UNIVERSITY OF THE WESTERN CAPE

EXPLORING TRAJECTORIES OF SUCCESS IN RESEARCH AND INNOVATION: A COMPARATIVE STUDY OF WOMEN IN ACADEMIC CAREERS IN SOUTH AFRICA AND SWEDEN

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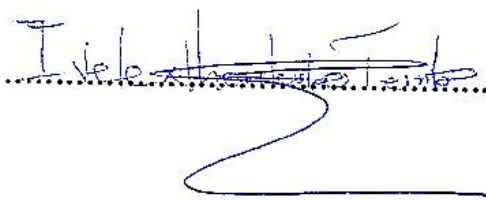
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DECLARATION

I hereby declare that this PhD thesis entitled *Exploring trajectories of success in research and innovation: A comparative study of women in academic careers in South Africa and Sweden* is my work and that I have not previously submitted it at any university for a degree or examination. All sources that I have quoted are indicated and duly acknowledged by means of references.

Ivete Salomão Nhantumbo Tembe

December 2023

ACKNOWLEDGEMENTS

DEDICATION

For my children

Junior and Gabriela

ABSTRACT

This study investigates the factors contributing to women's success in academic careers within research and innovation fields, comparing perspectives from South Africa and Sweden. Despite the underrepresentation of women in higher academic ranks and as knowledge producers, some have managed to break the barriers and achieved significant success. This research employs a qualitative approach, utilizing in-depth semi-structured interviews, bibliometric analysis, and CV modes of data collection, framed by constructivist grounded theory. Findings indicate that individual characteristics and proactive behaviors were crucial to women's career success in both settings of the study. Successful women full professors share a similar profile of professionals, independent of the challenges of their academic systems, marked by intrinsic motivations, such as a passion for stimulating and creative work, a desire to contribute meaningfully to others with their work, and a need for autonomy, creativity, self-expression and flexible work arrangements that accommodate family life. These intrinsic motivations enable resilience, adaptability, and proactive career management behaviours, even in a constrained environment**.** Additionally, the study highlights contextual influences on career success definitions, underscoring the importance of considering social and cultural factors. This research contributes to a nuanced understanding of women's academic career success across diverse settings, offering insights for policy and practice.

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Keywords: Career success, science, successful women, objective career success, subjective career success, research productivity

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CHAPTER ONE
INTRODUCTION TO THE STUDY

1.1. Background of the Study

In the global knowledge-based economy, universities are pivotal (Nishikawa & Kanama, 2019; Coenen, 2007) in fostering socio-economic development through the cultivation of human resource and the advancement of scientific knowledge and technology based on innovative academic research necessary to drive the economy to growth, development, and competitiveness (Hadidi & Kirby, 2016; Mensah & Enu-Kwesi, 2018; Ylijoki et al., 2011). Despite the critical role of universities, the academic landscape is marked by disparities. Career progression within academia is influenced by a complex interplay of factors with gender being a particular salient axis of inequality (Aiston & Jung, 2015; Leathwood, 2017; Thornton, 2013; Winchester & Browning, 2015). This gender-based stratification not only reflects societal biases but also has profound implications for the development of knowledge and innovation (Aiston & Jung, 2015; Leathwood, 2017)

Research has shown that the gender imbalance in higher rank positions in academia appears to be as persistent an issue today (Ceci et al., 2014; Diezmann & Grieshaber, 2019; Fotaki, 2013; O'Connor, 2019) as it was 20 years ago, despite increased gender equality in society as a whole and governmental programmes and measures designed at encouraging the share of female professors (Allan, 2011; Bagilhole, 2002; Bailyn, 2003; Danell & Hjerm, 2013; Morley, 2006; Van den Brink et al., 2010). In fact, in countries such as the United States, Sweden, and South Africa, although women were historically marginalised from university education, they are slowly outnumbering men in accessing higher education (Abramo et al., 2015; David & Matola, 2017; Pinheiro et al., 2015; Seierstad & Healy, 2012; Winslow & Davis, 2016).

However, when one examines the contribution to universities and to science and knowledge production, disparities continue to occur between men and women (Amilon & Persson, 2013; Britton, 2017; Cooper, 2019; Riordan & Louw-Potgieter, 2011; Tartari & Salter, 2015). More men than women are contributing to the field of science and innovation, therefore, in the literature, women are recognised as an underrepresented group in research (Abramo et al., 2015; Kameny et al., 2014; Lažnjak et al., 2011). Only around half of women who begin in

academia advance to the position of professor (Danell & Hjerm, 2013; European Commission, 2016; Lühe, 2014; She Figures, 2018). Research also highlight that there are differences in terms of fields, with fields such as social science and humanity having higher proportion of women professors than natural science and engineering (Lühe, 2014).

In Sweden, one of the settings of the present research, the number of female professors remains low, as in most countries (Peterson, 2017) although the country is considered one of the most gender equal countries in the world, with progressive policies to ensure equal opportunities for women and men (Martinsson, Gryphon, Nygren, 2016). In South Africa, the situation is the same; women professors number is 31%, lower than men in higher education institutions (Council for Higher Education, 2022), and occupy the minority of positions at top and senior management level in universities, with only 15% of Universities being led by women (Seale, Fish, & Schreiber, 2021), although the country as one of the highest averages of women researchers (45%) in the continent (UNESCO, 2021).

The reasons for this underrepresentation are well described in the literature and fall mainly under two perspectives. Reasons external to the university organisation or those that are non-university system related can be for example, career preferences and fertility/lifestyle choices, both free and constrained (Ceci & Williams, 2011), caring and family obligations (Fox, 2005; Long et al., 1993; Probert, 2005; Reskin, 2005) and reasons internal to the structure and practice of university organisation (Acker, 1990; Acker & Dillabough, 2007; Blackburn, 2017; Garforth & Kerr, 2009; Powell et al., 2009). More specifically, the reasons can be cultural (cultural gender norms and ideologies; resistance and production); institutional (leadership, structured support); relational (family, peers, mentors); and individual (personal characteristics, values, perceptions, choices) (Blackburn, 2017; Danell & Hjerm, 2013; Lühe, 2014) and also related to gender discrimination in academia (Peterson, 2017) or a lack of equal opportunities for men and women to achieve professorship (Danell & Hjerm, 2013).

Various actors, such as international organisations, national government and institutions are promoting policies, processes and practices that facilitate the contribution of both women and men to science and innovation (Burke, 2013; Cozzens, 2008; Leggon et al., 2015). In African higher education systems, despite some progressive policies, for example, Science, Technology and Innovation Strategy for Africa – 2024 (African Union Commission, 2014), that promote women's contributions to research and innovation, there is confusion and misunderstanding as to the impact and outcomes of such policy actions and how they affect different categories of women. These have led various scholars to wonder, whether women

are progressing or perishing in academic careers (Aprile, Ellem, & Lole, 2021; Res-Sisters, 2017).

Nonetheless, some female academics have been noticeably more successful than others in academia. They have managed to overcome the barriers that they encounter throughout their career and reach higher ranked top positions. This research focuses on higher ranked women's academic experiences from two different countries, Sweden and South Africa, exploring what factors make them successful. We explore highly successful women academics as a distinctive (and under-researched) segment of the academic profession. Understanding successful women experiences in academia may help to shed light on the persisting inequalities that women experience in university scenarios. The research specifically contributes to several lines of higher education research: social stratification in science, career success, and international comparative academic profession studies, all with a focus on European and African contexts.

Research suggests that the perpetuation of the underrepresentation of women in the professoriate may impact the quality of knowledge creation since potential talents are not allowed to grow, resulting in wasteful human resource management (Danell & Hjerm, 2013; Diezmann & Grieshaber, 2019); specifically, with a significant part of their female academic talent pool underutilised, universities limit their global and national competitiveness, affecting performance funding and the universities' attractiveness to potential employees and students (Diezmann & Grieshaber, 2019) because "diversity in the workforce contributes to creativity, productivity, innovation, and success" (Blackburn, 2017, p. 236).

While knowledge and progress have been developed on a more global level to date, we still lack a clear understanding of empirical comparative and contextually specific trajectories of how different actors in higher education systems, especially women in African and European institutions who take up academic careers in the research and innovation fields, make meaning of the policies and practices, socio-cultural and structural dimensions and how these influence their trajectories of success in academia.

In the literature, success in a career has an inconsistent (Stupnisky et al., 2015) and broader definition (Bostock, 2014). A traditional understanding defines success according to measurable indicators located at the institutional level (Bostock, 2014). Other scholars (Afiouni & Karam, 2014; Dries et al., 2008; Santos, 2016; Sutherland, 2017) claim that success is a social construct, understood and perceived within individual social and cultural values. Different contexts offer different constraints and experiences (Bray et al., 2014) for success. European and African women may have different social and cultural constraints

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operating through their multiple experiences and choices. The aim of this study is not to obscure the dynamic aspects of women's experiences and identifications, but to recognise the broader professional, social and cultural narratives that frame their experience and the way they conceive their success in academia within their individual and specific contexts. Looking at women in research and innovation in different cultures will allow for an examination of characteristics and relationships across cultures to determine which were familiar to professionally successful women in research and innovation in an academic context, and which differed because of socio-cultural values and background. It will also allow not only an understanding of how research and innovation shape their success, but also how they individually use research and innovation to develop their success.

1.2. Problem Statement

The underrepresentation of women in science is not a new concern and has been the focus of academic literature and policymakers around the world. Early studies asserted that although the number of women in science as students and professionals has increased, women do not have equal participation and professional advancement in science compared to men (Bruer, 1984; Settles, et al., 2006; Stamm, 2010). Recent studies also state that in spite of women's progress and them holding higher education degrees, equality of opportunity and access in science have not been reached and women do not have the same visibility and contribution in science as their male counterparts (Diezmann & Grieshaber, 2019; Ceci, et al., 2014; Schmidt, 2014; Leathwood, 2017). According to UNESCO (2023), women comprise 33% of researchers around the world. In Europe, for instance, the proportion of women researchers remained at 32.8 %, with Sweden having 32.6%, one of the lowest in the European Union average (She Figures, 2021). In sub-Saharan Africa, women represent 31.3% of researchers; 45% of researchers are women in South Africa, one of the highest averages on the African continent (UNESCO, 2018; 2021).

This situation has proven that although the literature has described women's underrepresentation in science extensively, further inquiry is needed to understand and examine the condition of women in this career in different contexts. Despite existing research, it is still not known how cultural and institutional factors specifically contribute to the career trajectories of women in research and innovation, particularly in diverse geographical contexts such as South Africa and Sweden. We need comparative and contextual empirical research to understand how, for instance, in high-income countries such as Sweden that is deemed to have one of the most equal societies in the world, men are still dominating the upper levels in

organisational hierarchies (Abramo et al., 2015), and there is a surprisingly low proportion of female researchers. Countries such as South Africa, for example, that is coming from a disadvantaged and inegalitarian history has a high number of women researchers progressing to gender parity, and is considered a regional academic powerhouse in research (David & Matola, 2017).

In the academic context, previous studies that addressed the issue of underrepresentation of women in science have focussed their attention mainly on understanding the barriers women have faced in pursuing academic careers (Bagilhole, 1993a; Boateng, 2018; Canal-Domínguez & Wall, 2014; Ismail et al., 2005; Ramli et al., 2016; Riordan & Louw-Potgieter, 2011) and less attention has been given to the voice of successful women in an academic context.

Furthermore, previous research on career success in the university system has been limited on a number of fronts. First, they concentrate nearly entirely on academic careers in the United States. This means that we know relatively little about gendered professional paths outside of the United States. Second, because career paths are influenced by elements connected to the workplace as well as societal factors outside of higher education institution systems, there is reason to believe that there may be variances among countries (Danell & Hjerm, 2013). Therefore, traditional career theories have also been criticised for failing to take into account environmental context in shaping careers (Chinyamurindi, 2016). Scholars (see Ozbilgin, 2011) recommend a more situated, geographical and cultural viewpoint in comprehending career development. This aligns with recommendations for research to be less broad and more detailed in respect of people's contextual difficulties (Khapova & Arthur, 2011). This is a significant emphasis, particularly in light of the environmental changes that affect individual careers in modern society (Chudzikowski & Mayrhofer, 2011). Therefore the present study will fill this gap by focussing on exploring successful trajectories of women in the field of research and innovation within academia in two different contexts, South Africa and Sweden, as a way to shed light on the underrepresentation of women in science. We believe that a deeper inquiry into career trajectories of women who have succeeded in their academic settings and related dynamics can enhance our understanding of work motivation, career choices, commitment, challenges and other factors of women's careers in both countries of the study, revealing insights into factors that promote or hinder women's success in academia, potentially informing policy and institutional practices to achieve gender parity in research and innovation. Therefore, combining institutional and individual measures, or constructs of objective and subjective career success, this study was conducted to understand personal

experiences of successful women in research and innovation in two different contexts of academia, by asking the following question: What factors influence women in the research and innovation field to remain and succeed in an academic career?

To explore this question the following study sub-questions are presented:

1) How do successful women in research and innovation, in South Africa and Sweden perceive and interpret their success in an academic context?

2) Which discourse of success is dominant among successful women in the field of research and innovation in South Africa and Sweden?

3) How do successful women academics in South Africa and Sweden understand and cope with the social and professional demands and strive for success in their careers?

4) How do institutional policies and leadership, social and cultural values, in South Africa and Sweden influence successful women academic's decisions to remain and succeed in their careers?

1.3. Study Objectives

The present study aims to establish the factors that influence successful women in the research and innovation field to remain and succeed in academic careers in South Africa and Sweden. It specifically draws from the experience of successful women full professors from the two different countries in the study, South Africa and Sweden, to understand the response, status and trajectory of women in their academic professions. Specifically, the study aims to accomplish the following study objectives:

1) Understand how do successful women in research and innovation, in South Africa and Sweden perceive and interpret their own success in an academic context;

2) Understand which discourse of success is dominant among successful women in the field of research and innovation in South Africa and Sweden;

3) Analyse how do successful women academics in South Africa and Sweden understand and cope with the social and professional demands and strive for success in their careers;

4) Understand how do institutional policies and leadership, social and cultural values, in South Africa and Sweden influence successful women academic's decisions to remain and succeed in their careers.

1.4. Justification of the Study

The justification for this research is multifaceted. First, career success scholars (see Dries et al., 2008) have shown that success is not universal but a social construction that should be understood in light of each individual's social and cultural values. This definition highlights the importance of local realities in shaping and explaining cross-cultural differences in how success is understood and experienced (Blustein & Ellis, 2000; Hofstede, 2001). In fact, different contexts offer different constraints and experiences (Bray et al., 2014) for success. European and African women might have different social and cultural constraints operating through their multiple experiences and choices, which may affect how they define and perceive career success in academia. However, the literature on career success highlights that cross-cultural differences have been underestimated in describing and explaining career phenomena and asks for the need to understanding the commonalities and differences of career in distinct cultural contexts (Chudzikowski et al., 2009). In a more recent study, Prozesky and Mouton (2019) emphasised the need for empirical knowledge on the career challenges of African scientists, especially women, as a way to achieve success in the science systems of the continent. This cross-cultural comparative study intends to fill this gap by focussing on understanding successful South African and Swedish women's perspectives about the factors that have contributed to their success. The study will contribute to the literature of higher education, policy and innovation studies by highlighting a more specific and contextualised understanding of how success in a career is perceived and achieved by women in diverse academic environments. Which in turn can enhance innovation and competitiveness.

