

**CAREER DEVELOPMENTAL EXPERIENCES OF WOMEN IN SENIOR  
LEADERSHIP POSITIONS WITHIN CIVIL ENGINEERING INDUSTRY**

by

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DECLARATION

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I declare that CAREER DEVELOPMENTAL EXPERIENCES OF WOMEN IN SENIOR LEADERSHIP POSITIONS WITHIN CIVIL ENGINEERING INDUSTRY is my own work and that all the sources that I have used referenced have been indicated and acknowledged by means of complete citations and references.

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## ABSTRACT

The paucity of women in senior leadership positions as indicated in the Business Women Association of South Africa 2011 census corroborates that gender equality is still a concerning issue even in the democratic era that we live in. This study explores career developmental experiences of women in senior leadership position in the civil engineering industry. The primary objective was to investigate how these professional women were managing their careers and what career experiences contributed to their ascent to the senior echelons of management. Meaning to the career experiences of these women had been given according to the self-determination theory. By means of purposive selection, seven women at senior management level were selected from both the private and public sectors in the civil engineering industry. Based on the semi-structured interviews conducted, personal documents reviewed and footnotes recorded; it was evident that there were different factors that had facilitated the ascent of these women to senior positions. Their career experiences were also characterised by challenges that subsequently instigated the development of coping strategies and methods. The study has implications for organisations in civil engineering that wish to attract and retain women from generations to come.

**Key words:** career, case study, civil engineering, executive positions, experiences, male-dominated environments, non-traditional occupations, self-determination theory, senior leadership, women

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## TABLE OF CONTENTS

CHAPTER 1 .....	1
INTRODUCTION .....	1
DEFINITION OF KEY TERMS .....	3
PROBLEM STATEMENT .....	4
RESEARCH QUESTIONS AND OBJECTIVES .....	5
Primary research questions .....	5
Secondary research questions .....	5
PURPOSE OF THE STUDY .....	5
PARADIGM PERSPECTIVE .....	7
RESEARCHER'S ASSUMPTIONS .....	8
CONCLUSION.....	8
CHAPTER 2 - LITERATURE REVIEW .....	10
INTRODUCTION .....	10
CAREER DEVELOPMENT .....	11
Theories of career development.....	11
FACTORS INFLUENCING CAREER CHOICES.....	14
Socialisation of women.....	14
Self-concept .....	15
Family .....	16
Career counselling .....	17
WOMEN IN SENIOR MANAGEMENT POSITIONS .....	18
CHALLENGES OF WOMEN IN SENIOR MANAGEMENT AND LEADERSHIP POSITIONS IN THE CIVIL ENGINEERING INDUSTRY .....	19

Slow career progression .....	19
Work-family balance .....	19
Working hours .....	20
Organisational Culture .....	21
Promotion policies .....	22
Gender-based stereotypes .....	22
Lack of support from organisations .....	22
ACHIEVEMENT MOTIVATION AND CATALYST.....	23
SELF-DETERMINATION THEORY.....	25
Intrinsic Motivation .....	26
Extrinsic Motivation .....	28
CONCLUSION.....	30
CHAPTER 3 - RESEARCH DESIGN AND METHOD.....	32
INTRODUCTION .....	32
RESEARCH DESIGN .....	32
Case study .....	33
Pilot case study .....	35
RESEARCH METHOD.....	35
Selection of participants.....	35
Entrée and establishing researcher role.....	38
Data collection techniques .....	39
Strengthening of data .....	40
Recording of the data .....	41
Data analysis .....	42
ETHICAL CONSIDERATIONS.....	45

Right to privacy and confidentiality .....	45
Informed consent .....	46
Non-maleficence, beneficence and justice.....	46
Social value and scientific validity .....	47
QUALITY OF THE RESEARCH DESIGN .....	47
Credibility .....	47
Transferability.....	48
Dependability.....	48
Confirmability.....	49
CONCLUSION.....	49
CHAPTER 4 - FINDINGS AND INTERPRETATIONS .....	51
INTRODUCTION .....	51
CATEGORY A - CAREER JOURNEY.....	53
Informants' profiles .....	53
CATEGORY B - DIFFERENT WORK ROLES AS STEPPING STONES .....	61
CATEGORY C - FACTORS THAT FACILITATED THE ASCENT OF WOMEN TO SENIOR POSITIONS.....	62
Mentoring.....	63
Learning within mentoring .....	64
Willingness to learn .....	65
Exploration.....	66
Government interventions.....	67
Personality attributes.....	70
Positive attitudes .....	72
CATEGORY D - CONSTANT CHALLENGE, YET A JOY .....	73
Acceptance of women as leaders .....	73

Pressure to perform .....	75
Predominant dialect .....	76
Work-family balance .....	78
Long working hours .....	79
ADAPTIVE STRATEGIES AND METHODS.....	80
Self-knowledge and self-awareness .....	80
Knowledge of your work environment .....	81
Support System .....	83
Be knowledgeable .....	85
Clothing.....	86
Flexible hours.....	87
Participation in sports and hobbies .....	88
CATEGORY E - INFORMANTS' RECOMMENDATIONS ON CAREER	
MANAGEMENT.....	89
Summary – Table 4.1 .....	93
CONCLUSION.....	94
CHAPTER 5 - CONCLUSIONS, LIMITATIONS, AND RECOMMENDATIONS.....	96
CONCLUSIONS.....	96
RECOMMENDATIONS.....	101
LIMITATIONS.....	102
CONCLUDING REMARKS.....	103
RESEARCHER'S REFLECTIONS .....	104
REFERENCES .....	105
APPENDIX A - INFORMED CONSENT .....	117

APPENDIX B - INTERVIEW GUIDE .....	120
APPENDIX C - BIOGRAPHIC INFORMATION .....	121
APPENDIX D - TRUSTWORTHINESS CERTIFICATE.....	123
APPENDIX E - INTERVIEW TRANSCRIPTS .....	124
APPENDIX F - NVIVO CODING RESULTS .....	125

## LIST OF TABLES

Table 1.1	<i>Number of women in companies listed on the Johannesburg Stock Exchange (JSE)and at State-Owned Companies(SOCs) as a percentage of all positions.....</i>	2
Table 3.1	<i>Informants' biographic information .....</i>	37
Table 4.1	<i>Recommendations to female generations who aspire towards senior leadership positions in civil engineering industry .....</i>	90

## LIST OF FIGURES

<i>Figure 3.1.</i>	<i>An Interactive Model of Research Design (derived from Maxwell, 2013, p. 5) .....</i>	33
<i>Figure 4.1.</i>	<i>Categories derived for analysis .....</i>	52
<i>Figure 4.2.</i>	<i>Themes that emerged from data analysis process .....</i>	52

## CHAPTER 1

### INTRODUCTION

Since 1994, gender justice and the development of gender sensitive policies and practices that involve government intervention for the prevention and elimination of unfair employment discrimination against women and other previously disadvantaged groups including racial transformation and economic justice have become national concerns in South Africa (Hicks, 2010; Horwitz & Jain, 2011). The matter of gender balance in traditionally male-dominated professions and in leadership positions, such as civil engineering, is a challenge around the world. Hicks (2010) proclaims that there are invisible elements related to the institutional culture of the male-dominated environments that marginalise women in government and in the private sector. Therefore, it is uncommon to find women who are working in these fields. The Business Women Association of South Africa (2011) census reflects that South Africa is ahead of other countries in terms of women who are directors and executives in government and private companies. In the public sector and private sector alike, women are taking decision making positions but in comparison with men their numbers are still few (Hicks, 2010).

The introduction of the Employment Equity Act in 1998, and other legislative and institutional interventions are meant to redress the unfair employment discrimination against racial groups, women and persons with disabilities (Horwitz & Jain, 2011). As a result, the country consists of emerging women entrepreneurs and women who are assuming positions of authority in government departments and at private companies, including fields that are referred to as “the man’s world”, such as civil engineering. However, there is a salient progression of women in political leadership and in public sector management (Nkomo & Ngambi, 2009).

The Commission on Gender Equality indicates that women represent a major part of the South African population and yet they constitute only a third of the labour force (Horwitz & Jain, 2011). Despite their greater part in relation to the total population, few women are occupying positions with status, power and authority which include traditionally male blue-collar occupations. The Employment Equity Commission’s 2007/08 and 2008/09 findings

reveal that women have a greater representation in administrative positions when compared to decision-making functions (Hicks, 2010).

In the corporate sector, as indicated in Table 1.1 below, a steady increase is evident of female Executive Managers from 18.6% in 2009 to 19.3% in 2010 and 21.6% in 2011. However, a decrease is recorded of women holding directorship positions from 16.6 % in 2010 to 15.8% in 2011. The number of Chief Executive Officers or Managing Directors also seem to be dropping from 4.5% in 2010 to 4.4% in 2011. There is also a recorded decrease in the chairpersons' position of 0.7% from 2010 (6.0%) to 2011 (5.3%) (Business Women Association of South Africa, 2011). The Business Women Association of South Africa (2011) census results reflect a noticeable increase in women's representation in government in relation to their presence in the private sector. Table 1.1 shows the representation of women in leadership positions.

Table 1.1

*Number of women in companies listed on the Johannesburg Stock Exchange (JSE) and at State-Owned Companies (SOCs) as a percentage of all positions*

Position	2009	2010	2011
CEOs/MDs	3.6%	4.5%	4.4%
Chairpersons	5.8%	6.0%	5.3%
Directors	14.6%	16.6%	15.8%
Executive Managers	18.6%	19.3%	21.6%

\* Adapted from Business Women Association of South Africa (2011, p. 12).

The main focus of the current study is on the career developmental experiences of women who hold senior leadership positions. It refers to the manner in which they manage their career in and between organisations. It is assumed that the development of their career is informed by their educational development, achievements in the process and work-related experiences which include roles, responsibilities, tasks, and challenges they encounter in their careers.

According to the Institution of Civil Engineers (n.d.), civil engineering is a professional engineering discipline that deals with the design, construction and maintenance of the physical and naturally built environment which involves the building of roads, bridges, canals, dams, big buildings and other structures. This field primarily consists of two facets, namely designing which takes place in the office and building which happens at the construction site (Watts, 2009). Over the years, women have entered various traditionally male-dominated occupations. According to Vetter (1993, cited in Layne, 2010), there is a significant progress in terms of the number of women in the engineering workforce. However, the working environment is too unpleasant and consequently women are not retained for a lengthy period of time.

The engineering sector has contributed significantly to the infrastructure development of South Africa. Pullen (2010) states that the government has invested extensively in infrastructure in the past years and continues to invest in it for improving service delivery to the nation and for enabling socio-economic growth. Unfortunately, South Africa is far behind in the development of human capital in the fields of science and engineering. According to Kruger (2008), the main challenge facing the country in terms of infrastructure and economic growth is the shortage of critical skills. Lawless (2001) states that since career guidance has been extended to schools, there is a significant transformation in civil engineering and progress is made in relation to the inclusion of the previously disadvantaged groups. Menches and Abraham (2007) suggest that attracting women to the industry is a critical first step. However, retention needs also to receive priority attention since the majority of women quit the industry due to slow career progression and the organisational culture in the industry. It is an important field that makes such a significant difference in the country but it does not readily accept the presence of women in its ambit.

## DEFINITION OF KEY TERMS

*Leader* is the key person in developing and implementing the organisation's goals by engaging with his or her followers, creating trust while striving towards the attainment of goals, and demonstrating commitment and willingness to take risks for the business at all times (Kesby, 2008; Rayner & Adam-Smith, 2009).

*Leadership* involves activities in the development of the business vision and a plan to realise it, then directing and energising the organisational resources towards the achievement of the goals of the business or organisation (Rayner & Adam-Smith, 2009).

*Senior leadership positions*, for the purpose of this study, refer to any or all of the following positions: chief executive officer (CEO), chief operating officer (COO), chief risk officer (CRO), chief finance officer (CFO), chief information officer (CIO), chairperson, president, vice president, director or equivalent positions.

## PROBLEM STATEMENT

Chiloane-Tsoka (2010), in her study about the barriers that restrain the advancement of women in management and leadership positions, states that South African women are still dominated and discriminated against in the business environment and that they find it difficult to access leadership positions. Bennett, Davidson and Gale (1999) highlight that many women in the construction industry feel isolated, experience segregation, and those women who are at the entry level of management feel that they have fewer opportunities for further career development beyond middle management level. Eagly and Carli (2003, cited in Botha, 2005) argue that men who are working in male dominated environments have better chances for promotion whereas women in those situations may leave their jobs because of male dominance.

Women appear to be facing considerable difficulties when advancing in their career in the civil engineering industry. In most parts of the world, senior female executives, especially CEOs, are extremely rare in the corporate world (Oakley, 2000). When looking at the statistics supplied in Table 1.1, it is clear that the number of women, who hold senior management positions in the corporate sector, is decreasing. The present study seeks to explore the career developmental paths of women in senior management positions in the civil engineering industry. The intention has been to gather information about the manner in which these women are transcending the existing obstacles with regard to their career advancement in the civil engineering industry and about what they have learnt from their career developmental experiences that can be transferred to the emerging generation. Their shared experiences may assist the process of attracting and retaining the next generation of female leaders.

## RESEARCH QUESTIONS AND OBJECTIVES

The primary aim of the study has been to obtain a deeper understanding of the career developmental experiences of women in senior leadership positions, particularly in the South African civil engineering industry. This study focuses on activities and behaviours that these women have been engaged with and exposed to during their career development. It includes the perceptions and interpretations of their experiences that have led to their current positions. Furthermore, it examines the factors that are motivating these women on their occupational journey. Finally, it explores how their lived experiences can benefit the emerging female generation in the civil engineering industry and encourage those women who are on the verge of quitting the career path they have embarked upon.

### Primary research questions

What are the career developmental experiences of women with respect to leadership in civil engineering that have contributed to the ascent to their current positions?

What career developmental experiences have they gained that can assist with recruiting and retaining the younger female generation which aspires to senior management positions in the civil engineering industry?

### Secondary research questions

What are the challenges faced by South African women in the civil engineering industry, with a particular focus on those women in senior leadership positions?

What are the strategies and methods used by these women to cope with encountered challenges during their career development?

## PURPOSE OF THE STUDY

The barriers that prevent women from ascending to top ranks in leadership are seen prominently in the percentage of women in senior management positions at large corporations (Oakley, 2000). Participation of women in the economic development of the country has always been a particular focus of the current democratic government. The empowerment of women is supported by legislation and other government initiatives (Hicks, 2010; Horwitz & Jain, 2011). Therefore, this study contains the potential of benefitting the

South African government with their strategy to empower women, especially by supplying scientifically sound and relevant information and knowledge. The study supports the affirmative action policy that aims at providing role models from the visible minority group in prominent executive positions and confirming that it is possible to reach those positions despite one's background and all the barriers that are hindering the advancement of women in their careers (Lockwood, 2006).

This study might contribute to the civil engineering industry by bringing about change, growth and new ideas. There are an increasing number of companies that have no female representation in their directorship and executive management positions (Business Women Association of South Africa, 2011). The civil engineering industry in South Africa has a serious shortage of skills as stated by Kruger (2008). At the same time, the industry is losing women at managerial level due to the unpleasant work environment (Layne, 2010).

By exploring the career developmental experiences of women in leadership positions in the civil engineering industry, the majority of women who aspire to be in this field and eventually in leadership positions might be able to prepare themselves adequately for these opportunities. The study seeks to offer foreknowledge of the skills set and personality traits that are required to lead in this kind of environment.

Potentially, this study could provide support to those women who hold leadership positions already, since it could raise their awareness of the fact that they are not alone while dealing with their uniquely female challenges in their management roles (Jupp, 2010). It created a platform for the selected women in leadership positions to share and learn through their stories, by exposing and exploring their challenges and different coping mechanisms.

The paucity of studies that focus on South African women in the civil engineering field who are in leadership positions has severely stirred my curiosity. In their study, that examined the state of knowledge about African women in leadership, Nkomo and Ngambi (2009) established that there were a limited number of research studies that focused on African women leaders and managers. This study has the potential of filling the literature gap in the body of knowledge about the issue, since there are few studies that investigate the male-dominated industries in relation to women.

## PARADIGM PERSPECTIVE

The study has been conducted from a constructivist paradigm of qualitative research. Denzin and Lincoln (2011) are of the opinion that the researcher engages in a study with a set of beliefs or ideas and a theoretical framework that directs the set of questions to be explored and which, in turn, are examined in a specific manner. The beliefs are assumed to have an influence on the manner in which a researcher sees the world and acts in it (Denzin & Lincoln, 2011). It is, therefore, important to outline the basic principles of a constructivist paradigm which is also known as interpretivism.

Interpretivists believe that “all reality is a constructed reality” (Daly, 2007, p. 31). In interaction with other members from a variety of societal backgrounds, assumptions and experiences; reality gets constructed (Wahyuni, 2012). Furthermore, there is a belief that people construct their own understanding of reality based on their interaction with their surroundings (Lincoln & Guba, 1985). Knowledge is socially constructed based on the actor’s prior frame of reference within the setting (Daly, 2007; Lincoln & Guba, 1985). Daly (2007) emphasises the importance of shared meanings that we have, for example, about language and cultural symbols during the interpretive process.

In order to understand the social world based on the experiences and subjective meanings that people attach to it, the paradigm suggests that the researcher should interact and enter into dialogue with the selected participants (Wahyuni, 2012). That is the rationale behind choosing semi-structured interviews as the main method of data collection; other methods of data collection applied are personal documents and field notes. The objective is to understand career developmental experiences of women in senior leadership positions in the civil engineering industry. In addition, how their perceptions of those experiences contributed to their ascent to senior leadership positions is explored with the purpose of developing better insight of their career development.

All knowledge that is generated by means of a constructivist process of inquiry is viewed as multiple, intangible mental constructions, socially and experientially based, local and specific in nature and dependent, for their form and content, on the individual persons who conduct this process of inquiry (Guba & Lincoln, 1994). Daly (2007) assumes that the researcher plays an important role by being simultaneously engaged with the participants in the process

of conversation, observation and interpretation. It does imply that the experiences and values of the participants and researchers alike can influence the data collection and data analysis process (Wahyuni, 2012).

## RESEARCHER'S ASSUMPTIONS

Daly (2007) indicates that there are multiple realities that can be created based on the researcher's values, standpoints and positions about issues. In order to avoid a particular bias in this qualitative study it is critically important to me to acknowledge and record my assumptions as a researcher.

My previous professional experience in the field of civil engineering influenced me to adopt the following assumptions: The majority of women in the civil engineering industry have challenges in their leadership role, mainly because it is a male-dominated industry. Furthermore, since men in this industry are in the majority, they are highly influential in the decisions in the industry. It is further assumed that men find it difficult to accept the leadership of a woman in a technical environment and to admit that women in the industry are deliberately opposed by their fellow workers.

I also have assumed that female leaders in the industry will find the study interesting enough to participate. The research approach followed in the study is assumed to be the most suitable approach for full understanding and interpretation of career developmental experiences.

My last assumption is that those people in leadership and those who aspire towards leadership positions will be able to learn something from the selected participants' trajectories even though the career developmental experiences of individuals are unique.

## CONCLUSION

Chapter one has introduced the topic of the study by giving background information about civil engineering and what transpires in this particular industry in South Africa since the dawn of a democratic government. It also highlights the rationale of the study, the researcher's paradigm and assumptions which are of significance to this study.

The following statements provide an outline of the rest of the chapters in the dissertation:

Chapter two - provides an overview of literature about theories of career development, factors influencing career choice and achievement motivation. It further examines challenges of women in the civil engineering industry and outlines a conceptual framework for this study.

Chapter three - gives a clear indication of a set of procedures and instruments and techniques that were used to gather and analyse data. It also discusses the limitations of the study and measures taken to ensure that the quality of the research is of a superior standard.

Chapter four - highlights the main findings of the study and supplies an interpretation in relation to literature and theoretical framework.

Chapter five - presents conclusions and recommendations.

## CHAPTER 2

### LITERATURE REVIEW

#### INTRODUCTION

There are few studies in South Africa that focus on women who hold leadership positions in traditionally male-dominated fields, particularly in the field of civil engineering. These prolifically researched studies mostly focus on the entire construction industry. For example, Geertsema (2007) explores the motivating factors for women in their career choices, as well as barriers in their career journeys. Other researchers focus on the challenges and problems of women who hold leadership positions in different professions (e.g. Chiloane-Tsoka, 2010; Gouws, 2008); Lawless (2001) focuses on women in engineering. The paucity of research studies that focus on female South African executives and the underrepresentation of women in top positions have contributed to my eagerness to pursue this kind of study. A valuable aspect of the current study is its intent to explore different coping strategies that women are using when they are faced with challenges along their career journeys.

Women are poorly represented in the civil engineering industry, particularly at senior management level (Watts, 2009). Whitmarsh and Wentworth (2012) are of the opinion that traditionally male-dominated and mathematics-based careers are still not considered an option for most young women as a preferred career choice. The present study has motivational potential by providing guidelines to women who view themselves as a minority group in male-dominated occupations. Lockwood (2006) states that women may be inspired by gender-specific models since these models provide evidence that it is possible to remove barriers in the work environment and to achieve high levels of success. Therefore, studying the career developmental experiences of women in outstanding executive positions can inspire other women to pursue similar achievements.

An exploratory study about the career developmental experiences of the participants may elicit information that can fill some of the existing gaps in this particular field of research. According to Schafer (2006) “some professions such as engineering may miss out on valuable contributions and new thinking approaches which a diverse workforce may add, and which may be needed to achieve the exceptional performance required to solve today’s

complex engineering problems” (p. 661). This context necessitates an essential research study like mine.

My primary objective while conducting this literature review has been to reach a better understanding from other researchers and theorists about career development. The review also illuminates the reasons why women in executive positions are underrepresented in the civil engineering industry. A further literature inquiry was conducted on factors that influence women in choosing careers in non-traditional occupations. The barriers women in executive positions experience in their career development and facilitators of their career advancement were also explored.

## CAREER DEVELOPMENT

### Theories of career development

According to Gottfredson’s (1981) theory in relation to the development of occupational aspirations, the construction of self-concept and occupational preferences begins during the early childhood phases of development. Career choice decision is the process that occurs at many stages of development (Whitmarsh, Brown, Cooper, Hawkins-Rodgers & Wentworth, 2007). Whitmarsh et al., (2007) have discovered that women who choose female-dominated careers, such as teaching, exercise their choice based on early developmental experiences and they are also highly influenced by their mother or a female adult in their family who is in the same field that they choose. The issue of gender stereotyping starts to influence career aspirations at an early stage of human development while children are still at middle school age, which is approximately in the age group of between 10 and 14 years (Schuette, Ponton & Charlton, 2010). Gottfredson (1981) identifies four stages of development, namely: (a) orientation to size and power (3 – 5 years), (b) orientation to gender roles (6 – 8 years), (c) orientation to social valuation (9 – 13 years), and (d) orientation to the internal, unique self (14 – 19 years).

