in construction. Consistent with this finding, Lent et al. (1996) noted a direct relationship between individual career choice and the nature of opportunity structures.

Studies have identified access to opportunity structures as a facilitator of career choice and development (Furlong et al., 1996; Lent and Brown, 2006; Auyeung and Sands, 1997). Özbilgin et al. (2005) reported that opportunity structures focus on resources and hardships and is an important construct which avails and limits career choices.

The provision of opportunities for education and training is an enabler for individuals to achieve career goals, which may counteract the negative impact of perceived barriers to their career choices (Furlong et al., 1996). Furlong et al. (1996) argued that because few adolescents make career choices to which they aspire, an adequate explanation of career choice should begin with examining the distribution of opportunities within labour markets and social groups.

10.4 Extent to which the Hypothesized Career Choice Model Fit the Sample

The findings of the structural equation model are that nine hypothesized factors have a direct relationship with career choice while one factor was excluded. The AMOS outputs showed that the values of RMSEA, SRMSR, TLI, RFI, CFI, PNFI and PCFI met the cut-off criteria for goodness of fit indices. Parameter estimates were also found to be reasonable and statistically significant. Therefore, the general hypothesis that career choice in construction in South Africa is directly related to the influence of the exogenous variables cannot be rejected. These findings are consistent with findings of (Blanco, 2011; Lent et al., 2002; Lent et al., 2003; Lent and Sheu, 2010; Peña-Calvo et al., 2016; Lent and Brown, 2006; Fouad et al., 2016;

Lent et al., 2014), suggesting that the predictors of career choice are a multi-dimensional construct. The hypothesized relationships between the retained exogenous variables and the endogenous variable werefound to be statistically significant. The relationship between learning experiences and career choice was found to be the non- significant.

10.5 Delphi and Survey Findings

The purpose of the Delphi study was to obtain expert opinion in determining the factors that influence career choice in the South African construction industry. The Delphi sought to achieve consensus through two rounds of study. The opinion of the experts was used to refine the questions presented in the survey. The survey was used to validate the hypothesized model developed based on the review of literature and Delphi process

The validated model is a nine-factor model (see Figure 9.3) comprising self-efficacy, outcome expectations, goal representations, interests, social supports, gender Stereotypes, perceived barriers-discriminatory factors, perceived barriers -barriers to success and progression and access to opportunity structures as determinants of career choice in construction South Africa.

Overall, and in support of (Ali and McWhirter, 2006; Betz and Hackett, 2006; Eccles, 1987; Lent et al., 1994; Lent et al., 2002; Peña-Calvo et al., 2016), this study confirms the importance of applying a gender analysis to the SCCT constructs to examine the career choices and persistence of students. Findings from the study support the applicability of SCCT to identify and examine the key social and cultural factors that influence gender dynamics and career choices in construction in the South African context.

10.6 Chapter Summary

Results from the questionnaire survey based on the descriptive and inferential statistics presented in the previous chapter were discussed in this chapter. The demographic information of the participants was presented to justify that the sample, despite being conveniently selected, is sufficient for making a meaningful inference. The results from the exploratory factor analysis and SEM were used to discuss the validated model.

The findings of the structural model were discussed and was supported by the test of hypothesis, which indicated both significant and non-significant relationships of the variables of the validated model. This discussion was done based on findings from the literature.

The next chapter presents a summary of the findings of the study and provides recommendations for future research.

CHAPTER ELEVEN

CONCLUSIONS AND RECOMMENDATIONS

11.1 Introduction

The study sought to develop a career choice model for the construction industry in South Africa through the identification of factors that influence career choices in construction. Therefore, to achieve this objective, a mixed-method approach consisting of an extensive review of extant literature, Delphi study and survey was adopted. The data obtained from the Delphi study was analyzed using Excel Spreadsheet and content analysis while the SPSS v27 and AMOS software were used to analyze the descriptive and inferential statistics and for the SEM. Findings from the survey were used to validate the results of the Delphi study.

This chapter articulates the research objectives and summarizes the key findings of the study. Conclusions are presented in accordance with the findings, and limitations of the study are addressed. Recommendations for future research are also highlighted.

11.2 Review of Research Objectives

11.2.1 Objective One

The first objective was to identify the key factors that influence the career choices of men and women in the construction industry. This objective was achieved by first undertaking an extensive literature review to identify the factors that influence education and career choice options in construction in South Africa, followed by a review of relevant career choice theories and models.

This is because although the issue of career choices in construction exist in South Africa and numerous studies have focused on factors affecting career choices and their influences, very few studies have attempted to consider predictors of career choices from a theoretical perspective. The study applied the Socio-Cognitive Career Theory (SCCT) to understand the career choices of students in construction-related disciplines.

Therefore, the current study extended the evaluation of career choice predictors to include the SCCT constructs and to incorporate person and contextual variables such as gender, ethnicity, socio-economic status, gender stereotypes, perceived barriers and access to opportunity structures.

From the literature review, nine predictors and 68 elements were identified and presented to the Delphi panellists. The panel of experts were required to draw from their experiences, which is not limited to practice in the construction industry, to identify the major factors that predict career choices in the South African Construction industry. The Delphi results indicated that 67 elements were perceived to have significant importance and impact on career choice in the South African Construction industry.

The nine predictors under which the identified 67 elements were categorized were;

- Self-Efficacy
- Outcome expectations
- Goal representations
- Learning experiences
- Interests
- Social Supports
- Gender Stereotypes
- Perceived Barriers
- Access to opportunity structures

All elements categorized under the predictors achieved consensus and were retained. Under the person and contextual factors, ethnicity was excluded, as the panel of experts perceive it has insignificant importance and impact on career choice in the South African Construction industry.

Likewise, when evaluation of the extent of influence of the factors on career choice was performed, the study established that outcome expectations; perceived barriers; goal representations, social supports and gender stereotypes were ranked highest.

Following refinement of the career choice predictors, a conceptual model was developed.

11.2.2 Objective Two

The second objective was to determine whether there are gender differences in the factors that influence career choices in the construction industry. To achieve this objective, a literature review was undertaken to achieve this objective, starting with a review of literature on gender roles and sociocultural influences regarding women's career decisions and opportunities followed by the Mann-Whitney U test, to test for significant differences between men and women on the career choice predictors.

Three of the nine predictor constructs (social supports, perceived barriers and gender stereotypes) were found to have significant differences between men and women.

11.2.3 Objective Three

The third objective was to determine whether differences exist among socio-economic categories in the factors that influence career choices in the construction industry. The study predicted the influence of SES on career choice, in terms of differences in mean scores for each of the independent variables and as a moderator variable, differently influencing and predicting career choice in men and women from different SES backgrounds.