Second, Fotaki (2013, p. 1266) in his work about the underrepresentation of women in senior positions in universities states:

> The experience of overt discrimination and/or marginalization caused many interviewees to doubt themselves, feel depressed, disempowered, 'emotionally battered', 'paralyzed', 'very threatened'. While some internalized the effects of bad treatment or even blamed themselves for it, others were bent on achieving success in the restricted space given even if this involved accepting injustice, 'working harder than men' and 'keeping one's head low'. As one way of defending themselves from attacks on their work and/or to reinstating their threatened sense of self, informants reported going into compulsive spells of writing research papers, while keeping their heads down

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The question that may be raised is, why has this happened? What makes those women to be willing to remain in academia and thrive for success although they face challenges?

1.5. Thesis Structure

This thesis is organised into seven chapters.

Chapter One introduces the study. The introductory section provides the background, which presents the context of the study and the statement of the problem. It further presents the study question, objectives, the aim and the justification of the study

Chapter Two sets out the study's literature review. The main themes under the literature review include an historical overview of women's conditions in their careers in higher education; conceptualisation of career success in higher education and women's perspectives on the definition of success in a career; an analysis of the challenges faced by the Swedish and South African systems vs the challenges faced by academic women in the quest of their careers; coping strategies adopted by professionals to navigate academia and its challenges; factors that motivate academics to pursue an academic career; and factors that contribute to career success.

Chapter Three discusses the theoretical and conceptual framework of the study. This section presents the main principles, assumptions, and criticisms of the theory.

Chapter Four is concerned with the study's methodology. It presents a justification for selecting South Africa and Sweden, and a rationale for choosing women full professors as a group study in both countries. Examined in this chapter are data collection methods, data collection procedures, ethical considerations, and data analysis. The conclusion of the chapter analyses the trustworthiness of the study.

Chapter Five presents empirical research data. This chapter constitutes the core of the thesis. The chapter details an elaborate analysis of the themes that emerged from the data.

Chapter Six discusses the results while comparing the results from the two countries, presenting similarities and differences.

Chapter Seven concludes the research, provides some reflections, limitations and implications of the study and summarises the findings.

<center>**CHAPTER TWO**</center>
<center>**LITERATURE REVIEW**</center>

2.1. Introduction

This chapter sets out to locate the research problem in the literature regarding the factors of career success in academic settings. The first section provides an overview of women's conditions in higher education careers. To situate this study in a proper context, it is crucial to provide a background of women in higher education careers, especially beyond Ph.D., where the challenge to climb the career ladder has been acknowledged. Section two discusses the conceptualisation of career success in higher education. It teases out significant debate on the institutional academic standards of success and women's perspectives on the definition of success in a career. The third section reviews the challenges faced by academic systems vs challenges faced by women academics in the quest of their career success. Section four examines the coping strategies adopted by professionals in academia to overcome their challenges. The fifth section reviews the factors that influence women's decision to pursue an academic career. The last section examines the factors that influence career success. The chapter closes by providing a summary of the main arguments.

2.2. Global Overview of Women's Conditions in Higher Education Careers

In the academic hierarchy, men and women are still unequally distributed (Goastellec & Pekari, 2013; Göktürk & Tülübaş, 2021). A chronological analysis of the literature on women's conditions in higher education careers revealed that in both early research (August & Waltman, 2004; Bagilhole, 2002; Gupta & Sharma, 2002; Knights & Richards, 2003; White, 2003) and more recent studies (Brumley, 2014; Diezmann & Grieshaber, 2019; Fritsch, 2015; Göktürk & Tülübaş, 2021; Mickey, 2019) women are characterised as a group of academics with a history of being placed in unfavourable conditions, highlighting therefore the precarious conditions of women academics. Furthermore, more recent research emphasises the worsening of those conditions due to the advent of neoliberalism ideologies in higher education that emphasise metric based evaluations, individualism and an ideal worker that works harder, without family and domestic responsibilities. Specifically, research as shown that organisational research and practice continue to be dominated by male-defined constructs

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of success at work and in careers, although the number of women has increased over years (Morley, 2018; Teichler, 2009; O'Neil et al., 2008).

On a global scale, at least three forms of discrimination are said to characterise the condition of women in academic career (Rees, 2011; Fritsch, 2015). First, there is vertical discrimination where women are located mostly in managed positions with activities relating to teaching and administration that do not weigh much towards their progress (Bagilhole, 1993b; Dubois-Shaik & Fusulier, 2017; Thornton, 2013). Second, there is horizontal discrimination, where women are concentrated in the social sciences and humanities (Fritsch, 2015; Ward & Wolf-Wendel, 2017), fields that are thought to reflect the extension of women's caregiving role in society (O'Connor et al., 2015). Third, there is contractual discrimination, where women account for the high number of academic professionals working in fixed-term contracts and part-time employment (Aiston, 2011; August & Waltman, 2004; Bagilhole, 2002; Diezmann & Grieshaber, 2019; Knights & Richards, 2003). Additionally, many research endeavours underline gender differences in terms of achieving tenure or permanent position; and in promotion processes (Diezmann & Grieshaber, 2019; Goastellec & Pekari, 2013). Women are often confined to jobs as casual teachers, and men continue to make up the majority of academic professors (Marchant & Wallace, 2013).

In terms of promotion processes, women experience five barriers described in the literature: promotion in academia is considered to be based on merit which is associated with a traditional uninterrupted career path that values a full-time, uninterrupted career trajectory; male managers favour those with a similar profile; women are considered to have a poor research track record compared to men, whereas in academia promotion criteria typically prioritise research performance; some women are hesitant to apply for career promotion; and women are less confident than men about their chances of reaching success in a career (Diezmann & Grieshaber, 2019; Gupta & Sharma, 2002; Lipton, 2017; Mayer & Rathmann, 2018; Thornton, 2013; White, 2003; Wilson et al., 2010).

A recent report by UNESCO (2018) reveals that although gender discrepancy in research remains significant internationally with female researchers accounting for 28.1%, it is important to note that this figure covers variances at the national and regional levels, with certain regions achieving gender parity. Women are particularly well represented in Southeast Europe (49%), the Caribbean (44.4), Central Asia (44.3), and Latin America (44%). The gender parity in the aforementioned regions (45-55% of researchers) is the result of a legacy of constant investment in education by the socialist government in place until 1990 (UNESCO,

2018). Bolivia (63%) and Venezuela (56%) have the highest proportion of female researchers (UNESCO, 2018). Surprisingly, female researchers are underrepresented in certain high-income countries. In France, Germany, and the Netherlands, for example, only one in every four researchers is a woman. The Republic of Korea (18%) and Japan (15%) have even lower numbers of women researchers. Despite efforts by the government to increase this ratio, Japan still has the lowest proportion of female researchers of any member of the Organisation for Economic Cooperation and Development (UNESCO, 2018). Interestingly, the countries being studied, South Africa and Sweden, have disproportionate rates of female researcher participation, namely 45% and 32% respectively.

Considering the scenario described above, researchers emphasise that when investigating women's participation in research, it is not sufficient to rely only on the number of women involved in knowledge production, however, it is also necessary to investigate more thoroughly and with greater nuance the qualitative contextual factors that inform the gendered level of participation (European Commission, 2012b).

Research emphasises that women's conditions in academia reflect the impact of history and the 'old norms', the traditional gendered expectations and understandings that associate women with the private or domestic sphere, with a role of providing support for a male and taking care of the children (Acker, 1990; Acker & Armenti, 2004; Pyke, 2013). Therefore, Acker (1990) sustains the statement that the concept of work is gendered. It contains an implicit gendered division of labour between the public and the private sphere. Women workers are seen as having other responsibilities in the private realm other than those necessary for the work while the male worker's life "centers on his full-time, life-long job, while his wife or another woman takes care of his personal needs and his children" (Acker, 1990, pp. 149).

The concept of a universal worker excludes and marginalises women who cannot almost by definition, achieve the qualities of a real worker because to do so is to become like a man, a worker who exists solely for the purpose of working and has no other commitments, such as childcare or housekeeping, except from his labour (Acker, 1990). The ideals and images of success and excellence are based on this ideal worker, extremely devoted to his work and without domestic responsibilities (Acker, 1990). Specifically, According to Acker (1990) organisational structure and culture are gendered. Organizations reflect the preferences and desires of powerful males, and the ideal worker is male, without other responsibilities, which reinforces the primacy of masculinity and men and reproduces inequalities (Hart, 2016)

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Therefore, historically, women's success was measured by the connections they made in their personal lives rather than by what they accomplished in the public sphere (Levinson & Levinson, 1996). These personal standards might still be present even though women now hold jobs in the public sphere in addition to the jobs they have previously held in the private sphere. For example, all of the women in Simon's study (1995, p. 186) on the meaning of work and family responsibilities "viewed employment as an added responsibility, and felt that a woman's primary duty to her children and spouse is to provide a well-kept home, emotional support, and nourishment".

Literature has suggested that young women are still being socialised to prioritise conventional traditional caregiving duties. According to McKeen and Bu's (2005) cross-national survey, men expect that wives will sacrifice professional success in order to fulfill home responsibilities. Orenstein (2000, p. 40) also observe that although women are encouraged to become financially independent, they also experience significant pressure to pursue more flexible but less financially rewarding careers that can more easily accommodate "traditional motherhood". According to Gordon (1991, p. 270), caring is essential for women in all facets of life: "It is through caring connections and community, not in spite of it—that we [women] achieve and create". In her review of the implications of women's development for career theory, Gallos (1989) argued that "women's career gains and professional accomplishments are complements, not substitutes, for strong interdependent relationships" (p. 111).

The literature described above emphasises how notions of success in a career for women are associated with meaningful relationships outside of work, and how the old norms associated with the ideal worker dominate academia and define how is to be a successful academic. In academia, research (Burkinshaw & White, 2017; Peterson, 2018) has highlighted that university structure and culture need to change to contribute to gender equity in leadership and high-rank positions in academic careers. According to Bagilhole and White (2011), women academics are less likely than men to follow a traditional career path, beginning as a lecturer and moving to senior lecturer, associate professor, and full professor positions (Bagilhole and White, 2011), to receive mentorship crucial for their career advancement, and to have access to networks (Hart, 2016).

However, Acker and Armenti (2004) acknowledge that the 'old norms' cannot fully dictate how women behave because there will always be sources of resistance and change. In the same vein, Pyke (2013, p. 446) also recognise that

Women are not 'squashed ants' under the weight of a patriarchal structure that conspires to exclude women. Nor is there a rigid glass ceiling to that halts progression. Women exercise considerable agency within the system meaning that gendered structures of academic employment are dynamic.

In line with this view, Ahmad (2017) declared that research that analyses women's success in academia report that women who undertake highly demanding academic occupations are also the ones who can come closest to the ideal worker norms. An ideal worker in academia is someone who has a high level of human capital or potential (e.g., a large number of peer-reviewed publications, visibility through conferences, flexibility, and geographic mobility) and who is solely devoted to work with little or no family responsibilities. Men are more likely to resemble the ideal worker norm since they have historically been breadwinners with limited roles in caregiving (Ahmad, 2017). Women, on the other hand, have traditionally been the major caregivers in their families. As a result, women who are unmarried, childless, or divorced are more likely to resemble the ideal worker standard and to be more successful. Those who have found a means to preserve high levels of human capital while privately conducting their caregiving should be successful among married women or women with children (Ahmad, 2017). This perspective is also emphasised by Göktürk and Tülübaş' study (2021) that concludes that if women want to succeed in their academic careers they have to pay the price in their private lives and give in a lot with regard to well-being.

2.3. The Meaning of Career Success in the Academic Context

Early studies on career success defined it as "the positive psychological or work-related outcomes or achievements one has accumulated as a result of one's work experiences" (Judge et al., 1995, p. 486). In the literature, career success is operationalised in two different dimensions, objective career success and subjective career success (Heslin, 2005).

Specifically, while subjective career success is felt directly by a person involved in their own work, objective career success is thought to be observable, measurable, and verifiable by others (Heslin, 2005). Indicators of objective career success are therefore extrinsic and linked to standardised institutional measures, such as salary, promotion, and occupational status (Judge et al., 1995; Heslin, 2005; Ng et al., 2005), whereas indicators of subjective career success emphasise intrinsic measures such as job satisfaction and personal aspirations (Judge et al., 1995; Heslin, 2005; Ng & Feldman, 2014).

Within the literature, extrinsic measures were long thought to be the main topic of professional success research in empirical studies, (Sullivan, 1999). For instance, in their search for empirical studies on career success from 1992 to 2002, Arthur, Khapova, and Wilderom (2005) found out that the objective career success perspective was analysed 90% among 68 articles, and only one study focussed on the academic context. This picture shows the need for empirical studies related to the subjective success perspective on one hand. On the other hand, it revealed the need for more research in the academic context.

In academia objective indicators, such as position, remuneration, personal status and research productivity, have been considered the measure of academic career success (Bostock, 2014; Jungbauer-Gans & Gross, 2013) and research performance is typically considered paramount in promotion criteria and allocation of resources (Barrett & Barrett, 2011; Craig et al., 2021; Joy, 2006; Martínez et al., 2011; Mayer & Rathmann, 2018; Ramsden, 1994). Specifically, research states that scholars and institution have to display high performance in research productivity to be promoted (Martínez et al., 2011; Parker, 2008). According to some authors (Joy, 2006; Macfarlane, 2011; Nygaard & Bahgat, 2018; Ramsden, 1994), this would be evidenced by peer-reviewed publications, winning research grants, and contributing to academic and professional bodies.

Martinez et al. (2011, p. 692) explained that research productivity is the:

> benchmark against which high-stakes decisions about salary, promotion, and tenure are measured at research universities. Accordingly, successfully publishing research in peer-reviewed journal articles is the lifeblood of the graduate student seeking employment at a research university, the tenure-track assistant professor desiring tenure, and the tenured professor seeking promotion to full professor.

For instance, Sutherland's study (2017) in academic context identifies status, promotion and tenure, salary, research productivity and teaching performance as measures of objective success. Research productivity was considered as the main criteria indicated by participants to get ahead on the career ladder. These findings are also sustained by diverse early and recent literature (e.g. see Enders & Kaulisch, 2006; Hlatshwayo & Ngcobo, 2023; Jepsen et al., 2012; Williamson & Cable, 2003).

Universities are seen as institutions legitimised by meritocratic values (Jungbauer-Gans and Gross, 2013), which are assumed to ensure equal and fair opportunities for all (Gupta &

Sharma, 2002; Lipton, 2017) independent of status, gender, or identity. Success is therefore seen as something that everyone may achieve as long as they put in the necessary effort and are able to adhere to the established institutional standards measures. Some scholars consider this principle problematic for many reasons. They contend that it conceals the position of discrimination of women and other minority groups in the academic context (Thornton, 2013); is centered on a traditional male measure of success, founded on the profile of male workers without domestic and family duties who are fully engaged in his profession (Dubois-Shaik & Fusulier, 2017); and also reproduces only one side of career success, the objective side (Sutherland, 2017).