During early stages of development, young children view all occupations positively but while they are growing they start developing their own preferences that are based on the compatibility of those occupations with their developing self-concept. Gottfredson (1981) indicates that young children start to exclude occupations that seem to be inconsistent with their gender, prestige and intelligence. It is only during the adolescent stage that they start

considering their interests, capacities and values in further narrowing down their occupational choices.

At the end of high school, when it becomes time to implement their career choices, they start introducing the element of availability of job opportunities they encounter (Gottfredson, 1981). “Problems in obtaining and completing training or education and in locating and obtaining employment are some of the barriers to fulfilling one’s adolescent aspirations” (Gottfredson, 1981, p. 549). The theorist emphasises that with each barrier individuals encounter in their endeavour to attain their occupational aspirations, they are forced to compromise some elements of their aspirations. The pattern of compromises she has discovered consists of the first step of vocational interest, followed by job level with the last step of gender type. Gender type is more important to individuals since it is a central aspect to the self-concept and comprises an important part of self-identity (Gottfredson, 1981).

Bloch’s (2005) theory of complex adaptive entities views human beings as complex adaptive entities that normally get confused by the complexity of the world they live in. The author holds the opinion that individuals believe that there should be some sequence or order to follow with regard to work roles; unfortunately most individuals experience their careers as illogical processes which do not have a clear relationship between actions and reactions.

The following principles are representative of complex adaptive entities that can be applied to careers (Bloch, 2005). The first principle is described as autopiesis or self-regeneration, where individuals’ careers are perceived as consistently getting regenerated while they are getting exposed to different experiences, regardless of their aspiration or career counselling they have received at some point in life. The second principle refers to open exchange. Because careers are open entities, they autonomously maintain a continual process of interchanging components with the world. The third principle comprises participation in networks. In this instance, a career is seen as an entity within an entity of the individual and each entity has many networks. Therefore, one’s career is also part of the surrounding networks; such as organisations, communities, and education. The fourth principle is known as fractals, since a career is perceived as part of the individual’s life experience; this individual understanding forms part of the whole work and economic system. Fractals show the similar picture at different levels of examination. The fifth principle is described as phase transitions between order and chaos. Career changes occur, primarily because careers are part of

relational networks that are constantly open to exchange. Potential sources of phase transitions include, for example, events like graduation, job placement, and being dismissed.

The search for fitness peaks is also another principle of complex adaptive entities, which involves the individual's pursuit of exploring what suits him or her best. The search can be limited by an individual's willingness to take risks, the confidence level, and the network relations. The seventh principle entails the nonlinear dynamics of understanding the career developmental pattern of each individual in terms of that individual's internal dynamics, the dynamics of the specific environment in which they occur and the individual's work life. The next principle is called sensitive dependence and describes a small change in the environment that may lead to a serious career shift. The ninth principle encompasses the attractors that limit growth. Some of the careers are explained to be formed by point attractors when the person sees only one job opportunity and often a single way of getting there. Other career attractors are called pendulum attractors. In a situation like this, the individual simply swings back and forth while there is no movement at all in his or her career due to indecisiveness. The tenth principle refers to careers that are formed by torus attractors that move in circular patterns. Careers that are formed by these attractors may feel comfortable but the realisation of being stuck can be very unpleasant. The role of strange attractors and emergence is also regarded as another principle. Since life is unpredictable, new career trajectories can always emerge in an individual's life. When a career emerges in a new shape, it may bring some sense of satisfaction and joy to the individual. The last principle of spirituality at work occurs when the person experiences a sense of interconnectedness.

The longitudinal study by Frome, Alfeld, Eccles and Barber (2006) support the predictions that are made in the two theories discussed above by revealing that the majority of young women, who successfully complete their high school education, aspire to occupy male-dominated careers but a few years later their aspirations change towards more female-dominated and neutral jobs. The authors emphasise that most women do not achieve their male-dominated job aspirations or fulfil their potential in these fields of interest because they are left behind along the way. It was found that 80% of the Grade 12 learners who were aspired to occupy male-dominated positions ventured into female-dominated or neutral jobs seven years later.

According to Gottfredson's (1981) theory, once women get to a point in life where their career aspirations are not consistent with what the outside world will be offering, they are obliged to compromise. The author further argues that for some people the compromise continues until they are in their most suitable job. In support, Bloch (2005) states that an individual always searches for peaks and, since life contains surprises, individuals should always expect careers to take new shapes and emerge in a different form never thought of before. "People continually reinvent their careers, moving freely among, within, and outside the macrocycles and roles previously identified as the anticipated career paths of 'healthy' individuals" (Bloch, 2005, p. 199).

### FACTORS INFLUENCING CAREER CHOICES

Every individual is responsible for making choices that will enable him or her to actualise their career potential (Cook, Heppner & O'Brien, 2002). However, women's career choices are affected by some additional factors, such as the attitude of an industry towards women, job prospects, family backgrounds, and career aspirations. The dramatic change of women who are participating in the paid labour force is likely to be normal, since earlier the pattern of work commitment has primarily been reserved for men and unmarried women (Cook et al., 2002). In support of the previous statement, Mendez and Crawford (2002) state that women are currently at liberty to pursue male-dominated careers since it has become more acceptable in a 21st century society.

#### Socialisation of women

"From early childhood and throughout life, many women are exposed to pervasive messages that women's life should revolve around taking care of other people and that their career plans are somehow superimposed on this primary obligation" (Cook et al., 2002, p. 298). Chiloane-Tsoka (2010) states that socio-cultural perceptions and societal values play an important role in women's attitudes towards certain occupations and can discourage women from pursuing leadership opportunities. Chiloane-Tsoka's study about barriers to the advancement of women in management and leadership positions reveals that the majority of male respondents still believe that a woman's place is at home, indicating that it is still difficult to accept women as managers, especially in male-dominated industries. Gender-role socialisation plays a great role in influencing our career choices since many jobs and

organisations are gender-typed; and women who occupy male-dominated jobs are in conflict with the gender-role orientation (Long, 1989).

“In spite of the proclaimed ‘equal opportunities’ for men and women when it comes to acquiring some profession, stereotypical notions about “men’s” or “women’s” specialties as they have been formed historically still hold sway among a substantial portion of the population” (Razumnikova, 2005, p. 21). Gillem, Sehgal and Forcet (2000) state that women are seen by society as more interpersonally sensitive, warm, and expressive than men and men are viewed as more competent, independent, objective, and logical than women. These kinds of societal constructions that inform the notion of women as being less competent may lead to low self-image and less confidence in their own abilities (Haslett & Lipman, 1977, as cited in Gillem et al., 2000).

According to Ely and Padavic (2007), gender stereotypes cause people to label some occupations as either masculine or feminine and are deemed to be suitable for either men or women. Ely and Padavic further argue that occupations with a larger power and authority component tend to be seen as requiring the skills associated with men whilst those lacking power and authority are associated with women. Since women’s roles are characterised as nurturing, emotional, non-aggressive, non-assertive, and passive, perceived suitable professions for them are nurses, teachers, or secretaries (Ely & Padavic, 2007). Leadership positions are seen mainly suitable for men since these positions require aggressiveness and logical thinking. In the work environment, it is found that jobs are classified according to gender and based on society’s stereotypes of men and women (Gillem et al., 2000). In these enlightened times, it seems that women’s career choices and patterns are still influenced by the same gender stereotypes that were described in the ancient times (Oswald, 2008; Razumnikova, 2005; Whitmarsh & Wentworth, 2012).

### Self-concept

Self-concept refers to “one’s view of oneself, one’s view of who one is and who one is not” (Gottfredson, 1981, p. 546). Mendez (1999, cited in Mendez & Crawford, 2002) have found that gifted girls perceive themselves as possessing more masculine traits, for example self-confidence, independence and assertiveness than non-gifted girls. At the same time, gifted girls possess highly feminine traits, such as caring, understanding and kindness (Mendez & Crawford, 2002). The results of the study also indicate that girls’ self-perception of

femininity is not related to the gender type of the career which they aspire to, whereas correlation has been found between their self-perception of masculinity and the gender type of their career aspiration. The girls who perceive themselves as hardworking and internally motivated have a higher aspiration to pursue male-dominated and prestigious careers.

According to Oswald (2008), if a woman has perceived abilities to succeed in a male dominated occupation and has an interest in it, she will succeed. Whitmarsh et al., (2007) point out that when women gradually understand their world of work better, their self-efficacy, which is their belief about their capabilities, develops. As a result, they exhibit more confidence in themselves to venture into more demanding positions or careers. Long (1989) is of the opinion that the majority of women in non-traditional occupations exhibit high levels of self-efficacy.

#### Family

Geertsma (2007) indicates that families motivated a high percentage of respondents during their studies in pursuit of a career in the construction industry. A study about the career experiences of African American female executives also supports the argument that families are a critical source of support and confidence, especially if they can encourage their children to invest in education (Brooks Greaux, 2010). Bennett et al., (1999) argue that women's career choices are influenced by family background factors. Most women who choose non-traditional professions have a strong role model in the industry. Whitmarsh et al., (2007) finds that some of the women in female-dominated careers were discouraged by significant others' perception that women cannot be successful in male-dominated occupations while successfully managing their family responsibilities at the same time. "As a result of the demands of external reality, women often adjust career aspirations to provide a compatible match with marriage and family responsibilities" (Whitmarsh et al., 2007, p. 231).

Since engineering is considered as one of the high status occupations, according to Gottfredson (1981), the socio-economic status of the family is also seen as an influencing factor in career choices. He emphasises that career aspirations of middle school children are consistent with the socio-economic status of their families. These children do not aspire to hold more prestigious occupations than their parents. As a result, they restrict their preferences and choices.

Schuetz et al., (2010) conducted a survey in one of the schools in Norfolk, Virginia in the United States of America with the objective of exploring the relationship between pre-adolescents' career aspirations and the occupations of the working adults in their home. The survey finds that there is a significant relationship between boys and the working male adults in their home in relation to job identification based on gender. It implies that the majority of boys aspire to male occupations that are held by the working male adults in their home. The study further indicates that there is no significant relationship between the aspirations of girls and the actual occupations of the female working adults in their home. In contrast to Gottfredson's theory, the study finds that girls from a low socio-economic background tend to aspire to occupations that are more likely to be classified as high in status when compared to the occupations of their parents. It is also found that most of their career choices are stereotypically male.

Additional evidence is provided by Mendez and Crawford (2002) in the study that examines the career aspiration of gifted boys and girls from both middle and high socio-economic status. The results indicate that girls aspire to occupations that are high in education and prestige. Furthermore, adolescent girls are found to be more gender-role flexible in their career aspirations than boys. Likewise, Lockwood (2006) emphasises the importance of gender-specific role models rather than the significance of family members as role models. Many low income people do not have the luxury of making career choices. Having a paid job is a more immediate necessity to them (Cook et al., 2002). The authors argue that these individuals find themselves being influenced by their financial circumstances during the development of their careers.

### Career counselling

In schools, career counsellors play a critical role in assisting students with career choices (Gaudet & Savoie, 2007). The career counsellors' roles are to provide clients with access to adequate information about themselves as well as various available occupations. If required, the career counsellors may assist with improving their clients' decision making skills (Cook et al., 2002). From the career counselling model which encompasses individual assessment, it can be assumed that an individual's traits and preferences are significant in career decision making processes (Cook et al., 2002). Gaudet and Savoie (2007) in their study of the role played by career counsellors, emphasise that the counsellors need to be trained and sensitised with the purpose of increasing the effectiveness of their interactions with girls. Gaudet and

Savoie (2007) indicate that most of their participants agree that in career choices girls need to be influenced differently than boys. Women with exclusive career choices need a lot of support in pursuing their career plan if they live in society that still accentuates care of home and family as the primary role of women (Cook et al., 2002). In fact, it can be argued that all women need to be assisted in identifying their strengths and defining themselves independent from the myths and stereotypes that are prevalent in our societies (Cook et al., 2002).

Career counsellors can also assist their clients in finding mentors, role models and even child care assistance. Access to affordable and quality child care can open a number of occupational opportunities to many women (Cook et al., 2002). Through networking, they may also improve their career success (Cook et al., 2002). A mentor is a person in an individual's chosen profession who is willing to provide guidance, inspiration and encouragement for the successful development of the other person's career (Williams-Nickelson, 2009). On the other hand, a role model can be defined as "an individual who provides an example of the kind of success that one may achieve, and often also provide a template of the behaviours [sic] that are needed to achieve such a success" (Lockwood, 2006, p. 36).

## WOMEN IN SENIOR MANAGEMENT POSITIONS

Botha (2005) states that in the past years women and the previously disadvantaged groups were not involved in top management at corporate organisations. They were seldom exposed to these management positions and not developed adequately to function effectively in such positions. Since the change to a democratic government in 1994, there has been a significant change in the representation profile in South African organisations in both public and private sectors as a result of employment equity legislation (Horwitz & Jain, 2011). This change specifically refers to the decline of white male leaders in top management positions and the rise of the previously disadvantaged groups, including women, to decision making positions (Horwitz & Jain, 2011).

Engineering has always been perceived as a man's world and it can be extremely challenging for a woman having to lead in such an environment. Menches and Abraham (2007) highlight the most encountered barriers in the construction industry. Other researchers also identify

obstacles in women's advancement to senior positions (e.g. Chiloane-Tsoka, 2010; Lyness & Thompson, 2000; Oakley, 2000).

## CHALLENGES OF WOMEN IN SENIOR MANAGEMENT AND LEADERSHIP POSITIONS IN THE CIVIL ENGINEERING INDUSTRY

### Slow career progression

Lawless (2001) states that women are marginalised in the engineering industry. In most cases, they are not afforded an opportunity to do the job they are qualified for. Instead, they are "protected" from rugged conditions and difficult situations. Those women who need training related to their job are given traditional female activities to perform, like typing or filing (Greed, 2000; Lawless, 2001). Some of the women who enter the industry in professional positions are offered technical positions and are, therefore, placed on site away from management or specialist roles (Bennett et al., 1999; Greed, 2000).

Oakley (2000) indicates that very few women in management have line management experience in areas such as marketing and operations, which are considered as a prerequisite for advancing to upper management positions. Women also find it difficult to get developmental job assignments and when they do, the assignments involve relationships that do not involve activities of authority because they are viewed stereotypically (Lyness & Thompson, 2000). The mid-career phase does not provide them with relevant experience that is required for senior management ranks, such as the position of CEO. Consequently, they do not qualify for promotion.

It has also been revealed by Whitmarsh et al., (2007) that a number of women do not possess skills for negotiating their promotions in the workplace. It can be a barrier to an individual's career progress. Female managers' promotion to upper positions can also rely strongly on women's skills to negotiate with relevant people and those skills can open opportunities for other benefits as well, such as salary progression, maternity leave and working flexible hours (Cook et al., 2002; Oakley, 2000).

### Work-family balance

A difficult work-family balancing act, including primary child care pressures, is outlined as one of the challenges women in construction management have to face (Menches &

Abraham, 2007). Most of the women are career and family people who hold demanding positions whilst actively rearing children (Tengimfene, 2009). Evetts (1996, cited in Bennett et al., 1999) has found that the majority of women in construction do not see management as a suitable career path for them since they have too many family commitments. Bennett et al., (1999) indicate that many women who start attending to their families quit the non-traditional occupations and consider traditional occupations, such as teaching, as a more suitable option. It has been found that many young women fail to sustain their male-dominated job aspirations due to lack of flexibility of job schedules, with the intent to incorporate family responsibilities (Frome et al., 2006; Geertsema, 2007). Watts (2009) states that the majority of women in management are overwhelmed by the demands to such an extent some of them are forced to choose between being an engineer manager or having a family.

Making a career decision without considering home and family commitments might be viewed as being naïve and short-sighted by many women (Cook et al., 2002). The authors suggest that for effective management of multiple roles, the structure of the work environment needs to be changed by allowing for flexible hours. It can result in an increasing number of women who choose prestigious, non-traditional and high paying jobs.

#### Working hours

Long working hours is a concern for the majority of women in senior management positions at male-dominated organisations and, as a result, is considered to be a barrier in their careers (Geertsema, 2007; Simpson, 1988). The results of a study conducted in South Africa about women in professional and leadership positions in the construction industry showed that a high percentage of the women aged between 41 and 50 years reported long working hours as a barrier, while a few of them in the other age groups agreed that long working hours were a barrier (Geertsema, 2007). Previous research by Simpson (1998) has also shown that a high proportion of women in senior management positions experience long working hours as a major source of pressure when compared to those women at lower levels of management. The study further reveals that more married women than unmarried women report long hours as a pressure. However, there is a major difference between those women with children and the ones without children. Women without children are surprisingly more likely to identify long hours as a pressure as opposed to women with children. Women with children regard conflicting demands at home and work as their key sources of pressure (Simpson, 1988).

Bebbington (2002) argues that:

“the ‘domestic responsibilities model’ positions women in normed relationships in terms of the family, implying that all women share a commonality of lifestyle, that unmarried or childfree women do not have responsibilities in the private sphere, and that women have restricted mobility and are in fixed situations from which they cannot easily escape” (p. 364).

Simpson (1998) highlights three main reasons that can cause managers to work long hours: Firstly, the job may demand extra hours. It only occurs when there is a need, for example, if there is a deadline to meet. Secondly, the restructuring of an organisation may result in high workloads or loss of personnel due to instability in the organisation. Thirdly, Simpson indicates that sometimes managers feel that they can only retain their position by working long hours in order to show commitment to their work even though the job does not require that kind of inflated commitment. This kind of behaviour is referred to as ‘presenteeism’ (Simpson, 1998).

#### Organisational Culture

Greed (2000) describes the construction industry as a hostile world that is occupied by competitive and aggressive professionals with attitudes and values that have a strong influence on their professional decision-making. This group of professionals decide about whom to welcome and whom not to welcome as part of their team based on their personal perspectives, professional socialisation and social class position. Greed further argues that outsiders who seek to fit in are either socialised to conform or alternatively are marginalised, discouraged or thrown out. “Those who ‘fit in’ are the most likely to gain seniority” (p. 183).

In their study of women in construction, Bennett et al., (1999) find that most of the women do not have a sense of belonging because of the “old boys’ network” that exists in the industry. Additional evidence is also provided by Lyness and Thompson’s (2000) study when a female executive participant in the study reports that a lack of culture-fit and being excluded from informal networks are some of the great barriers to career progression of women.

Chiloane-Tsoka (2010) finds that majority of men do not believe that women have the potential of being leaders. Women in management often find themselves in situations where they cannot succeed no matter what they do; sometimes it is because they are deliberately given tasks beyond their capabilities (Oakley, 2000; Lawless, 2001). At the same time, they

are expected to be assertive like men but not too assertive, to dress like women but not too feminine. These challenges might lead to continuous self-monitoring and self-consciousness that can negatively affect their performance when they take it too seriously (Oakley, 2000).

#### Promotion policies

Botha (2005) indicates that the South African government has implemented gender equality and affirmative action legislation but people still experience inequality in career advancement and job segregation. In the construction sector, it is also found that women are obstructed at and confined to the middle management level, and unable to reach the next level of management (Greed, 2000). Women do not get promoted easily. As a result, they still hold fewer leadership positions than men. Oakley (2000) indicates in her study of barriers to CEO positions that often women in middle management express a lack of performance-based feedback as opposed to their male counterparts. It becomes a barrier to promotion for women. In most of the organisations, there is often no clear written guideline about matters such as recruitment, promotion, career development and qualification; it all depends on “who you are” (Greed, 2000).

#### Gender-based stereotypes

Stereotypically, male managers are viewed as independent, unemotional, competent, aggressive, dominant, logical, active, objective, skilled in business and having all the positive qualities of a good manager. In the same vein, female managers are viewed as possessing the opposite qualities of male managers (Oakley, 2000). She further highlights other restraining stereotypical opinions about women in upper executive positions, for example, their tone and pitch of voice, mode of dress, and physical appearance. These perceptions could influence the decision-making process of most women in middle and upper management to embrace a short hairstyle and a masculine dress code in order to under emphasise their femininity and to increase their observed authority (Oakley, 2000). Beautiful women are viewed as not suitable for management positions since they may cause distraction in management (Chiloane-Tsoka, 2010).

#### Lack of support from organisations

A South African study about women in professional and leadership positions in the construction industry explicitly indicates that women in leadership positions need continuous active support. Such support can be achieved by providing training, seminars, and mentorship

programmes (Geertsema, 2007). Support programmes are critical to the civil engineering industry in order to avoid the exodus of women each year, while unsuitably skilled workers remain behind (Menches & Abraham, 2007). Mentoring relationships are also necessary, since the primary purposes of these relationships are to assist the mentees with advancing in their career and attaining positions they are qualified for (Cook et al., 2002; Williams-Nickelson, 2009; Chiloane-Tsoka, 2010). In the process, mentees need knowledge, skills and ability to establish what is important for the benefit of their career advancement in the rapidly changing and complex profession (Williams-Nickelson, 2009). The absence of mentors can be seen as a barrier to the career advancement of many women in leadership (Chiloane-Tsoka, 2010).

Due to the existence of the barriers and prejudice that are restraining women's career development, some women may settle for careers that under utilise their abilities (Cook et al., 2002). According to Lawless (2001), women are welcomed in the engineering practice but they have to overcome the above-mentioned problems.

#### ACHIEVEMENT MOTIVATION AND CATALYST

Whitmarsh et al., (2007) have found that most women who explore non-traditional occupations have received support and mentoring from outside of their families. Such support includes professionals like teachers, professors, and guidance counsellors. The authors also indicate that co-workers and line managers can also play a crucial role in motivating some women to achieve success in their career paths. The South African Government is perceived to be playing a key role in making the young generation tackle the career opportunities in the construction industry (Geertsema, 2007). The support of the Bloodhound Project by the Northern Cape Government of South Africa shows the determination and commitment the government has to inspiring young people in the disciplines of engineering, mathematics and technology (Northern Cape Tourism Authority, n.d.). The National Youth Service Programme is another example that encourages young people to participate in opportunities that are offered by different institutions, including the Department of Science and Technology by volunteering their services in order to develop themselves intellectually (South African Agency for Science and Technology Advancement, n.d.).