While the group means for self-efficacy and perceived barriers differed for high and medium SES cohorts, differences were detected between the three SES groups on the gender stereotypes variable.

11.2.4 Objective Four

The fourth objective was to determine whether differences exist among women from different socio-economic categories in the factors that influence career choices in the construction industry. The Kruskal-Wallis test was conducted, to test for significant differences between the three SES categories on the career choice predictors. Self-efficacy was found to have significant differences between women from high and low SES categories.

11.2.5 Objective Five

The fifth objective of the study was to develop a career choice model for the South African Construction industry. This objective led to a review of relevant theories and models on career choice. Relevant constructs, conceptual and theoretical frameworks on career choice were reviewed. Although numerous studies aimed to examine determinants of career choice in construction in South African may not fully capture the dynamics of career choices for individuals aspiring to undertake careers in construction, this study applied relevant career choice theories and concepts to a peculiar and dynamic context, such as the construction sector in South Africa.

This led to the development of the main constructs of the conceptual model. The hypothesized conceptual model was a nine-construct model framed by gaps in existing literature concerning career choice for the current study. The identified constructs were Self-efficacy (SEF), Outcome expectations (OTX), Goal representations (GRP), Social Supports (SSP), Interests (INT), Learning experiences (LEX), Gender Stereotypes (GST), Perceived Barriers (PRB) and Access to opportunity structures (AOP). After the structural equation model, the validated model is a nine-factor where learning experiences was excluded, as it was considered non-significant with career choice, and perceived barriers were divided into two types; barriers to success and progression and discriminatory barriers.

The IBM AMOS v27 software was the structural equation modelling software used to model the structural model after testing model fit of the measurement model.

11.2.6 Objective Six

The last objective was to determine the goodness of fit of the hypothesized career choice model. The advantage of using SEM is that it not only tests the relationships between the variables but also tests the structural relationships of the entire model, therefore justifying the acceptability of the model. The study established from the evaluation of the model fit statistics that the structural model was of good fit and that the model fits the sample data adequately. Further, the model fit statistics obtained from the measurement models indicated that the constructs included in the structural model qualify for inclusion. Moreover, the covariance of the constructs in the model with the exogenous were found to be statistically significant. This revealed that the career choice model for the South African Construction industry developed through a review of extant literature, a Delphi study and questionnaire survey is validated. Likewise, the study justifies that the identified factors are predictors of the career choices in construction-related professions, i.e., self-efficacy, social supports, goal representations, interests, perceived discriminatory barriers, outcome expectations, perceived barriers to success and progression, gender stereotypes and access to opportunity structures.

11.3 Contributions and Value of the Research

The ultimate contribution of this study is the development of a neutral career choice model for the South African construction industry that would provide a comprehensive understanding of career choice and development. Since the study focused on choice rather than avoidance, it is believed that the nine-factor model provides a more neutral and positive perspective on women's career choice behaviour, as compared to many other studies on gender differences in academic and career choice patterns.

Through SEM, the model confirms that career choice in construction in South Africa is determined by a nine-factor model, which comprises self-efficacy, social supports, goal representations, interests, perceived discriminatory barriers, outcome expectations, perceived barriers to success and progression, gender stereotypes and access to opportunity structures. The study asserts that these factors, including personal inputs such as, for example, gender and socio-economic background will significantly predict career choices and have diverse influences on career choices in construction.

Further, there are theoretical, methodological, and practical dimensions to the contribution of the study.

11.3.1 Theoretical Contributions and Value

Results from the SEM revealed that career choice predictors in the construction profession are a nine-factor model. The researcher is yet to find any evidence of a similar study conducted within the South African context. Further, there is limited theoretical information on the factors that will most significantly determine career choice in construction in a diverse nation such as South Africa. Findings in this study also justify the theory that career choice is a multi-factor construct. The current study adopted a mixed-method approach

involving a literature review, a Delphi method and a structural equation modelling of constructs obtained in a questionnaire survey. There is no evidence that an existing study has adopted a combination of both approaches to examine career choice in the construction industry in South Africa.

11.3.2 Methodological Contributions and Value

Studies in construction management and general career development research have adopted only the qualitative research approach or used univariate and bivariate statistics such as regression analysis, MANOVA and ANOVA. Very few studies in international and national literature have used SEM to study career choice development. Some studies have conducted exploratory reviews (Ceci et al., 2009; Eccles, 1987; Koch et al., 2009a; Lynch et al., 2018; Shumba and Naong, 2012), others have used descriptive and inferential statistics (Jamenya et al.; Kelly, 2009; Peña-Calvo et al., 2016; Pio et al., 2013; Rosa et al., 2017; Hunt et al., 2017). This study contributes methodologically by using SEM, which is a more comprehensive and appropriate approach to determine the causality and strength of relationships between the constructs in the proposed model. The SEM was adopted to study the factors that influence career choiceand the evaluation of the significant effect of each factor. The questionnaire survey developed from existing literature demonstrated reasonable reliability and therefore, can be adopted in future studies to validate theresults of the current study or be applied in another context.

11.4 Implications for Practice

Findings of the current study have meaningful implication for practice in career choice and development in male-dominated environments and occupations. Overall, the most significant of the present study is that results from the study suggest clear pathways to making a career choice in construction, for people who want to enter and remain in the construction work. The SCCT (Lent et al., 1994) was applied in this study and tested on the study's sample. Results were consistent with the SCCT relevant suppositions. The generalizability and applicability of SCCT in the South African context and culture is supported. The SCCT's incorporation of important academic and career development factors such as person inputs and contextual factors makes it a sound theoretical framework to examine women's career choices in non-traditional professions such as construction.

Although SCCT has been applied to study the career choices and persistence in a number of occupations, not much empirical support exists for the application of the theory to career choice in construction, particular women in the construction profession (Alexander et al., 2011; Ali and McWhirter, 2006; Chronister et al., 2003; Daniels, 2012; Kelly, 2009; Lent et al., 2003; Patton and Creed, 2007; Serra et al., 2019; Tokar et al., 2007; Peña-Calvo et al., 2016; Wang and Wickersham, 2018). An increasing amount of empirical support for SCCT's postulated influence of self-efficacy and outcome expectations on career choice has also accumulated (Abdinoor, 2020; Everhart et al., 1998; Schaub and Tokar, 2005; Williams and

Subich, 2006).

The SCCT career choice model was developed by Lent et al. (1994) to identify some of the differential issues facing academic and career development. In support of this philosophy, some of the implications stated in this study may be useful to academia and industry.

Outcome expectations was found to be the most salient predictor with regards to predicting career choice in construction. Guidance from experienced and satisfied individuals should be provided to students seeking to make career decisions to help them establish clearer perceptions of their career expectations with regards to the physical, social, and self-evaluative outcomes. This is particularly relevant for women who may be interested in undertaking non-tradition careers such as construction given that differences in their socialization process may have diminished their consideration and motivation to pursue these careers.