In academia, there is a paucity of studies that address subjective career success (Peluchette, 1993; Bilmoria et al. 2006; Canal-Dominguez & Wall, 2014). Therefore, scholars have claimed the need for a holistic view of success in academic contexts (Arthur et al., 2005; Dries, 2011; Sutherland, 2017). Bostock (2014) agrees that a typical definition of success in the academic setting is focussed on extrinsic measures. Yet, the author also acknowledges that we require a more "sophisticated and meaningful definition of success" (p. 85) in order to define, assess, and reward success in an effective manner. For example, a definition that incorporates women's voices, that comes from individual construction (Sutherland, 2017), a subjective perspective of success.

We now turn to offering comments on how women define success in a career

2.4. Women's Definitions of Success in a Career

Scholars suggest that women assess their career success using different criteria than men. Early studies pointed out that women perceive success more in a subjective ways (see Powell & Mainiero, 1992; Sturges, 1999; O'Neil & Bilmoria, 2005). Powell and Mainiero (1992) suggest that women may place more emphasis on measures of satisfaction that reflect how they feel about their jobs, rather than what their jobs actually look like.

In this regard, literature on career success sustains that women's definition of success in a career is based on the ability to contribute to society, the ability to balance work and life (Baker, 1999; Kalet et al., 2006), and internal criteria such as a sense of personal achievement, integrity, and balance (Sturges, 1999). Baker (1999) states that for women, the definition of success comes from assessing all aspects of life. Success is defined as individual satisfaction in career, family, and personal life, indicating therefore the importance of balance. According

to Baker (1999), success is defined more on a personal level and is not solely derived from external factors.

Another line of research affirms that the assessment of women's career has to take into consideration contextual factors (O'Neil et al., 2008) and that in this regard, success is a social construction (Dries et al., 2008), highlighting, therefore, the contextual character of careers (Mayrhofer & Schneidhofer, 2009). O'Neil and Bilimoria (2005) stated that women have progressively moved into the public arena while maintaining primary responsibility for the private sphere, confusing the once clear divides between their personal and professional lives. Because women generally continue to provide primary care for children and dependents while juggling the demands of their workforce participation, their career development, concerns, and responsibilities, are shaped by the work and family pressures they face. According to O'Neil et al. (2008) women's career success is intertwined with life issues, and women desire to succeed both professionally and personally, however, organisational practices demand the separation of careers and life. Organisations and jobs are still built around the masculine norm of total availability. This suggests that understanding women's career success requires an approach that considers women's life outside of the work realm, the social realm (Powell & Mainiero, 1992) because women's careers encompass more than work. Careers for women are entrenched in women's larger-life contexts (O'Neil et al., 2008).

This line of research may highlight how contextualised and socially constructed success in a career can be. In fact, more recent researchers argue that women define success taking in to account sociocultural patterns – predominant institutions in the region (Afiouni & Karam; 2014), therefore career success is perceived as a social construct that must be understood and perceived within the context of an individual's social and cultural norms (Afiouni & Karam, 2014; Santos, 2016; Sutherland, 2017). This perspective of success emphasises the importance of social and cultural contexts in shaping and explaining cross-cultural differences regarding how success is understood and experienced (Afiouni & Karam, 2014), and how people from different cultures and nations may have diverse interpretations of the concept of career success (Mayrhofer et al., 2016).

Empirical research has revealed that some academics do not aspire to full professorship or chair, and what one academic considers being successful may rank low on another academic's list of goals (see Sutherland, 2017). In an early study by Hardesty and Jacobs (1986), for example, they reported that successful female professionals experienced feelings of emptiness, dissatisfaction, tiredness, disillusionment, and individual failure when they realised the

personal and interpersonal costs of professional success. Power, status, success, and money were not enough for these women. They desired better treatment, more pay, and a more balanced life. In the absence thereof, they changed careers, reassessed their career and life priorities, and in many cases turned to self-employment. In similar vein, Sutherland's study (2017) on the constructions of success in academia by early career scholars conclude that even if a professional fills the requirements in terms of external or objective measures of success, if they feel to be an impostor, over-worked, underpaid, unhappy, or imbalanced, they may not continue to achieve such standards of success on a regular or consistent basis, and may also decide to leave the workplace or abandon that particular career. In a more recent study Hlatshwayo and Ngcobo's (2023) results revealed that early career women academics have rejected the publish or perish mantra, questioning the usefulness of publishing, and to what extent their own research will make a societal impact, revealing therefore, that women define career success based on a more subjective perspective.

One possible justification for this view of success of women might be aligned with the fact that women are primarily assigned tasks which revolve around caring for people and fostering connections with others (Dyke & Murphy, 2006). Dyke and Murphy (2006) also affirm that women highlight the importance of balance and relationships in the definition of success. That is, in order to be successful, a woman must make the decisions necessary to achieve in all parts of life, and success will differ for each woman. Powell and Mainiero (1992) similarly declare that women's careers cannot be fully understood unless their non-work lives are also examined. Dyke and Murphy (2006) also state that the meaning attributed to success affects the decisions individuals make in their personal and professional lives. According to these authors, the definitions of success influence educational goals, employment preferences, level of job engagement and professional advancement. In same vein, Dries (2011) also states that the way in which professionals view career success affects their decisions as to whether or not to strive to achieve institutional standards of success.

These findings imply that traditional measures of success, such as income, status, and power, may no longer be as essential to assess women's success in a career, although today with the impact of neoliberal policies in academia, the ideal academic is rewarded by being constantly productive and visible in his/her field of research (Göktürk & Tülübaş, 2021). In fact, research claims (Hobfoll, 2002; Ten Brummelhuis & Bakker, 2012) that indicators of career success such as large incomes or status positions, can be viewed as resources that are valuable in aid of the achievement of further goals. Spurk et al. (2019) also highlights that career success can

be viewed as a resource that aids in the attainment of other important internal or external states and objects.

Hall and Chandler (2005) agree that objective career success does not necessarily cause subjective success; according to the authors, under certain conditions, the requirements to achieve success in a career can lead to disappointment and frustration. This can occur especially when, (i) extended hours spent on work leads to excessive involvement in work objectives, negatively affecting professional involvement with family; (ii) a professional reaches high levels of career success but does not internalise it in his identity; (iii) a professional is not recognised and valued by his or her peers; and (iv) objective success in one phase of the career forces professionals into a new career learning cycle.

For instance, in the present study, successful women full professors' reasons for choosing to pursue and remain in an academic career are more subjective then objective. They reach high ranking positions in academia although their driven force has not been external factors such as salary, position, and status. Instead, they were moved by internal desires such as passion for research and academic work, and contributing to society or to other people's lives.

Puwar (2004a) speaks metaphorically in terms of space invaders, to describe women and minority non-white groups who work in male-dominated environments traditionally not set for them. This analogy can be applicable to women in academia. According to Puwar (2004a), those who invade the space of others are forced to assimilate the norms of the hegemonic class to be accepted and they are expected to adhere to the norms of those who are in charge of the space because adherence to the norms is a condition to succeed. Further, Puwar (2004a) adds that acceptance in the field is granted to those who display signs of the dominant norms. The exhibition of behaviors associated with the dominant norms grants visibility in the field and interaction with the right people, while marginalised space or extinction is reserved for those who do not want to conform to the dominant norms. Puwar (2004a, 2004b) also asserts that the outsiders, who are women and non-white minorities in a male-dominated field, adopt the norms and practices of the field and focus on the work to try to blend with the traditional workers to succeed in their careers as a strategy to survive in their field.

As stated above, literature (e.g. Hobfoll, 2002; Spurk et al., 2019; Ten Brummelhuis & Bakker, 2012) claims that indicators of career success such as large incomes or status positions, can be viewed as resources that are valuable in aid of the achievement of further goals. This suggest that professionals may adhere to the traditional external norms of success also to be able to fulfil other individual goals that are implicit in the positions, or status

acquired through objective measures of success. Hall and Chandler (2005) speak in terms of career as a calling to describe how professionals endure setbacks and hardship in a career, move ahead through their sense of calling, purpose, and passion for their work. More specifically, professional's sense of identity and conviction about what they want motivates them to move ahead in their careers. Career success is therefore tied to a sense of self (beliefs, values, attitudes) rather than observable objective criteria of success. A career as a calling occurs when individuals experience work as more than a job or career – when work is perceived as a serving a purpose in life, and individuals do it with the objective to contribute to society or to a better world, and to help others (Hall & Chandler, 2005; Dik & Duffy, 2009; Duffy & Dik, 2013). Therefore, individuals who pursue their careers in a constrained environment are not simply motivated by external objective outcomes such as status and salary, rather they are often driven by some inner purpose or self-fulfillment, which makes them adaptive and self-confident (Hall & Chandler, 2005; Duffy & Dik, 2013). Specifically, they do not identify an external calling, but rather engage in a field that matches with their deepest internal desires, a field that they are passionate about (Dobrow & Tosti-Kharas, 2011; Elangovan et al., 2010; Hagmaier & Abele, 2012).

Hall and Chandler (2005, p. 173) stated that "[objective] success can be understood by measuring what one has attained, but the deeper sense of fulfillment comes when those attainments measure up favourably with one's own inner purpose". For Hall and Chandler (2005) those with a calling orientation work for the fulfillment of doing so and believe that their work has an influence. They have competences that help professionals in their careers and facilitate the acquisition of specific skills and also improve individual and institutional performance (Elangovan et al., 2010). Those competences are self-awareness and adaptability and are well defined by Hall and Chandler (2005). The ability to gather self-related feedback, generate accurate self-perceptions, and adjust one's self-concept as needed is referred to as self-awareness.

Adaptability is the ability to change, which encompasses both change competence and change motivation. Great self-awareness assists the individual in recognising when their abilities require updating, and great adaptability allows individuals to engage in the actions required to gain those skills. As a result of these two competencies, the individual is able to be a self-directed learner capable of producing independent changes. Adaptability is defined as the ability to "identify for himself or herself those attributes that are crucial for future performance and is also able to make personal modifications necessary to meet these needs"

(Hall, 2002, p. 161). As a result, the individual with high adaptability would be able to actively participate in the process of goal-setting, commencing effort, and achieving psychological success. Individuals are put in more difficult conditions and expected to be resilient and successful. Only those who are capable of responding to these types of situations will thrive in today's volatile career environment. Furthermore, when confronted with unknown or difficult work scenarios, the person with a sense of purpose is more likely to be able to manage momentary setbacks or failures and cope better because they believe that they will eventually achieve (Elangovan et al., 2010; Hall & Chandler, 2005; Treadgold, 1999).

This perspective of career success influences the discourse of success and failure perceived in academic context. Specifically, in this regard success is individual responsibility, with emphasis on individual agency – encouraging individual ownership of one's career, resilience, and proactivity (Beigi et al., 2018). In fact, studies have also noted that neoliberal policies have transformed academics to professionals who work independently and competitively in a culture that emphasises competition and high performance (Göktürk & Tülübaş, 2021). Although this perspective is emphasised in today's neoliberal university, it is worth mentioning that researchers (Loveday, 2018; Thornton, 2013) criticise this view of seeing success as individual responsibility, specifically, as individual agency, a result of hard work, ability to manage time, and taking risks. Researchers posit that the individual perspective of success fails to take into consideration the structure of academic institution under which academic work is undertaken (Loveday, 2018).

We now turn to the challenges of academic systems.

2.5. Challenges of Academic Systems

Academic careers are becoming increasingly global (Teichler et al., 2013). However, academic career structures are shaped by their specific national contexts (Finkelstein, 2015; Teichler et al., 2013). Therefore, some challenges faced by academic systems are more evidenced in some contexts than others as a result of the specific characteristics typical of particular regions, countries and institutions (Teichler et al., 2013). This section discusses some of the most prominent challenges of higher education systems as reported in the literature.

2.5.1. Dependence in External Funding

According to the literature, the development of the 'knowledge economy' has accelerated and legitimised the dominance of neoliberal ideology to higher education (see Courtois & O'Keefe, 2015). The neoliberal ideology defends the concept that education is a commodity which individuals should acquire for their own gain (Davies et al., 2006; Saunders, 2010) and higher education institutions should operate like corporations (Slaughter & Rhoades, 2000; Mayer & Rathmann, 2018), specifically, be function based on values of competitiveness, performance, and profitability (Clarke, 2012).

Therefore, to be aligned with neoliberal ideology, higher education economics, purpose, structure and priorities had to be changed (Giroux, 2002; Saunders, 2010). One of the notable changes emphasised in the literature is the drastic decrease in direct government funding and consequent prioritisation and reliance of higher education institutions on revenue generation and private sources of funding (Auranen & Nieminen, 2010; Saunders, 2010). Saunders (2010) and Giroux (2002) pursue this by explaining that fields such as humanities and social science that used to receive adequate institutional support are being challenged, as they are unlikely to generate significant revenue. Higher education institutions have shifted allocation of resources from these fields to fields that have potential to bring in funding to the institution (Giroux, 2002). They focus on applied research with a final goal for commercialisation of research products (Giroux, 2002; Saunders, 2010). In similar vein, Slaughter and Rhoades (2000) observed that higher education units that are not similar to corporates have received reduce internal resources, while units resembling the market have received an increase in resources. In fact, according to Slaughter and Rhoades (2000) universities allocate more resources to different fields, such as physical science, engineering, and mathematics. Access to funding has become competitive in the higher education arena and its successful allocation according to Wood (1990) depends on implementation of appropriate research management plans, highly qualified staff, and projects designed to respond to national priorities. Wood (1990) also observes that the importance of funding resources depends on the academic field of research, for example, for researchers dedicated to theoretical research, funding is not perceived as important as long as basic facilities are secured. However, for researchers in scientific fields, attracting and retaining research funding continuously is critical for for example, aiding research, maintaining long-term projects, hiring assistants and developing programmes, and many have found challenges caused by funding constraints. Wood (1990) further explains that even in fields where funding is not a major concern to carry out research,

it is still important to support researchers with travel expenses and for hiring support staff such as assistants and interviewers.

In the Swedish context, universities are more reliant on outside stakeholders. The Swedish Higher Education Authority (2022) reported that in 2021 the bulk of higher education research funding came from external stockholders and accounted for 54.2%, which restricts the university's ability to define its own priorities (Swedish Higher Education Authority, 2015) and also increases university dependence on fixed and temporary positions (Henningsson & Geschwind, 2022). Öquist and Benner (2012) state that the higher education system admitted to being incapable of offering positions and suitable working circumstances for early career researchers at universities. Therefore, the search for funding is one of the practices in the Swedish system, and success in securing funding is the paramount factor for recruitment as opposed to quality of work (Öquist & Benner, 2012). The authors further reveal that Swedish researchers are excessively reliant on external research funding to finance their own wages throughout their careers, even if they have a permanent position. Therefore, instead of asking academics to gather funding for their own wages, the authors advocated for the creation of fully-financed tenure-track positions. In another study Öquist and Benner (2014) reported that at universities the majority of public research funding is external and in universities such as Karolinska Institutet and Chalmers University of Technology, external research funding constitutes close to 70% of all funding. This situation has increased competition for funding, and led to a transfer of research quality control from university level to external funding agencies (Öquist & Benner, 2014). External funding agencies define the fields and the research directions and higher education institutions and professionals competing in an arena for grants are forced to match the needs of the external grants agencies to succeed in bringing grants to their institutions. Öquist and Benner (2014) pursue this by stating that, therefore, Swedish university departments are characterised by a number of sponsored initiatives rather than a coordinated collegial atmosphere with activities to support research following a specified long-term goal.