Lyness and Thompson (2000) have found that it is significant for women to have professional relationships with influential people, to be willing to take risks, to ask for developmental assignments, and to have a good track record in order to overcome gender stereotypes. Brooks Greaux's (2010) study also emphasises the value of involving women in developmental assignments, such as start-up and international assignments to buttress their career development. Brooks Greaux's participants describe international assignments as a task that involves working in another country to turn around or establish a new office. It happens in the absence of family, friends, and solid networks. They describe start-up assignments as an "opportunity to flex their business acumen and develop their skill sets in functional areas other than the ones they were trained in and hired for" (Brooks Greaux, 2010, p. 144).

Given a number of obstacles that may impede women in their career advancement, access to supportive mentors may assist with negotiating the barriers they encounter along their path (Cook et al., 2002). According to the study by Lyness and Thompson (2000), mentoring is viewed as one of the constituents of career advancement. The results in the study by Lyness and Thompson show that mentoring is reported more extensively into the case of the success of men rather than of women. The findings imply that more successful women do not report mentoring as a constituent of their career advancement while less successful women do. In contrast, the results from a case study of the development of African American women executives reflect that almost all the participants have had mentors, sponsors, or both; who played a significant role in their career advancement to senior executive positions (Brooks Greaux, 2010). Cook et al., (2002) suggest that women can benefit equally from being mentored by people of similar or dissimilar gender and ethnicities.

The study results of Brooks Greaux (2010) also reveal that moving from one company to another is the best strategy for advancing to senior positions. The majority of the women in her study express that career progression in a single company is very slow; however, it is easier for them to attain high level positions by applying for placement at different companies.

## SELF-DETERMINATION THEORY

The self-determination theory is considered the most suitable theoretical foundation for this study, since motivation is one of the fundamental requirements for mobilisation of women to the top ranks in a male-dominated industry. Motivation also seems to be playing a crucial part in the role of women as leaders and/or managers in mobilising other people to act with the purpose of achieving the goals of the company (Deci & Ryan, 2000a). Deci and Ryan (2000a) are of the opinion that motivation involves energy, persistence, direction, and equifinality. It is evident from the literature review conducted in the study that women who have climbed the corporate ladder to the top in male-dominated industries are motivated and need to have endurance along their path (e.g. Bennett et al., 1999; Greed, 2000; Lawless, 2001; Menches & Abraham, 2007). When individuals have precise goals to pursue, there should be nothing that can prevent them from achieving their goals despite their historical backgrounds, financial status, gender, and other perceived obstacles. Top positions are not reserved for specific people; everybody has an equal opportunity to access them even though it might be in a different approach.

The self-determination theory assumes that “humans are active, growth-oriented organisms who are naturally inclined toward integration of their psychic elements into a unified sense of self and integration of themselves into larger social structures” (Deci & Ryan, 2000b, p. 229). Deci and Ryan (2000b) imply that human beings tend to engage in interesting or rather challenging activities in order to exercise their capabilities, to pursue connectedness in social groups, and to integrate intra-psychic and interpersonal experiences into a fundamental unity.

During career development processes, people engage in behavioural and psychological activities that are executed out of interest and consequentially these activities promote growth. This kind of motivation is referred to as intrinsic motivation; however, some forms of motivation are based on instrumental reasons, such as money and status (Deci & Ryan, 2000a, 2000b). Extrinsic motivation applies to an individual who engages in an activity or behaviour because the consequences are viewed as important (Deci & Ryan, 2000a, 2000b). According to Deci and Ryan (2000a), “extrinsic motivation refers to the performance of an activity in order to attain some separable outcome and, thus, in contrast intrinsic motivation refers to doing an activity for the inherent satisfaction of the activity itself” (p. 71). In both

instances, intrinsic and extrinsic motivational behaviour can be self-determined (Deci & Ryan, 2000a, 2000b).

### Intrinsic Motivation

The self-determination theory suggests that people have three innate psychological needs, namely competence, autonomy and relatedness. Taking these needs into consideration will improve the understanding of human motivation (Deci & Ryan, 2000a, 2000b). Competence or effectance is the extent to which a person feels proficient in pursuit of achieving his or her goals in life (Deci & Ryan, 2000b). They further define autonomy as the extent to which decisions and actions originate from a person's integrated self, based on their interests and self-endorsed values. Relatedness is described as a person's desire to feel connected to people around him or her. According to the self-determination theory, these basic needs can be satisfied while an individual engages in different behaviours and actions. The satisfaction of all these basic needs is essential for the psychological growth, integrity and well-being of individuals. It is predicted that, if the facilitating conditions support need satisfaction, the outcomes will be optimal development and well-being. If the conditions prevent need satisfaction, the consequences will be degradation or ill-being (Deci & Ryan, 2000b).

“Perhaps no single phenomenon reflects the positive potential of human nature as much as intrinsic motivation, the inherent tendency to seek out novelty and challenges, to extend and exercise one's capacities, to explore, and to learn” (Deci & Ryan, 2000a, p. 70). In order to facilitate or enhance this inherent propensity, a supportive environment is required (Deci & Ryan, 2000a, 2000b). Sometimes, the organismic process gets delayed by certain workplace conditions that women find themselves in. Botha (2005) indicates that a male-dominated work environment hampers women in the actualisation of their potential.

As it is indicated in previous studies (e.g. Chiloane-Tsoka, 2010; Lawless, 2001; Menches & Abraham, 2007; Oakley, 2000), there are a number of challenges that women encounter in their working environment; therefore, we may assume that their environment thwart the need satisfaction. It is explicit from earlier research that the civil engineering industry can be excessively challenging, and not providing the ambient support that is needed for the women to satisfy their basic needs. Consequently, women may exhibit negative processes, such as the tendency of not sharing their concerns with other people, focusing on oneself, and engaging in psychological withdrawal behaviour as alternative motives (Deci & Ryan, 2000b). The

self-determination theory maintains that “people will always pursue goals, domains, and relationships that allow or support their need satisfaction” (Deci & Ryan, 2000b, p. 230).

According to the cognitive evaluation theory, a sub-theory of the self-determination theory, the intrinsic motivation needs environments that will facilitate its expression rather than undermine it (Deci & Ryan, 2000a). The theory suggests that social-contextual events like rewards, positive feedback and achievements at each career developmental stage promote a feeling of competence which facilitates the intrinsic motivation. The theory further indicates that feelings of competence alone are not sufficient to enhance intrinsic motivation; the sense of autonomy is also needed and, therefore, people have to experience their behaviour as self-determined. Previous studies as indicated by Deci and Ryan (2000a, 2000b) have shown that parents and lecturers who support autonomy, rather than those of them who are controlling, tend to catalyse intrinsic behaviour in their children or students. It results in individuals who are trusting their context and believing that it will be responsive to their personal initiations and consequently they develop a desire and a curiosity for more challenges in various areas (Deci, Connell, & Ryan, 1989). That is why some women still make it to senior positions regardless of the challenges they are facing.

Relatedness, as one of the basic needs for intrinsic motivation, can easily be explained from the perspective of the attachment theory which postulates that when infants feel securely attached to their parents, it stimulates exploratory behaviour (Deci & Ryan, 2000a). The same principle applies to the self-determination theory when more intrinsic behaviour gets facilitated by a sense of security and autonomy. When people feel secure and more connected to other people, as well as being at liberty in their choice of career plans, they engage in more exploratory behaviour.

Flum and Blustein (2000) do not view exploration as a stage in career development but perceive it as a process with critical lifelong and adaptive functions. The authors further indicate that exploration is the process that encompasses activities that are directed toward enhancing self-knowledge and knowledge of one’s environment that particularly enhance self-esteem. It also includes an attitudinal component which refers to one’s motivation for engaging in exploration and exploratory skills that develop while an individual is engaging in exploratory activities which may result in exploratory competence (Flum & Blustein, 2000). The central result of exploration is self-construction, “which refers to the process of

developing a coherent and meaningful identity and implementing that identity in a life plan” (Flum & Blustein, 2000, p. 382). Blustein, Devenis and Kidney (1989) have found that exploration and occupational commitment that play a part in identity formation are related to a certain set of career developmental tasks.

If women pursue developmental tasks at work out of interest and thrive on the execution thereof, it is expected that they will experience autonomy and competence which are essential for motivating human activity (Deci & Ryan, 2000b). Additionally, if their family members, friends, supervisors and or colleagues are viewed as supportive, they will engage in more intrinsically motivated behaviours. However, it has been identified by Deci et al., (1989) in the study of self-determination in a work organisation that at times managers’ support for self-determination is insufficient to absorb all problems that are experienced by employees, especially if the problems involve salaries and job security. In such instance, the company is obliged to provide concrete evidence in an informational, autonomy-supportive context to demonstrate that they are concerned about their employees.

Intrinsically motivated behaviour does not require reinforcement because people find performing an interesting activity to be intrinsically rewarding (Deci & Ryan, 2000b). Marshall (1984, as cited in Simpson, 1998) is of the opinion that women’s motivators are more intrinsic relative to those motivators of men; their work orientation is directed towards intrinsic rewards, such as job satisfaction and working relationships.

#### Extrinsic Motivation

While people are developing, they assume a variety of responsibilities and experience social pressure to engage in certain behaviours that have no intrinsic origin. Such extrinsically motivated behaviour is another type of self-determined motivation (Deci & Ryan, 2000a). Most of the behaviours are aimed at basic needs satisfaction, especially when the satisfaction received is insufficient (Deci & Ryan, 2000b). For example, if people feel redundant in a particular job, they may explicitly search for a job that will enable them to feel valuable and competent.

Individuals have ways of behaving that is not intrinsically motivated. Internalisation and integration of the values and regulations of the requested behaviour are used for the practice to be manifested (Deci & Ryan, 2000a, 2000b). In every career or workplace environment

that an individual enters there are certain behaviours and values expected. These behaviours may not necessarily be interesting and the values may be difficult to adopt (Deci & Ryan, 2000a). “Internalisation refers to people’s assimilation of a value or regulation, and integration refers to the further transformation of that regulation into their own with the effect that, subsequently, it will emanate from their sense of self” (Deci & Ryan, 2000a, p. 71). Deci and Ryan (2000b) are of the opinion that these processes may assist individuals with incorporating external regulations into their personal systems in order for these individuals to be self-determined when they are endorsing these regulations. The civil engineering industry can be viewed as having its own values and regulations, which require women to internalise them with the aim of fully accepting these values and regulations as their own and experiencing integrated identification (Deci & Ryan, 2000b).

According to the self-determination theory, there are different forms of internalisation of extrinsic motivation (Deci & Ryan, 2000a, 2000b): External regulation occurs when individuals’ behaviour is dependent on external contingencies. Introjection is another regulation that involves individuals’ partial internalisation of regulations and not accepting them as their own. Subsequently, it results in behaviour that is not self-determined. Identification regulation is the process that directs individuals to identify and accept the value of defined behaviour which implies that they have fully accepted its regulations as their own. Finally, there is integration regulation which also involves identifying the value of defined behaviour and integrating those identifications with other aspects of self; this process yields self-determined behaviour. Extrinsically motivated behaviours differ to the extent that their regulation is autonomous (Deci & Ryan, 2000a, 2000b). It is critical for women’s career choices to emanate from within themselves if they are to perform their duties out of their own will, and further advance in their careers, since those choices will be identified and accepted as valuable to them. If there is no consistency between what a person is doing and self-realisation, then an individual will experience pressure, conflict and tension as a result of internally controlling regulation (Deci, Eghrari, Patrick & Leone, 1994). Internalisation is more efficacious and integrated when it occurs in the presence of support for self-determination while it is less and introjected in the absence of self-determination (Deci et al., 1994).

In the civil engineering industry, women may easily internalise the regulations and values of the industry if they experience a feeling of relatedness and competence with regard to the

regulation that they are internalising; it involves the ability to understand or to get the rationale behind the regulation in order to ratify it (Deci & Ryan, 2000b). Deci et al., (1994) suggest three contextual events that will enable the acceptance of a regulatory process as one's own. This process is also referred to as integrated internalisation: (a) providing a meaningful rationale, (b) acknowledging the perspective of the behaviour, and (c) conveying choice rather than control. Furthermore, it is found that when the social context supports self-determination, integration tends to take place but when the context does not support self-determination, introjection is likely to happen (Deci et al., 1994). Therefore, it can be assumed that social context influence the quantity and quality of internalisation (Deci et al., 1994).

## CONCLUSION

The literature review presented in this chapter gives an indication of the significant issues in the career developmental experiences of women in male-dominated occupations. Gender discrimination is taking away individuals' control of their own career choices and satisfaction by creating barriers in all human spheres (Cook et al., 2002). It is evident from previous studies and theories that each individual's career path is unique. It depends on factors; such as the individual's personality, life experience, and organisations one works for. Greed (2000) has discovered in her study that some women are more likely to be accepted in the construction industry and, therefore, they do not experience any problems in their career development. "Career paths are characterized [sic] by unexplained trajectories and apparent, but not actual, disconnections" (Bloch, 2005, p. 198).

From the self-determination theory, it can be deduced that women who have made it to the top positions have innate needs that propel them to pursue their career goals. As a result, they continuously engage in activities that bring them need satisfaction, since they are growth-oriented beings. The focus of this study is to establish how these women have ascended to the top rank of their careers, since most of the previous studies reveal that this career path has many obstacles, especially for women. In spite of all the barriers and challenges that have been identified, what drives these women to chasing their current top positions? Is it intrinsic or extrinsic rewards that ultimately bring about innate need fulfilment? In addition, the theory emphasises the importance of a supportive environment for the satisfaction of the basic psychological needs. It is, therefore, significant to explore the women's social context with

regard to being given choices, the existence of a meaningful rationale behind regulations, and acknowledgement of their feelings and opinions in their career journey. The social context can either facilitate or impede one's natural functioning (Deci et al., 1994).

As pointed out at the beginning of this chapter, there are a few studies in South Africa that focus on women in management or leadership positions in civil engineering industry. The current study is considered to be a relevant platform to establish from South African women in the civil engineering field what their career developmental experiences are. It is assumed that women in top executive positions in this particular industry have learnt a lot along their career paths that can benefit future generations and the industry as a whole. It includes the manner in which they have adapted with regard to dealing simultaneously with the values and regulations of industry and individual qualities and attitudes that are required for survival in the industry.

In the next chapter, the method that was followed in seeking and obtaining relevant data that were needed to answer the outlined research questions and objectives, is explained in details. The chapter provides a comprehensive understanding of the appropriateness of the research design chosen for this study.

## CHAPTER 3

### RESEARCH DESIGN AND METHOD

#### INTRODUCTION

In this chapter, I am discussing the design of the study which incorporates the method used for selecting participants, collecting data and analysing data. It further supplies an explanation of the manner in which trustworthiness was established and ethics were applied in the study. The purpose of the study was to understand career developmental experiences of women in senior leadership positions in the civil engineering industry, which refers to how these women manage their careers within and between the organisations.

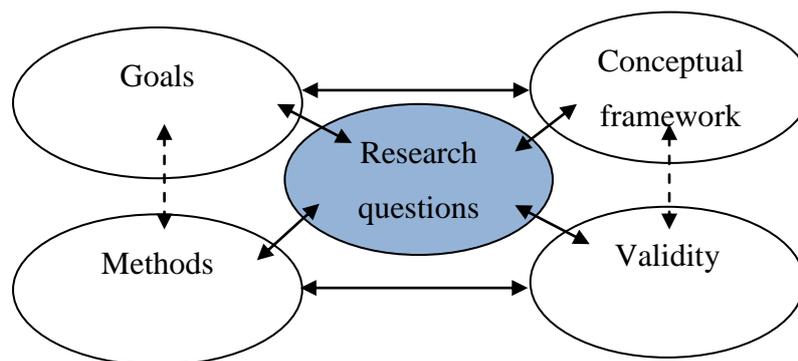
#### RESEARCH DESIGN

A qualitative approach was followed in this study which involves “studying things in their natural setting, attempting to make sense of, or interpret phenomena in terms of the meanings people bring to it” (Stake, 2005, p. 3). Yin (2009a) is of the opinion that every empirical research study has a research design, which he defines as “the logical sequence that connects the empirical data to a study’s initial research questions and, ultimately, to its conclusions” (p. 26).

According to Maxwell (2013), qualitative research requires a flexible, non-sequential design. He proposes a model of research design called an interactive model that consists of five components; namely goals, conceptual framework, research questions, methods, and validity (Figure 3.1). Maxwell argues that these components form an integrated and interactive whole. He further suggests that the more conceptual top triangle of the model includes goals, research questions and conceptual framework and these elements needs to be viewed as a closely integrated unit. Equally so, the more operational bottom triangle should also be considered a closely integrated unit. It consists of methods, validity and research questions. The research questions can be considered as the link between these triangles.

Concisely, the model indicates the interactive nature of the design decisions in qualitative studies (Maxwell, 2009). It implies that the purpose of this study, that can be referred to as

research goals, has an influence in choosing the methods used for collecting and analysing data and conversely, the methods found suitable for the study are controlling the goals. At the same time, the goals are informed by current theory and knowledge. When choosing the suitable theory and knowledge, the goals and research questions of the study are taken into consideration. My conceptual framework helped with identifying possible validity threats. Similarly, validity threats influenced my conceptual work and the methods chosen. Research questions are considered as the heart of the model that connects all other components involved in the design. Therefore, the research questions should inform and be sensitive to these components (Maxwell, 2013). Maxwell (2013) also highlights that there are environmental factors that can influence the design of the study. These involve my research skills, available resources, ethical standards, research setting, perceived problems, data collected and the results drawn from the data. Figure 3.1 below illustrates how an interactive model functions.



*Figure 3.1.* An Interactive Model of Research Design (derived from Maxwell, 2013, p. 5)

### Case study

A case study strategy of enquiry was used to gather rich and relevant information, since my objective was to conduct an intensive investigation of the career developmental experiences of women in top leadership positions in the civil engineering industry. According to Yin (2009b) a case study method should be considered as an option when the phenomenon under investigation cannot be separated from its context. It is assumed that the context contains valuable exploratory variables. Women's career experiences cannot be easily distinguished from their place of occurrence. Identifying a theoretical foundation plays a major role during the data collection phase (Yin, 2003a).

A case study method allowed me to immerse myself in the few cases I studied. Consequently, I was closer to the social worlds of the participants which enabled me to view patterns in their context holistically (Stake, 2005). Case study is a method of qualitative inquiry that provides in-depth analysis which, in turn, yields richness and completeness (Yin, 2003b). A descriptive case study is regarded as the most suitable type of a case study to present a complete description of what the study intends to investigate in its real-life context (Yin, 2003a). It develops what is perceived to be the case's own issues, contexts, interpretations and its thick descriptions (Stake, 2005).

According to Yin (2009b), case studies can be either of a single-unit or of multiple-case designs for understanding a larger class of similar units. The multiple-case design was chosen for this study, since it allowed a comparison between observed practices by subjects investigated and subsequently yielded a complete understanding of these practices (Wahyuni, 2012). In this study, only a few cases were selected to obtain a comprehensive understanding of the phenomenon under investigation. Yin (2003a) holds the opinion that when the cases are few, it is easy to do an intensive study of each one of them. However, the disadvantage is the representativeness of the cases to the larger population. The aim of the study was not to generalise the research findings "but to describe the case in sufficient descriptive narrative so that readers can experience those happenings vicariously and draw their own conclusions" (Stake, 2005, p. 450).

Case studies involve exploration of bounded units by means of in-depth data collection (Fouche & Schurink, 2011). Cases studies are found to be embedded in a number of contexts or backgrounds; for example historical, cultural, economical, and physical circumstances which make these case studies complex entities (Stake, 2005). It was, therefore, essential to take into consideration participants' contexts, activities, and functioning while data were gathering, since it represented the holistic nature of the study.

According to Stake (2005), in a case study data gathered need to be verified. To this end, semi-structured interviews and field notes were used in this study to collect data. In order to avoid misinterpretation of data, participants were given their transcripts to read with the purpose of verifying the accuracy of these transcripts. They were also given an option to add any of the reflections they had about the content of the transcripts. Mostly, the content of the

transcripts were found to be accurately recorded. However, some of the transcripts required minor corrections (Appendix E).

#### Pilot case study

A pilot case study in research is critically important, since it enables the researcher to improve the data collection process by adjusting the content and the procedures to be followed (Yin, 2009b). According to Maxwell (2009), previous studies can perform some of the functions of a pilot study. However, Maxwell (2009) emphasises the importance of a pilot study, since it produces an understanding of the concepts and the theories held by the targeted participants. The limited number participants in the target population and the difficulty in accessing them resulted in a pilot study not being formally conducted. After the first interview, I had to make minor modifications to my interview structure and questions. Listening to each voice recorded interview enabled me substantially with the preparations for the next interview. I also relied intensely on prior research studies (e.g. Brooks Greaux, 2010) in terms of structuring my questions and understanding my cases.

## RESEARCH METHOD

#### Selection of participants

The career developmental experiences of women in executive positions in the civil engineering industry are the primary units of analysis in this study. Polkinghorne (2005) argues that in qualitative research the unit of analysis focuses on experience, not on individuals or groups. In multiple-case studies, the selection of cases follows replication logic. Therefore, it is predicted that the cases chosen will result in similar findings (Yin, 2009b). The selection of cases was not based on sampling that focused on selecting a subset of cases representing the population of cases but rather on a replication system (Durrheim, 2010). Contextually, the use of the word sampling is not recommended in qualitative study (Polkinghorne, 2005). Cases were selected by means of purposive selection with the goal of choosing fertile exemplars of the experience under investigation (Polkinghorne, 2005).

Purposive selection was used to ensure that the selected cases had the particular characteristics that I was targeting in the population criteria (Strydom, 2011). It was also useful for capitalising on the selection of cases that were readily available and accessible, since it enabled me to collect rich data at a low cost (Henry, 2009). Due to the shortage and

unavailability of women in senior leadership positions in the civil engineering industry I had to keep on asking the available cases to help with identifying other women in the industry that fitted the selection criterion until data saturation was reached. Yin (2009a) is of the opinion that when interviewees contribute more to the study, they are more of “informants” rather than respondents. Therefore, I viewed my study respondents as informants.

The criteria used for selecting informants were:

- Women were expected to be in senior leadership and management positions in the civil engineering industry. They were to hold senior positions at a level of chief executive officer (CEO), chief operating officer (COO), chief risk officer (CRO), chief finance officer (CFO), chief information officer (CIO), chairperson, president, vice president, director or equivalent positions.
- They were to have a minimum work experience of three years in a leadership and/or management position.
- For the success of the study, they needed to willingly share their career development experiences.
- They were required to willingly participate in individual interview sessions of approximately one hour long.