Further implications can be drawn from the study findings in relation to the proposal of Lent et al. (1994) for mentorship and training programs for the support of minority groups such as women and people from lower SES backgrounds who may be interested in pursuing non-traditional professions. Since SCCT encompasses variables such as gender along with contextual influences as they relate to the career choice and development process, it incorporates a theoretical perspective that has potential for practical applications within training and internship programs. To reinforce career self-efficacy beliefs, activities related to sources of self-efficacy such as hands-on experiences resulting in greater mastery could be included to apprentice and training programs thereby strengthening interests and solidifying commitments to choose goals and actions. Mentoring programs involving role models in the industry could be developed to provide verbal persuasion.

Addressing the issue of gender role stereotypes and the socialization process within some non-traditional environments could serve to empower women to pursue non-traditional professions more confidently and with a better understanding of the barriers to participation.

11.5 Limitations

Although this study sampled men and women from diverse ethnic and socio-economic backgrounds in the KwaZulu-Natal province of South Africa, a generalization of the findings to the entire South African population needs caution. Further, because the sample in this study was one of convenience, some limitations apply. Convenience sampling is a non-probability sampling technique that involves selecting participants who are closest and easier to access.

Since the present sample may be described as unique due to the inclusion of only men and women enrolled in construction-related programmes at two universities, it is uncertain whether these results may not adequately represent the population of interest and be generalized to a general sample of students in other

universities.

11.6 Recommendations for Further Research

Although, much needed within career development literature, there is a dearth of research on the career choice and influencing factors in male-dominated and among diverse groups. This study presented an in-depth examination of the career choice development for a subset of these groups. This study also represents a concrete attempt to examine their career choices from an existing theoretical perspective (SCCT), and the results reveal the applicability of the SCCT to the population in this study. Further, findings from this study suggest the proposed career choice model could give insight into how members of this population take career decisions and persist in their academic endeavors.

A potential area for future research may be to conduct studies applying the SCCT constructs to investigate the career choice behaviour of men and women in traditionally feminine occupations such as nursing.

Most of the extant literature on career choice have adopted a qualitative or conceptual approach. Consequently, there were no existing validated scales for some of the constructs, such as access to opportunity structures and learning experiences, tested in the study. Additional variables such as personality, career aspirations, sex role and biological sex should be considered for inclusion in the model and tested to further investigate career choice predictors in future research. Contextual factors such as women's expectations for marriage may also lend a better understanding of their career choices and persistence.

Mellström (2009) proposed a study of the intersectionality between gender, technology and factors such as sex, class and market demand to examine the determinants of women's career choices in non-Western contexts. Undoubtedly, future research can be conducted on an intersectional analysis of diverse groups. Nevertheless, the current study is one of the first to apply SCCT – a major career theory in the South African context. It is anticipated that the current study will motivate further cross-cultural studies in this area.

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APPENDICES

Appendix 1 – Invitation Letter to Participate in Delphi Study

March 2020

Dear Sir/Madam

RE: EXPERT(S) TO PARTICIPATE IN DELPHI STUDY

I am currently studying towards a PhD in Construction Management at the School of Engineering, University of KwaZulu-Natal, South Africa under the supervision of Prof Theo C. Haupt on the topic *Applying the Socio- Cognitive Career Theory to the influence of socio-cultural factors on women's career choice behaviour in the construction industry.*

The aim of the study is to develop a model that provides interventions and possible strategies to influence policies for the enhancement, recruitment and retention of women from diverse groups in the construction industry in South Africa.

The first stage of the research uses the Delphi technique which utilises a consensus building approach among individuals such as yourself with outstanding reputation and advanced knowledge in the construction industry and built environment.

I invite you to participate in this study by serving on my panel of experts and look forward to your invaluable contribution to the study. Your participation is totally voluntary, and you are assured of complete confidentiality. I will avail a summary of the results from the study, should you wish to be informed of the research findings.

Thank you and Kind Regards,

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Appendix 2 – Delphi Instructions and Questionnaire (Round 1)
DELPHI SURVEY (ROUND 1)

Research Title: Applying the Socio- Cognitive Career Theory to the influence of socio-cultural factors on women's career choice behaviour in the construction industry.

Dear Participant,

Thank you for accepting to serve on the Delphi panel for this study. Your participation is greatly appreciated.

Please return the completed questionnaire via email to akinlolumariam@gmail.com by 22nd April, 2020

This is the first round of the Delphi study and will take approximately 20 - 25 minutes. Subsequent rounds will require significantly lesser time to complete. The questionnaire has two sections. **Section A** deals with identification of key factors and other influences on career choice behaviour and **Section B** is concerned with ranking key factors that influence career choice behaviour in construction in South Africa.

SECTION A: IDENTIFICATION OF KEY FACTORS AND INFLUENCES ON CONSTRUCTION CAREER CHOICE BEHAVIOUR IN SOUTH AFRICA

INSTRUCTIONS: Please rate your level agreement with the following statements based on your experience and judgement on a scale of 1 to 10 using a point scale as the example shown below.

Scale of Importance

Unimportant… .... Very important									
0-10%	11-20%	21-30%	31-40%	41-50%	51-60%	61-70%	71-80%	81-90%	91-100%
1	2	3	4	5	6	7	8	9	10
				X					

How important are the following factors in influencing construction career choice behaviour?

		(Importance scale)									
1.	**Social Cognitive Factors**										
		1	2	3	4	5	6	7	8	9	10
1.1	Self- Efficacy										
1.2	Outcome Expectations										
1.3	Goal Representations										
1.4	Learning Experiences										
1.5	Social Supports										
1.6	Interests										
2.	**Person and Contextual Factors**										
2.1	Gender										
2.2	Ethnicity										
2.3	Socio-economic status										
2.4	Gender role stereotypes										
2.5	Access to opportunity structures										
2.6	Barriers										
2.7	Access to support structures										