In similar vein, Hallonsten and Silander (2012) report that the funding for the Swedish higher education system relies mostly on competitive funding schemes perceived as "project grants negotiated at the level of individual researchers" (p. 372). As a result, there are a plethora of project grant recipients and grant agencies in Swedish universities, rather than the universities setting the strategic direction for their activities (Öquist & Benner, 2014). One highly significant reason for this is that in Swedish academia, the number of professors increased

without a following increase in the funding for universities. Conversely, what happened is the increase in the dependence on external funding (Öquist & Benner, 2014). In addition, as a consequence, the leadership has only a limited amount of control over recruitment, which is primarily in the hands of the grants holders and grant agencies.

Drawing on institutional autonomy with increasing dependency on outside actors, Bladh (2007) reports that research funding is about 50% dependent on external temporary funding. As a result, autonomy is significantly decreased both at the institutional and individual level. In this regard, Öquist and Benner (2012, p. 11) write that in Sweden,

> external funders provide the bulk of research funding and thus, with various aims and by different means, exert relatively strong control over the direction of research. The universities' own priorities are therefore overshadowed and emphasis is laid on how to obtain funding rather than which research priorities to select.

In Africa, in their work about a gender perspective on career challenges experienced by African scientists, Prozesky and Mouton (2019) report that funding is highlighted as a career challenge by the majority of women scientists. The funding is needed for funding research and research equipment more among scientists in the fields of natural and agricultural sciences than in humanities and social sciences fields.

In South Africa, Arvanitis et al. (2022) reveal that the allocation of public research funding is made through the South African National Research Foundation which receives funds from the Treasury via the Department of Science and Technology and distributes it to South African universities on a competitive basis through a variety of vehicles. According to Arvanitis et al. (2022), in South Africa the private sector contributes over 35% of the total Research and Development expenditure, and the country depends on foreign funding for 16%.

In same vein, Prozesky and Albertyn (2021) write that in South Africa, the government supports research at higher education institutions through the South African National Department of Higher Education, Science and Technology (DHEST) which provides funding to institutions for research units producing articles in journals published in selected indexes. The South African National Research Foundation (NRF) administers DHEST funding to South African university researchers based on peer review ratings (Prozesky & Albertyn, 2021). Weber (2011) writes that each peer-reviewed journal article is worth one unit, whereas book chapters, peer-reviewed conference proceedings and monographs are worth variable

amounts. In addition, Mouton and Valentine (2017) found that a university would get ZAR 100 000 subsidy per unit, which is distributed proportionally according to the contribution of each author affiliated to the respective institutions, and universities have the freedom to manage the money.

According to Woodiwiss (2012) some universities allocate subsidies proportionally to the faculties that produced the research, while faculty research committees decide on allocation of the units within their control.

The increase in the dependence on external funding in academia is followed by the increase of fixed-term employment funded by temporary research projects, which in turn decreases the number of permanent position available (Ates & Brechelmacher, 2013). The challenge of reduced permanent positions in academic careers is discussed below.

2.5.2. Few Permanent Positions Available

Over the last three decades, higher education systems around the world have seen a shift away from permanent job contracts and toward reliance on ad hoc, short-term, or 'flexible' works (Ackers & Oliver, 2007; Bozzon et al., 2019; Gill, 2014). Academics in early stages of their careers are confronted with precarious employment conditions (Dirnagl, 2022; Huisman et al., 2002; Waaijer et al., 2017). Permanent positions become a rare phenomenon in many university systems (Dirnagl, 2022; Huisman et al., 2002). Only a limited percentage of early career scholars are given permanent positions (Dirnagl, 2022), and younger and non-tenured academics frequently find it difficult to obtain a permanent position in academia and in their own country, consequently being forced to contemplate migrating to another nation or leaving academia entirely to work in another sector (Castellacci & Viñas-Bardolet, 2021).

Ates & Brechelmacher (2013) report that in countries like Austria, Ireland and the United Kingdom, measures to increase higher education flexibility and reduce the financial burdens make it difficult for professionals who want to build a career in academia to find permanent appointments. The number of Ph.D. students and fixed-term posts has expanded, further fostering competition for the few tenured positions available in academia (Dirnagl, 2022; Goldan et al., 2022; Huisman et al., 2002). Dirnagl (2022) states that in Germany, 90% of academic researchers are on short-term contracts, generally lasting less than a year. The majority of short-term contract workers are early career researchers composed of Ph.D. students, postdoctoral fellows, or principle investigators aspiring to become tenured professors. Given their short-term perspectives and uncertain contract renewals, they find it

difficult, if not impossible, to plan for the future. This produces a toxic environment of higher competition, twisted incentives and steep hierarchies that discourages qualified and driven young scientists, who leave academia in frustration (Dirnagl, 2022).

The situation described above also apply to South African academic system. In South Africa for instance, academics are frequently hired on a temporary or ad hoc basis rather than in a permanent contract in public universities, but there has been little published studies on the subject (Kerr, 2021, 2022). Recent evaluations of the state of South African research capacity and productivity undertaken by the Department of Higher Education and Training (DHET 2019) and the Department of Science and Technology (Mouton 2018) are specific in considering only permanent academics in their evaluations.

Temporary positions in South Africa are filled by postdoctoral fellows, research associates, interns, consultants, and Ph.D. students on fixed-term teaching contracts, who conduct ad hoc or hourly-paid labour for which there may be no written agreement and are almost absent from the general image of the academic workforce in the country (Kerr, 2021). This situation is considered problematic when taking into account that the number of temporary employees in public universities is about double that of permanent ones (Kerr, 2021) and according to Mouton (2018), the majority of academics now in permanent employment do not have Ph.D.s, and many are not active researchers; institutions also already host thousands of research-active postdoctoral fellows who have Ph.D.s but are not university employees (Kerr 2020).

According to the Council on Higher Education's VitalStats document for 2016, 65% of academics in South African public universities and technical universities are temporary (CHE, 2018). In terms of comprehending this statistic relating to race, according to CHE (2018) figures, 67% of African, 61% of coloured, 65% of Indian, and 64% of white academics were temporary in 2016.

Prozesky and Mouton (2019) also aver that one of the challenges faced by African scientists is job insecurity. According to the authors, external changes in the environments of African research institutions, such as volatile or uncertain economic conditions or changes in government policy, may encourage institutions to save expenses by expanding their use of contract jobs.

In Sweden, research also acknowledged that there are few permanent employment opportunities available in academia to meet the needs of the new generation of Ph.D. holders (Huisman et al., 2002) and fixed-term positions are a part of the academic career system (Swedish Higher Education Authority, 2022). Twenty-seven per cent of the higher education employees are on fixed-term contracts, with a slightly higher rate among women than among men (27% versus 26%) (Swedish Higher Education Authority, 2022).

The Swedish Higher Education Authority (2022) reported that the academic career is characterised by fierce competition from the start. "The further in a career an individual comes, the more difficult it becomes" (p. 119). There is rigorous competition for fixed-term positions among the doctoral graduates planning to pursue an academic career. In 2021, half of the cohort graduated in doctoral degrees was hired in fixed-term positions in academia as postdoctoral researchers, associate senior lecturers and postdoctoral research fellows.

In Sweden, Öquist and Benner (2014) observed that during the financial crises in the 1990s, universities experienced a severe cut in budget that forced them to rely on external funding and fill academic positions based on external temporary funding. Those positions are designed to provide individuals with doctoral degrees with skills for a continued career in higher education (Swedish Higher Education Authority, 2021). Specifically, they are important in molding attitudes toward entering and remaining in academic research through research portfolio development and academic networks resulting from mobility (national and international). With them comes an important boost to career development and the opportunities to accelerate career progression; access to prime research groups, facilities, or research time; fixed-term research posts, particularly fellowships, which provide researchers the ability to focus on their research while avoiding the types of multitasking that define junior lectureships and therefore, providing researchers with the opportunity to produce the type of curriculum vitae-enhancing research outputs that are favoured in terms of academic appointments and advancement (Ackers & Oliver, 2007; Ackers & Gill 2005).

The concern arises when a significant number of early career scholars are not constantly purged from the system to create a place for new researchers, specifically, when fixed-term contracts become permanent (Dirnagl, 2022). In similar vein, an early study by Huisman et al. (2002) stated that those who choose an academic career risk shifting from one contract to the next without the opportunity to build a specific research agenda. In addition, research has highlighted that many doctoral graduates wind up spending several years, and sometimes all careers, in sessional work, either out of perseverance to achieve a tenure-track position or

because they are unable to find a suitable job outside of academia (Walters et al., 2021). Some scholars (Bozzon et al., 2019) assert that temporary academic labour in Europe can no longer be viewed as a stepping stone to permanent employment. According to Bozzon et al. (2019, pp. 37–38) the temporary work in academia "cannot be considered a simple part of a learning process, where one is 'learning the ropes', because the goal here is not to prepare the new-comers for stable and paid jobs, but to replace such jobs with precarious and unpaid ones".

Similarly, Ackers and Oliver (2007) report that whereas one or two temporary positions in different contexts can be an important and career-boosting way of gaining new knowledge, contacts and experience without committing to the kind of institutional responsibility and engagement associated with permanent positions, career paths characterised by a series of temporary contracts with little prospect of a permanent position create a different dynamic. There are two major areas of concern, according to Ackers and Oliver (2007), both related to status. The first concern relates to temporary contracts and quality of life. Contractual insecurity leads to personal financial instability, limiting access to credit (particularly mortgage finance) and entitlement to employment-related benefits (such as pensions and leave entitlement). The second concern is the fact that academics in temporary contracts experience differential forms of treatments in different areas, which might affect the academic psychologically and in the ability to produce effective career outcomes and develop their academic profile, namely, accommodation and access to facilities; general inclusion, participation, and integration within the life of parent departments; access to training budgets, conference funding, and related occupational perks; representation on e-mail networks, websites, and publicity material; and opportunities for promotion and progression.

Researchers have discussed the need to reform the academic system, and much is said in this regard in the literature (see Albert et al., 2014). Dirnagl (2022) argued that reforms in that direction face resistance because of the need of additional funding to create positions that are more permanent. Universities lack the financial resources to implement reforms and in many countries, a large proportion of academic research funding is provided through temporary project funding with no or little prospect of permanence, which pays for Ph.D. students and postdocs (Dirnagl, 2022).

In South Africa the situation is the same, as temporary and fixed-term positions are used by universities to cut costs in the academic system. Holley et al. (2018) assert that the reason for the proliferation of temporary works in academia is associated with the convenience of cost effectiveness of temporary employees for universities. Postdocs earn modest stipends

compared to permanent staff, which do not increase from year to year, and like other temporary academics, they do not receive benefits such as a pension or medical aid. Another explanation cited by Holley et al. (2018) is postdoctoral researchers' ability to meet institutions' research productivity goals when permanent academics are unable to do so due to general overwork duties in teaching and learning, research, and community engagement. Kerr (2022, pp. 553–554) states that "postdocs' scholarships are funded either by the university they are affiliated with, or by external funders such as the National Research Foundation (NRF), philanthropic funders, or industry; in most cases, these scholarships are significantly lower than an entry-level permanent lecturer salary, for which a PhD may or may not be a requirement".

Huisman et al. (2002) aver that the massification of higher education has occurred in several nations during a period of significant drop in government funding and changes in resource distribution methods. Funding has not kept pace with expanding student enrollment. This tendency has resulted in large layoffs, privatisation, fee conflicts, a drop in academic incomes relative to average earnings in other employment sectors, and increased uncertainty among academics. Further, Huisman et al. (2002) affirm that universities have responded to these shifts by altering the balances of tenured, permanent, and fixed-term positions. A higher share of temporary workers compared to tenured personnel would boost institutions' adaptability to changing external circumstances, such as shifting student numbers, budget cuts, and other financial variations. In similar vein, Courtois and O'Keefe (2015) assert that although the massification of higher education has resulted in a huge increase in student numbers, public funding for the sector has collapsed, increasing the sector's reliance on private sources of finance and creating uncertainty about future cash flows. As a result, there is a greater demand for flexible and inexpensive labour (Hill, 2005; Ryan et al., 2013). Permanent academic posts were rapidly replaced by low-wage, temporary and fixed-term contracts (Courtois & O'Keefe, 2015). Decisions about hiring or promotions are now dependent on objective quantified metrics such as journal impact factor or amount of third-party financing (Dirnagl, 2022).

However, some scholars affirm that fixed-term positions are perceived as largely beneficial for the employers and detrimental for the employees (Ackers & Oliver, 2007; Goldan et al., 2022). According to Goldan et al. (2022), temporary contracts have various advantages over permanent contracts for employers. First, temporary employees may be especially productive in order to boost their chances of landing a permanent job. Second, firms can examine prospective hires before offering them a permanent position, which allows the selection of the

best talented researchers, and consequently benefits the excellence of science. Finally, they help employers to reduce workforce adjustment costs by responding flexibly to changing labour market conditions and increasing or declining demand for their products or services. Conversely, for the employee, they frequently experience job insecurity, which has a negative impact on a variety of psychological and job-related outcomes, including well-being, health, pay, organisational commitment, and job satisfaction (Dawson et al., 2017; Hünefeld et al., 2020) especially for women if connected to the mobility, both national and international, that those positions require (Ackers & Oliver, 2007). Furthermore, Goldan et al. (2022) maintain that employees frequently benefit from temporary contracts only when the alternative is unemployment. In such instances, temporary work may be an appealing option for gaining professional experience and allowing individuals to demonstrate their productivity and commitment.

2.5.3. Rigidity in the System

Academic systems are considered to be rigid. Few scholars reach a tenured professorship. The reasons range from highly demanding requirements at junior stages to discouraging management practices or hostile work practices and climates (Pyke, 2013; Zacher et al., 2019). Specifically, to progress from Ph.D. level to professorship, high discipline-specific expertise and maximisation of research output is relevant (Bedeian, 2004; McGrail et al., 2006; Braun et al., 2013; Seibert et al., 2017; Zacher et al., 2019). Additionally, tenure-track jobs in academic institutions are still based on a rigorous pipeline and ideal worker norms (Ahmad, 2017). These norms continue to exclude women and men with substantial caregiving responsibilities from entering the tenure track (Ahmad, 2017) and with discontinuous and interrupted career routes that do not adhere to the typical male model of academic career growth (Pyke, 2013). In his study about "Women, choice and promotion or why women are still a minority in the professoriate" concerning the group of women who decided to not seek for promotion, Pyke (2013) identified two major obstacles of the academic system namely, (i) negative organisational cultures, experiences of being bullied, or a lack of support and (ii) timing, changes in promotions policy and a belief that they would not be able to meet the criteria.

In the literature, women continue to report open and latent discrimination. Gender-based stereotypes and discrimination is perceived as entrenched in an academic context (Allen et al., 2006; Herman, 2015; Pyke, 2018). Open discrimination is characterised by bullying, harassment, sexist comments, gender-biased communication downplaying women's

capabilities, being overlooked or ignored, or by being asked to do work not expected of men (Bishu & Kennedy, 2020; Karami et al., 2020; Täuber et al., 2022). Latent discrimination is more subtle and affects women through resistance to appointments and a lack of respect from colleagues (Täuber et al., 2022; Diezmann & Grieshaber, 2019). Interviewees in Pyke's study (2013) described traumatic experiences as a result of being bullied by top managers, being the subject of direct discrimination, and/or being 'frozen out' of collegial and decision-making networks. Further, a related concern noted was the absence of a system to foster academics along a road to promotion, implying that interviewees reported feelings of isolation.