The selection of informants was based more on the potential of learning more from the informants rather than on the representativeness of the population of informants (Polkinghorne, 2005; Stake, 2005). It was, therefore, significant for me to view the potential informants’ profiles on the Internet before the final selection of the informants for inclusion in the study was made. Although there were restrictions on some of the informants’ profiles, I managed to gather some basic information about them, even if it was by word of mouth. As a result, the seven informants from both government and the corporate sector were sought and selected for the study.

The data collection took place over a period of eight weeks. The majority of informants had civil engineering qualifications. The qualifications were dependent on their expertise. There are certain skills of significance for the smooth management of a company or an organisation apart from its specialisation; for example financial management skills and human resource management skills are also required to hold a high office. It was, therefore, also interesting to

find that some women were holding prominent roles, like CEO positions, although they did not have any civil engineering qualifications. Unfortunately, none of them were available to take part in the study. Despite the study primarily being based in Gauteng, South Africa, there was diversity in terms of ethnicity and age groups. It was found that most of the informants were married and had children. Their job titles ranged from Directors, Head of Departments to Chief Executive Officers. Table 3.1 provides biographical information about informants.

Table 3.1

*Informants' biographic information*

Participant	Age	Ethnicity	Marital status	No. of children	No. of years at senior position	Qualifications	Current studies	No. of awards received	Job position	Member of professional society
Agrineth*	44	Indian	Married	3	15	BSc Eng. (Civil) GDE	Certificate in Arbitration	5	CEO	Yes
Bohlale*	44	African	Married	2	6	MSc Civil Eng. BSc Civil Eng.	None	8	CEO	Yes
Tamia*	57	White	Married	1	12	BSc Honours (Physics) Teaching Degree	None	1	Quality Management Specialist (Manager)	No
Mahlatse*	31	White	Married	0	4	MBA B. Eng (Civil) S.A.	None	2	Associate Director	Yes

Participant	Age	Ethnicity	Marital status	No. of children	No. of years at senior position	Qualifications	Current studies	No. of awards received	Job position	Member of professional society
Mpho*	35	White	Married	1	4	D.Eng (Civil) M.Eng (Civil) B.Eng (Civil)	None	3	Associate Director	Yes
Tiara*	36	Indian	Married	2	3	Project Management Professional BSc Civil Eng.	None	-	Principal	Yes
Portia*	38	African	Divorced	2	8	BSc Civil Honours	None	2	Head of Department	Yes

\*Pseudonyms were used for confidentiality purposes

#### Entrée and establishing researcher role

Informants for the study were identified by means of social and professional networks. My family members and friends played an instrumental role in identifying the informants, since they were working in the civil engineering industry, where their professional membership in societies, such as Engineering Council of South Africa, and professional networks, such as LinkedIn were used to identify suitable informants.

My original intent was to have a short meeting with the informants a few days before the interview to discuss what the study entailed, what was expected of them, time and venue of the interview, and to collect signed written consent from the informants, while at the same time building rapport with them. However, things did not go according to plan due to the difficulty in accessing the informants and their busy schedules. The appointments were arranged with the informants' personal assistants, which meant that I never got to talk to most

of them before the interview. Electronic mails seemed to be the most preferred means of communication rather than telephone conversations or face-to-face meetings. An informed consent form (Appendix A) was sent to the selected informants for them to make a knowledgeable decision of taking part in the study. They responded by means of an electronic mail from their personal assistants, indicating their interest in the study. Fouche and Schurink (2011) are of the opinion that the successful execution of the design and data collection rely on the researcher's ability to develop and maintain relationships with the gatekeepers and the participants.

Therefore, the process of establishing rapport with the informants took place during the interview session while relationships with their personal assistants were already solidly developed. I used the first 10 minutes of the interview session to establish a relationship with the informants, since it was regarded as critical for building trust between the researcher and the interviewees (Greeff, 2011). I also used the time to formally introduce myself and to give an explanation of the study and its purpose. Ethical principles, such as confidentiality, were also discussed; not forgetting to get permission for recording the interview.

As a post-graduate student researcher, I did not have much experience in using interviews as a data collection method. Therefore, since one of my responsibilities involved data collection, I had to attend workshops about conducting interviews, and listen and watch television programmes that involved interviews in order to improve my interviewing skills. The workshops and television programmes assisted me with identifying my strengths and weaknesses in relation to conducting interviews. These auxiliary resources also provided me with tips on how to conduct a good interview, for example seating posture, and how to build rapport with the interviewee.

#### Data collection techniques

Data were collected by means of semi-structured interviews, where a set of predetermined questions were formulated as a guideline (Appendix B). Informants' demographic information was also requested in order to acquire a full description of the cases (Appendix C). The literature review provided support during data collection by directing me as the researcher to ask appropriate questions. After the literature review, it was evident that there were challenges that women in leadership positions were experiencing. Therefore; I was interested in finding out what informants' challenges were. Open-ended questions were asked

in a semi-structured format. The interviews progressed from concrete, to abstract, then to interpretive questions that probed informants to talk about their experiences and interpretations (Singleton & Straits, 2010). Concrete questions were for example, "Please tell me about where you grew up, your family background, interests and so on". Abstract questions involved questions like, "What factors facilitated your success?" An example of an interpretive question asked was "What meaning did that experience have to you?" Probing questions were also used in an open-ended fashion and it was based on the participant's comments rather than on theory, for example "Can you please tell me more...?" (Hsieh & Shannon, 2005).

The interviews resembled conversations due to the semi-structured nature thereof. Yin (2009a) emphasises the importance of operating on two levels at the same time when conducting interviews, which requires "satisfying the needs of your line of inquiry while simultaneously putting forth 'friendly' and 'nonthreatening' questions in your open-ended interviews" (p. 107). The informants were offered an opportunity to construct reality and to think about situations which produced more understanding (Yin, 2009b). The data collection method was also found to provide me with an opportunity to inquire about the informants' feelings, motives and interpretations of events (Singleton & Straits, 2010).

This method of data collection allowed flexibility in the interview and made it easier for me to probe any interesting concepts that arose during the interview, resulting in rich and extensive data (Yin, 2009a; Greeff, 2011). Yin (2009b) refers to the open-ended interviews as "elite" interviews, which support the appropriateness of the data collection method, since the study focuses on the elite female members of the civil engineering industry. These interviews lasted for approximately an hour, including conversations that were necessary for building rapport with the informants.

#### Strengthening of data

In order to strengthen the reliability of data collected during interviews, different data sources were used in the study (Yin, 2009a). During the interview process, field-notes were captured in mind, which involved the recording of the activities, events, and any features of the physical environment that were influencing the process. Field notes assist in providing the complete picture in order to understand and give meaning to the situation (Mulhall, 2002). Since it is critical in case studies to study cases in their natural settings, interviews were

conducted at the informants' offices which gave me the opportunity to directly observe them in their work environment (Yin, 2009a). This observation provided important information about their behaviour, size of the organisations, and furnishings of offices. Observation data were written down in the form of narratives immediately after leaving the interview setting while I was still able to easily recall it, since field notes were only recorded in mind, in order to focus all the attention during the interview on the informants. Schurink, Fouche and de Vos (2011) are of the opinion that these narratives can be helpful in linking occurrences; such as words, expressions and interaction between people, their values and norms, as well as other occurrences. They further regard such associations as necessary for developing and verifying ideas, themes and typologies. For example, the theme of clothing as a coping strategy that emerged during the interview was supported more emphatically by my observation of their appearance on that day.

Informants' comprehensive curriculum vitae and biographies were also requested to corroborate evidence collected during interviews. These kinds of personal documents also assisted in providing precise details; such as the correct spelling of names and places mentioned during the interviews, titles or positions, and recording their different roles in a systematic order which enabled and enhanced the data analysis (Yin, 2009a).

#### Recording of the data

Since it is critically important to keep record of the interview, an audio recorder was used with the purpose of recording the interviews with expressed consent from the participants. However, Yin (2009a) is of the opinion that the use of a recording device is a matter of personal preference. According to Lincoln and Guba (1985), an audio recorder has few advantages which include the provision of impeccable data, and subsequent review of nonverbal cues; such as pauses, and raised voices. It also allows the researcher to frequently review the recordings until a full understanding is achieved. The authors further indicate that it is important for the interviewer to have a contingency plan in the event that the recording equipment fails mechanically. To that end, I always carried my cell phone with me as an alternative recordings device in the event of the malfunctioning of the audio recorder.

At the end of the data collection phase, data had to be organised in preparation for the analysis. Field notes were written down and the audio recorder data were sent to the professional transcriber. Subsequently, I had to check the transcripts for accuracy by listening

to the audio recorder while reading the transcripts. Errors were fixed in collaboration with the transcriber and the trustworthiness certificate was issued (Appendix D). Once this process was completed, the transcripts were sent to the informants to confirm and verify whether or not their thoughts were captured accurately (Brooks Greaux, 2010; Lincoln & Guba, 1985).

#### Data analysis

My primary objective with data collection was to explore the career developmental experiences of women in top executive positions. Data are the constructs that emerged from my interaction with the informants (Lincoln & Guba, 1985). Therefore, the data analysis process was the reconstruction of these constructs into comprehensive and meaningful information (Lincoln & Guba, 1985). Since the descriptions alone are not sufficient, the researcher is expected to integrate the descriptions with concepts and ideas that will enhance the understanding thereof (Singleton & Straits, 2010). According to Singleton and Straits (2010), “the field approach to data analysis entails some attempt to summarise and order the data by identifying themes, concepts, propositions, and theories” (p. 385). In the next chapter, data is organised in a way that addresses the research questions. The identified themes are highlighted and interpreted by the use of theories, literature review, and my own understanding in order to present it meaningfully.

Data analysis in a qualitative study requires a dual approach; either data analysis occurs in the field during data collection or data analysis takes place away from the field (Schurink et al., 2011). For instance, the recording and writing of field notes can be referred to as part of the data analysis process while the researcher is trying to make sense of the data (Singleton & Straits, 2010). The data collection and data analysis phases complement each other because the analysis requires revision of data collection procedures and strategies that results in rich data (Schurink et al., 2011).

Data was analysed by using content analysis which, according to Hsieh and Shannon (2005, p. 1278) can be defined as a “research method for the subjective interpretation of the content of text and data through the systematic classification process of coding and identifying themes or patterns”. This kind of analysis seems to be suitable since the existing literature about this phenomenon is limited (Hsieh & Shannon, 2005). Schurink et al., (2011) have indicated that there are various ways of analysing qualitative data and the process can be very

demanding for a novice. I, therefore, opted to use a computer assisted tool called Nvivo to complement my data analysing skills.

Computer programs for qualitative data analysis are employed to facilitate the ordering and categorising of massive amounts of data. Therefore, its full use should be applied when administrative tasks are executed (Schurink et al., 2011; Welsh, 2002). It is important to be mindful of the fact that the computer program had not been used to substitute me as a researcher. Interpretation of data is entirely the researcher's responsibility, while the program assists with structuring and presenting data for interpretation (Lincoln & Guba, 1985).

Creswell (2009) identifies six steps in qualitative data analysis, which I have followed as a guideline during the data analysis phase.

#### Step 1

Organising and preparing the data from different sources: The data from interviews were sent to professional transcribers to be organised in an easy to use manner. As a result, interview recordings were transcribed in full detail. This step also involved the recording of field notes and getting comprehensive curriculum vitae that were not received from informants during the data collection phase.

#### Step 2

Reading and re-reading all the data, with the objective of getting a general sense of the interview as a whole: The phase also involved the recording of my reflections about the data. While I was busy working through the data, there were ideas and themes developing in my mind. I, therefore, used memos for writing down these ideas for use during the coding process. Schurink et al., (2011) state that these analytic memos are the basis of analysing data, since the memos create a link between data and the abstract thinking of the researcher.

#### Step 3

The ability to identify relevant themes, recurring ideas and patterns that link people and settings together is the most challenging part of the data analysis process (Schurink et al., 2011). Coding data required making a list of all topics from the text data, grouping similar topics together and converting them into categories. The next stage was to find the most descriptive labels for the themes. The labels are generally supplied by the researcher.

However, some labels are derived from the words and phrases uttered by the informants (Schurink et al., 2011). This step also involves the identification of relationships between the categories which helps with reducing the number of categories and making the interpretation simpler. Coding can be viewed as an ancillary process for making sense of the informants' world (Singleton & Straits, 2010).

Another strategy for analysing data is counting. According to Singleton and Straits (2010), counting entails looking at the number of times a theme or pattern occurs and consistency in the way it happens. They also indicate that it can be a way of protecting the researcher from personal bias and helping an individual to see data more clearly.

#### Step 4

The coding process can be used to produce a description of selected anecdotes and quotations from informants, as well as detail about the setting, the actions, and incidents that are occurring (Singleton & Straits, 2010). The coding was used for generating themes (Figure 4.2). These themes were considered as the major findings in the study and supported by quotations from different cases. They were, therefore, analysed for each case and across different cases.

#### Step 5

This phase involved representing the descriptive information and codes about each case in a matrix format (Appendix F) and diagrammatic figures (Figure 4.1 & 4.2).

#### Step 6

The final stage in data analysis involves the interpretation of the findings which entails making sense of the data. During this phase, meaning was given to the findings based on theoretical conceptions, personal interpretation, and a literature review. Some meaning was confirming while other was diverging from the predictions of theories and from the literature review.

When discussing the findings, it is significant to consider relevant theories and other research findings in relation to the study (Hsieh & Shannon, 2005).

## ETHICAL CONSIDERATIONS

In research, ethics are very important, since it helps us to act in a proper and responsible manner. Ethics are a set of guiding principles which offers rules and behavioural expectations about how researchers should treat research participants, sponsors, employers, other researchers and assistants (Strydom, 2011).

The following ethical principles were adhered to in this study:

### Right to privacy and confidentiality

“Privacy, in its most basic meaning, is to keep to oneself that which is normally not intended for others to observe or analyze” [sic] (Strydom, 2011, p.119). “The right to privacy is the individual’s right to decide when, where, to whom and to what extent his or her attitudes, beliefs and behaviour will be revealed” (Singleton & Straits, 2010, p. 60). Informants were never forced or deceived to participate in the study and all information was provided voluntarily. It was also made explicit that they could withdraw from participating in the study at any time that they felt uncomfortable to continue.

They were aware of the recording device that was used during the interview and were also informed that field notes were being recorded. All information and data that informants were providing were treated in a confidential manner which implied that no one would have access to it without prior written consent from the informants. It excluded my research team and me, who had full access to the identity of the informants and we had made a commitment to honour the confidentiality principle.

Regardless of the sensitivity of the information, ethical researchers protect their participants’ right to privacy by abiding to the confidentiality principle (Singleton & Straits, 2010). Confidentiality is viewed as a continuation of privacy where limits are put in place to protect participants’ private information (Strydom, 2011). Pseudonyms were used in reporting the findings due to the intensity of the information from the informants while simultaneously protecting their right to privacy. Fetterman (2009) views the use of pseudonyms as a simple way of protecting the participants’ identities, and consequently from potential harm.

“Privacy implies the element of personal privacy, while confidentiality indicates the handling of information in a confidential manner” (Strydom, 2011, p. 119).

#### Informed consent

The informants were given sufficient information about the purpose of the study, methods of data collection, recording of data, safeguarding of their records, nature of participation, expected duration of their involvement, possible advantages and disadvantages they might be exposed to (Strydom, 2011). I also disclosed my identity and qualifications for the sake of building trust. Comprehensive information about the investigation was necessary for the informants in making decisions concerning their participation in the study. Signed written consent forms were obtained from all the informants before the data collection process could commence. It confirmed that none of the informants were coerced into participating in the study and enough information pertaining to the study and its requirements was offered to facilitate informed decision making by informants. Informed consent is important in research studies, since it guarantees full knowledge by the participants and also enhanced the cooperation of participants (Strydom, 2011).

#### Non-maleficence, beneficence and justice

Singleton and Straits (2010) are of the opinion that harm cannot be easily defined and predicted in social research, since people can be harmed personally, psychologically and socially rather than physically. I found it also not easy to envisage whether the study would elicit adverse effects on the informants or not. However, it was my responsibility as a researcher to ensure that the research did not impose either physical or emotional harm on the informants. The research was conducted in the comfort of their offices which was regarded by them as a place of convenience. The research topic did not seem too sensitive for causing the informants emotional pain. However, since it was difficult to predict harm I was willing to refer informants to professional counsellors in the event of them being exposed to emotional discomfort.

The research study is expected to bring benefits rather than harm to the informants. This principle is referred to as beneficence (Strydom, 2011). In this study, it was anticipated that the informants would benefit much from taking part in the study, since the study afforded the man opportunity to reflect on their career experiences, to share their challenges, and to learn about different coping mechanisms from their contemporaries. To this end, key findings were

summarised and given to the informants with the purpose of increasing their knowledge about this topic. It is suggested by Strydom (2011) that the study can be rounded off ethically by making the research findings available to the participants, if they so wish. Informants also need to be treated equally and with fairness during the research process (Wassenaar, 2010).

#### Social value and scientific validity

It has been clearly outlined in the literature review that women experience barriers in ascending to senior positions. Therefore, the study will hopefully yield information that will benefit those women who aspire to be in those leadership and managerial positions; most of all, it should bring hope and courage to the future generations. The study is also expected to fill the gap about the phenomenon in literature, since there are few studies in South Africa that address this topic.

#### QUALITY OF THE RESEARCH DESIGN

According to Lincoln and Guba (1985), the quality of the research design can be assessed by using the following criteria:

##### Credibility

It is important for the researcher to ensure that the participants are correctly identified and described and that a match exists between the participant's views and his or her reconstruction and representation thereof (Schurink et al., 2011). The exercise of trying to preview the informants' profiles on the Internet sought to ensure that suitable informants who would add value to the study were selected. Schurink et al., (2011) are of the opinion that clearly defined boundaries in a study, such as "women in senior leadership positions", assist with validating the study.

The following strategies were used to enhance the credibility of the study (Lincoln & Guba, 1985): (1) Different sources of data; such as interviews, field notes, and personal documents were used for validation of the generated themes. (2) Furthermore, the use of multiple sources could be regarded as necessary for boosting the credibility of the findings and interpretations. It refers to the variety of data that gets selected from multiple cases. (3) Informants were given their transcripts to check for accuracy. It also intended to increase the credibility of the study. Lincoln and Guba (1985) emphasise the importance of member checks, since it offers

participants an opportunity to correct what has not been recorded correctly. They further elucidate that a comparable opportunity can yield additional information that participants have not mentioned during interviews. (4) Prolonged engagement with informants which involves spending time with informants in order to achieve rich data is encouraged. In my study, an hour seemed sufficient for an interview. However, there was some interaction between the informants and me after the interview which also served to corroborate some findings.

In order to avoid bias, recording of assumptions about a topic is regarded as essential in a qualitative study (Creswell, 2009). The use of qualitative data analysis software is also viewed as another way of enhancing credibility of a study, since it eliminates human error while searching for certain information in the data (Welsh, 2002).

#### Transferability

The criterion of transferability primarily relates to the issue of the probability of transferring findings from one case to similar another one with the aim of generalising the findings. The use of multiple cases and more than one data gathering method can increase the usefulness of a study in other settings (Schurink et al., 2011). Lincoln and Guba (1985) state that the researcher should always ensure that he or she provides a thick description or sufficient base that permits likely transferability of judgments.

#### Dependability

This criterion assumes that the phenomenon being studied is always changing since the social world in which it occurs is constructed by human beings (Schurink et al., 2011). Dependability is viewed as an alternative to reliability; therefore, Gibbs (2007, as cited in Creswell, 2009) recommends the following reliability procedures: (1) Checking of transcripts for obvious mistakes after receiving them from the transcribers. This exercise was performed by the informants and me. It is a measure that can be used to avoid possible misinterpretation of the informants' responses (Maxwell, 2009). (2) A co-coder was used to cross check the codes that were derived from the text data. (3) Data were analysed both electronically and manually to ensure that data were thoroughly interrogated (Welsch, 2002).

### Confirmability

The question that needs to be asked is whether the findings of the study can be confirmed by other researchers. (Schurink et al., 2011). It is also of critical importance when a case study is conducted that the readers are allowed to draw independent conclusions. To this end, sufficient evidence was provided to support the findings and interpretations that had been augmented by an independent co-coder. Singleton and Straits (2010) are of the opinion that alternative explanations might enhance the validity of the interpretations.

Yin (2009b) emphasises the principle of creating a database for the purpose of allowing other researchers to review the evidence whenever such a need arises. Yin indicates that the process of creating a database involves organising and documenting collected data for easy future access. He further describes a database in terms of four components. The first component is called case study notes which include all notes the researcher is dotting down during the interview, observations or a document analysis process. The second component refers to case study documents, i.e. all documents that have been collected during the study. In this study, for example, it included comprehensive curriculum vitae of the informants which needed to be safely stored for later retrieval. The third component comprises tabular materials created or collected by the researcher. It implies that the biographic table and the matrix representing the results should form part of the case database. Lastly, narratives that are produced by the researcher after data collection need to be included in the case study database. Yin (2009b) refers to this principle as “open-ended answers to the questions in the case study protocol” (p. 121). The objective of this exercise is to link specific evidence with different study questions by using citations.

### CONCLUSION

The research design is the blueprint for a study and it can either be explicit or implicit (Yin, 2003b). It is a logical plan that helps to ensure that the evidence addresses the initial research questions (Yin, 2009a). Although qualitative studies also require a research design, it requires less structure than the research design of quantitative studies.

It seems that this study would yield more benefits than harm to society and to the informants. It is of paramount importance for ethical researchers to always consider the best possible ways of attaining the research objectives while not jeopardising the well-being of the

participants. It is the researcher's responsibility to ensure that the research is conducted in an honest manner in order to consider it to be a scientific study (Singleton & Straits, 2010).

The central data gathering methods that were used in this qualitative study involved interviews, field notes and personal documents. Singleton and Straits (2010) indicate that field research always seeks to understand the phenomenon as it is defined by the subjects themselves in their own language and also in their natural settings. The primary purpose of gathering data is to obtain evidence that people are providing about the experience under study (Polkinghorne, 2005). Then, it becomes the researcher's responsibility to analyse that evidence in order to yield descriptions of the experience and to effectively demonstrate how the findings were extrapolated from the data (Polkinghorne, 2005). In order to maintain high-quality standards in case studies, all original evidence should be kept safe in an organised manner for easy retrieval when it is needed (Yin, 2009b).