		(Importance scale)									
		1	2	3	4	5	6	7	8	9	10
3.	**Self-Efficacy**										
3.1	Accurate Self-Appraisal (Identify resources, constraints, and personal characteristics that might influence career choices)										
3.2	Gathering Occupational Information (collect information on training and employment opportunities and manage them effectively)										
3.3	Goal Selection (develop lists of priorities on the effective actions to successfully manage their professional development)										
3.4	Planning (plan the steps needed to realize a vocational project)										
3.5	Problem Solving (address difficulties related to their career)										
4.	**Outcome Expectations**										
	Physical outcomes										
4.1	Favourable income/wages										
4.2	Job opportunities										
4.3	Promotion and professional development										
4.4	Favourable work conditions										
4.5	Job security										
4.6	Stable career and guaranteed employment										
	Social outcomes										
4.7	Family approval of career choice										
4.8	Respected image and status in the society										
	Self-Evaluative outcomes										
4.9	Satisfying lifestyle										
4.10	Happy future										
4.11	Job satisfaction										
4.12	Achievement of career goals										
4.13	Use of skills and talents										
4.14	Attainment of career success										
5.	**Goal Representations**										
	Intrinsic Goals										
5.1	Technical/functional skills										
5.2	Opportunities for training and development										
5.3	Opportunities for interesting work										
	Extrinsic Goals										
5.4	Financial Success										
5.5	Leadership position										
5.6	High social status										
5.7	Career success										
6.	**Social Supports**										
6.1	Parental Support										
6.2	Teacher Support										
6.3	Family Support										
6.4	Peer-group Support										
6.5	Mother's support										
6.6	Father's support										
6.7	Support from significant other										

		(Importance scale)										
		1	2	3	4	5	6	7	8	9	10
7.	**Learning Experiences**											
7.1	Verbal encouragements											
7.2	Vicarious learning											
7.3	Emotional arousal											
7.4	Performance accomplishment											
8.	**Interests**											
8.1	Personal interest											
8.2	Financial interest											
8.3	Social interests											
9.	**Perceived Barriers**											
9.1	Discriminatory attitudes											
9.2	Work-life conflict											
9.3	Wage gap											
9.4	Masculine workplace culture											
9.5	Lack of access to opportunities											
9.6	Challenges in career progression											
9.7	Poor working conditions											
9.8	Long work hours											
9.9	Glass ceiling											
9.10	Gender stereotypes											
9.11	Lack of knowledge and career information											
9.12	Lack of role models											
9.13	Lack of education and training											
9.14	Lack of opportunities											

SECTION B: RANKING OF KEY FACTORS THAT INFLUENCE CONSTRUCTION CAREER CHOICE BEHAVIOUR

INSTRUCTIONS: Please rate your level agreement with the following statements based on your experience and judgement on a scale of 1 to 10 using a point scale as the example shown below.

No impact .... Very high impact									
0-10%	11-20%	21-30%	31-40%	41-50%	51-60%	61-70%	71-80%	81-90%	91-100%
1	2	3	4	5	6	7	8	9	10
				X					

What impact will each of the following social cognitive factors have on construction career choice behaviour?

		(Impact scale)									
1.	**Social Cognitive Factors**										
		1	2	3	4	5	6	7	8	9	10
1.1	Self- Efficacy										
1.2	Outcome Expectations										
1.3	Goal Representations										
1.4	Learning Experiences										
1.5	Social Supports										
1.6	Interests										

		(Impact Scale)									
		1	2	3	4	5	6	7	8	9	10
2.	**Person and Contextual Factors**										
2.1	Gender										
2.2	Ethnicity										
2.3	Cultural Background										
2.4	Gender role stereotypes										
2.5	Access to opportunity structures										
2.6	Barriers										
2.7	Access to support structures										
3.	**Self-Efficacy**										
3.1	Accurate Self-Appraisal (Identify resources, constraints, and personal characteristics that might influence career choices)										
3.2	Gathering Occupational Information (collect information on training and employment opportunities and manage them effectively)										
3.3	Goal Selection (develop lists of priorities on the effective actions to successfully manage their professional development)										
3.4	Planning (plan the steps needed to realize a vocational project)										
3.5	Problem Solving (address difficulties related to their career)										
4.	**Outcome Expectations**										
	Physical outcomes										
4.1	Favourable income/wages										
4.2	Job opportunities										
4.3	Promotion and professional development										
4.4	Favourable work conditions										
4.5	Job security										
4.6	Stable career and guaranteed employment										
	Social outcomes										
4.7	Family approval of career choice										
4.8	Respected image and status in the society										
	Self-Evaluative outcomes										
4.9	Satisfying lifestyle										
4.10	Happy future										
4.11	Job satisfaction										
4.12	Achievement of career goals										
4.13	Use of skills and talents										
4.14	Attainment of career success										
5.	**Goal Representations**										
	Intrinsic Goals										
5.1	Technical/functional skills										
5.2	Opportunities for training and development										
5.3	Opportunities for interesting work										

		(Impact scale)									
		1	2	3	4	5	6	7	8	9	10
	Extrinsic Goals										
5.4	Financial Success										
5.5	Leadership position										
5.6	High social status										
5.7	Career success										
6.	**Social Supports**										
6.1	Parental Support										
6.2	Teacher Support										
6.3	Family Support										
6.4	Peer-group Support										
6.5	Mother's support										
6.6	Father's support										
6.7	Support from significant other										
7.	**Learning Experiences**										
7.1	Verbal encouragements										
7.2	Vicarious learning										
7.3	Emotional arousal										
7.4	Performance accomplishment										
8.	**Interests**										
8.1	Personal interest										
8.2	Financial interest										
8.3	Social interests										
9.	**Perceived Barriers**										
9.1	Discriminatory attitudes										
9.2	Work-life conflict										
9.3	Wage gap										
9.4	Masculine workplace culture										
9.5	Lack of access to opportunities										
9.6	Challenges in career progression										
9.7	Poor working conditions										
9.8	Long work hours										
9.9	Glass ceiling										
9.10	Gender stereotypes										
9.11	Lack of knowledge and career information										
9.12	Lack of role models										
9.13	Lack of education and training										
9.14	Lack of opportunities										

Appendix 3 – Delphi Instructions and Questionnaire (Round 2)
DELPHI SURVEY (ROUND 2)

Research Title: Applying the Socio- Cognitive Career Theory to the influence of socio-cultural factors on women's career choice behaviour in the construction industry.

Dear Participant,

Thank you again for accepting to serve on the Delphi panel of this study. We recognise that the survey requires a significant amount of time to complete thoughtfully. We appreciate your time and effort expended in the Round 1 of the study. We are grateful for your contribution.

The purpose of the Round 2 Delphi is to give you an opportunity to change your response, if desired, while presenting you with the median group response for each question.

Please return the completed questionnaire via email to akinlolumariam@gmail.com by 3rd June, 2020

INSTRUCTIONS
1. Your answers to Round 1 Delphi are presented in yellow colour. The median represents the current group consensus.

2. Please take **ONE** of these actions for each category:
• **Accept** the group median by leaving the sections entirely unchanged.
• **Maintain** your earlier choices by placing "X" in the **yellow** coloured boxes.
• **Indicate** a new response by placing "X" in your new choice option.

3. Where your final options vary significantly from the group's median, kindly state your reason in the comments section.