However, women can actively participate in discrimination by aiding men's performance and confirming their perceived authority through assuming they are in control already, by taking notes at meetings for them, by organising life for them, and also by discouraging other women, and even fighting against the success of other women (Faniko et al., 2021). A clear example of this is 'Queen Bees', women in position of power who could support other women but do not, as they feel threatened by other women and are possessive and defensive of they own academic positions (Faniko et al., 2021; Derks et al., 2016).

Another form of discrimination is where women and men are treated differently. Women are seen as junior to men of the same age, and are perceived differently by senior management. Thornton (2013) reports how men are perceived as dedicated and enthusiastic, reflecting their commitment and the ideal academic devoted to his work, and women are described as cheerful and excitable, terms not often associated with a serious academic and which provide no indication of the woman's devotion to academia. The upshot of such discrimination and stereotyping according to Diezmann and Grieshaber (2019) is that, regardless of merit, men and women are positioned differently in academia and are exposed to various mechanisms that favour men, and also being a woman academic requires one to work hard and to be twice as good as men, and it takes twice as long to be recognised.

The other effect of discrimination is that when it comes to other people's impressions of their conduct, women are effectively in a no-win situation. Women are expected to be motherly, but they are damned if they do and damned if they do not. They may be accused of being patronising, but being too soft and caring renders them ineffective. When men and women perform the same acts, yet are viewed differently for these actions, the no-win scenario occurs. Women professors from Diezmann and Grieshaber's study (2019) reported that because of discrimination and gender stereotyping, in order to reach high levels of academic career they had to work harder than their male counterpart. This reinforces the fact that academia is a

male-dominated environment, and that in order to rise in the academic hierarchy, women must be effective in that environment, following the requirements to reach higher levels. Though ostensibly wise, such advice denies women the right to participate as equals in a world ostensibly based on merit (Thornton, 2013). As a result, universities' traditionally masculine culture is nonetheless plagued by informal and powerful male networks (Thomas & Davies, 2002), gendered career structures (O'Connor, 2000), and male hegemony (White, 2001). Additionally, women face gender-based discrimination rooted in the organisational culture (Cardador, 2017). Women were thought to be better suited for administrative positions; therefore, they were encouraged to take on responsibilities that highlighted the human side of engineering (Cardador, 2017).

Sweden has a well-documented self-image as one of the most contemporary and gender-equal countries in the world, despite the fact that women and men remain unequal (Martinsson et al., 2016). Specifically, Martinsson et al. (2016) aver that although Sweden is one of the most gender-equal countries in the world, it still strives for more gender equality, because women and men are still unequal. In similar vein, although they recognise that Sweden is advanced in the creation of policies that support the inclusion of women in the job market, Alatalo and Ostapenko (2014) are a strong critic of the system, maintaining that while the country displays an international reputation in terms of social issues, projecting an image of being one of the best countries in the world in terms of social indicators and equal opportunities for all, this image must be revised because the Swedish system is segregating. One of the segregated areas identified in Alatalo and Ostapenko's (2014) study is how the country has a lack of women in positions of high influence. Lane and Jordansson's study (2020) traces the Swedish gender equality discourse and interrogates how equality was problematised and what solutions were offered for it. In their study the authors affirm that in the formative gender equality policy process the problem of gender disparity in the employment market was seen in terms of inequalities at home, specifically, men's and women's unequal sharing of unpaid housework. Therefore, the emphasis was on women's admission into the labour market, not in the gendered and discriminatory practices of the labour market. Gender segregation was evident in the labour market through differences in wages for the same task and defined positions or areas of work for women and men, with men remaining in positions of power.

In an African context, Prozesky and Mouton (2019) observed that patriarchy continues to pervade the majority of African countries, resulting in gender-based divisions of labour in both the home and scientific organisations, inequities between men's and women's access to

power and resources, and gender biases in rights and entitlements. In their study about career challenges that confront African scientists, and women scientists in particular, they highlight that women scientists in Africa face the following challenges: challenges to balance work and family, lack of research funding, lack of mentoring and support, lack of funding for research equipment, lack of training opportunities, lack of mobility opportunities, lack of access to library and/or information sources, limitation of academic freedom, job insecurity, and political instability or war. In addition, Prozesky and Mouton (2019) report that women from their study were less likely than men to have travelled overseas for training and jobs, As well as to have access to the mobility that is vital in a scientific career.

2.5.4. Welfare States and Their Extended Parental Leave

Literature on welfare states has explored the role played by policies such as parental leave and child care in women's labour market participation and occupational accomplishment (Boeckmann et al., 2015; Gangl & Ziefle, 2015), with some researchers showing empirical evidence that increasing generosity of leave entitlements led to a decline in mothers' work commitment (Gangl & Ziefle, 2015; Ferragina, 2019).

Sweden is perceived as a family-friendly country for women who want to balance work and family life (Haas, 2003; Hegewisch & Gornick, 2013; Evertsson & Duvander, 2011; Mayer & Tikka, 2008). The country is well known for policies to reduce the conflict between work and family for women. One of those policies concerns parental leave, implemented since 1974 and regarded as one of the political reforms that altered Swedish society from a male-breadwinner to a dual-earner paradigm, because it facilitated the participation of women in the labour market and raising a family (Albrecht, et al., 1999; Haas, 2003; Hagqvist et al., 2017; Korpi, 2010). The parental leave period is for the duration of 13 months and allows women to have the option of taking a variety of leave lengths which can be extended by lowering the replacement rate and followed by a period of unpaid leave (see Hegewisch & Gornick, 2013; Evertsson & Duvander, 2011). However, although parental leave is perceived to be positive as it increases the employability of women and their retention in the job market, literature has presented empirical evidence of the negative effects of extend parental leave rights for women's career development (Albrecht et al., 1999; Hegewisch & Gornick, 2013).

Evertsson and Duvander (2011), drawing on the effects of long family leave breaks on women's occupational careers in Sweden, conclude that length of parental leave can have negative effects on women's career progress. Specifically, Evertsson and Duvander's (2011)

results report that women who took 16 months or longer leave were less likely to experience an upward professional move once they returned to work. Evertsson and Duvander's study (2011) raises three explanations for this result. First, during long periods of maternity leave women experience skill deterioration that is perceived as detrimental for their transition to a higher career position. Second, taking extended periods of maternity leave can be judged by the employers as a signal of employees' lower career ambition, and may affect the acquisition of competences for a higher position in the institution. Third, women's career goals shift as a result of having a child, and women may not be willing to develop in a career during the time when they have a young child. In another study about women's and men's wages after parental leave in Sweden, Evertsson (2016) concludes that women's wages suffer more the longer that they are on leave because longer periods of parental leave result in human capital losses and less possibilities for work training that can harm career development. In similar vein, in his study about the economic consequences of parental leave mandates in Europe, Ruhm (1998) concludes that although long parental leave has a positive effect on women's employability continuity it has a negative influence on wages among women compare to men. A recent study by Göktürk and Tülübaş (2021) also show that policy initiatives providing long maternity leaves for women do not help improve women academics' conditions but instead adds to their "conflicts and dilemmas" (p. 279). Göktürk and Tülübaş (2021) further advocate for the need of transformative social policies to support women balancing professional and family roles, illustrated as affordable childcare and leave for fathers specifically for childcare.

Research elaborates (Ronsen & Sundström, 2002; Lalive & Zweimüller, 2009) how that in contexts with prolonged parental leave women frequently extend their leave periods correspondingly, and may also experience a decrease in their human capital during the absence from the labour market (Evertsson & Duvander, 2011). As a result, scholars such as Mandel and Semyonov (2006) report that in nations with prolonged parental leave entitlements women face higher challenges in obtaining and retaining influential employment positions.

These findings may justify the results reported by Dex et al. (1998) in their study about women's employment transitions around child bearing. Dex et al. (1998) reported that educated women have higher employment continuity and take shorter breaks of maternity leave than less educated women. Mandel and Semyonov's study (2006) about the role played by the welfare state, such as in Sweden, in affecting women's labour force participation and occupational achievement revealed that women's labour-force participation in developed

welfare states is facilitated, but not into powerful and attractive positions. Mandel and Semyonov (2006) highlight the paradox of welfare states' women-friendly policies. They maintain that nations with progressive and developed women friendly policies, as well as a large public service sector, tend to have high levels of female labour force participation, as well as a high concentration of women in female-typed occupations and low female representation in managerial occupations. According to Mandel and Semyonov (2006), the increase in family-oriented services, the accessibility of public child-care facilities, and a big public service sector give women opportunities to become economically active. However, after becoming economically active, advantages for working moms and a high demand for female labour in public services limit their career opportunities. Family-friendly policies and practices prioritise women's familial duties. They are designed to give women time off to care for small children through extended maternity breaks and the encouragement of part-time work. Consequently, these policies prevent companies from employing women for high and influential positions, while encouraging women's commitment to female-typed occupations and jobs with convenient working conditions (Mandel & Semyonov, 2006). Similar findings about the employment continuity of working mothers was reported in Stier et al.'s work (2001). Stier et al. (2001) conclude that welfare states and their family-friendly policies provide proper environments and conditions for working mothers to return to the job market, such as legislation focussed on boosting mothers' employment which enhances their attachment to the labour market by providing the necessary conditions for sustained full-time employment.

Lane and Jordansson (2020) assert that the foundation of Swedish equality lies in a vision of a society where the division of labour between men and women is equal. Specifically, in a vision where women and men have equal responsibility in unpaid work. In line with this vision, the country provided conditions to facilitate the access of women in the job market through access to employment and economic independence for men and women. Those conditions are described by Lane and Jordansson (2020) as access to health, sickness and unemployment insurance, parental leave and access to child care and elderly care. However, in spite of the equality policy discourse about shared responsibility for paid and unpaid work, tensions between paid and unpaid labour remained unresolved. The authors explain that the emphasis on creating conditions for a dual provider-system – where women and men are engaged in the labour market – did not problematise the division of unpaid work in the household. Theorising Scandinavian gender equality, Borchorst and Siim (2008) state that the

employment market was guided by male-centered norms and rules, which implied that women should work like men, devoting a lot of their time to work. Lane and Jordansson (2020) aver that as women entered the labour force, the time spent on unpaid home duties created concerns about who would handle the care work. The reality of women working two shifts, one paid and one unpaid, increased. Women entered the employment force with men, but males did not join women in unpaid domestic chores.

2.5.5. Performance-based Funding Systems

Over the last few years, numerous countries have established performance-based university research financing systems, based on peer review and matric procedures (Hammarfelt & De Rijcke, 2015; Hammarfelt et al., 2016; Hicks, 2012). These funding systems provide prestige to higher education institutions and professionals (Hicks, 2012) on the basis of performance, where the "institutions that perform according to the quality criteria formulated in the system should be awarded a larger share of the available resources" (Hammarfelt et al., 2016, p. 293). They are defined as "organised sets of procedures for assessing the merits of research undertaken in publicly-funded organisations that are implemented on a regular basis, usually by state or state-delegated agencies" (Whitley, 2007, p. 6). Those procedures are applied at national level and distribution of research funding depends on the results of evaluation (Hammarfelt et al., 2016; Hicks, 2012). Their nature varies across countries and evolves over time. They differ, in particular, in terms of how they are formed and managed, as well as the implications for resource allocation decisions (Whitley, 2007).

In South Africa the National Research Foundation's (NRF) ratings dominate the performance-based evaluation system in the country. The NRF is an individual performance evaluation scheme, specific to the South African context. The NRF is a South African government research funding agency that supports research through funding, and rates researchers using a peer-review method, to assess and reward scientific expertise through predefined categories from A to Y (Callaghan, 2018). A-rated refers to leading international researchers, B-rated is categorised as internationally acclaimed researcher, and C-rated is an established researcher. The P and Y-rate is attributed to younger scientist scholars within five years after Ph.D. where P-rated is a prestigious award, and Y-rated means promising young researcher (Callaghan, 2018; Breetzke & Hedding, 2020). Specifically, NRF ratings promote human resource development and the provision of research facilities (Breetzke & Hedding, 2020).

The NRF rating system is used extensively throughout all South African higher education institutions. It is included in academics' applications for promotions and employment hiring (Breetzke & Hedding, 2020; Callaghan, 2018), and provides the quality of researchers in South Africa (Breetzke & Hedding, 2020). As Wingfield (2014, p. 1) posits, "consideration for promotions and other awards is made much easier where candidates have NRF ratings".

In addition, of the institutional incentives emphasised above, there are individual benefits of NRF ratings acknowledged in the literature (Breetzke & Hedding, 2020). First, it allows for recognition from peers as being a leading international scholar in a respective discipline based on the quality and impact of their research. Second, universities and research-performing organisations in the country use a rating status as one of the criteria for purposes related to personal promotion, resource allocation, 'performance' awards, and employment retention. Third, the NRF provides funding to rated researchers who hold a valid NRF rating through its Incentive Funding for Rated Researchers Programme (IFRRP). Funding is provided on an annual basis for the duration of a researchers' rating (five years), with monetary amounts allocated based on rating outcomes. Allocations typically range from R100,000 (£5,000) per annum for A-rated scientists to R20,000 (£1,000) per annum for Y-rated scientists. This funding is most often placed in a cost center account which the researcher can use at their discretion for research purposes. Spending against these accounts is audited annually. Academics are rated through an application process that comprises a submission to the NRF of the research output generated over the past eight years. The rating lasts five years, after which academics have to apply to be reevaluated during the final year of their rating or "their rating lapses" (Breetzke & Hedding, 2020, p. 3).

The research outputs consist of peer-reviewed publications but can also comprise books, conference presentations, patents, policy or technical reports and publications in the public press (Breetzke & Hedding, 2020, p. 3). The rationale behind NRF ratings in South Africa according to Breetzke and Hedding (2020) is that universities in South Africa are mainly public and the NRF is the government accountability strategy to assess the research being subsidised by public money. Further, Breetzke and Hedding (2020) explain that the funding model in South Africa is a performance-based framework, however, it is built more on student head-count and the cost of offering the qualifications, consequently, the individual research performance of South African researchers (in terms of their NRF rating) as well as their departments (in terms of the number of NRF-rated academics per department) is less often considered in government funding allocations.