When using qualitative data analysis software, it is significant for the researcher to also analyse the data manually, since computer programs have their own peculiar limitations. This approach is necessary, since it increases the rigor of the data analysis. There are certain data analysis tasks that require the involvement of the researcher as an analyst. The Nvivo program is known to be quick and easy to use (Bourdon, 2002; Welsh, 2002), however, it should be used for collating and categorising data.

The following chapter presents a complete report about the results of my data analysis process and the interpretation thereof.

## CHAPTER 4

### FINDINGS AND INTERPRETATIONS

#### INTRODUCTION

In this chapter, a discussion of the career developmental experiences of women in senior leadership positions in the civil engineering industry is provided. The study was based on the data from seven women in senior leadership positions in the civil engineering field who had volunteered to share their career developmental experiences. These women were identified by means of a convenience selection method. This chapter presents the findings of the data analysis process and the interpretation of the results in relation to the literature and theoretical framework discussed in Chapter 2.

Data were gathered by using semi-structured interviews, field notes and personal documents as data collection methods. After collection, data were analysed manually and by using the Nvivo program to enhance the credibility of the study (Welsh, 2002). The output analysis of the Nvivo program is represented in the format of a matrix (Appendix F). In the discussion, there are direct quotations from the interview transcripts to illuminate what has led to certain inferences. Pseudonyms are used in order to protect the confidentiality of the informants. The letter X is used for protecting names of organisations, towns and groups of people.

Findings are organised into different categories to address both primary and secondary research questions (Figure 4.1). The categories have been derived from the interview guide (Appendix B) which is aligned with the above research questions.

After a thorough reading of the transcripts and replaying the audio recordings several times, the interview transcripts were analysed line-by-line. Different topics were listed and grouped into defined categories. During the process of data collection, listening to audio recordings and reading the transcripts, different themes were identified (Figure 4.2). The coding results from the Nvivo program were also used to support the identified themes.

Figures 4.1 and 4.2 indicate different categories and themes that have emerged during the data analysis process.

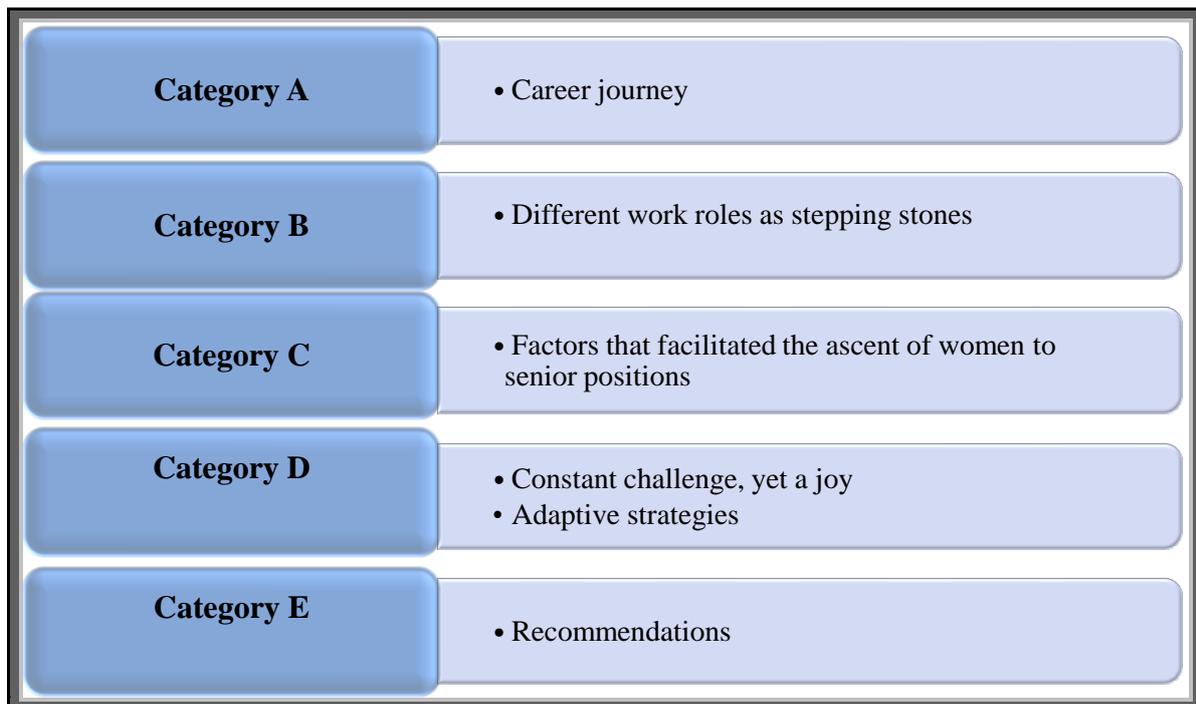


Figure 4.1. Categories derived for analysis

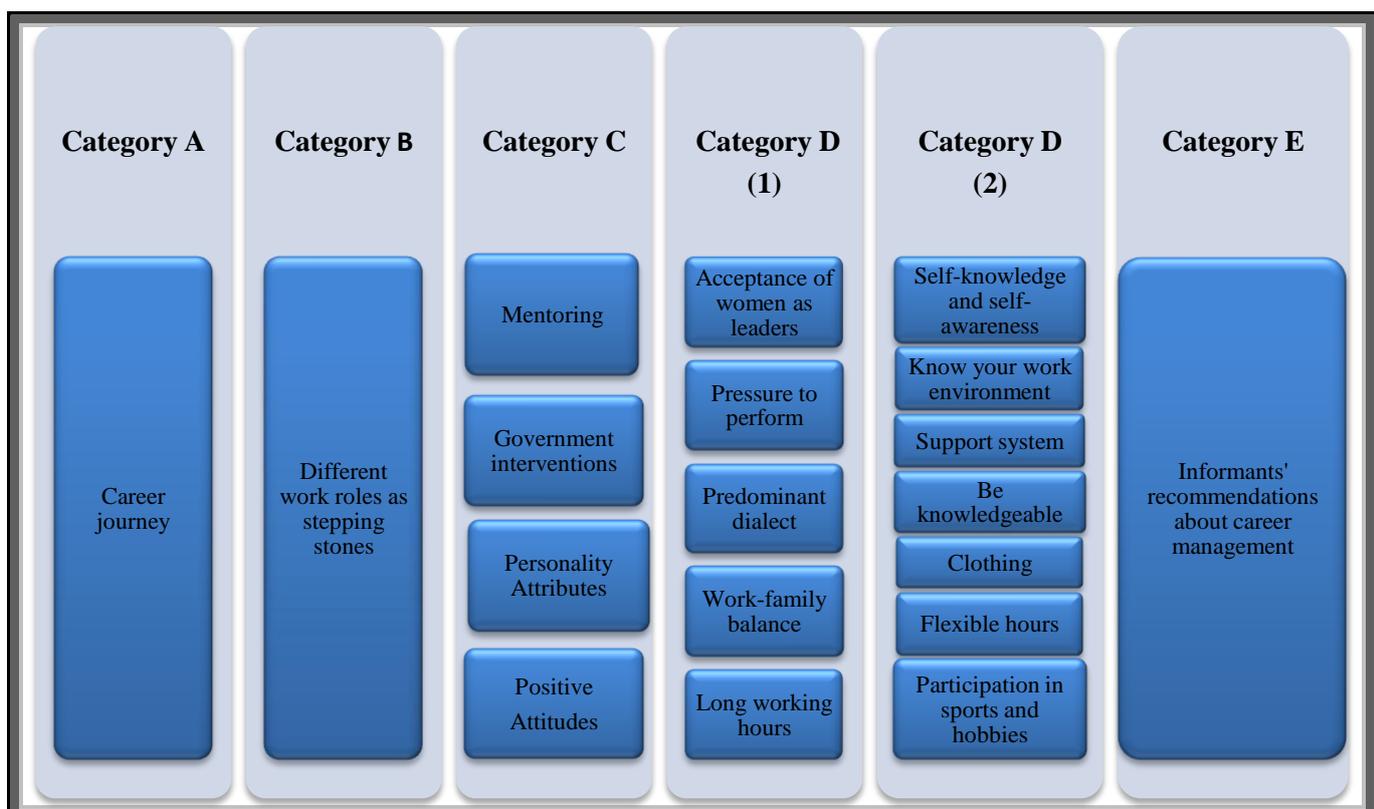


Figure 4.2. Themes that emerged from data analysis process

## CATEGORY A

## CAREER JOURNEY

## Informants' profiles

This section supplies a brief discussion of the profiles of each informant, including their family background and career trajectories. This background information is important, since it gives a description of the informants which enables the compilation of a comprehensive picture of their career experiences.

## Portia

Portia was an African woman, divorced and blessed with two children. She was in her late thirties when the interview was conducted. Her first child was born when she was in Grade 10 at high school. The fact that she had a child at an early age was never an obstacle for her to proceed with her studies. On the contrary, it was rather the greatest motivation on her journey, since she understood the responsibilities that accompanied motherhood. She was brought up in a rural area by both her parents, who encouraged her to capitalise on education. Her mom was a teacher and her father was employed by government and he was also a leader in the community. Tragedy struck and her dad passed on while she was still at high school.

In the first few years of primary school, Portia was staying with her aunt. Her aunt had poor health conditions and that affected her performance at school. When she got to high school, her life changed completely, she performed extremely well, her grades improved significantly and that was when she began to assume leadership roles. Most people started to admire her and she became the school prefect, hostel prefect and so on. On one occasion, her teacher advised her about a bursary scheme that was offered by company X, since she told her teacher about her ambition to become a civil engineer. At the time, she did not even know what engineering was all about. What caught her attention were land surveyors who were working at their school to construct a sport facility. She then developed an interest in what they were doing. She was offered a bursary and studied for a diploma in Civil Engineering and Bachelor of Technology degree at a University of Technology; thereafter she completed Honours in Bachelor of Science Civil Engineering degree.

She started working from her first year at the University of Technology at the company that was sponsoring her studies. During those years, her duties had involved a lot of

administration, before she became a technician. Immediately after completing her degree, she became a Deputy Office Manager because her company lost most of their senior employees. The position exposed her to management duties quickly in her career. As time progresses the workload became too much for her due to her other personal responsibilities. She moved to a public sector where she worked as a District Road Engineer, managing about 128 workers who were all older than her. Later, she served as a Chief Engineer for five months. Thereafter, she got another appointment as an Expanded Public Works Programme National Coordinator. After two years, she went for greener pastures and became a Deputy Director General. Currently, she is heading an infrastructure department at one of the five metropolitan municipalities in South Africa.

Portia is a very brave, elegant woman who works hard. She also highlighted that she has a passion for the advancement women; she will do anything in her power to see them succeeding. The interview was conducted in her office which had a sophisticated, feminine, modern look.

#### Bohlale

Bohlale was in her early forties. She was married, with two children. She was a humble, African woman who took pride in her culture, as it was portrayed by the artefacts in her office. She was born in another African country. Her father was a journalist by profession. At some point, his profession required his family to move from the country they were living in. As a result, she completed some of her high school grades overseas. Then the family went back home again. After two and half years back in Africa, she was awarded a scholarship to further her studies overseas. Bohlale completed her undergraduate and postgraduate degrees overseas. Her first degree of choice was Food Science; she landed in engineering by chance. When she was still searching for a suitable career, she approached two professors and they directed her to civil engineering. Ultimately, she decided to go for civil engineering, since it was involving the creation of a lot of structures. She passed her BSc Civil with a distinction. Bohlale then decided to enrol for a Master's degree in Civil Engineering (MSc Civil Engineering), which was her highest qualification at the time of the interview.

She got her first job at the Department of Transportation abroad as an engineer in training. Her initial duties encompassed geometric design. In a period of two years, she became a Graduate Research Assistant. Upon coming to South Africa, she got a position as an Assistant

Resident Engineer and her primary duties were to execute practical work on construction sites for one year. Subsequently, she moved into the design office where she was responsible for planning and documenting projects. After four years of working as an Assistant Residential Engineer, she applied for professional engineering status at the Engineering Council of South Africa. Bohlale then got married to a man who was staying far from where she was employed. As a result, she had to apply for a position at a company that was closer to her husband. She was appointed to the position of Engineer and Divisional Director at a company closer to home. There she did a lot of office work, including design work.

After a period of time, she was exposed to client interface, where it was expected of her to demonstrate her capabilities to the client in order to be hired for a particular assignment. Affirmative action helped her in getting the position of the Divisional Director and at the same time she was offered shares. Thereafter, she became a board member.

As a result, she was relieved from technical work and was treated as a senior person in the company. At the same time, her remuneration improved. After approximately five years, she was appointed in the position of a Project Manager at another company; after two years, she was promoted to the position of Chief Executive Officer (CEO). She served in that position for two years, before she received an offer from another bigger company. She accepted the offer, and at the time of the interview, she was still the CEO of that company. Her responsibilities involved leading the company of about 850 people, while she was no longer involved in technical work.

#### Agrineth

Agrineth was in her early forties, married with three children. She came from a traditional Indian family, which is very supportive of her in all endeavours. She also thought that she ended up in civil engineering by chance. Her parents were middle income working class members of society. Initially, she enrolled for chemical engineering at the university, and then she switched her career path to civil engineering, since she underperformed in chemistry. The idea of changing to civil engineering was initiated by the Head of the Civil Engineering Department. In 1991, she attained her four year degree in civil engineering and continued to study towards a Graduate Diploma in Engineering which she completed in 1997. At the time of the interview, she was studying towards a Certificate in Arbitration, since she

strongly believed that learning never stopped. She was highly regarded as a water and sanitation specialist.

After acquiring her degree in civil engineering, she worked as a design engineer for about five years at the same company. Her responsibilities included managing various infrastructure projects from conceptual to implementation phase. As part of her agreement with her scholarship administrators, she was then placed in a British company for a year. During that period she developed her business plan because she felt she needed something more challenging. Fortunately, she was exposed to every single discipline of civil and structural engineering. Thereafter, she came back and established her own company. At the time of the interview, she was the CEO of her own company which she had founded 15 years ago. She always had the goal of starting her own company by the age of 30, and indeed she achieved her aspirations. The company was growing; it had three satellite offices in different provinces in South Africa. One of her company's objectives was to attract more women to the civil engineering industry.

Agrineth was a very assertive, structured and knowledgeable woman. At the same time, I found her to be very open and willing to share her knowledge with other people. Most of all, she had a strong passion for her vocation.

#### Tamia

Tamia was born and bred in one of the sovereign states of Europe. She was in her late fifties, and married with one child. She held a teaching degree and honours in Bachelor of Science (Physics). In her country of birth, there were no career distinction between men and women; therefore; it was not an issue for her to pursue a career in the sciences. She was brought up in an atmosphere of independent decision making and bearing the consequences of one's own decisions. She always enjoyed science and stated that for that reason she ended up being a physicist but at her time of study, it was also expected of them to take a teaching degree before entering the job market.

Tamia was a Quality Management Specialist. That background was her point of entry in the civil engineering industry. She had been working as a quality manager for twelve years. She had a vast experience of laboratory systems and risk management. Her responsibilities included the facilitation, implementation, project management, training, auditing of

management, systems such as ISO 9001, and risk management. At the beginning of her career, she worked as a teacher. Surprisingly, she found teaching in South Africa to be different from the educational system she was exposed to. As a result, she quit and started practising as a scientist. She worked in an ionising laboratory and ended up being the head of the laboratory. At some point in her career journey, she needed a career change because she easily became bored when her job started to become a matter of routine. In some way, she managed to do a transition in the same company she was working for by moving on to quality management.

Tamia believed that individuals needed to learn to be true to themselves and learn to express their needs. When she applied for the position she was holding at the time of the interview, she said that she had told the interview panel at that time that “if I’m not part of top management, I am not interested”.

Mpho

Mpho was married, with one child and she was expecting her second child at the time of the interview. She was a white South African woman in her mid-thirties. She started doing part time work when she was fourteen years old. One day she drove past a bridge that was under construction and that captured her attention. As a consequence, she wanted to study Civil Engineering. She applied for a scholarship but it did not cover all her tuition fees. She also had to apply for a student loan, since her parents could not afford to send her to university.

Mpho had a Bachelor’s, Master’s and Doctorate degree in Civil Engineering. After completing her Master’s degree, she wanted to start working. Unfortunately, she could not find a job. The lack of job opportunities compelled her to enrol for a Doctor of Engineering degree (D. Eng.). She specialised in water and waste water management engineering.

She was very passionate about her job and she did a lot of volunteer work for the industry. She started working in 2004 as an engineer but found her responsibilities too overwhelming. Since she held a D. Eng. Degree, it was expected of her to assume management duties as well. As time went by, she started to enjoy her work and she applied for another position at a different company where she worked for a year. She then moved to another company as an Engineer, where she served for about two years. During that period, she got promoted to the position of Associated Director as a result of her contribution to the company. Subsequent to

that she decided to join the company where she was working at the time of the interview. It was easier for her to become part of the company, since she was already at the top level of management. In addition, she was offered shares in the company. From entry level, it took her four years to progress to a senior executive position.

The reception I received from the company was quite warm. Even the interior of the office had a homely feeling. Mpho seemed to be enjoying her workplace a lot, despite the fact that the majority of her colleagues were older than her.

Mahlatse

Mahlatse was in her early thirties, and the youngest amongst the informants. She was married, with no children. She was also the youngest in her family. She used to perform a lot of male activities while she was growing up. She stated: “So, I grew up as what we call in Afrikaans a ‘laatlammetjie’ which means that if your brother is out of the house you need to be able to do everything.”

She had a very close relationship with her father who was an artisan by profession. Mahlatse wanted to be a doctor and her parents influenced her into pursuing civil engineering. She became grateful that she did not take the medical route. She had always been involved in leadership roles from primary and secondary school. At tertiary level, she became a member of the Student Board of the Engineering Faculty and a house committee member.

She completed her four-year degree in 2002, and immediately started working as a Candidate Engineer at the company that she was working at the time of the interview. Her duties involved site work, getting a sense of how structures were actually built, design work and project management. She needed four years of experience before she could register with the Engineering Council of South Africa as a Professional Engineer. After her registration, she was included in the management team. She then realised a need to study a Project Management Professional course which she completed in 2008. Somewhere along the journey, she got really bored and then she pursued a Master’s in Business Administration (MBA) qualification, since she wanted to acquire more knowledge in relation to business. In that way, she was equipping herself for managerial position. At the time of the interview, she was appointed in the position of Associate Principal.

### Tiara

Tiara was in her mid-thirties, married, with two children. She was from a close-knit Indian family. She was quite a tomboy when she was growing up and she used to spend most of her time in the company of boys. She always wanted to study mechanical or electrical engineering but a friend of a family member convinced her to study civil engineering. She also believed that her brother, who was a Civil Engineer and her generation of cousins, who were all engineers, had a substantial influence on her career choice. She was quite glad that she followed the civil engineering path, since it gave her the opportunity to realise one of her life purposes. Her parents always encouraged her to study in order for her to have a better future. She used a student loan to pay for her studies, since her parents could not afford the fees at the time.

She studied to obtain a Bachelor of Science in Civil Engineering degree. Immediately after her graduation, she started working at the university for six months in the capacity of research study assistant. She then got a job as a candidate engineer at one of the biggest infrastructure development companies in South Africa. At the time of the study, she was still working at that company, serving as a principal and a shareholder. While she was working as a candidate engineer, she did not spend a lot of time on technical work, since there was a shortage of resources in the management and administrative division. Her involvement in those functions helped her with accelerating her development at the company. After acquiring the required amount of site experience for professional registration, she was given a team of colleagues to work with on a research study about infrastructure at different municipalities. After sometime, she became a project manager with additional management duties. Afterwards, the company decided to promote her to an Associate Principal position which motivated her a lot. It implied that she was already at a middle management level within the short period of five years. Three years ago, she got promoted to a senior level position of a Principal. Along the way, she also attained a Project Management Professional qualification.

### Concluding remarks

It is evident that every individual's career trajectory is exclusive. Bloch's (2005) theory of complex adaptive entities emphasises that career experiences are illogical; there is no relationship between the actions and reactions. An individual's career path is unpredictable in terms of the order of work roles, promotion and number of years of service required for an individual to reach senior management.

Most of the informants who studied civil engineering took an average of five years to get to senior leadership positions. There were various factors that appeared to have facilitated their advancement to senior level positions in the industry. These factors included possession of relevant qualifications, shortage of skills in the industry, mentoring, affirmative action, supportive work environment, family background and individual's personality.

Though their rate of climbing the corporate ladder seemed to be admirable, it also had a negative component. Bohlale seemed to have found it interfering with her life plan:

Speed of my career advancement? Yes, it was a gain in one respect and it was a loss in another respect because if you asked me 15 years back or 20 years back what was my personal life plan, my own ambition was to advance to a Doctoral level in a technical field. And it was like there is the pioneering feeling in that. So, my personal plan, my personal wish was never to be a generalist, it was to be a specialist and to be renowned for that specialist work.

Mahlatse stated that:

So, don't chase everything before you are 30 because you are still young and you still need to enjoy the simple pleasures in life. Ja, which I think is extremely important. I felt it the first time before I started my MBA which got me distracted for two or three years and I am feeling it now again.

In terms of their career choice, informants were found to be influenced by different people, situations and interests in pursuing their field of study. Two out of seven informants were found to be influenced by significant others, their professors, and teachers. Parents and family members were also found to have played a major role in informants' career choice of two of the informants. Two of the seven informants developed interests by seeing the physical structures that were constructed by civil engineers. One of the informants remarked that she enjoyed science subjects and, as a result, she ended up in this field. Subsequent to the informants' different remarks, it was clear that there were various factors, not limited only to their own experiences, that affect women's career choices.

## CATEGORY B

## DIFFERENT WORK ROLES AS STEPPING STONES

“Career development is day-to-day micro-development, taking shape in the gradual strengthening, weakening, and change of certain roles” (Hoekstra, 2011, p. 161). People are constantly engaging in different roles that are accompanied by more responsibilities, bigger salaries and better titles.

Six of the seven informants echoed similar sentiments with regard to the significance of various roles they played in their career journey. All their work roles were considered important; starting at the lower level roles which included the following positions: intern engineer, resident engineer, design engineer, lead engineer and middle management positions up to the senior positions they were holding at the time of the study. Every role was considered a stepping stone to the top of the hierarchy.