SECTION A: BACKGROUND INFORMATION

1. Kindly indicate your highest qualification

Doctorate Degree	
Masters degree	
Bachelors Degree	

2. Kindly indicate your field of specialization ………………………………….

3. Kindly indicate your professional qualification…………………………………

4. Kindly indicate your years of experience……………………………………...

SECTION B: IDENTIFICATION OF KEY FACTORS AND INFLUENCES ON CONSTRUCTION CAREER CHOICE BEHAVIOUR IN SOUTH AFRICA

INSTRUCTIONS: Please rate your level agreement with the following statements based on your experience and judgement on a scale of 1 to 10 using a point scale as the example shown below.

Scale of Importance

Unimportant… .... Very important									
0-10%	11-20%	21-30%	31-40%	41-50%	51-60%	61-70%	71-80%	81-90%	91-100%
1	2	3	4	5	6	7	8	9	10
				X					

How important are the following factors in influencing construction career choice behaviour?

	(Importance scale)	1	2	3	4	5	6	7	8	9	10	Mean
10.	**Social Cognitive Factors**											
1.1	Self- Efficacy	X										8
1.2	Outcome Expectations									X		8
1.3	Goal Representations									X		9
1.4	Learning Experiences							X				8
1.5	Social Supports								X			7
1.6	Interests										X	10
11.	**Person and Contextual Factors**											
2.1	Gender								X			7
2.2	Ethnicity					X						5
2.3	Cultural Background							X				7
2.4	Gender role stereotypes									X		7
2.5	Access to opportunity structures									X		10
2.6	Barriers					X						7
2.7	Access to support structures								X			8
12.	**Self-Efficacy**											
3.1	Accurate Self-Appraisal (Identify resources, constraints, and personal characteristics that might influence career choices)								X			8
3.2	Gathering Occupational Information (collect information on training and employment opportunities and manage them effectively)							X				8
3.3	Goal Selection (develop lists of priorities on the effective actions to successfully manage their professional development)						X					8
3.4	Planning (plan the steps needed to realize a vocational project)							X				8
3.5	Problem Solving (address difficulties related to their career)								X			8

13.	Outcome Expectations	1	2	3	4	5	6	7	8	9	10	Mean
	Physical outcomes											
4.1	Favourable income/wages								■			9
4.2	Job opportunities							■				9
4.3	Promotion and professional development						■					8
4.4	Favourable work conditions							■				8
4.5	Job security								■			9
4.6	Stable career and guaranteed employment							■				9
	Social outcomes											
4.7	Family approval of career choice					■						6
4.8	Respected image and status in the society						■					8
	Self-Evaluative outcomes											
4.9	Satisfying lifestyle							■				8
4.10	Happy future								■			9
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Mean**
4.11	Job satisfaction									■		9
4.12	Achievement of career goals								■			9
4.13	Use of skills and talents								■			9
4.14	Attainment of career success							■				9

14.	Goal Representations	1	2	3	4	5	6	7	8	9	10	Mean
	Intrinsic Goals											
5.1	Technical/functional skills								■			8
5.2	Opportunities for training and development								■			8
5.3	Opportunities for interesting work								■			9
	Extrinsic Goals											
5.4	Financial Success									■		8
5.5	Leadership position										■	8
5.6	High social status									■		8
5.7	Career success								■			9

15.	Social Supports	1	2	3	4	5	6	7	8	9	10	Mean
6.1	Parental Support								■			8
6.2	Teacher Support									■		8
6.3	Family Support									■		8
6.4	Peer-group Support										■	8
6.5	Mother's support							■				8
6.6	Father's support							■				8
6.7	Support from significant other					■						7

16.	Learning Experiences	1	2	3	4	5	6	7	8	9	10	Mean
7.1	Verbal encouragements								■			8
7.2	Vicarious learning									■		8
7.3	Emotional arousal								■			8
7.4	Performance accomplishment							■				8

17.	Interests	1	2	3	4	5	6	7	8	9	10	Mean
8.1	Personal interest									■		10
8.2	Financial interest								■			9
8.3	Social interests								■			8

18.	Perceived Barriers	1	2	3	4	5	6	7	8	9	10	Mean
9.1	Discriminatory attitudes						■					9
9.2	Work-life conflict							■				9
9.3	Wage gap								■			8
9.4	Masculine workplace culture									■		9
9.5	Lack of access to opportunities						■					8
9.6	Challenges in career progression					■						8
9.7	Poor working conditions			■								7
9.8	Long work hours							■				8
9.9	Glass ceiling								■			8
9.10	Gender stereotypes									■		9
9.11	Lack of knowledge and career information							■				7
9.12	Lack of role models							■				7

| 9.13 | Lack of education and training | | | | | | | | ▨ | | | 8 |
| 9.14 | Lack of opportunities | | | | ▨ | | | | | | | 8 |

Comments:…………………………………………………………………………………………
………………………………………………………………………………………………………
………………………………………………………………………………………………………
………………………………………………………………………………………………………
………………………………………………………………………………………

SECTION C: RANKING OF KEY FACTORS THAT INFLUENCE CONSTRUCTION CAREER CHOICE BEHAVIOUR

INSTRUCTIONS: Please rate your level agreement with the following statements based on your experience and judgement on a scale of 1 to 10 using a point scale as the example shown below.

No impact .... Very high impact									
0-10%	11-20%	21-30%	31-40%	41-50%	51-60%	61-70%	71-80%	81-90%	91-100%
1	2	3	4	5	6	7	8	9	10
				X					

What impact will each of the following social cognitive factors have on construction career choice behaviour?

		(Impact scale)										
10.		**Social Cognitive Factors**										
		1	2	3	4	5	6	7	8	9	10	Mean
1.1	Self- Efficacy							▨				8
1.2	Outcome Expectations								▨			9
1.3	Goal Representations								▨			8
1.4	Learning Experiences							▨				8
1.5	Social Supports							▨				9
1.6	Interests									▨		10
11.		**Person and Contextual Factors**										
2.1	Gender		▨									7
2.2	Ethnicity			▨								6
2.3	Cultural Background				▨							7
2.4	Gender role stereotypes					▨						8
2.5	Access to opportunity structures							▨				8
2.6	Barriers						▨					8
2.7	Access to support structures					▨						9