However, the NRF rating system has been criticised among researchers, methodologically (Callaghan, 2018) and theoretically (Fedderke, 2012). In an open criticism of the system, although considering it important, Wingfield (2014) maintains that the system is tough and offers a distorted view of success/accomplishment by presenting hierarchical ratings, which are frequently highly detrimental. Some brilliant researchers never make it into the B-rated researcher ranks. To pass through the ranks and make it to the highest rank which is A-rated it is important that the academics act strategically in terms of research and put in intensive effort, and academics who succeed in doing that are those who have fun, who enjoy their work in a way that the time spent doing it is not considered hard work, but fun. In Wingfield's words,

> achieving a significant research output involves focused and sustained research activity, which requires commitment to one's career and involves far more than the 40-h week that is typically defined as a normal effort for which one receives a salary. The defining issue here is that being a research academic is a vocation – not a job. (Wingfiled, 2014, p. 1)

Wingfield (2014) further maintains that working hard in academia is a choice, a choice that only some academics are willingly happy to make. Those academics, according to the author, see benefits of the academic career beyond the monetary reward. They enjoy being connected with a global community of scientists and the research inquires and contributes globally to the development of their fields. In similar vein, researchers from educational psychology (Kiewra, 2008; Martínez et al., 2011; Mayrath, 2008) reported that highly productive scholars are curious about their research areas, and they find enjoyment in their work. Martínez et al. (2011) affirm that intrinsic motives for doing research may be more motivating than doing so just for tenure requirements or to acquire extrinsic rewards such as status and grant funds. In addition Martinez et al. (2011) also state that research is demanding work, but it is made less daunting when the work is enjoyable; for professionals it is much easier to work hard on an area of interest, than in a less intriguing field. One of Martinez et al.'s (2011, p. 714) participants declared that it is less "onerous to do research and work hard and get things done" when academics/professionals "pick a topic that [they] are really interested in; one that [they] really want to know more about". According to Mayrath (2008), maintaining long-term motivation and intellectual stimulation requires a strong passion in your research. Obtaining NRF ratings requires hard work and consistent commitment. Bond (2014), in his work, *The secret of success: Blood, or sweat and tears,* emphasises that success cannot be attributed only to intelligence, talent, or geographical or social advantage. Essential factors such as passion,

dedication, time, hard work, and tenacity play if not the paramount, the most important role. Faniko, Ellemers and Derks, (2022) also state that a career in science requires persistence, dedication, and ambition. Scholars such as Callaghan (2018) sustain that the NRF ratings allocates career advantages and disadvantages for academics, for those who managed to have the high ratings and for those in the bottom of the scale.

In the Swedish contexts, the performance-based research funding system (PRFS) is based on two indicators: (i) bibliometric, which consist of allocating resources based on the number of publications and citations and (ii) amount of external funding acquired by each university (Hammarfelt et al., 2016). Although the model was created to encourage the quality of research produced in the country, it experiences criticism. First, the model was insufficiently robust; second, the fields of social sciences and humanities did poorly as a result of being evaluated using metrics that were inappropriate for the patterns of their field publication and citation (Hammarfelt et al., 2016). According to Hicks (2012) the Swedish model differs from other models because it only assesses and distributes resources across universities, while others evaluate and publish reports on the performance of individual departments and reallocates resources on the university level, and evaluates and distributes resources on the level of individuals. In this regard the Swedish model differs also from the South African model that assesses academics at the individual level.

2.6. Challenges Women Face Throughout Their Careers

Empirical studies have demonstrated that the challenges that women face in academic careers are still persistent (Blackburn, 2017; Howe-Walsh and Turnbull, 2016). Academic women still report challenges such as conflicts between work and family life, anxiety, exhaustion, stress, lack of support (Acker & Armenti, 2004; Cochran et al., 2013; Horta & Tang, 2023); gendered organisational culture, gender-role stereotyping, lack of mentors (Allen et al., 2006; Cardador, 2017; Duberley & Cohen, 2010; Herman, 2015; Makarem & Wang, 2020; Settles et al., 2006); informal encounters (Fritsch, 2015); social networks (Casad et al., 2021; Howe-Walsh & Turnbull, 2016); geographical mobility (Fritsch, 2015; Nikunen & Lempiäinen, 2020) and long periods of learning/training and productive work, part-time employment, short-term contracts and competitiveness (Teichler et al., 2013). Some of those challenges are explored below.

2.6.1. Gender Stereotypes

In the literature, one explanation for the underrepresentation of women in STEM fields is gender stereotypes. Research has shown that they facilitate discrimination in hiring (Casad et al., 2021) and evaluation (Heilman, 2001; Teelken et al., 2021) through expectations that they create about both what women are like and how they should act, that limit women's career advancement prospects. Gender stereotypes are defined as cognitive structures that include the socially shared knowledge about the characteristics of men, and they include expectations about character and personality traits and patterns of behavior which are the result of cultural norms and values (Lühe (2014). The male gender stereotypes are labelled as agentic and can be characterised as independent, dominant, rational, ambitious, determined, and confident. The female gender stereotype, on the other hand, perceives women as communal and characterised by attributes such as dependent, gentle, communicative, affectionate, understanding and warm-hearted (Casad et al., 2021; Lühe, 2014). Those gender stereotypes arouse specific expectations and therefore influence the way in which men and women are perceived by others. For example, because of gender expectations women are assumed to be more capable and suited for feminine roles in management while being seen as less technically skilled (Cardador, 2017; Ecklund et al., 2012; Leslie et al., 2015), and "tend to be perceived as aggressive whereas men exhibiting the same behavior are seen as decisive" (Foschi 1992, p. 181). As a result of gender stereotyping women's expectations are therefore to be put in roles based on stereotyping and not evidence. Top management and executive positions are associated with male gender stereotypes (Heilman, 2001).

Orser et al., (2012) reported that, in the U.S. the IT industry's organisational structures and job roles were also stereotyped as being suited toward a male lifestyle that included lengthy workdays and frequent travel. Because of this, women were underrepresented in the field and it was assumed that their roles as mothers and wives had priority over professional roles (Schmader et al., 2004; Orser et al., 2012). According to Crump et al. (2007), women working in IT in New Zealand characterised the IT culture as a pervasively stereotypical picture of a male who lacks social and communication skills which causes women to feel alone and unwelcome.

Empirical research also indicates that a good manager is primarily described by masculine characteristics (Heilman et al., 1989; Powell & Butterfield, 1989) and that stereotypically male qualities are thought to be necessary for being a successful executive (Martell et al,

1998). Consistent findings also support this assertion in the academic context. Lühe (2014) and Casad et al., (2021) state that male characteristics are frequently associated with attributes believed to be success factors in science. Those attributes are considered to be dominant, assertive, and rational. Women are believed to be less productive, less motivated, and less interested in advancing their careers as a result of prevailing gender stereotypes. Furthermore, they are seen as potential moms, making them less resilient and more prone to disrupt (full-time) work. As a result, women have disadvantages in terms of job opportunities: they are less likely to be offered prominent roles and projects, as well as additional schooling.

According to Lühe (2014), academics' tasks are divided into two kinds. On the one hand, there is student teaching and mentorship, which are less valued and associated with 'feminine' personality traits. On the other hand, prestige tasks such as publishing and research are connected with male personality attributes. As a result, women are frequently overburdened with teaching and mentoring, whereas their male counterparts can engage in academically valuable tasks that advance their careers, such as research and publication. As a result, when judging their careers, women frequently have fewer publications and research on their curriculum vitae than their male counterparts. Female researchers who publish and conduct research, on the other hand, are frequently regarded as 'aggressive, masculine, and tough' (Lühe, 2014). This suggests that women in science face not only role conflicts, but also a significant level of uncertainty about their career chances because academic achievements are judged in favour of male traits. Women tend to be more self-conscious and underestimate themselves and their achievements as a result of gender stereotypes and status ideas, which can have a negative impact on their job advancement (Lühe, 2014).

In academic environments, the evaluation of professionals is based on merit. However, the goal of merit-based evaluation is to eliminate gender bias in decision-making procedures that are negative to women. Nevertheless, how merit is measured is determined by those in power. In the literature, Thornton (2013) expressed skepticism that a merit-based procedure could be free of gender bias in a male-dominated environment, where those in power are associated with the ideal academic. According to such literature merit-based evaluation instead of change, can exacerbate the status quo in academia.

2.6.2. Being an Outsider

As stated in the sections above, women in academic careers face diverse forms of discrimination. A subtle form of discrimination for women is embedded in practices that

position women as outsiders in academia (Caine et al., 2007; Collins, 1986; Van den Brink & Benschop, 2012). Such practices include a lack of access to social networks, as well as a lack of knowledge about how academia operates and a lack of academic vacancies and job requirements (Collins, 1986; Skachkova, 2007; Talley-Matthews et al, 2022; De Four-Babb et al., 2015). In this regard, Van den Brink and Benschop (2012, p. 83) state:

> A more subtle way of exclusion is the uneven access to knowledge on the rules of the academic career game. … Because of the large influence of invisible connections and tacit rules and criteria, it is hard for newcomers and outsiders to be a member of this inner circle. Women respondents argue that they often lack access to these patriarchal support networks and are unaware of the tacit rules that are necessary to operate in this idiosyncratic environment.

In Behtoui and Leivestad's study (2019, p. 214) about immigrants in Swedish higher education, entitled "The 'stranger' among Swedish 'homo academicus'" they maintain that "newcomers in the field" face challenges regarding the access to appropriate network of contacts to receive information and support when applying for a position. According to Behtoui and Leivestad (2019) the 'newcomers in the field' are young people from native backgrounds and individuals from migrant backgrounds. Further the authors continue by stating that there is a difference between these two groups of newcomers. When they enter the job market all are in the same condition due to the lack of mentors and networks for support, however, the difference is evident when they get their first job. Their careers take different patterns, the natives become advantaged, while the individuals with a migrant background are likely to experience a cold environment, prejudice, hostility and exclusion from networks that result in research, and unclear hiring processes. Nielsen (2016, p. 5) speaks about "closed procedure" to highlight that positions can be available but without an open competition to benefit some applicants who are hired based on their previous employment in the organisation or through professional or informal network connections.

Researchers (Behtoui & Neergaard, 2010; Lin & Erickson, 2008) assert that what is behind this situation is the well-known desire for similarity in social relationships, which indicates that interactions typically take place between individuals who have similar resources and lifestyles, emphasising therefore the importance of social class in networks. In addition. Lin and Erickson (2008) mention gender and race/ethnicity as also being important determinants in individuals' social relationships. For this group of researchers, social networks will remain gendered and racialised as long as the stratification system is gendered and racialised.

Bourdieu (1996) contends that an individual's social background, such as class, gender, and race/ethnicity, has a significant impact on the position attained in academia. Although all women interviewed in the present research have the same rank position, full professors, the results of data analysis reveal that an individual's background (e.g., not native) is significantly associated with certain challenges that they have faced in their career to reach the top of the academic career ladder (e.g. delays in appointment, lack of information, lack of knowledge about the system, and networks and mentorship).

One form of responding to this discrimination of women in academia is described in the literature as being through positive discrimination or affirmative action practices (e.g. representative roles, initiatives that help women enter or reenter the university at various career points, and flexibility of work practices) (Diezmann & Grieshaber, 2019). These practices help to expose and give visibility to women through decision-making processes and practices at the university level that can help in promotion decision and opportunities within the discipline. However, despite the importance of affirmative actions in redressing discriminatory practices faced by women, some scholars (Kimura, 1997; Leslie et al, 2014; Soliman, 1998) believe that such practices are problematic and have downsides, which individually or collectively can inhibit career progression. First, affirmative actions can raise doubt as to whether a woman's nomination is based on merit or gender. This doubt may be expressed by the woman herself or be interpreted as a result of the negative actions of others. If a woman is appointed to a committee because of her gender, other committee members may show a lack of regard for her, which may be detrimental to female colleagues rather than beneficial (Diezmann & Grieshaber, 2019; Leslie et al., 2014). In this regard Kimura (1997) writes that, hiring women over better-qualified men may result in women being devalued in academia and collegial relations deteriorating. Second, due to the necessity for gender representation, women in male-dominated fields may be asked to serve on committees for extended periods of time, reducing their time available for other academic activities (Baker, 1999; Diezmann & Grieshaber, 2019). In this context, Soliman (1998) reported that women might be subjected to overwork if they serve as the token woman on committees; therefore, women's workloads in representational roles should be managed with caution. Third, women are skeptical of affirmative action's initiatives because their merit is not evaluated in open competition (van den Brink & Benschop, 2012). In this regard, van den Brink and Benschop (2012, p. 88) add:

Simultaneously, these gender equality practices lead to questions about the woman appointee's quality, which is suspect when not tested in competition with men or measured against male competitors. As a result, some women academics refuse to take positions that are established for women, out of fear of being marked out as an 'affirmative action' case

As a result, some authors (Diezmann & Grieshaber, 2019; Leslie et al., 2014) assert that the idea of employing affirmative actions to address or overcome the impacts of negative discrimination is oversimplified and requires further investigation.

Flexibility of work practices it is also perceived as an affirmative action (Winchester et al., 2006). Flexible work practices and hours in academia help assist women academics in balancing family and work responsibilities. In this regard, women professors from Diezmann and Grieshaber's study (2019, p. 112) reported:

Yes, absolutely [working in the university helped balance raising a child with work] and people were very understanding. That is one of the things I like about working in a university, you do have that flexibility and you can sit and work for say 10 hours in a stretch if you need to catch up and then take time off for family things if that is required

Despite the fact that some women experience flexibility of academic work and hours, Diezmann and Grieshaber (2019) state that how some women experience flexibility depends on their supervisors and workplace/leadership. Leslie, Mayer, and Kravitz (2014) also highlight that despite the existence of affirmative actions the numbers of women are not reaching equality in higher rank positions because, also the existence of policies in itself "is not sufficient to assume that it will be implemented in a way that will benefit women or implemented consistently across the institution" (Diezmann & Grieshaber, 2019, p. 114). In the same vein, Pyke's study (2013) of why or why not women seek promotion, respondents highlighted that one major influence that disadvantaged women seek promotion was cultural background. This issue was emphasised specifically by respondents born overseas. According to Pyke's (2013) respondents, not knowing how to 'play the game' or comprehend the enigmatic norms of academia in the context they find themselves was considered to be a disadvantage.

2.6.3. Lack of Mentorship

The acknowledgement of mentoring within and beyond the university for women's career development is recognised in the literature by early and recent research (Block & Tietjen-Smith, 2016; Casad et al., 2021; Gardiner, 2007; Helms et al., 2016; Jyoti & Sharma, 2015; Kram, 1988; Ragins & McFarlin, 1990; Van Balen et al., 2012). It supports women's career progress by providing strategic guidance, professional relationships and access to network (Gardiner et al., 2007; Schmidt & Faber, 2016; Ward, 2003). A mentor, male or female, who could give guidance, clear paths, and in general be in a position of power to remove unneeded impediments, was common to the success of women (Baker, 1999; Schmidt & Faber, 2016). Fritsch (2015, p. 555) writes that,

> Membership in an association is especially important since 'it communicate[s] the values and norms of their disciplines, provides access to informal networks, and help[s] to move people along by offering useful information through unofficial channels.

Career researchers have outlined the importance of having a supportive network or social and professional networks for career development. Specifically, access to both official and informal networks has become essential for integration in the academic community (Fritsch, 2015). In Acker and Armenti's study (2004), women participants highlight that access to information and values and norms of the academic disciplines is made available via those networks. Recruitment is based on non-transparent and informal rules that favour male colleagues who have access to informal networks. However, some authors (Casad et al., 2021; Fritsch, 2015) argue that women academics still face barriers to networking, particularly in the scientific and technological disciplines. Similar findings are shown by DeWelde and Laursen (2011, p. 577) who demonstrate that women are largely shut out of "old boys' clubs" that offer expertise, opportunities, and mentoring, particularly in the domains of science, technology, engineering, and mathematics. Morley (2018) has similarly observed that successful academics in is study, such as female vice-chancellors, deans, and directors of research centers, reported having to work hard to reach their positions, with no formal assistance, mentoring, or professional growth. However, some respondents also reported coming from privileged social and economic backgrounds, or academic dynasties that had provided them with structural opportunities and social capital. Cullen and Luna (1993) aver that mentoring is vital because it provides a role model for inspiration and work-related influence. A mentor also provides a sponsor, protector, and research coach (Hall & Sandler, 1983). Lack of

mentorship support is recognised as a career hurdle for women trying to climb the ladder of success (Makarem & Wang, 2020; Nolan et al., 2008).