Each and every position that I had was a stepping stone for me being here. There were those that were more prominent than the others, like the X position. I have learned a lot there, 90% of the work and things I learned there had nothing to do with my training and schooling, my Civil Engineering. Even now, okay it helps that I am a technical person and I can understand and I can direct people in my big department but it's when I was in X that I grew my emotional intelligence. So it played a big role. Even my previous position in the City. I was an Executive Director for Roads, I have learned technically some of the things and directing a team. I've been building roads since I started working, but the human side of it, human behaviour, was contributed more in me being where I am. (Portia)

The informants emphasised that there were no shortcuts to the top echelons. Informants further reflected that most of the skills and knowledge needed for their existing positions were not taught during their formal training, but they were rather acquired as and when they changed roles, companies, and interacted with different people. Sometimes, work role change was prompted by the need for challenging work. Two of the informants stated that after a period of time doing the same job they experienced that particular job as routine. It led to them searching for more challenging work roles.

So, I can never ever discount all those seasons in my life. They all have added to the sum total of what I am now, without question. And the important message is that throughout each one of those seasons I worked the hardest I feel I could and therefore there is no regret there. Whereas sometimes you find especially youngsters who feel they just need to cruise. They don't need to sweat; they don't need to feel any discomfort or pain. (Bohlale)

Yes it helped a lot because I used to sit there when there was no receptionist, work as a receptionist and do tea for my boss. I did everything you know, so it helped me, exposed me to work ethics, even to things, if you think about my background. Although my high school wasn't bad but I wasn't exposed to computers, telephones and stuff like that. So it exposed me. (Portia)

#### Concluding remarks

The participants' experiences of different work roles as stepping stones support Bloch's (2005) theory of career development that individuals are in a constant search for fitness peaks. It could be the reason why career developmental experiences of the informants is characterised by mobility in work roles, either inside or outside an organisation. They are exploring the work environment looking for roles that suit them well. The self-determination theory assumes that people are constantly looking for interesting or challenging work in order to exercise their capabilities and to feel connected in social groups. It is significant to realise that the change in work roles involves acquisition of additional knowledge, skills and abilities.

#### CATEGORY C

##### FACTORS THAT FACILITATED THE ASCENT OF WOMEN TO SENIOR POSITIONS

There were a number of factors that had facilitated the ascent of these women to the top positions that they were holding. The discussion that follows consists of the factors mostly mentioned by informants:

### Mentoring

Mentoring is regarded as a useful tool in male-dominated fields for supporting women at all stages of their career (Singh, Bains & Vinnicombe, 2002). The study reveals that having influential mentors plays a significant role in helping these women to advance in their career in civil engineering industry. It enables individuals to develop personal and professional growth (Chowwen, 2004). Most of the informants mentioned having more than one mentor at one particular time in their career. Each stage of career development might require different mentors due to the responsibilities that come with each level of management. However, it will depend on the mentor's level of experience and knowledge.

When I went to X, I had no mentor there, it was tough. I sort of had to fit in and maybe that's why I also let... I never thought about it but I am thinking about it now, I never had a person guiding me you know, X hang on you know, this is right, do it this way and that way. I never had that. (Portia)

Singh et al., (2002) state that mentoring may be career-focused or psycho-social in nature. Career-focused relationships will provide protégés with functions like coaching, challenging work, sponsorship and exposure (Singh et al., 2002). On the other hand, psycho-social relationships will provide friendship, counselling and role modelling to protégés (Parise & Forret, 2007). The informants regarded some of their mentoring relationships as formal while others were viewed as informal. In most organisations when graduates get recruited, they are assigned mentors to guide them during their career development. For legitimate purposes, there are written or verbal contractual agreements between the mentor and the protégé. While informal mentoring which includes either mentors that are aware and or mentors that are not aware of their mentorship roles, can be characterised by not having a binding contract. Singh et al., (2002) are of the opinion that informal mentoring which is based on interpersonal interaction is more successful than formal mentoring. Chowwen (2004) views mentoring as having a friendship with someone who has more experience than the protégé does. Informants showed a higher preference for informal rather than formal mentoring where they did not have to structure their meeting sessions and topics for discussion.

So, there are different people but you probably end up having more informal mentors than formal ones. Less structured and less pressured and sometimes

you don't even think of them as mentors and then after you've walked that journey you say but listen this guy I actually learned a lot from him. (Mahlatse)

So, he liked my style and he had obviously a lot of experience in the department and in return he supported me so much. And we worked together; he became more like my brother. Even today we still call each other and talk; he will even say no you cannot date that man X, jo! (Portia)

It was also revealed that these women had male mentors only and felt comfortable in those relationships. It might be due to the fact that they were used to having males as companions from their institutions of higher learning to their workplaces. It could also be due to the fact that the majority of people in this field were men. One of the informants pointed out that after completing her MBA, she was looking for a female mentor in her field; unfortunately she could not find one, since most of the women in the industry did not have the technical expertise. This finding supports the fact that women are underrepresented in senior positions as indicated in Chapter 2.

Ja, yes I do get along with males in a professional environment, it is easier for me. (Mahlatse)

No, it was a male. I've never been mentored by a woman. It has always been male. (Portia)

#### Learning within mentoring

The informants reflected on the importance of having a mentor who was knowledgeable and experienced in their field, since learning had to occur during the mentoring process. There was a lot that these women had learnt about their organisations, jobs and work ethics from their mentors. They also identified with their mentors. Subsequently, it influenced their personal development. Therefore, it was highly important for mentors to be competent in their work and to conduct themselves in an ethical manner, since huge amount of skills and knowledge transfer were occurring during the process. The most highly used and effective way of learning that informants referred to was to "ask" questions.

So, when you look at my contractual now, which I've got it from the best, when you look at my design knowledge, I've got it from the best. So that gave me... and I think I was just at the right place at the right time. (Agrineth)

But I think also with my career development the important thing that stand out is that I always ask a lot of questions, I mean I was never satisfied with one solution. You know I am like that, I look at everything, I look at something from every single angle to see all the options and exhaust them. (Agrineth)

Get to know that person, identify him or her and become their shadow and learn everything from them in that time that you need to spend with them. And ask questions, stupid questions; if you think they are stupid ask them, you will end up knowing that they are actually not as stupid as you thought. (Mahlatse)

Obviously I also I didn't know how to do it. I kept on asking so what do I do here and he kept on telling me and telling me. (Mpho)

#### Willingness to learn

An attitude that was exhibited by the informants was the willingness to learn. Regardless of the positions they were holding at the time, they were still receptive to learning. This attitude assisted them during the learning process in the context of their mentoring relationships.

You will find the very old and experienced individuals that want just to impart all of their knowledge at their last step, at the last step, to industry, to individuals, to young people. And they are really there, and they just want to do it because that is their last wish now. But if you don't have a willing individual, that wants to absorb all that, that are excited to receive it, you are not going to get anything. You are not, that is not going to happen. So older persons will lose interest and the younger persons would believe they know it already and they don't. (Agrineth)

So, the secret is hard work, hard work, and hard work. Willing to do everything. You must be more than willing to make the coffee and take minutes and it doesn't matter... (Mpho)

### Exploration

In their work environments, informants were afforded the liberty to explore which was another way of fast tracking learning. Their assigned mentors had good relationships with them and they offered informants various activities or tasks to work on in their work environment while offering them support. Many were entrusted with a lot of responsibility during their junior stages; they had to discover on their own how things were done. Some were able to identify gaps and necessary developmental tasks for their careers; subsequently, they would ask to be more involved. Flum and Blustein (2000) are of the opinion that when an individual engages in different activities, it enhances their self-knowledge and knowledge about their environment. The cognitive evaluation theory is of the assumption that “people need to feel autonomous and competent, so social-contextual factors that promote feelings of autonomy and competence enhance intrinsic motivation, whereas factors that diminish these feelings undermine intrinsic motivation, leaving people either controlled by contingencies or amotivated” (Gagne & Deci, 2005, p. 332).

Tiara indicated that sometimes there were boundaries in the organisations that restricted individuals in getting involved with performing certain tasks or executing projects. According to the self-determination theory, the work environment was thwarting the basic need satisfaction of competence, autonomy and connectedness of their employees, meaning that they could not experience growth at the rate that they were supposed to (Deci & Ryan, 2000a, 2000b).

So, the project that I was involved in and I found it very-very interesting and it was an important project in the X CBD, it was the pipe jacking for 1200 diameter sewer pipe below X Street and that is a very busy street. And that was the task I was tasked with as a junior engineer. That gave me a lot of exposure because it was an exciting project, it hasn't been done before, everybody was watching it and it really was giving me a lot of exposure. As a result because he couldn't like sort of mentor me or guide me in any way, he allowed me the flexibility of using some senior specialists in the area that had retired and are still consulting to the company. (Agrineth)

I was fortunate to work under someone who had a lot of civil engineering experience, but who was also a very... how do I need to say this, he lets people develop themselves. So having someone who in a way protected me from repercussions because he was the boss at the time, you know, I could develop with a lot of freedom around me. But at the same time there was someone I could basically say help, I need some help. (Tamia)

As part of our training you had to have a certain amount of site experience. So after my training of a few months, my technical training of a few months, I got a team of people to work with. And then we embarked on also a research type of a study, a research of infrastructure within different municipalities. And, I think that also boosted my career because I managed a group of people at a very young age you know. (Atira)

#### Concluding remarks

Mentoring played a significant role in the career development of the informants. The support they were continuously receiving from their mentors had a positive influence on their development. Support from mentors allowed them to feel secure and, therefore, it led to them to develop more trust in their environment. As a consequence, they engaged more readily in exploratory activities in accordance with the self-determination theory. Competency development which occurred when informants became actively involved in organisational activities and their perceived support for competency development were positively associated with self-perceived employability (de Vos, de Hauw & van der Heijden, 2011).

#### Government interventions

Science and engineering courses were strictly reserved for white elite at institutions of higher learning during the apartheid era in South Africa (Case & Jawitz, 2004). Consequently, the engineering industry was mostly dominated by white men. The introduction of equity legislation assisted with opening the doors in all spheres for the previously disadvantaged individuals, including women. Women started to become visible in the engineering industry at the advent of the forceful implementation of affirmative action measures to redress historical discrimination by the organisations. Nowadays, companies are required by the Department of Labour to comply with the employment equity legislation and they are monitored by the department to ensure that they comply with their equity plan. As found by

Thomas (2003), the enactment of legislation have developed a sense of urgency for companies to address discrimination, recruitment and development of human resources of previously disadvantaged people. To this end, competent women are being headhunted to join the civil engineering industry.

The purpose of affirmative action measures is to ensure that the qualified people from designated groups have equal employment opportunities and are equally represented in all occupational categories and levels of the workforce (Employment Act, 1998). The Broad-Based Black Economic Empowerment Act (2003) is also one of the measures that is used to eliminate unfair discrimination against all black people, including women, the youth, and people with disabilities, and to promote economic transformation in South Africa (Broad-Based Black Economic Empowerment Act, 2003).

The enforcement of these acts was apparent in the responses of the informants:

So, I became that sort of person but at the same time it is important for you to know that affirmative action has been a big defining role, has played a defining role in my personal journey. In the sense that when I first entered South-Africa, South-Africa was just designing its own employment equity as well as black empowerment imperatives. So, the need for companies to show participation of blacks and participation of black females was very high. And the fact that I came on board and that I had this advanced degree in the field of practise made me very much a target for affirmative action. So there was a time where I was promoted at this... accelerated rate. I became a Divisional Director and then I was offered shares and then I became a member of the board of X. (Bohlale)

I think good grief that is a very good question. Maybe gender to a certain extent because the movement is to try and get more women into the industry. Maybe there is a bit of, let's call it biasness towards pushing women to the front. I mean we've got now also a... what do they call it, fast tracking program in our organisation where we've got certain young individuals that have been identified to go through the process quicker. (Mahlatse)

So, the policies obviously helped, it opened doors for me like in X now, I am sure they can get a few men that can be Heads of Department but they have made it clear they want female technical. So, obviously I've got an advantage there. In the X they were doing the same thing, they wanted a female in technical field. So, although there are few of us there, I think I will still beat the few. So, it is a combination of many things and also my background and my hunger for success. (Portia)

It was also evident that the informants detested the perception that they were tokens, since they had applied a great amount of effort to earn their credibility. Their hard work was supported by the accolades they were receiving since becoming part of the civil engineering industry. If one takes a glimpse at their profiles, they have all the required qualifications, and have the necessary experience. Therefore, affirmative action measures simply assisted them by opening the doors that were closed for many years.

But I have found that it is extremely valuable that I come from that background of training and outlook even if it means for the acceptability of my..., I mean managing a company of 850 people, often times in the current South Africa we live in, you will find that people might dismiss your abilities and view you as ah you are an employment equity appointment. Of course you are there because you have the skin that is dark enough and you female so we don't need to look to you for any of your trained skills and attributes. So, ja. I... (Bohlale)

So, yes. Gender, perhaps it did opened more doors for me. But I have always been very... very adamant towards fairness. I don't like preferential treatment and that is also why I took myself off the fast tracking program because I think someone else should have a chance. But yes it can be very dangerous because even though in terms of race or gender people always ask the question is it because I am really worth it or is it just because I'm a woman, or black or disabled or why are you giving me preferential procurement. It is sad because you almost lose focus on the other attributes that got you to that position which are actually things that you need to focus on. (Mahlatse)

I didn't want to compromise so I never, never ever used either of those things in any of my marketing strategies. It was obvious when I went to see a client that I was a black female, Civil Engineer but I never used that as a trump card. It was a very deliberate decision on my part because I felt it was actually demeaning to be classified in that way because you were just as competent as somebody else, I mean why did you have to be classified in that way. I mean I wanted to stand on the fact that I am a Civil Engineer and that is it, full stop. (Agrineth)

#### Concluding remarks

The above responses are supported by Ndhlovu and Spring's (2009) findings that government interventions are found to be making progress in the occurrence of women who are ascending the corporate professional ladder. Previous studies indicate that the South African Government interventions for promoting women's status are most successful in promoting gender equity in parliament leadership and the public sector alike (Hicks, 2010; Mathur-Helm, 2005; Nkomo & Ngambi, 2009). However, the informants strongly emphasised that their careers were established on credibility. As a result, they have not reached their positions purely on the basis of being women.

#### Personality attributes

The study by Doubell (2011) has established that there is a significant relationship between the personality variables of self-efficacy and professional success of women. The informants expressed confidence in their ability to succeed and that they had invested a lot of effort in the development of their careers with the purpose of becoming successful. Portia believed that the major contributing factor to her success was her personality. She also expressed her confidence in her abilities and skills to an extent that made her confident that she would be the best candidate at any job interview. The remarkable part of her confidence was manifested in her work activities where the outcomes of her efforts were visible. Increased confidence in their capabilities seemed to be motivating them to engage more in developmental tasks. It is critically important to take into consideration the distinct thoughts of these women, since dysfunctional thinking may lead to low self-image and perceived self-efficacy (Bullock-Yowell, Andrews & Buzzetta, 2011).

Right now, if you can ask, if you can go and ask the Mayor who is your most efficient Head of Department in the City, I am sure, he will give you my name.

(Portia)

According to the self-determination theory, human beings are referred to as active and growth orientated. Therefore, they will always seek to engage in different activities, as long as their work environment is perceived as autonomy-supportive. Mpho explained that for her to get promoted at some point on her journey she had initiated the implementation of a particular project for the first time on her own, since her manager was over committed.

So, that was an amazing moment that I saw, that if you just take the initiative you get promoted (laughing). So whenever I go speak to the ladies I tell them the story and I say okay, I will tell you the story now. I did this, all I did was instead of waiting I stepped up and said let me start so long. That is all I did, no magic, no wow whatever, I just said instead of sitting there twirling my thumbs, I said I am going to start even if I don't know how to do it, I am just going to go with it. (Mpho)

As Tiara has mentioned, there were times when certain situations or factors impeded individuals' success on their career journey. Those kinds of situations required a strong and persistent personality attribute.

I have a very strong personality and I will do it any way, you know. And that is like I said before I have been lucky enough for I mean, 90% of the time I've been successful in just bulldozing my way through stuff. But maybe my attitude would have been different if I wasn't successful. If I was just disheartened by it... but I thank God I was successful so that I can have that attitude that I am going to take it irrespective of whether you are giving it to me or not. (Tiara)

#### Concluding remarks

An individual's personality seems to be having an influence on career success. The responses showed that informants possessed high level of self-efficacy which encouraged them to initiate involvement in more responsibilities. These women expressed willingness to take

risks and when an opportunity presented itself they worked hard to successfully handle such opportunities. All the personality traits mentioned in the responses had assisted informants in ascending the organisational ladder while developing their careers.

#### Positive attitudes

The findings revealed that the informants' attitudes towards their work were motivational in nature. The majority emphasised the strong passion they had for their jobs. Tiara explained her job as fulfilling to her life purpose. The informants talked a lot about their need to make a difference in the lives of other people. The nature of their job offered them an opportunity to build schools, houses, and to provide potable water and sanitation to the underprivileged sectors of the community. This kind of involvement in the community was giving them satisfaction. They always wanted to succeed in their endeavours which could be regarded as one of the driving forces on their career journeys. The informants indicated positive attitudes towards learning by engaging in formal or informal learning and always searching for more challenging work. The confidence in their abilities could also be regarded as them having a positive attitude. A positive attitude begets optimism to life and makes the person sought after by employers (Mohanty, 2010).

I had to start paying for the student loan as soon as I finished studying and started working. So if I didn't enjoy my career I would have been stuck. I still had to work and pay for the stuff and help my parents out and whatever... but I was lucky enough to have found a career that I enjoy and that is fulfilling.  
(Tiara)

I chose the right occupation and it is not really my work, it is my passion.  
(Agrineth)

#### Concluding remarks

A positive attitude towards an individual's work can be associated with career success. The need to achieve and to make a difference in the lives of other people can be referred to as the source of a person's strength. Employers desire a worker with an optimistic attitude. Therefore, a worker's employment probabilities increase exponentially with the improvement in attitude of a worker (Mohanty, 2010).

## CATEGORY D

## CONSTANT CHALLENGE, YET A JOY

There are a few challenges that these women have encountered on their journeys. Some challenges can be referred to as professional in nature while others are personal challenges. It has been voiced during the interviews that they are being constantly challenged as women holding demanding roles in the civil engineering field.

## Acceptance of women as leaders

“Although changes in women moving up the management hierarchy have begin to erode the stereotype of corporate women as low in status and relegate to clerical or support position, these have not been as profound as they seem especially in male-dominated environment” (Chovwen, 2003, p.139). It seems to be quite difficult for men to accept that they can be led by women. The findings in the study are congruent to Chovwen’s (2003) findings that executive women in male-dominated environments perceive themselves as not being fully recognised in their workplaces.

Gender stereotyping has a great influence in the way women are perceived; women are viewed as less capable of executing leadership roles, especially if they are in an industry that is incongruent to their gender role (Garcia-Retamero & Lopez-Zafra, 2009). Garcia-Retamero and Lopez-Zafra (2009) see women as facing a double bind, since they possess communal characteristics such as kindness, and once they assume leadership positions, they are expected to have agentic characteristics like self-assertion and dominance that are incompatible concepts.

I feel strongly about that but I have found, especially when I did work for the mines, they would walk in and they are like okay “bokkie” (a term of endearment used in Afrikaans for a young woman) I will have some coffee and what-what-what and I leave it, I leave it and then finally when the meeting starts and they see you don’t get up and or you not taking minutes and then they are like who are you and then my boss would say okay this is Dr X and they like oh shit! (Mpho)

The responses indicated that some women experienced challenges when they had to totally assume their positions of leadership in the work environment due to factors, such as age and culture. Mpho expressed her difficulty with issuing instructions to her male subordinates, since she was the second youngest employee at the company:

And then, the thing that is still tough for me but because we are a small company I don't have to face it day to day is having people work for you, work underneath you. Because I have a problem; the moment I give somebody work and they don't do what I ask I would rather just do it myself. So I know that is a problem I have. (Mpho)

Bohlale narrated how cultural values interfered with her leadership role:

But when a 65 year old board member, who is important and old-fashioned, walks in the room, especially if he is also Venda like me, then I have to say... (speaking home language). I call him by his surname and I say "Vho" in front and that thing sticks. And that is fine, it doesn't harm, but then there are sometimes when issues escalate and they become quite heated points of difference in opinion and I have the need to take this person on as my equal but that whole cultural backdrop gets in the way. And with my white colleague I might have no baggage because he and I, all we have is a professional relationship. (Bohlale)

Black male colleagues were found to be having more difficulties relating with women who occupied leadership positions. It could be attributed to the gender and culture stereotypes that affected men's perception about women in leadership positions. Garcia-Retamero and Lopez-Zafra (2009) in their study of cross-cultural comparison have found that there is a cultural difference in terms of how women's ability to succeed is perceived in different countries. Nkomo and Ngambi (2009) also emphasise that culture can have an influence on gender stereotyping. The informants expressed their views of the issue:

I never had challenges because I am a female per se. Here and there, when I have a client who doesn't know me especially black males, I don't think they like taking instructions from females. So initially they like shut-up, shut-up and

the moment I start making sense and the moment I bring in my part and I am contributing, and I am making their lives easier the doors just open. (Mpho)

Ah... you know the work that I do is very difficult, very difficult in a sense that I... my male black colleagues may undermine your ability. Whites, they don't have a problem but blacks they do. So where I have worked I have always found it difficult to work under a black male. They feel intimidated that you are going to take their position. (Portia)

### Concluding remarks

It is evident that gender and cultural stereotypes still exist in the civil engineering work environment where the informants are working. These stereotypes prevent women from effectively exercising their potential in their work. It hampers their personal and professional development. The gender stereotypes that exist in the workplaces cause women to experience discrimination.

### Pressure to perform

There is a strong feeling that these women are constantly experiencing pressure to perform in order to prove to their male counterparts that they are capable enough to occupy leadership positions. It seems that this pressure does not start developing in the workplaces but it has existed at university already. Agrineth expressed how she always wanted to appear competent in class at the university where she was the only women. The expectation of having to prove themselves to their male counterparts can be attributed to the gender stereotype that reinforces the belief that women are less competent. The characteristics of women cause them to become targets to be labelled as suitable or not for certain occupations and leadership roles (Ely & Padavic, 2007; Garcia-Retamero & Lopez-Zafra, 2009). In her study of women in one of the male-dominated industries, Singh (2012) has found that women believe they work harder than men to prove themselves worthy of management level positions.