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12.									**Self-Efficacy**					
3.1	Accurate Self-Appraisal (Identify resources, constraints, and personal characteristics that might influence career choices)										�				8
3.2	Gathering Occupational Information (collect information on training and employment opportunities and manage them effectively)														8
3.3	Goal Selection (develop lists of priorities on the effective actions to successfully manage their professional development)														8
3.4	Planning (plan the steps needed to realize a vocational project)														8
3.5	Problem Solving (address difficulties related to their career)														8
13.	**Outcome Expectations**														
	Physical outcomes														
4.1	Favourable income/wages														9
4.2	Job opportunities														9
4.3	Promotion and professional development														9
4.4	Favourable work conditions														9
4.5	Job security														9
4.6	Stable career and guaranteed employment														9
	Social outcomes														
4.7	Family approval of career choice														7
4.8	Respected image and status in the society														8
	Self-Evaluative outcomes														
4.9	Satisfying lifestyle														9
4.10	Happy future														9
4.11	Job satisfaction														9
4.12	Achievement of career goals														9
4.13	Use of skills and talents														9
4.14	Attainment of career success														9
14.									**Goal Representations**						
	Intrinsic Goals														
5.1	Technical/functional skills														8
5.2	Opportunities for training and development														9
5.3	Opportunities for interesting work														8
	Extrinsic Goals														
5.4	Financial Success														9
5.5	Leadership position														8
5.6	High social status														8
5.7	Career success														9
15.	**Social Supports**														
6.1	Parental Support														8
6.2	Teacher Support														8
6.3	Family Support														8
6.4	Peer-group Support														8
6.5	Mother's support														8
6.6	Father's support														8
6.7	Support from significant other														8
16.	**Learning Experiences**														
7.1	Verbal encouragements														9
7.2	Vicarious learning														8
7.3	Emotional arousal														8
7.4	Performance accomplishment														9

17.	**Interests**											
8.1	Personal interest										▉	10
8.2	Financial interest									▉		9
8.3	Social interests									▉		8
18.	**Perceived Barriers**											
9.1	Discriminatory attitudes			▉								9
9.2	Work-life conflict										▉	8
9.3	Wage gap									▉		8
9.4	Masculine workplace culture										▉	8
9.5	Lack of access to opportunities								▉			8
9.6	Challenges in career progression							▉				8
9.7	Poor working conditions						▉					8
9.8	Long work hours					▉						7
9.9	Glass ceiling						▉					7
9.10	Gender stereotypes					▉						8
9.11	Lack of knowledge and career information								▉			8
9.12	Lack of role models									▉		8
9.13	Lack of education and training									▉		8
9.14	Lack of opportunities								▉			8

Comments:………………………………………………………………………………………

…………………………………………………………………………………………………

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Appendix 4- Research Introduction Letter for Respondents

University of KwaZulu-Natal
School of Engineering
Department of Construction Studies
Howard College Campus
Durban 4041
South Africa

August 2019

To whom it may concern

Re: Questionnaire for a PhD Study on the influence of socio-cultural factors on the under-representation of women in the Construction Industry in South Africa

We are conducting a PhD research study which seeks to examine the social and cultural factors that hinder women's career choices in construction and develop a framework that provides interventions and possible strategies to influence policies for the enhancement, recruitment and retention of women from diverse groups in South Africa.

Being a student enrolled in an undergraduate program, you are invited to participate in this research study by completing the attached 7 paged questionnaire which only requires you to check an appropriate box after reading the accompanying statement. The exercise takes only between 10 to 20 minutes to complete. Your participation is vital to the success of this study and we cordially request that you treat the exercise with the importance it deserves.

Responding to the questionnaire is completely voluntary and you are guaranteed complete confidentiality in the treatment of your responses; you have the right not to respond to any questions which you may deem inappropriate and you are assured that the information collected will be used for academic purposes only. Should you wish to know the findings of the research, note that publications arising from the study will be sent to the contact person at your organisation for onward circulation to all participants.

Please check the box below to indicate that; a), you have read the above information; b), you are over 18 years old and; c), you voluntarily agree to participate. ☐ I Agree. If you do not agree, please do not fill in the questionnaire.

Thanking you in advance,

Miss Mariam Akinlolu
PhD Scholar
Mobile: +27840503384
E-mail: akinlolumariam@gmail.com

Prof. Theo C. Haupt
Professor, Construction Studies
Mobile: +27 82 686-3457
E-mail: pinnacle.haupt@gmail.com and theo.haupt@mut.ac.za

Humanities and Social Sciences Research Ethics Committee
Research Ethics Office
Govan Mbeki Building
Westville Campus
Phone: +2731 260 4557
Fax: +2713 260 4609
E-mail: mohunp@ukzn.ac.za

Appendix 5- Research Measurement Instrument
Career Choice Survey Questionnaire

Section A: Demographic Information

INSTRUCTIONS & DIRECTIONS: By way of a cross (X) or a tick (√), select the category which best describes you

1. Kindly indicate your gender …..…………………………………………...

2. What year of study best describes you?

1st		2nd		3rd		4th	

3. Kindly indicate your programme of study……………………………………

4. Which university are you enrolled at? …………………………………………

5. What is your marital status (for research purposes only)?

Single	
Married/ Partnered	
Other (Specify)	

6. What is your race/ethnicity (for research purposes only)?

Black	
White	
Coloured	
Indian	
Other (Specify)	

7. What is the current occupation of the breadwinner of your household (or last job held, if currently not working)? ……………………………………………

8. What is the highest qualification of the breadwinner your household?

Primary education	
High school education	
Matric	
Post-matric	

SECTION B: SELF-EFFICACY SCALE

INSTRUCTIONS & DIRECTIONS: The following statements are presented for your evaluation. Please place an (X) or a (√) in the appropriate column per item to choose the response which best describes your level of agreement with the following statements. **Please use the following scales: 1 = Strong disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly agree**

	Self-Efficacy	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	I have confidence in my ability to identify resources, limitations, and personal characteristics that might influence my career choices.	1	2	3	4	5
2	I am confident about being able to collect information about training and employment opportunities for myself and manage them effectively.	1	2	3	4	5
3	I am confident about being able to develop lists of priorities on the effective actions to successfully manage my own personal professional development	1	2	3	4	5
4	I am confident about being able to plan the steps needed to realize a project related to my profession	1	2	3	4	5
5	I am confident about being able to address any difficulties related to my career	1	2	3	4	5

SECTION C: OUTCOME EXPECTATION SCALE

Please place an (X) or a (√) in the appropriate column per item to choose the response which best describes your level of agreement with the following statements.

Please use the following scales: 1 = Strong disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly agree

	Outcome Expectations	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	I expect to earn a good and satisfactory salary	1	2	3	4	5
2	I expect to get experience and get better jobs in future	1	2	3	4	5
3	I expect to get promoted and get regular salary increases	1	2	3	4	5
4	I expect to work in a decent and satisfying work environment	1	2	3	4	5
5	I expect to have a stable and secure job	1	2	3	4	5
6	I expect to have a stable career and guaranteed employment	1	2	3	4	5
7	I expect to have a positive image and contribute to the society	1	2	3	4	5
8	I expect to have a satisfying lifestyle	1	2	3	4	5
9	I expect to have a happy future	1	2	3	4	5
10	I expect to feel productive and have a sense of purpose and worth	1	2	3	4	5
11	I expect to achieve my career goals	1	2	3	4	5
12	I expect to be successful in my career	1	2	3	4	5
13	I expect to learn new skills and be able to use these skills and talents in my job	1	2	3	4	5

SECTION D: GOAL REPRESENTATION SCALE

Please place an (X) or a (√) in the appropriate column per item to choose the response which best describes your level of agreement with the following statements.