In the literature, women's lack of mentorship is experienced in different dimensions. Cardador (2017) highlights the lack of mentorship experienced in the presence of a mentor. According to Cardador (2017), American women engineers were encouraged to pursue management paths instead of technical ones regardless of their individual interests and skills because of the stereotyped roles associated with women as being good in communication and people skills. In the same line, Ecklund et al., (2012) emphasise how women scientists' lack of mentors or role models led them to change careers from physics to biology, where they felt they would fit better and receive more guidance. Furthermore, Latina women scientists emphasised the significance of peer/informal mentoring in their career success and development (San Miguel & Kim, 2015). In an early study, White and Cooper (1997) state how, although none of the successful women from their study had been involved in a formal mentorship scheme, conversely, most had identified an individual who had been influential in their careers.

Literature also highlights how gender and mentoring can interact together. Men professors who are the gatekeepers of academia and are responsible for decision-making process (Thornton, 2013), are considered to mentor more their male associates. Specifically, a greater proportion of men are exposed to male mentors' significant influences. For instance, in Diezmann and Grieshaber's study (2019), men are perceived as having a considerable proportion of male mentors (90%) compared to women (53%). However, the existence of women mentors is paramount for other women who want to pursue an academic career. Female mentors serve as female role models (Block & Tietjen-Smith, 2016; Foster, 2001) and theoretically, can provide the mentee with assistance in how to work successfully due to their expertise and experience of the gendered academic workplace. They can also offer advice and support to help academic women understand themselves and to learn how to advance in the academic hierarchy (Ibarra et al., 2010). One way to overcome inhibitory difficulties is through female role models who have proved that they have succeeded and reached the professoriate despite meeting challenges throughout their career (Diezmann & Grieshaber, 2019).

Another dimension of women's lack of mentorship experience is the absence of sponsorship when career advancement is planned and endorsed publically by the mentor (Ibarra et al., 2010). Research affirms that male professionals in academia receive stronger sponsorship than female academics (van den Brink & Benschop, 2012). Thomas and Hollenshead's (2001)

participants reported having had a lack of mentoring throughout their career. When reporting their experience of mentorship, women have claimed that their mentors were from outside their departments, which according to Thomas and Hollenshead (2001), suggests that successful women had to be proactive to look for professional support outside their departments – the same support provided to other peers academic professionals. Women participants claimed that they have had to find creative strategies to develop mentorship opportunities outside their own academic departments because they were not aware of formal mechanism of mentorship at the university. They reported having had no mentoring throughout their career by senior colleagues from their department, and also reported being proactive in seeking help to enhance their careers. In a more recent study, Davis et al., (2022) state that women reported having experienced (i) negative mentoring, perceived as feelings of neglect from their mentors, lack of expertise and manipulative behaviours, (ii) difficulty finding mentors, and (iii) insufficient institutional support

Satisfactory mentoring involves, among other things, having a role model for inspiration and work-related influence (Cullen & Luna, 1993); having someone to encourage, affirm, and instill confidence and having a sponsor, protector, and research coach (Hall & Sandler, 1983).

In an African context, research also emphasise that one of the challenges faced by women scientists of the continent is a lack of mentoring, or poor access to mentoring (Prozesky & Mouton, 2019; Udegbe, 2016). In a study by Udegbe (2016), early career academics reported facing neglect and no support or encouragement from their mentors.

2.6.4. Lack of Female Role Models

Women's interactions with role models influence how they aspire to specific positions and value career success (Gasser & Shaffer, 2014; Gillooly et al., 2021). Specifically, role models help to guide individual career development (Elzubeir & Rizk, 2001; Gibson, 2004; Morgenroth et al., 2015), showing them how to advance in their career and succeed despite existing hurdles (Kurtz-Costes et al., 2006; Morgenroth et al., 2015). Gasser and Shaffer (2014) state that women's decisions about work and family are impacted in part by their perceptions of their moms' work behavior, both within and outside the home; their developing gender role attitudes; and sociocultural signals about the gendered nature of occupations and possibilities. Research has acknowledged (Baker, 1999; Steele et al., 2013) that female role models are important to contribute to increasing the numbers of women in science. However, research also recognises that the few women who rise to the top in academia portray images

that might not be inspiring to spark young women's interest to enter the system, and that men are more likely to have role models in the academic system than women (Baker, 1999; Bagilhole, 1993a). For example, participants from Baker's study (1999) maintain that as role models, they were unsure if they were portraying an image that would inspire other women. According to them success in science normally necessitates long hours and hard labour, and the demands on academics might be exceptionally high. Working hard, long hours, teaching effectively, and being successful scientists/engineers was the most beneficial role they could play in positively impacting young women scientists; nevertheless, women professors also indicated that they were viewed as aggressive or intimidating by colleagues while doing so, and were less influential in their female student career choices because if their continued in science, they probably would go to industry because they did not want the life that their female co-professors had. However, this discourse, according to Baker (1999), emphasises that academia attracts a specific type of professional, those who will be successful there, and are willing to do what it takes.

Literature claims (Bagilhole, 1993a; Howe-Walsh & Turnbull, 2016) that men have more access to role models and mentors than women do because higher positions in academia are dominated by male academics, they make the rules of academia, and the absence of women role models perpetuate the male culture in academic environments. According to Bagilhole (1993a), to survive in academia, women as a minority and therefore a marginalised group have to behave like a man, they become an "honorary man" (p. 442), they have to become harder, and detached themselves from their femininity to be taken serious as academic professionals. Women work hard to be recognise as good as their male counterparts. These women fail in being role models for other early career women who want to enter the academic system. They behave like men, embrace the male characteristics of the ideal academic to thrive in academia, and ignore the existence of discriminatory practices in academia and support to other women (Bagilhole, 1993a). Bagilhole (1993a, p. 443) states:

> Women academics act in an ambivalent way. They respond to women students, but also show strong commitment to the male model of the profession. They have to rid themselves of all female characteristics, feelings and interests in order to survive

The situation described above may justify what Baker (1999, p. 216) states, that although more women are joining science and engineering occupations, a considerable proportion of women are leaving the field, "not because they are unsuccessful, but because the pull from

other directions is more attractive" for them. Which in turn contributes to the existence of few role models in the academic system (Baker, 2010).

2.6.5. Balancing Work and Family

Career researchers acknowledged the existence of tensions for women who combine work and family (Acker & Armenti, 2004; Ahmad, 2017; Makarem & Wang, 2020). The tensions are related to difficulties in sharing housework or childcare responsibilities with partners; having children or childcare responsibilities in an academic systems that have structured professional trajectories that gave little consideration to family issues (Acker & Armenti, 2004) and being present in the family while still wanting to rise on the career ladder (Kameny et al., 2014).

According to Orser et al. (2012), women in the IT industry face career impediments due to work and family obligations. These difficulties include caring for children and the elderly while juggling the demanding demands of their professional position. In literature, an academic profession is considered very demanding and has diverse impacts on women's other aspects of life (Fritsch, 2015). In order to reconcile family and work responsibilities, or reduce the conflict between family and work-related difficulties and enhance career advancement, women choose to rather remain childless, postponed pregnancy or integrate family matters into daily work routines (Airini et al., 2011; Doherty & Manfredi, 2010; Diezmann & Grieshaber, 2019; Fritsch, 2015). Specifically, women choose to organise their family life around occupational obligations (Fritsch, 2015).

However, research has shown that women's career interests can change over time. For instance, Glass et al. (2013) state that American women's commitment to working in STEM fields has reduced and their intention to leave their jobs increased as a result of family duties. On the other hand, Fouad et al., (2016) affirm that American women engineers who persisted in their careers commended their supervisors for understanding their juggling of family and work obligations and for their managers' compassionate support.

Diezmann and Grieshaber (2019), in their study of women who made it to professorships, also acknowledge that family responsibilities disadvantage women's career progression in different ways. First, maternity leave and child-rearing responsibilities frequently disrupt academic mothers' careers, making them less than ideal for academic advancement (Ahmad, 2017; Pyke, 2013; Sussman & Yssaad, 2005). As a result, women might tend to opt for periods of maternity leave or part-time employment (Sussman & Yssaad, 2005). However, the effects of maternity in women's career advancement are divergent. Some authors (Khan, 2012)

report that maternity leave can increase the likelihood of promotion, because women work during their leave period. Secondly, there is a gap in gaining tenure between women and men who become parents early, with more men gaining tenure, because the timing and requirements of tenure make it difficult for women to raise a family. Thirdly, research productivity, one of the paramount criteria for career advancement in science, can be impacted by rearing children. A focus on number of publications in science makes it difficult for women to advance if time is taken up early in a career with child-rearing and interrupted career development. However, in contrast, some authors (Sax et al., 2002) reported that family-related variables such as having dependent children had little to no effect on research productivity. Childrearing does not reduce research productivity, possibly because mothers try to make the most of their limited time (Sax et al., 2002). Fourthly, women have limited time to build social capital and professional networks as a result of balancing family and work commitments. Fifthly, women's careers are influenced by career mobility, which is an important factor in academic career advancement (Nikunen, & Lempiäinen, 2020). Academic women are less likely than men to manage work in more than one country or to undertake overseas appointments due to the fact that women may bear the majority of child-rearing and household responsibilities (Nikunen & Minna, 2014). Another reason is that in a dual career household, women may be more likely to relocate in accordance with the demands of their partner's job rather than their own career (Baker, 2010). Despite the challenges of mobility, Wallace and Marchant (2009) reported that international experience helps women develop knowledge and skills for their positions.

Research has demonstrated both benefits and obstacles of mobility for women's career advancement (Acker & Armenti, 2004). Career researchers (e.g. Acker & Armenti, 2004; Fritsch, 2015; Nikunen & Lempiäinen, 2020) acknowledge that mobility, especially geographical, is important to build diverse personal connections essential to obtain career-enhancing information and potential research collaborations. All interviewees in Acker and Armenti's study (2004) believe that a research stay abroad is crucial for their academic advancement. Although considered crucial, the need to be mobile is also recognised as a potential barrier for female scholars (Acker & Armenti, 2004; Fritsch, 2015). The need to be mobile promotes gender inequalities, especially when caring responsibilities become prevalent. Combining mobility with family responsibilities is challenging for women and is perceived as an obstacle to academic career advancement (Acker & Armenti, 2004; Nikunen & Lempiäinen, 2020). In a study by Fritsch (2015), interviewees emphasise that mobility is

preferable in early stages of one's career in order to minimise the challenges to reconcile family and career. Literature has acknowledged that there are few permanent positions available in academic careers (Carson et al., 2013) therefore, to advance in careers academics frequently have to apply to fill positions at other universities and sometimes even in different towns or countries. In this context, Kemkes-Grottenthaler (2003), in her study of the characteristics of childlessness among academic women, concludes that due to mobility requirements in an academic career, academics with many obligations, such as family, are less mobile than others, and as a result, many academics postpone having children until their job prospects are secure. Women in particular, are frequently obliged to make job sacrifices for the sake of their families and children (Nikunen & Lempiäinen, 2020). Wolfinger et al., (2008) have found that women in academia have fewer children than other professional women, owing to the longer time it takes to acquire job security through tenure. In addition, it is nearly impossible for scholars to return to academia after being away for a few years. Because there is such a strong emphasis on publishing, returnee researchers would have little chance of competing for a post with academics who have been in academia since they obtained their Ph.D. and have a huge number of publications. (Gilliot et al., 2002).

Despite all the challenges mentioned above related to balancing work and family, researchers have stated that the status quo is being challenged by two shifts in thinking (Diezmann & Grieshaber, 2019). First, motherhood can be a positive state for women academics because it gives them a break and boosts their self-esteem. In this regard, life partners and workplace departments play an important role in assisting women in balancing family and an academic career. In this context, partners' support is palpable, with male partners doing more at home than previously (Asmar, 1999). Furthermore, there is a variety of parental leave available to women and, some shared with men or allowed for men following the birth or adoption of a child. Ray, Gornick, and Schmitt's conducted a study (2010) of 21 high-income countries and the differences between them in terms of how generous their parental leave policies are, as well as how gender-egalitarian their policy designs are. Finland, Norway, Sweden and Greece stand out as having policies that are both generous and gender egalitarian (Ray et al., 2010). However, there is evidence in the literature that leave can have unexpected outcomes. Taking maternity leave may be a short-term solution for women, but it may have long-term negative career consequences (Ahmad, 2017). According to Ahmad (2017) breaks of maternity leave can delay tenure for women due to decrease on productivity. The second shift is generational and refers to changes in women's career aspirations. In their study of senior women in United

Kingdom universities, Ledwith and Manfredi (2000) discovered that older women's careers took a back seat to family responsibilities. Younger women's careers, on the other hand, were oriented more toward vertical advancement because they were able to balance work and family responsibilities. Because of better childcare provisions and Equal Employment Opportunity policies, younger women appeared to have more opportunities than their older counterparts. Younger women, on the other hand, were still confronted with male gatekeepers, which had a negative impact on their work life: they "still found themselves complying with male norms that ignored the demands of domesticity, and the newly managerialist long hours culture of higher education" (Ledwith & Manfredi, 2000, p. 27). As a result, younger women sacrificed family time in exchange for potential career advancement. Further, despite positive attitudes toward balancing family and work, as well as the increased career aspirations of new generations of academic women, in reality, academic mothers must make a difficult decision (Ahmad, 2017), they always face a conflicting situation, and always feel that have not done enough (Baker, 1999). They frequently feel as if they are either working too much and neglecting family, or spending too much time with family and neglecting work (Baker, 1999). If women use Equal Employment Opportunity policies their family benefits but their career suffers; if they do not use Equal Employment Opportunity policies, their family suffers but their career benefits (Ahmad, 2017). In line with this, Finkel, Olswang and She (1994) state that women's tendency is not to take up some of the policy reforms offered by universities such as maternity leave, for fear of harming their careers. Puwar (2004a) states that women in male-dominated fields are forced to adopt the male model norms to succeed in their careers. Therefore, instead of relying on the services of a traditional wife, they, like other professional women, buy the time of other women as nannies and housekeepers.

In an African context, researchers (Arthur & Arthur, 2016; Akinsanya, 2012; Mama, 2003; Tsikata, 2007; Miller & Shrum, 2012; Tamale & Oloka-Onyango, 1997) have raised concerns about the potential detrimental consequences of African women scientists' reproductive duties and a conventional gendered division of labour within family. For instance, women scientists in Africa have reported difficulties travelling to conferences because they are presumed to be the primary domestic caretaker at home (Akinsanya, 2012; Campion & Shrum, 2004). In addition, Prozesky and Mouton (2019) write that women scientists face challenges regarding the balance of work and family, and this challenge is more experienced by women scientists of the continent than by men. However, a study by Riordan and Louw-Potgieter (2011) about the career success of women academics in South Africa, reported that caregiving

responsibilities did not impact negatively on work centrality and consequently on career success. Specifically, 80% of Riordan and Louw-Potgieter's (2011) sample reported having caregiving obligations. Furthermore, there was a direct and positive association between caregiving obligations and work level in this study. This is a significant finding because it implies that prevalent beliefs that women without partners and/or children are more successful than those who are allegedly distracted by family responsibilities, are unsupported.

This finding backs up previous research that revealed women hold primary domestic duty despite working full-time outside the home. This can be justified by the fact that in Africa, and South Africa specifically, domestic work is one of the major sectors of the South African labour market and is poorly paid (Gaitskell et al., 1983; Jinnah, 2020) and professionals from academia can use it to relieve the tension between work and family demands.