But the thing is when the lecturer for instance talked about, for example structures and load-bearing walls, I would sit in class and not know anything about what they were and stuff like that. But because I did not know I would make sure that I go to the library, research the whole thing and little did I realise even the guys in my class also didn't know, so we found out much later

(laughing), it was quite funny actually. So I wanted to excel in an environment like that because you don't want to look stupid so you actually do that extra bit. (Agrineth)

There is a lot of proving that happens on a daily basis. I can't advise any woman to do otherwise. It's, I think it is a very important life lesson to learn early like many women. I think it is true even worldwide that as a black female there is no question that there are many stereotypes that follow us. Just like for white males there are stereotypes that follow them. Now the stereotypes that happen to follow black woman are disappointingly not ones associated with high performance, attention to the job, being able to assert oneself and stand up to male authority. (Bohlale)

I think ... knowledge is power. I always tell the young ladies here; knowledge is certainly power. You need to be knowledgeable; you need to give comfort to the person. I am constantly challenged on a daily basis, because even though I have all the years of experience I am constantly challenged and I just deal with it by being more knowledgeable. I actually read up a lot, I understand what I am doing; I am still very in contact, although I am CEO of this company. (Agrineth)

#### Concluding remarks

Competition between men and women in the workplaces of the informants exists. This competition is instigated by the notion that women are less competent and not suitable to be in the field of civil engineering. Senior management positions are held mostly by men as indicated in Business Women Association of South Africa (2011). Therefore, women are perceived not to be suitable for those upper echelons. Consequently, they feel pressured to prove that they are qualified to be in those top positions.

#### Predominant dialect

It was found that three out of four informants were not native Afrikaans speakers and they mentioned that the use of the Afrikaans language was an obstacle at their workplace, since it was mainly used to communicate in the industry. The remaining informant probably did not mention it as a problem because she was the founder of her company. Booysen (2007) states

that there is a white male-dominated organisational culture that seems to be insensitive to diversity at the workplace. Booysen further highlights that white men are not only dominating in numbers but also in perceived positions of power. The engineering workplace is a largely white male sector; however, the status quo is gradually changing (Case & Jawitz, 2004). The Engineering Council of South Africa (ECSA) indicates in their annual report of 2011/12 that the total registrations under the Professional Engineer category amount to 15168, of which 1007 are Black, 697 are Indians, 145 are Coloured in comparison with Whites who represent 13319 of Professional Engineers. This report provides confirmation that Whites are still dominant in the civil engineering sector. Contextually, it is important to note that registration with ECSA is voluntary, which implies that the statistics given do not necessarily represent the number of all qualified engineers. I also believe that the geographic location of the company can also influence which language will be the lingua franca at a specific company.

I don't speak Afrikaans. I don't understand Afrikaans for all intended purposes. It is still to a large extent an Afrikaans dominated environment. Alright, since I started in 2000 things have changed, things have evolved but Afrikaans is still the main language. (Tamia)

Coming into a white Afrikaans company, that was difficult for me. Note that I was female, it was the fact that I was black and I can't speak Afrikaans because I came from X. And I mean you know, British colonised, most white people spoke in English and you know we didn't have anyone speaking in Afrikaans. The only people that were speaking Afrikaans were like the police service pointing guns at you when you were a small girl, way before your time. So that for me was the difficulty. A lot of meetings were conducted in Afrikaans and I would constantly have to remind people to speak in English. A lot of e-mails were send in Afrikaans, work e-mails that I had to write back and say you know, can you please correspond in English and that took a long time to change. It is a lot better now. And the company has transformed significantly but it... uhm, that for me was the difficulty, not that I'm female. (Tiara)

#### Concluding remarks

There seems to be subtle discrimination that exists at the workplace of some informants in relation to the preferred language for communication. Some informants in private sectors are

treated unfairly when the majority of people in the company communicate in a language that they do not understand. This kind of treatment can make them feel less welcome and excluded at the company.

#### Work-family balance

Most of the informants were responsible for rearing children. Surprisingly, the majority of the informants did not mention it as a challenge. However, some of them still found it difficult to balance their work and family lives. These women's decisions caused them to compromise by adjusting home and family responsibilities (Whitmarsh et.al., 2007).

Tiara remarked about the feeling of guilt she had because she was unable to properly contribute to the fulfilment of her children's needs. She recalled her own childhood when her mother was always there to prepare meals and to help her with homework. McDonald (1998) has found that women in demanding working roles, who are unable to provide the best possible care for their children, believe that their children are deprived and, as a result, they develop feelings of guilt and discomfort. In her study about work-family conflict, Tengimfene (2009) reveals that women are expressing a range of strong emotions attributed to raising children while working. These emotions include anger, guilt and joy. Tengimfene further explains that it is good and healthy for women to acknowledge those feelings rather than pretending that everything is well while it is not. All the above-mentioned studies, including Groves and Lui (2012), confirm that there are feelings of guilt experienced by working women when they are unable to take care of their children.

So it is very demanding and I mean we only get home at six o'clock and it is such a short space between six and he needs to be in bed by seven, eight o'clock so that they can wake up in the mornings. I do feel quite guilty and that is why on the weekends, we try to do a lot with the kids to sort of make up for during the week thing but it is hard. (Tiara)

#### Concluding remarks

It was a remarkable observation that the majority of the informants did not raise work-family conflict as a challenge, which most previous studies strongly indicated as an issue. The informants and their families seemed to have adjusted and accepted the use of external support, such as domestic helpers and au-pairs.

### Long working hours

In their responses, some informants indicated that long working hours were a challenge. Geertsema's (2007) earlier research in construction also reveals that women in senior management positions experience long working hours as a source of career pressure. As a result, their families and social life get affected negatively. It seems that they do not spend enough time with their children. Tiara expressed that at times her son complained because once she got home she would be busy on her phone and laptop. Mahlatse, who was 31 years old, stated that young people should not be in a rush to chase certain roles, since there are life pleasures that they still need to enjoy.

I thought about it the other day, when you are still young and in your first years of work, things are easy and you don't have that many worries. You think you have, you think you've got a lot of stress but you don't. Life is easy, weekend away with friends, you organise it on a Thursday afternoon because it is easy, you know you are going to be free the weekend. (Mahlatse)

And then I told you I have a wonderful husband and a wonderful family who would, like tonight we are going to have our business planning session and I mean I am only going to get home at about nine o'clock and then my husband will see the kids and whatever. (Tiara)

Basically, I don't cook during the week and my husband is alright with that. So that is one thing, this morning when I woke up, on my iPhone, tweet-tweet as I was getting dressed for the office. It is an outlook invitation for a teleconference between six and seven tonight. I went to bed thinking that I know what my calendar presents. And of course any matters that arise between eight and five they are neither here or there because I am not needed at home. But when they become after hours things, quite frankly people should know that I need about a day or two's notice because what if I am fetching the kids from school. How can I be there for a teleconference at six? But for my career security and advancement I have to be in that teleconference. (Bohlale)

### Concluding remarks

Although the informants considered their job or work environment as challenging, they also seemed to be devoted and passionate about their job. Being in senior management position requires a lot of commitment from an individual. The work role responsibilities consumed most of their time. Some of the informants expressed that the self-fulfilment or feeling of satisfaction that accompanied the nature of their work was more motivational for them. According to the self-determination theory, performing an interesting job is an intrinsically rewarding action itself.

### ADAPTIVE STRATEGIES AND METHODS

People do develop coping strategies and methods when they find themselves in situations where the demands are beyond their expectations. People respond to challenges in various ways; some can be referred to as effective while others are not. Some of the effective coping strategies and methods used by the informants need to be described in more detail.

#### Self-knowledge and self-awareness

Informants remarked about the importance of knowing oneself which involved an awareness of one's strengths and weaknesses. One of the informants mentioned that at their workplace they once made use of psychometric assessments to assist management executives with enhancing their self-knowledge with the purpose of effective functioning at work. Furthermore, being conscious of different personalities facilitates interaction with and understanding of other people (Brandt & Laiho, 2012). Singh (2012) has found that some of her participants are using self-awareness and reflection in their life learning. Her findings are congruent to some of the informants' strategies of dealing with challenges. Mahlatse mentioned the importance of keeping a journal to record everything that happens in life, and to compare the experience with the previous formulated goals and standards in order to use it as a tool to measure the relationship between plan and implementation. This helped individuals to be aware of their behaviour.

So, there is no one formula and that is why you hear me harping on the same thing. Know yourself because when you know yourself you will be able to name what your strengths are, you will be able to name what your weaknesses

are and you will be able to come up with coping mechanisms for those particular truths about your own self. (Bohlale)

Ja, I mean one needs to understand and acknowledge one's own deficiencies. (Agrineth)

It is just in subtle ways that somebody would ask me, isn't there more sugar or you know, it will be a catering question that they would present me with. And with this matter of self-awareness I found that there are occasional, not many, few and far spaced instances, where I can rise above that and in my own capable way, I can relay the message back to this person that they are mistaken, without aggression, and I can manage to sort that the sugar comes, all in one. And that for me is the beauty of being a woman and holding on to our gender inclinations. (Bohlale)

#### Concluding remarks

Self-knowledge seemed to be a popular tool that informants used in assessing their strengths and weaknesses. Self-knowledge can be enhanced by engaging in more exploratory activities (Flum & Blustien, 2000). Openness to feedback can also assist leaders in increasing self-knowledge. Sala (2003) is of the opinion that when people move up the organisational ladder, their chances of getting feedback from others are slim. As a result, their self-image can be distorted, since they are unable to adjust their self-perception in respect of the self-perception of other people (Sala, 2003).

#### Knowledge of your work environment

Informants indicated the significance of knowing one's work environment and understanding how engineers were functioning. Such knowledge prepares oneself in advance for expected challenges at the workplace. Tamia highlighted the importance of having at least a scientific background in top management in the absence of civil engineering qualifications. She stated that, her profession as a physicist worked in her favour in terms of understanding the language that was spoken in the environment. However, the question remained: Can one work in the environment? She saw the civil engineering environment as an unforgiving work environment and also a place that required a lot of attention to details. Bohlale emphasised

the importance of researching one's place of employment before accepting a job offer. She also mentioned the importance of planning.

Civil engineering is a place that is still dominated by men but those men are Engineers. Now Engineers are very black and white people. I mean, I told them that they work in a binary system, it is either yes or no and they have nothing in between. So it is a question of being able to speak the same language, not technically but when they are asking you a question, they don't want the long answer. They want can you do it, yes or no, can you do it by this time, yes or no. Which suits me fine, that's the way I like to work but it's in a way an unforgiving environment. (Tamia)

Tamia described why she referred to the engineering environment as an unforgiving environment:

So, if they ask you can you give me this by such a date and you said yes then you better give it to them by such a date because otherwise you have lost your credibility. That's what I mean by being unforgiving. They will give you a chance but don't blow it. (Tamia)

But in coming here, I had done homework and I knew it was not going to be a walk in the park, it was going to be very aggressively male, the language in the course of business there will be a lot of Afrikaans. But what I did choose to do as a success factor; I didn't choose to come here and make radical change overnight because I felt that I needed to begin by winning trust. (Bohlale)

...and... and I think all of us expect some of the biases. Knowing your environment is also important, I think that helped a lot because it is not like you were taken by... you knew some of the funny comments might come out at a stage. (Bohlale)

#### Concluding remarks

Exploration in a career or at work can increase an individual's knowledge of their environment. Since informants were curiously participating in different activities their

knowledge of their environment increased exponentially. Self-esteem also gets developed when an individual has knowledge about their environment (Flum & Blustein, 2000). When individuals know how to handle different situations due to their involvement in different activities and interaction with different people, their growth becomes evident. With increased knowledge of their environment and self-esteem they are encouraged to get more involved in developmental activities.

#### Support System

The majority of the informants emphasised the significance of their support systems in their life to carry them along the journey. There was a lot of support that informants received from mentors, the work environment, family, friends, domestic helpers and au-pairs. According to the self-determination theory, it is critical for a person to have socio-contextual support as part of their career development for that person to experience increased motivation. Whitmarsh et. al. (2007) suggest that dual-career marriages rely on a strong partnership in which responsibilities are shared. Statements from Tiara supported their suggestion:

And then I told you I have a wonderful husband and family who would, like tonight we going to have our business planning session and I am only going to get home at about nine o'clock and then my husband will see the kids and whatever. (Tiara)

However, Mpho did not believe in relying on other people for support because she did not receive a lot of support when she grew up. She believed that individuals needed to be independent by picking themselves up without any support from other people.

The following quotations highlight different support systems used by the informants:

When I worked for X, my direct line manager, a white male, a very good man, he believed in me, from day one. I know that for me to get on the board and all that I needed was to have a supporter and he was my greatest supporter. So, he was my mentor but he was not officially named as my mentor but years after I had left the company, we would phone each other and he would check on my growth and my progress. If I do something big and have a launch event in my new job I make sure I invite him. (Bohlale)

So, having someone who in a way protected me from repercussions... because he was the boss at the time. I could develop with a lot of freedom around me. But at the same time there was someone I could basically say help, I need some help. (Tamia)

On the home front, I have been supported by family and my husband is very supportive. My kids are very independent you know. So, I think in that way it helped. I didn't have to worry about... (Agrineth)

I have a close friend, it is a female friend, she is not in a job role like mine, she is something completely remote but she has got an excellent listening ability. And when she and I have coffee together she allows me to dump on her and she has her own set of things that she dumps on me. And we learn support like that, because my husband can't support, he can't provide support in all the areas. (Bohlale)

I don't do groceries in my house, if I have to pay electricity, arrange like... now I am arranging my son's 21st birthday, she is doing everything. Going to banquet managers at hotels and checking everything is fine. I am happy, she does everything. (Portia)

Doubell's (2011) findings confirm the importance of external motivation as contributing factor to the advancement of women. In addition, Doubell examines factors such, as professional associations for networking and issuing of rewards to the successful women. The majority of the informants were found to be members of the professional societies and had received rewards for their outstanding performance (Table 3.1). The cognitive evaluation theory postulates that social-contextual events like presentation of awards to these women also endorse feelings of competence (Deci & Ryan, 2000a).

#### Concluding remarks

The self-determination theory proposes that managerial autonomy support yields positive work outcomes (Gagne & Deci, 2005). Positive feedback plays a significant role in motivating individuals to engage in more developmental tasks. The feeling of competence

and an autonomy-supportive work environment mutually enhance intrinsic motivation, according to the self-determination theory.

#### Be knowledgeable

To be knowledgeable can be achieved by engaging in either formal or informal learning. The respondents emphasised the significance of continuous learning which was occurring in their everyday living since they constantly learned from daily activities, experiences and interaction with other people. Despite having been accredited with their degrees, informants still had to learn from different role players including their subordinates, for instance unskilled labourers on site, technicians, and personal assistants. All this information, knowledge and skills they acquired daily were building them into who they were. Bohlale had indicated that when she hired someone in the company, she preferred a person who knew more about their subject matter than she did. When the informants were changing jobs, mentors, and workplaces; there was always additional diverse skills and knowledge that added value to their career development. Colardyn and Bjornavold (2004) are of the opinion that for lifelong learning to be achieved; learning, skills and competencies acquired outside formal education and training need to be recognised and valued.

According to Svensson and Ellstorm (2004), informal learning is important but not sufficient for the acquisition of knowledge. It has to be supported by formal learning. Only one of the seven informants was found to be currently engaged in a formal learning process. The reason why other informants were not pursuing formal learning at the time of this study might be due to the load of commitments that they had, since some raised the issue of working long hours and struggling to balance work and family responsibilities. Some indicated that they were just starting families. I assumed that formal learning was an additional responsibility to them. In the responses it was also evident how Mpho's doctorate degree had protected her from being undervalued by clients.

And I like that element of surprise and the thing is the moment the clients know that I have a Doctorate then there are no issues. I think it would have been more difficult if I didn't have a Doctorate but (sigh), I think that has helped me a lot because it is as if you've got this stamp of approval. (Mpho)

I told you, I am currently studying certificate in Arbitration and I am constantly learning. If you come to my home next to my bedside you will find at least four or five different books, a lot of which I am busy reading actually. (Agrineth)

#### Concluding remarks

Being knowledgeable requires an individual who is willing and open to a learning process that occurs on a daily basis. Individuals need to equip themselves with knowledge by engaging in both formal and informal learning, since these modes of learning were the shields that the informants were using when faced with challenges.

#### Clothing

Six of the seven informants were formally dressed during the research interviews. One was casually dressed; perhaps it was their casual day since the interview occurred on a Friday or she was going to visit one of the sites, since she pointed out that she liked being operationally involved in her projects. To me, these women appeared presentable and were appropriately dressed for someone who held an executive position. It gave a strong impression that they took their job seriously and as soon as I saw this, I developed high expectations for our conversations. These women wanted to be recognised and taken seriously before they even started communicating verbally. Clothing can be used for impression formation and to project an image of self and it can be used to reinforce an individual's self-confidence in role performance (Solomon & Douglas, 1987). Bohlale remarked about the silent role played by her clothing:

So, if you ask me how do I overcome some of these challenges it's through a lot of effort. It's through a daily outlook from the moment I wake up in the morning and figure out what to wear. It's like, it's a daily performance and that is working for me. I don't think it is true for every woman. I should not present an image that makes one take a look at me and think of a wedding or think of sexy or think of too casual. Because I happen to be in a formal environment and time is money and in our workplace there is serious nature of business. (Bohlale)

### Concluding remarks

From an encloded cognition perspective, “clothes can have profound and systematic psychological and behavioural consequences for their wearers” (Adam & Galinsky, 2012, p. 922). Clothing is viewed as not only having power and influence on the wearers but also over the perceptions and reactions of other people (Adam & Galinsky, 2012).

### Flexible hours

It was a pleasant observation that some companies within the civil engineering industry had introduced flexible hours at their workplaces. Frome et al., (2006) and Geertsema, (2007) indicate that there is lack of flexibility in male-dominated industries which drives women away. Flexible hours seem to be benefiting employees, especially women, since they have a lot of responsibilities at and away from the work environment. Geertsema (2007) has found that women aged between 31 and 40 years in construction need the introduction of flexible hours, since they are involved in childcare, family life, and need time for their social life and for managing household needs.

I do have that flexibility so if there is something at his school then I make sure I always attend those things, and sport events, I attend that. And like parent-teacher meetings I will make sure I attend those things. And every two three weeks I try and I fetch him from school on a Friday and I just bring him back here to the office and he sits on the computer while I sit on my computer or I just fetch him and I drop him of at home but there is that contact. (Tiara)

Yes, we do. Everybody here works flexible hours. That's part of the conditions of employment. But it is not so much flexible hours, it is more the ability of doing things, I don't want to be out of X at this time, you know. One of my colleagues is making use of them but at the same time she is not. She's got two kids in primary school so, she would arrive quite early but she will also leave early as well because she needs to pick up the kids. (Tamia)

### Concluding remarks

Flexible hours seemed to have brought relief to the informants, especially the ones who struggled with balancing family and work roles. It enabled them to schedule their work in a

way that also accommodated their personal responsibilities. As a result, they were able to be actively involved in the lives of their children.

#### Participation in sports and hobbies

Most of the informants mentioned that they engaged in sports and hobbies as a relaxation method. It was also found that they had a common interest in art which seemed to be related to their engineering skills. The artistic skills of engineers can be observed at the physical structures that they design; such as roads, bridges and buildings.

Most of the civil engineering companies are identified by the gentleman's club culture. Tamia highlighted the existence of that kind of club at their company. Since she was involved in sports at work; she may use the activity to join the gentleman's club, since they normally talk about sport and sex (Gale, 1994). Kelinske, Mayer and Chen (2001) have found that women indicate more of a health or fitness benefit when engaging in sport. However, there are other benefits; such as networking, learning to be a team player, perseverance and fostering competitive behaviour.

I do a lot of things outside of Engineering that is very art related. There is a whole string of things that I do that is not even remotely connected to engineering. I sew, crochet, do all sorts of crazy things and I think that helps a lot. It relaxes me, it makes me focus of something totally different and the main thing I discovered in just a couple of years ago is that it helps with my art skills and I think it's because of the attention to details. (Agrineth)

I am an Engineer but I am still also very interested in arts. I enjoy watching plays and things like that but I am also into "skilder", what is it in English, painting. I like hiking and trail running and recently my husband said that it was in our marriage contract that I need to go climbing with him. So I actually started rock climbing a month ago which was absolutely fantastic. (Mahlatse)

Here at work we have action netball and action cricket team that is running and I play for both teams. (Tiara)

### Concluding remarks

The informants believed that engaging in physical activities assisted with reducing stress. It was an effective relaxation technique used as a way of coping with the challenging demands of their roles. The active participation in those activities did not only benefit their bodies but it also assisted with improving some of the skills that were required in their work; such as networking, and 3D spatial skills.

### CATEGORY E

#### INFORMANTS' RECOMMENDATIONS ON CAREER MANAGEMENT

The informants were requested to offer recommendations in terms of personality attributes, skills and knowledge to the female generation in South Africa, which were necessary for managing careers, including executive positions in the civil engineering industry. Their responses and other important elements that emerged in the discussion were tabled (Table 4.1). It is important to take into consideration that six of the seven informants, congruent to their qualifications, had a civil engineering background.

Table 4.1

*Recommendations to female generations who aspire towards senior leadership positions in civil engineering industry*

<i>On entry level</i>	<i>For career success</i>
Attributes, attitudes and values	
Be realistic	Be assertive
Deadline driven	Deadline driven
Define yourself	Empathetic
Work ethics	Work ethics
A job should bring self-fulfilment	A job should bring self-fulfilment
Work hard	Go an extra mile
Have a sense of humour	Work hard
Be self-aware	Have a sense of humour
Don't be after money	Enjoy your hobbies
Take time to consider next move	Keep to your promises
Be decisive	Learn from other people
Be thick skinned	Be persistent
Learn to accept and admire womanhood	Take risks
Make changes to make yourself happy	Positive attitude towards challenges
Be curious and willing to learn	Learn to accept and admire womanhood
Let your job be your passion not your work	Make changes to make yourself happy
Be persistence	Hardiness

<i>On entry level</i>	<i>For career success</i>
Be competent	Be willing to learn
Speak out	Be curious
Believe in your self	Be competent
Take initiative	
<b>Knowledge</b>	
Good understanding and knowledge of the industry	Good understanding and knowledge of the industry
Good understanding of the company, vision and operations	Knowledge and understanding of legislation
Knowledge acquired from formal learning	Knowledge of healthy coping mechanisms
Knowledge of your source of strength	Knowledge of company law
	Stay updated with technology
	Knowledge of politics and governance
	Knowledge of other engineering disciplines
	Know and understand your male counterparts
	Knowledge of administration
	Knowledge of the practical job on site
	Knowledge of your source of strength
<b>Skills</b>	
3D spatial skills	Self -awareness
Attention to detail	Hardiness
Team player	Analytical skills or critical skills

<i>On entry level</i>	<i>For career success</i>
Artistic skills	Ability to motivate other people and oneself
Problem solving skills	Attention to details
Technical skills	Be perceptive
Design skills	Ability to see the big picture
Project administration	Ability to network
Computer skills	Ability to take strategic decisions
Self-awareness	Communication skills
Self-knowledge	Self-knowledge
Site management skills	Consulting skills
	Coordinating skills
	Design experience
	Excellent project management skills
	Goal setting
	Leadership skills
	People or team management
	Problem solving skills
	Research skills
	Marketing skills
	Site experience
	Financial management skills
	Up-to-date with technology
	Emotional Intelligence
	Strategic planning
	3D spatial skills

#### Summary – Table 4.1

Obviously and for career success, there are certain recommended requirements at entry level and there are those requirements that can be acquired with time. Personality attributes, attitudes and values play a crucial role in determining career success. When individuals are at the entry level, they are expected to be realistic, curious, optimistic, deadline driven, persistent, competitive, willing to learn, hard working, have work ethics, sense of humour, harness womanhood, take initiative, believe in themselves, speak out, let their job be a passion, and not to chase money. In addition and for career success, the following attributes are required: assertiveness, empathy, ability to keep promises, willingness to learn from other people, hardiness, ability to take risks, positive attitude towards challenges and ability to make oneself happy.