Please use the following scales: 1 = Strong disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly agree

	Goal Representations	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	I will obtain technical/functional skills in my chosen career	1	2	3	4	5
2	I will have opportunities for training and development in my chosen career	1	2	3	4	5
3	I will have the opportunities for interesting work in my chosen my career	1	2	3	4	5
4	My chosen career will allow me to meet my financial obligations	1	2	3	4	5
5	I will be successful in my chosen career	1	2	3	4	5
6	I will occupy leadership positions in my chosen career	1	2	3	4	5
7	My chosen career will make my family, friends and society have a good and positive opinion of me	1	2	3	4	5

SECTION E: SOCIAL SUPPORTS SCALE

Kindly rate how important these supports are to your career choice by placing an (X) or a (√) in the appropriate column per item. **Please use the following scales: 1 = Strong disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly agree**

	Social Supports	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	I receive support from both my parents	1	2	3	4	5
2	I receive support from my teachers	1	2	3	4	5
3	I receive support from my family members	1	2	3	4	5
4	I receive support from my peers (e.g. friends, colleagues)	1	2	3	4	5
5	I receive support from my father	1	2	3	4	5
6	I receive support from my mother	1	2	3	4	5
7	I receive support from my significant other (e.g. husband, wife, partner)	1	2	3	4	5

SECTION F: LEARNING EXPERIENCES SCALE

Please place an (X) or a (√) in the appropriate column per item to choose the response which best describes your level of agreement with the following statements.

Please use the following scales: 1 = Strong disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly agree

	Learning Experiences	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	I receive positive feedback and encouragement, especially from influential people in my life such as my parents and teachers	1	2	3	4	5
2	I learn through observing others perform tasks related to my own career	1	2	3	4	5
3	I experience feelings of anxiety, nervousness and fear of failure when performing tasks and activities related to my career	1	2	3	4	5
4	I successfully complete tasks and activities related to my career	1	2	3	4	5

SECTION G: INTERESTS SCALE

Please place an (X) or a (√) in the appropriate column per item to choose the response which best describes your level of agreement with the following statements.

Please use the following scales: 1 = Strong disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly agree

	Interests	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	I enjoy performing tasks and activities related to my choice of profession	1	2	3	4	5
2	I would like to make a lot of money	1	2	3	4	5
3	I would like to receive recognition in the society	1	2	3	4	5
4	I would like to perform well at my job.	1	2	3	4	5
5	I enjoy thinking and solving problems	1	2	3	4	5
6	I like highly challenging activities and taking risk	1	2	3	4	5

SECTION H: PERCEIVED BARRIERS SCALE

Kindly rate the factors that will have the greatest impact on your career choice by placing an (X) or a (√) in the appropriate column per item. **Please use the following scales: 1= Very low, 2= Low, 3= Moderate, 4=High, 5=Very High**

	Perceived Barriers	Very low	Low	Moderate	High	Very High
1	Discriminatory attitudes	1	2	3	4	5
2	Work-life conflict	1	2	3	4	5
3	Wage gap	1	2	3	4	5
4	Masculine workplace culture	1	2	3	4	5
5	Lack of access to opportunities	1	2	3	4	5
6	Poor working conditions	1	2	3	4	5
7	Long working hours	1	2	3	4	5
8	Challenges in career progression	1	2	3	4	5
9	Gender stereotypes	1	2	3	4	5
10	Glass ceiling (Invisible barrier to career advancement)	1	2	3	4	5
11	Lack of knowledge and career information	1	2	3	4	5
12	Lack of role models in my chosen career	1	2	3	4	5
13	Lack of education and training	1	2	3	4	5
14	Lack of opportunities in my chosen career	1	2	3	4	5

SECTION I: GENDER ROLE STEREOTYPES SCALE

Please place an (X) or a (√) in the appropriate column per item to choose the response which best describes your level of agreement with the following statements.

Please use the following scales: 1 = Strong disagree, 2 = Disagree, 3 =Neutral, 4 = Agree and 5 = Strongly agree

	Gender role stereotypes	Strong disagree	Disagree	Neutral	Agree	Strongly agree
1	Because of my gender, people will believe I possess lesser abilities in my work	1	2	3	4	5
2	Because of my gender, I will have to work twice as hard as my counterparts	1	2	3	4	5
3	Because of my gender, I will have to occupy a junior position at work	1	2	3	4	5
4	Because of my gender, I will be expected to do administrative work	1	2	3	4	5
5	Because of my gender, I will be expected to have a lesser status in the society	1	2	3	4	5
6	Because of my gender, I will be expected to possess domestic skills rather than technical skills	1	2	3	4	5
7	Because of my gender, I will be expected to have a low level of education	1	2	3	4	5
8	Because of my gender, I will be expected to choose a career different from the one I prefer	1	2	3	4	5
9	Because of my gender, people will believe I will perform badly in mathematics and science subjects	1	2	3	4	5
10	Because of my gender, I will earn a lower salary than my counterparts for similar work	1	2	3	4	5

SECTION J: ACCESS TO OPPORTUNITY STRUCTURES

Please place an (X) or a (√) in the appropriate column per item to choose the response which best describes your level of agreement with the following statements.

Please use the following scales: 1 = Strong disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly agree

	Opportunity Structures	Strong disagree	Disagree	Neutral	Agree	Strongly agree
1	I have access to information on organizations and jobs in my chosen career	1	2	3	4	5
2	I have attended various career orientation programs	1	2	3	4	5
3	I have initiated conversations with knowledgeable individuals in my career area	1	2	3	4	5
4	I have access to information on the labour market and general job opportunities in my career area	1	2	3	4	5
5	I have access to information on specific areas of career interest	1	2	3	4	5

Appendix 6- Gatekeeper Application Letter

University of KwaZulu-Natal
School of Engineering
Department of Construction Studies
Howard College Campus
Durban 4041
South Africa

The Director: Research
Mangosuthu University of Technology

29th June 2020

Dear Sir/Madam,

Re: Application for gatekeeper permission to conduct a questionnaire survey for a PhD research study on "Applying the Socio-Cognitive Career Theory to the Influence of socio-cultural factors on the under - representation of women in construction in South Africa"

We are conducting a PhD research study which seeks to examine the social and cultural factors that hinder women's career choices in construction and develop a framework that provides interventions and possible strategies to influence policies for the enhancement, recruitment and retention of women from diverse groups in South Africa.

Being guardians of the students at your university while they are on the university premises and in tandem with UKZN research ethics requirements, your consent is required to proceed with the questionnaire survey at your university. Find attached a sample of the questionnaire for your information. The survey is scheduled to take place in the academic year and will be administered electronically via google forms. The survey will target students enrolled in construction related programmes who will be required to complete the attached 6 paged questionnaire which requires between 15 to 30 minutes to complete. Even with your consent, student participation in the survey is completely voluntary and students are guaranteed complete confidentiality in the treatment of their responses and the information collected will be used for academic purposes only.

At your option, publications arising from the study will be made available to you for your information.

Yours sincerely,

Miss Mariam Akinlolu
PhD Scholar
Mobile: +27840503384
E-mail: akinlolumariam@gmail.com

Prof. Theo C. Haupt
Research Professor: Engineering
Office: +2731 260 2712
E-mail: pinnacle.haupt@gmail.com and theo.haupt@mut.ac.za

Humanities and Social Sciences Research Ethics Committee
Research Ethics Office
Govan Mbeki Building
Westville Campus
Phone: +2731 260 4557
Fax: +2713 260 4609
E-mail: mohunp@ukzn.ac.za

Appendix 7- Gatekeeper Approval Letter 1

Research Directorate

MUT

MANGOSUTHU
UNIVERSITY OF TECHNOLOGY

UMLAZI KWAZULU-NATAL
PO Box 12363 Jacobs 4026 Durban
Tel: 031 907 7450

21 August 2020

REF: RD0/02/2020

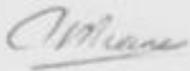Ms. M. Akinlolu
University of Kwazulu-Natal

Dear Ms. Akinlolu

PROTOCOL: The influence of socio-cultural factors on the under-representation of women in the South African construction industry

The MUT Research Ethics Committee considered your application at their meeting held on 10 August, 2020. It is my pleasure to inform you that permission to conduct the research project above was granted.

The approval is valid for two year from 01 September 2020. Any changes to the project must immediately be brought to the attention of the MUT Research Ethics Committee.

Your acceptance of this approval denotes your compliance with South African National Research Ethics Guidelines (2004) and the MUT Research Ethics Policy, Procedures and Guidelines.

Good luck with your research.
Yours sincerely,

Dr Anette Mienie
Director: Research

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Appendix 8- Gatekeeper Approval Letter 2

UNIVERSITY OF KWAZULU-NATAL
INYUVESI YAKWAZULU-NATALI

6 August 2020

Ms Mariam Akinlolu (SN 218083913)
School of Engineering
College of Agriculture, Engineering and Science
Howard College Campus
UKZN
Email: 218083913@stu.ukzn.ac.za

Dear Ms Akinlolu

RE: PERMISSION TO CONDUCT RESEARCH

Gatekeeper's permission is hereby granted for you to conduct research at the University of KwaZulu-Natal (UKZN) towards your postgraduate studies, provided Ethical clearance has been obtained. We note the title of your research project is:

"The influence of socio-cultural factors on the under-representation of women in the South African construction industry."

It is noted that you will be constituting your sample as follows:
- With a request for responses on the website. The questionnaire must be placed on the notice system http://notices.ukzn.ac.za. A copy of this letter (Gatekeeper's approval) must be simultaneously sent to (govenderlog@ukzn.ac.za) or (ramkissoonb@ukzn.ac.za).

Please ensure that the following appears on your questionnaire/attached to your notice:
- Ethical clearance approval letter;
- Research title and details of the research, the researcher and the supervisor;
- Consent form is attached to the notice/questionnaire and to be signed by user before he/she fills in questionnaire;
- gatekeepers approval by the Registrar.

You are not authorized to contact staff and students using the 'Microsoft Outlook' address book. Identity numbers and email addresses of individuals are not a matter of public record and are protected according to Section 14 of the South African Constitution, as well as the PAIA and POPI Act. For the release of such information over to yourself for research purposes, the University of KwaZulu-Natal will need express consent from the relevant data subjects. Data collected must be treated with due confidentiality and anonymity.

Yours sincerely

DR KE CLELAND: REGISTRAR (ACTING)

Office of the Registrar
Postal Address: Private Bag X54001, Durban, South Africa
Telephone: +27 (0) 31 260 8005/2206 Email: registrar@ukzn.ac.za
Website: www.ukzn.ac.za

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Appendix 9- Full Ethical Clearance Approval

31 January 2020

Miss Mariam Temisola Akinlolu (218083913)
School Of Engineering
Howard College Campus

Dear Miss Akinlolu,

Protocol reference number: HSSREC/00000996/2020
Project title: The influence of socio-cultural factors on the under-representation of women in the South African construction industry.
Degree: PhD

Approval Notification – Expedited Application

This letter serves to notify you that your application received on 29 January 2020 in connection with the above, was reviewed by the Humanities and Social Sciences Research Ethics Committee (HSSREC) and the protocol has been granted FULL APPROVAL.

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment/modification prior to its implementation. In case you have further queries, please quote the above reference number. PLEASE NOTE: Research data should be securely stored in the discipline/department for a period of 5 years.

This approval is valid until 31 January 2021.
To ensure uninterrupted approval of this study beyond the approval expiry date, a progress report must be submitted to the Research Office on the appropriate form 2 - 3 months before the expiry date. A close-out report to be submitted when study is finished.

HSSREC is registered with the South African National Research Ethics Council (REC-040414-040).

Yours sincerely,

_____
Dr Shamila Naidoo (Chair)

/dd

Humanities & Social Sciences Research Ethics Committee
UKZN Research Ethics Office Westville Campus, Govan Mbeki Building
Postal Address: Private Bag X54001, Durban 4000
Tel: +27 31 260 8350 / 4557 / 3587
Website: http://research.ukzn.ac.za/Research-Ethics/

Founding Campuses: ■ Edgewood ■ Howard College ■ Medical School ■ Pietermaritzburg ■ Westville

INSPIRING GREATNESS

Appendix 10- Perceived Barriers Factor Loading

		Factor	
		1	2
PRB1	Discriminatory attitudes		.883
PRB2	Work-life conflict		.745
PRB3	Wage gap		.557
PRB4	Masculine workplace culture		.473
PRB5	Lack of access to opportunities	.743	
PRB6	Poor working conditions	.564	
PRB9	Gender stereotypes	.374	.341
PRB10	Glass ceiling (Invisible barrier to career advancement)	.463	
PRB11	Lack of knowledge and career information	.738	
PRB12	Lack of role models in my chosen career	.752	
PRB13	Lack of education and training	.894	
PRB14	Lack of opportunities in my chosen career	.838	