At entry level, it is important for individuals to possess skills; such as 3D spatial, artistic, problem solving, project administration, site management, computer, technical, design, team player, self-knowledge and self-awareness. While they are developing in their careers, it will be significantly important for them to acquire additional skills; like marketing, consulting, financial management, hardiness, emotional intelligence, strategic planning and analytic skills.

In terms of the required knowledge, at entry level individuals need to have knowledge of the industry, company or organisation they will be working for. They are also expected to know their source of strength and also have knowledge acquired from formal training. For career success, they need to have knowledge and understanding of legislation, politics, governance, company law, administration, practical job on site, other engineering disciplines, their male-counterparts, and effective coping mechanisms when facing challenges.

#### Concluding remarks

I would recommend to those female middle managers without civil engineering background who aspire to hold senior positions in the civil engineering industry to acquire basic knowledge of civil engineering in order to understand the terminology and processes that are followed in civil engineering. It is important to note that there might be more requirements that are not mentioned in this study.

## CONCLUSION

This chapter consists of the discussion of findings from the data analysis process and interpretations by using theories, literature and the researcher's own sense of meaning. It was interesting to find that some of the themes that emerged were confirmed in most recent studies about female executives (e.g. Singh, 2012; Doubell, 2011).

In the career developmental experiences of women in senior leadership positions in the civil engineering industry, it was found that their experiences consisted of different factors that influenced their career choices, but the choice was mainly driven by their own will. They have been through almost similar work roles, such as design engineer, and project manager, because of their civil engineering qualifications. Although some of their job titles were similar, their responsibilities were not the same. Obviously, the informant with a different educational background had different work roles. As the journey progressed, at some time their responsibilities required common skills, such as management skill which was a necessary component in leadership.

On their career journey, they had encountered challenges, nonetheless they were found to be devoted while deriving pleasure from their work. In the self-determination theory, the joy that they experienced can be attributed to the fact that there was a sense of autonomy that they experienced during their career choice and working in the civil engineering industry was out of their own free will. As a result, their choice would always be regarded as of value to them. It was also evident that these challenges did not restrain them from advancing in their career. It was a matter of how the individual was dealing with the challenges or barriers that were found on the journey.

The informants' journey was characterised by mobility in work roles. Change in work roles stemmed from the fact that human beings were constantly searching for a job that would satisfy their basic needs; which were competence, autonomy and relatedness; according to self-determination theory. For example, some informants stated that they had to search for a challenging work, while some volunteered in different societies; in turn, all these activities produce growth.

These women had developed coping strategies and methods to deal with the challenges that they encountered in their careers. The majority of the informants mentioned only acceptable coping strategies but it did not exclude them from using ineffective strategies.

The informants mentioned various factors that contributed to their ascent to senior ranks. It was not solely a particular factor that played a major role but rather an integration of different factors. Ultimately, it was the individuals' responsibility to manage her career to the high echelons by maintaining direction, continuously participating in different activities, and showing persistence in the career.

The conclusions and recommendations of the study are presented in the following chapter.

## CHAPTER 5

### CONCLUSIONS, LIMITATIONS, AND RECOMMENDATIONS

The objective of the study was to explore career developmental experiences of women in senior leadership positions in the civil engineering industry. It was achieved by investigating the career developmental experiences of seven women who were holding top executive positions in both the public and private sector in the civil engineering industry. The processes involved in addressing the problem statement included a literature review, collecting data by means of semi-structured interviews, field notes and personal documents, and content data analysis. The case study research method was used to provide an in-depth understanding of these experiences.

In this chapter, the conclusions and recommendations for civil engineering organisations and future research are discussed. In addition, the limitations of the study are also included in the discussion. The primary and secondary research questions of the study are reviewed to establish whether the findings managed to answer the research questions or not. The research questions, which were developed at the beginning of the study based on the purpose and objectives of the study, are addressed below.

#### Primary research questions

What are the career developmental experiences of women with respect to leadership in civil engineering that have contributed to the ascent to their current positions?

The study focuses on the management skills of women in senior leadership positions in the civil engineering industry, which is regarded as a male-dominant environment. A career journey consists of an entry phase, middle career phase and senior career phase. All these phases consist of different roles, responsibilities, developmental tasks, salaries, and achievements.

The entry level phase requires individuals to equip themselves with relevant knowledge and skills in order to become employable. It can be achieved by studying relevant degrees or diplomas at institutions of higher learning. Informants always desired to increase their

knowledge by studying, though some had not been sure what field of study to choose and what their preferred courses entail. The support received from families, teachers, lecturers and professors played a significant role in guiding them about which field could be suitable for them and in accessing funds for their studies. The majority of informants used bursary schemes, scholarships and study loans to pay for their studies.

On entering the workplace, the organisations took the initiative to offer them mentors for guidance and support during their learning stage. Almost all of the civil engineering organisations where informants were employed were using mentoring to develop their young professionals. At the same time, informants also had and continued to have informal mentors because they perceived informal mentoring as more beneficial than formal mentoring. Both formal and informal mentoring had enhanced the career growth of these professional women.

Informants with civil engineering qualifications stayed a maximum period of four years in the entry phase because that is a requirement of the Engineering Council of South Africa if they were to acquire professional engineer status. However, that did not mean that their roles and responsibilities were stagnant for the period of four years. Due to their competence and eagerness to learn more they moved upwards in their careers. Fortunately, their work environment did not prevent their basic psychological needs for competency, autonomy and relatedness from being satisfied. They were allowed to explore by engaging in different developmental tasks and, as a result, they developed fast and progressed to the next phases.

Promotions, positive feedback and achievements at work served as encouragement to engage in more activities. These opportunities increased their knowledge which, in turn, enhanced their self-esteem and made them more employable and marketable. The informants expressed high confidence in their abilities and that encouraged them to pursue more challenging work roles. Of course, other factors such as affirmative action and positive attitudes facilitated their ascent to the top echelons.

It was revealed in their career experiences that these women encountered challenges on a daily basis. As a result, they had developed effective coping strategies and methods to deal with their individual challenges. However, some of the informants found it hard to deal with certain challenges, for example work-family balance. Nonetheless, these women still were finding joy in their careers.

What career developmental experiences have they gained that can assist in recruiting and retaining the younger female generation which aspires to senior management positions in the civil engineering industry?

In these women's career developmental experiences, a lot of learning occurred in order to achieve the objective of transferring skills and knowledge to the present and future generations. It was evident that women were needed in the civil engineering industry. Various initiatives were being developed by companies by means of investing in programmes to attract women to the industry. It is of critical importance for individuals when making a career choice to follow a career that will bring self-fulfilment on the journey of reaching their life purpose. A career should not be a job but a passion instead. The younger generation should not chase money but should focus on developing themselves by acquiring skills and knowledge that would produce inner fulfilment in their career. When a career is chosen out of interest it will enhance intrinsic motivation. Although the nature of civil engineering is perceived by society as masculine, some women find it to be satisfying their feminine needs, such as the need to care. For example, their ability to identify a need for houses in a particular township and to design and construct those houses bring much fulfilment to their lives.

Civil engineering is a multi-faceted field, for example, at the management level an individual can choose to pursue technical management or another form of management. There are divisions that focus on structural engineering, infrastructural services (i.e. water, roads, sanitation, and storm-water), financial modelling of projects, systems, various scientific studies; for instance geotechnical investigation, and advisory services. Therefore, if an individual does not experience career satisfaction in a particular division, one can move to a different stream within the industry. Change of work roles or environment has the ability to increase knowledge capacity of individuals. However, some people may consider it as lack of commitment or goals on a career journey.

Development takes place in phases; there are a number of processes and work roles that individuals have to go through before becoming part of senior management. These processes and work roles require hard work, persistence, work ethic and confidence in one's abilities. Sometimes, an individual is forced to persist in order to be given certain developmental tasks

and, when offered that opportunity, they need to excel in the duties that are assigned to them. All work roles are significant in career development. The findings in this regard were conclusive. The informants had acquired all required skills from project initiation, design, project management, administration, documentation and site administration before they could reach their current senior positions or establish their own entities.

#### Secondary research questions

What are the challenges faced by South African women in the civil engineering industry, particularly those women in senior leadership position?

There are a number of challenges these women in civil engineering were encountering in their career developmental experiences. These challenges should not be perceived as barriers that impeded the success of women in their careers, since these women managed to transcend them. This study seeks to raise the awareness of those women who aspire to hold senior leadership positions in order to keep on encouraging them on their career journeys.

At some of the civil engineering companies, it is still difficult to accept women as leaders due to gender and cultural stereotypes. Societal values and culture seem to be interfering with applying the leadership of some of the women. The stereotypes that these women experience force them to always want to prove to their male counterparts that they are suitable to be in these positions. It can be referred to as a constructive type of competition between men and women in the civil engineering industry, since it increases their knowledge and enhances their competency. The pressure to perform is a challenge that women are experiencing since they have entered the field.

The dominant lingua franca at the civil engineering companies where informants were working happened to be Afrikaans. Since the majority of people in the industry were white Afrikaans speaking engineers, the minority groups at these companies might feel marginalised.

Another challenge that women in senior management have to deal with is the long hours that they have to work due to their demanding roles. Long working hours make it difficult for these professional women to satisfy all the needs of their families. The inability to carry out

their motherly responsibilities comprehensively induces feelings of guilt for these women. However, the majority of women in the civil engineering industry who hold senior leadership positions seem to be effective in managing the work and family demands by making use of domestic helpers and au-pairs.

What are the strategies and methods that are used by women in senior leadership positions, to cope with encountered challenges in their career development?

There are different coping strategies and methods that the informants were using when dealing with the challenges they experienced at professional and personal level. Self-knowledge and self-awareness were important to these successful women, since it enabled them to know their strengths and weaknesses, to evaluate their career development. It also assisted them while interacting with other people and understanding them better. In the process, they become aware of their behaviour and actions. It seemed that self-knowledge could also be used to determine which kind of clothes would complement the self-image of an individual. The manner in which informants dressed for work and the way in which they conducted themselves might influence the way in which they are viewed. Certain situations at work required these women to dress appropriately in accordance with the nature of particular circumstances. The informants indicated that self-awareness could be achieved by keeping a journal.

Another effective way that can be used in dealing with challenges in the civil engineering field is to acquire knowledge about the work environment. This strategy can help an individual with preparing for predictable and unpredictable challenges, and with understanding other people's behaviour in the environment. The more people are familiar with their environment, the more they explore in their career however, in some cases an opposite process occurs. Subsequently, their self-esteem increases due to the knowledge they have gained about the environment. Knowledge of the environment can be acquired by exploring the environment that normally occurs once an individual feels secure in the prevailing environment. It is human nature for individuals to need meaningful interaction with other people around them.

It is significant for individuals to have support systems on their career journey. The support that individuals receive, particularly from their work environments, encourages them to

explore more in their careers. The support systems that the majority of informants had mentioned included families, friends, mentors, work environment, domestic helpers and au-pairs. Most of the informants' companies had introduced flexible hours which were helpful to professional women with numerous responsibilities. It had been highlighted that participating in sport and hobbies could be used as a relaxation technique for professional women in senior positions.

It is critically important for women who hold senior leadership positions in male-dominated occupations to be knowledgeable. The findings of this study also reveal that women always want to prove to men that they are competent enough to hold positions in the civil engineering industry. Knowledge can be acquired by participating in both formal and informal learning. The informants were receptive to learning from everyone, including their subordinates, daily activities, and interaction with other people. Formal training on its own was not considered to be sufficient. Informants emphasised that there were a lot of skills and knowledge they had acquired informally. Both formal and informal learning enabled these women to progress to the top of the hierarchy.

## RECOMMENDATIONS

The study offers civil engineering organisations a number of recommendations.

Civil engineering organisations could develop programmes that would strategically assist women at lower levels of management to engage in more developmental activities and assignments with the objective of stimulating their potential.

The companies without formal mentoring programmes should introduce such programmes at their organisations, since such programmes are playing a significant role in the career development. Furthermore, the mentoring programme should be autonomy-supportive in order to increase the intrinsic motivation of workers.

Diversity programmes are also recommended for the entire work force of an organisation in order to assist with integrating women into the industry. Women do not fit easily in due to the prevailing stereotypes in organisations. The focus of the programmes should be to minimise

the influence of stereotypes and discrimination that continue to manifest in relation to race, language, and gender.

Women in top management have demanding responsibilities. Therefore, organisations are recommended to establish women's forums where women will empower and support one another by sharing their stories, challenges, and different adaptive strategies. In order for a forum to be effective, the women should meet regularly and it should consist of three to four companies from the same region.

#### Recommendations for future research

The topic can be extended by focusing on women in senior leadership positions in civil engineering in the under-developed parts of South Africa, for instance the Limpopo and Eastern Cape Provinces. This comparative study will focus on the differences among provinces, since the provinces are not at the same level of development.

As a comparative study, the topic of the study could be extended to male-dominated occupations in other industries.

#### LIMITATIONS

The study was limited in four respects. Firstly, it was really a challenge to find informants due to the scarcity of women in the field and their busy schedules; consequently, the sample size was small. Neither could the sample results be attributed to the entire study population because the cases were selected on the basis of convenience which made the potential for bias greater (Henry, 2009).

Secondly, executives in the civil engineering industry had demanding roles. Therefore, it was not possible to interact with them more than once during the data collection phase. As a result, I had to rely on additional information they had sent when they were checking scripts for accuracy. The intent, however, was to conduct two face-to-face interviews with each of the informants. Lincoln and Guba (1985) are of the opinion that prolonged involvement with participants can increase credibility of the findings.

Thirdly, the informants might have sought to present themselves more positively in the responses that they had provided during interview sessions. Therefore, it was significant for me to have been thorough and able to verify certain information by obtaining data from multiple sources. Polkinghorne (2005) also indicates that evidence about human experiences have limitations, since experiences cannot be directly observed. "Data about it depends on the participants' ability to reflectively discern aspects of their own experience and to effectively communicate what they discern through the symbols of language" (Polkinghorne, 2005, p. 138).

Fourthly, since I was the primary instrument for gathering data during the study, my previous work experience as a woman in the industry might have led to the structuring of certain preconceptions. Social scientists always need to be mindful of the influence of their personal values, political preferences and motives when conducting research studies (Singleton & Straits, 2010). It was, therefore, of critical importance to me as an ethical researcher to know and state my personal preferences and values, in order to guard against my personal bias.

#### CONCLUDING REMARKS

Career developmental experiences of women in civil engineering are categorised according to change of work roles, achievements, challenges and growth. The industry remains a mainly white, male-dominated environment. However, there is a slow progression of women who are trickling into the industry with the aim of promoting the gender intervention programmes of the South African Government. Women who aspire to reach senior positions should not be discouraged by the challenges and recommended requirements that are mentioned in the study. The challenges can be transcended, like most women do, and the requirements are not inherent; people can acquire them on their career journeys.

Every individual's career journey is different, and some individuals' experiences are dissimilar like in the case of the informants of this study. However, it does not mean that any of these women will not reach the top of the hierarchy; it only means their journeys are different.

## RESEARCHER'S REFLECTIONS

This research study had been a learning journey for me. Initially when I chose the topic, it was basically due to my personal interest in the field and I never thought it would benefit my own development so profoundly. It was a journey with lots of challenges along the way, a variety of emotions, achievements, criticisms, disappointments, praises and interaction with different people. I was privileged to find the calibre of people that I worked with. The interview sessions were inspiring, since my career goals involved being at the top of the echelon in my field of study. Somewhere along the path of my career, I got disturbed by the challenges that I was encountering at the workplaces and, as a result, I became disillusioned by my job. While the informants were sharing their stories, I could easily relate to what they were going through, since I am a black, married woman, with children. At times, the interview discussion stirred up some negative emotions in me. However, I managed to retain my composure by focusing on my role as a researcher. I, therefore, learned to control my emotions and to remain non-judgemental about other people.

I was also astonished by the humbleness and openness of these women who informed my study. Even though I made all informants aware of the fact that I am a research student, they welcomed me and showed some interest and willingness to contribute to the success of my research study despite their busy schedules. Of course there were a few who turned me down when I invited them to take part in the study. While it was really disappointing and demotivating, I had to continue finding participants.

The study also helped me in learning to accept positive and negative feedback alike. At times, I did not clearly see where I was going but I just kept on pressing ahead, since my supervisor continuously re-assured me by reiterating these words "it is doable".

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## APPENDIX A

## INFORMED CONSENT

STUDY TOPIC: CAREER DEVELOPMENTAL EXPERIENCES OF WOMEN IN SENIOR LEADERSHIP POSITIONS IN THE CIVIL ENGINEERING INDUSTRY

RESEARCHER: MAPHOKO MATILDA MOSHUPI

Dear \_\_\_\_\_

I, the above-mentioned student researcher, am studying to be awarded a Master's in Research Psychology degree at UNISA. This research study forms part of the requirements for my studies and it also is a critically important study that could benefit the entire society.

As an elected participant, I will appreciate it if you are willing to allow me to conduct a study about your career developmental experiences, since you are one of a few women in the civil engineering industry who is holding a senior leadership position. Previous studies have found that women in this sector encounter some challenges that restrain their advancement in career development. This study seeks to explore your career developmental paths to gather information that will address the gap in literature pertaining to South African women who are leading in male-dominated industries. The research questions will assist you to understand what the study intends to achieve.

#### Primary Research Questions

What are the career developmental experiences of women in leadership in the civil engineering that have contributed to their ascent to current positions?

What career developmental experiences have they gained that can assist with recruiting and retaining the younger generation who aspire to hold senior management positions in the civil engineering industry?

#### Secondary Research Questions

What are the challenges that are faced by South African women in the civil engineering industry; particularly the ones in leadership position?

What are some of the methods and strategies that are used by these women to cope with encountered challenges in their career development?

Semi-structured interviews will be used to facilitate the answering of the research questions. During the interview, field notes will be taken in order to capture a holistic picture of the process. An audio recorder will be used, since it is important to keep a record of the interview. After the interview, information will be sent to transcribers to convert the audio recorded interview to text. The transcribers will be bound by a confidentiality agreement to ensure that all interview information remains confidential. Transcripts of the interview will be sent to you with the request to verify and confirm its accuracy.

The study will require your availability for an interview of approximately 60 minutes. The interview will require your biographic information and information about your career developmental experiences. The interview will be conducted at a location and time that are convenient to you.

After the transcripts have been checked for accuracy, data analysis will commence by using a content analysis method. The emerging themes will be developed in the format of a report to present the career developmental experiences of the participants. These results will then form part of the dissertation that will be submitted at UNISA. The results may also be used at some of the educational conferences. I am willing to provide you with a summary of the key findings in order for you to be informed of the outcomes of the study.

Risks associated with this study are minimal and it will be my responsibility to protect you from any harm that might occur during the data collection period. Some participants might experience some distress during the process of the study. A counselling session will be arranged for those participants who are showing signs of distress. If they are willing to continue with the study, another session will be scheduled at a time that they are ready.

Please be informed that participation in this study is voluntary. You may refuse to participate or withdraw your participation at anytime of the study. Your personal identification will be kept confidential; meaning that your name, address and name of your company will not be used or appear in the reports that I will write. Pseudonyms will be used to protect your identity.

Data will be stored electronically on a computer and hardcopies will be locked in my file cabinet for safety. Data will be held for a period of three years before it will be destroyed.

If you have any question concerning the research study you may contact me at mobile number 072 845 0012 or email: [mmmshupi@gmail.com](mailto:mmmshupi@gmail.com). You may also contact my supervisors, Prof. M. E. Fourie (012 429 8088 or at [fourime@unisa.ac.za](mailto:fourime@unisa.ac.za)) and Ms. T. Tshabalala (012 429 8088 or at [thandekatshabalala@yahoo.co.uk](mailto:thandekatshabalala@yahoo.co.uk)).

“Hereby I, ....., declare that I have read and understand the nature of the study. I voluntarily offer to serve as a participant in the study described above”.

Signature of the participant ..... Date.....

Signature of the researcher ..... Date.....

## APPENDIX B

## INTERVIEW GUIDE

- 1) Please tell me about yourself; including family background, interests, achievements and so forth.
- 2) Please tell me about your career journey; including description of your roles and responsibilities according to its stages in a systematic and progressive manner.
- 3) What roles have been most significant in your career development?
- 4) What factors fostered your success in your career advancement and please elaborate on your answer?
- 5) What challenges did you encounter in your career journey and how did you overcome them?
- 6) What motivated you to persist pursuing this highly ranked position?
- 7) What advice would you give to the young women of South Africa about managing their careers to the executive ranks in civil engineering industry?

## APPENDIX C

## BIOGRAPHIC INFORMATION

Please answer all the questions

\* Required

1. In which town were you born? \*

2. Currently, where do you live? \*

2. How old are you? \*

3. What is your ethnic group? \*

African

White

Indian

Coloured

4. What is your marital status? \*

Married

Single

Widowed

Divorced

5. How many children do you have? \*

One

Two

Three

Four

Five or more

6. Please write down your qualifications. \*(Start with your highest qualification)

7. Please write down your current studies, if any. \*

8. What is your employment status? \*

Self-employed

Employed

Other (specify)

9. What is your current job position? \*

10. How long, in years, are you holding your current position?

THANK YOU

APPENDIX D

TRUSTWORTHINESS CERTIFICATE

APPENDIX E

INTERVIEW TRANSCRIPTS (electronic copy)

APPENDIX F

NVIVO CODING RESULTS (electronic copy)