2.7. Coping Strategies Adopted by Women Professors to Succeed in Academia

Coping strategies are considered in this research to be responses that professionals give to the challenges their face in their work environment (Acker & Armenti, 2004; Fritsch, 2015). In the literature, career scholars highlight a range of coping strategies used by female academics to navigate academia and its demands. The coping strategies vary, from conforming to the academic requirements, impression management, proactive behaviour, working hard, having a supportive network, identifying with male rather than female professional and perseverance (Acker & Armenti, 2004; Bagilhole, 1994; Beigi et al., 2017; Flanigan et al., 2018; Mena, 2016; Wilkins-Yel et al., 2019).

In Bagilhole's study (1994) of female academics in the United Kingdom, three coping strategies were identified: working harder, identifying with male rather than female professionals, and collective action. Like in Bagilhole's (1994) study, in Acker & Armenti's paper (2004) entitled "Sleepless in Academia", respondents reported that they rely mostly on working harder and long hours and sleep less as a strategy to cope and navigate academia. The allusions to getting up early and going to bed late was reported by women academics in both studies. According to Acker and Armenti (2004), women who have children wake up early to work and many times have to wait until the children are in bed before they work again. For those academic women, leisure is defined as time spent with their children, and those who have partners try to negotiate division of labour.

Distinguished professors from Beigi et al.'s work (2017) claim that they devote extensive hours to their work, on a daily basis, particularly their research. According to Beigi et al.

(2017), the distinguished professors spend a significant amount of effort in the early phases of their careers anchoring their research work, publishing papers and achieving tenure. Later on, they were required to spend time on a variety of research, teaching, and service tasks, such as training future researchers, contributing to publications in their disciplines in various roles and submitting grants to fund their research staff. Many distinguished professors had to make up time by starting their workdays earlier, extending their workdays or working on weekends. In conversations with highly productive German educational psychologists, Flanigan, Kiewra and Luo (2018), reported that they worked about more than 50 hours a week, none slept well and they all frequently worked late at night. Some slept briefly after the family went to bed, then awoke to write for a few hours before finally falling asleep. Flanigan et al.'s (2018) interviewees reported that being productive necessitates a significant time commitment and personal sacrifice. They assumed that heavy workloads require some sacrifices involving family and social activities. Some admit difficulty in maintaining an active social life in the midst of their heavy workloads.

In similar vein, Puwar (2004a, 2004b) avers that women and non-white minorities are not expected to perform the appropriate competences to excel in their careers and it is expected that they are not as competent or capable compared to the traditional workers. Consequently, in order to succeed in their careers they have to work harder to be accepted. As Puwar (2004a) states, "they almost have to display exaggerated forms of competencies to be seen as capable" (p. 145). Fotaki's (2013) work reports how, unless they adopt a masculine subject position, women are relegated to the margins of academia with their perspectives and contributions actively devalued. Specifically, Fotaki's work (2013) shows how women react to the dominant norms of academia, discourses and representations that discriminate them and bring about feelings of self-doubt and inability to fit in, in four different ways: first, by working much harder to prove their worth; second, by resistance and adjustment, women simultaneously resist and subject themselves to the gendered structures of academe. Their ways of counteracting the dominant discourses involve constant negotiation and judgements about battles to fight and to let go, for the choice, as explained above, often is between having to abide by the rules of the exclusionary symbolic or be marginalised. Third, striving for recognition within the given symbolic norms, women employed various methods as they strove to overcome their marginality and 'foreign' status in academe by embracing the professional identity on offer. In this regard, Teichler, Arimoto and Cummings (2013) maintain that an academic career is composed by professionals driven by intrinsic motivations

who are devoted to their work. They are considered to be willing to dedicate a significant amount of time to their job and to forsake the luxuries of life outside academia in order to pursue their interest and career.

In an African context a study by Udegbe (2016) reported that the reasons leading to early career academics joining university are prestige, salary, benefits, intellectual space, and interest in lecturing, academics, and passion, with intellectual space being the most driven reason (77.9%) for academics to join the university and salary (1%) as the least mentioned drive. This results revealed how professionals involved in academic career are passionate about their work and are driven.

In the literature more studies substantiate these results. Highly productive and successful scholars are curious about their fields of study. They find joy in pursuing their work, and intrinsic motivations for pursuing research are behind their drive rather than meeting tenure criteria or achieving extrinsic rewards such as prestige and grant funding (Martínez et al., 2011; Mayrath, 2008; Kiewra, 2008). In similar vein, Lindholm (2004, p. 6111) reported that academics were attracted to academic careers because they emphasised the natural "fit" between themselves and their occupations almost without exception, particularly in terms of the possibilities that academic work provides for achieving their specific goals and ambitions which are the desire for a work that gives autonomy, freedom, and independent expression, specifically, the ability to pursue intellectual puzzles and avenues of research that are intrinsically attractive and personally engaging. The benefit of pursuing knowledge for the sake of knowing, making one's own research decisions, having a flexible schedule, and being around diverse, interesting people were seen as extremely enticing qualities of professorial job.

In general, the academic career is regarded as very appealing in terms of challenging tasks and the ability to shape one's own work. This may be important to infer that in academia only those who want to stay in academia and are moved by intrinsic motivation stay and strive for success. For instance, Behtoui and Leivestad (2019) maintain that in Sweden the labour market offers favourable conditions and high salaries for people with degrees in medicine, technology, IT, and the natural sciences. Specifically, in Sweden with an engineering degree, for example, one can earn a substantially higher salary and have a likelihood of getting a permanent position with favourable advancement chances on the ordinary labour market, than someone who stays in academia and pursues a Ph.D.. Further the authors continue by saying that there is a mismatch between academia's need for Ph.D. candidates in sectors such as IT

and technology and the number of native Swedes prepared to devote themselves to research in these fields.

Makarem and Wang's (2020) systematic literature review about women in STEM careers recognise that women in STEM have used a variety of strategies to deal with the challenges they are faced in order to advance in their careers. Three strategies in particular were frequently employed: conforming, impression management, and proactivity.

(i) Comforming strategies are distinguished by their compliance to existing organisational structures and their acceptance of the status quo (Herman, et al., 2013; Orser et al., 2012). Women engineers have convinced themselves through early acculturation in the field that to succeed in their career they have to comply and conform to traditional masculine behaviors and norms (Miller, 2004). Herman et al.'s study (2013) states that European women working in STEM fields continued to conform to ideal male worker practices and values and refrained from challenging the traditional masculine image within their organisation. Similarly, Hatmaker (2013) writes that women engineers in the United States, on the other hand, used rationalisation to deal with an organisational culture that imposed gendered expectations on their work.

(ii) Impression management strategies refers to women's attempts to refrain from engaging in 'feminine' behaviours or practices in various STEM industries (Rhoton, 2011), and consequently, women project an image at work that is more aligned with traditional masculine norms and practice (Miller, 2004; Rhoton, 2011; Watts, 2009). For instance, Buse et al., (2013) in their study of the individual and contextual factors that distinguish women who persist in engineering careers in the U.S., conclude that women engineers who persist in engineering careers purposefully chose to "dress down," "change the tone of their voice," or "pull their hair back" in order to adapt to their organisational culture and secure their jobs (Buse et al., 2013, p. 144). Furthermore, according to Rhoton (2011) women in STEM fields purposefully chose to distance themselves from their female colleagues who exhibit stereotypical femininity, a strategy known as "professional socialization" (Rhoton, 2011, p. 703). Similarly, Hatmaker (2013) avers that in order to be perceived as engineers rather than women, women engineers sought to project a professional image of themselves by downplaying their gender role and refraining from displaying traditional feminine behaviors and traits (Hatmaker, 2013). In sum, women in engineering concentrated on being technically proficient, establishing a professional reputation through successful project completion, working harder than their male counterparts, and restraining their gender role. Suppressing feminine characteristics is

perceived as a means of conforming to the standard norms of any STEM occupation, allowing women to advance in their careers and better integrate into the masculine organisational culture (Cardador, 2017; Ranson, 2003).

(iii) Proactive strategies are when women chose to defy the stereotype of the male ideal worker by refusing to conform to organisational practices and norms (Herman, et al., 2013). This strategy was applied by women when they were encountered in situations that imposed gender expectations on their behaviors. They used blocking mechanisms to deter work requests based on gendered assumptions, and challenged the hegemonic masculine organisational culture (Hatmaker, 2013). STEM women, for example, used blocking to challenge the assignment of gendered tasks such as taking notes and performing administrative duties, and avoided being associated with those tasks (Hatmaker, 2013). This behavior highlights how women notice implicit gender bias in the work environment and challenge those practices (Buse et al., 2013). For example, Martin et al., (2015) emphasise how women in STEM fields challenged implicit gender bias in the workplace by implementing entrepreneur strategies through starting their own business in STEM. According to Martin et al., (2015) the implementation of entrepreneurship strategies was possible because of women's skills and being open to greater opportunities.

Another form of coping strategy adopted by women in academia is being informed about how the system works and developing skills. In this regard Alfred (2001), in his study about Black women in the white academy found that the power of knowledge is important for women's career development. Results of his study indicate that knowing the academic culture and the role expectations of one's career, and meeting them was a strategy adopted by women to thrive in academia. Specifically, participants from Alfred's study (2001) reported that they give importance to understanding and meeting academic cultural rules and expectations. The understanding of the academic culture was improved through their roles as teaching and/or research assistants, as well as through supportive interactions with mentors and other key members of the academic culture. Their early interactions with major cultural members provided them with a competitive advantage in establishing the rules and competency required to successfully meet academic cultural norms. According to the findings of Alfred's study (2001), the women were well aware of the cultural expectations concerning the tenure procedure. They were cognisant of the academy's cultural rules as well as the political workings of the process. Although they thought some of the norms to be improper, they chose

to abide by them in order to succeed in the academic career. One of Alfred's respondents (2001, p. 121) said:

> I always said, even before I went up for tenure, I know the rules of this game that I have chosen to enter, like them or not, these are the rules. If I want to succeed in this system, then I have to abide by the rules. . . . Know the rules and play the game by the rules.

Acker and Armenti's study (2004) reveals another interesting coping processes and techniques for surviving in the academy. Distancing and protecting oneself emotionally from upsetting circumstances is a tactic that can be used in academic contexts. The strategy is to remain emotionally detached and maintain your composure even when things get challenging. In similar vein, Salazar (2009) finds similar strategies and mechanisms for survival in academia in her study of coloured faculty members. One strategy consists of distancing oneself: "Some participants distanced themselves as a means of self-protection, to physically or emotionally insulate themselves from painful surroundings" (Salazar, 2009, p. 188). The coping strategies involve the mechanism of distancing oneself from one's social environment and not taking comments too personally. The approach is to keep a cool head and avoid becoming over-involved emotionally, even when things become difficult. Flanigan et al.'s study (2018) also reported that to enhance their research productivity and manuscript quality, highly productive psychologists welcomed critical feedback from journal reviewers to improve manuscripts further and also embraced feedback from reviewers and colleagues.

In Banik's study (2016) about strategies and techniques for new tenure-track faculty to become successful in academia, he states the need of a set of skills that must be mastered in order to succeed in an academic context. Those skills include planning, project management, problem solving, presentation, patience, persistence and reflections. A study by Kiewra and Creswell (2000) reported that highly productive educational psychologists had interests outside academia. They pursue other interests that keep them balanced with academic life such as walking their dog, hiking, and mountain biking, weekend trips with family, watching sports on television, cooking and routinely preparing dinner every other evening for their family. Powell, Bagilhole and Dainty's study (2009) report three coping strategies adopted by women engineers in a male-dominated environment: acting like one of the boys, accepting gender discrimination, achieving a reputation, seeing the advantages over the disadvantages and adopting an 'anti-woman' approach.

All the coping strategies discussed above help women navigate academia and succeed in their careers. However, literature also explore the motivation for women career choice. Those motivations are explored below.

2.8. Motivations for Career Choice

In the literature the debate around factors that contribute to women's choice of a career in STEM fields falls under a variety of perspectives, namely, developing an identity linked to STEM from a young age, having supportive families, access to quality advice, exposure to gender-inclusive environments, having a passion for STEM fields and individual perceptions of skills in STEM fields (Astin, 1984; Bieri Buschor et al., 2014; Blackburn, 2017; Bystydzienski et al., 2015; McCarthy and Berger, 2008; Lindholm, 2004).

Astin's research (1984) about the meaning of work in women's lives proposes a model of career choice and work behavior that posits that human nature has basic needs that are satisfied by work. Those basic needs are survival needs, pleasure needs and contribution needs. The survival needs are defined as needs satisfied by income earned through employment, as food, shelter, clothing and other things important to physical health and well-being. The pleasure needs referred to the "intrinsic pleasure of the work activities themselves, and to the intellectual and emotional pleasure that derives from the performance and accomplishment of some task and the achievement of some goal" (Astin, 1984, p. 120). According to the author, humans can enjoy merely solving problems, especially if the problem necessitates exerting effort to overcome a certain level of difficulty. It should be mentioned in this context that people with repetitive and routine employment frequently exhibit a high level of job discontent and must seek to satisfy their enjoyment needs in other pursuits. The contribution need is defined by Astin (1984) as the need that all human beings have to contribute to the good and well-being of others, whether those others be family, close friends, an organisation, a community, a nation, or another broader social body. Further, Astin (1984) maintains that the individual's sense of self-worth and self-esteem is derived from the satisfaction gained through the knowledge that the work benefits others.

In summary, Astin (1984) states that individuals choose their careers based on needs which are survival, pleasure or passion for their work, and the need to contribute to others through their work. Astin (1984) also writes that work experience and choices are shaped by early socialisation, specifically by personal experiences and lessons learned in childhood and adolescence with parents, teachers, and other adults.

In this regard, Bieri Buschor et al.'s study (2014) about what counts for women's career decision-making argues that women who have chosen a career in STEM fields have exhibited stronger mathematical competencies and a preference for investigative activities since they were young. Specifically, respondents from Bieri Buschor et al.'s study (2014) reported that had always wanted to be a scientist. They already demonstrated a strong sense of identity as scientists, although their vocational choices and career plans, including family planning, appeared hazy. McCarthy and Berger (2008), in same line, aver that women who grew up in STEM-encouraging environments, supportive families and schools, who played with boys and 'masculine' toys in their pre-school years or looked up to same-gender role models in STEM-related activities during their formative education, may be interested in pursuing STEM-related occupations. As well as women who received support and encouragement in obtaining experience and abilities in hands-on activities from fathers, grandfathers, and male technology education teachers'. Bystydzienski et al., (2015) state that more women will become interested and want to pursue engineering if more girls students at all levels have great experiences investigating it. However, Bystydzienski et al. (2015) further maintain that it is insufficient to spark girls' attention. To move from an interest in engineering to a college major and a career in engineering, underrepresented students require significant financial resources as well as continual social and educational assistance. The authors emphasise the importance played by counsellors and mentors in this regard. They can play a critical role in introducing students to financial resources, such as targeted college scholarships, help them apply, inform them about social and academic resources, and introduce them to role models at a critical moment in the transition from high school to college.

Although not specific to STEM, Lindholm's study (2004) highlights three sources of influence in shaping men and women academic career aspirations, namely, childhood experiences; undergraduate and graduate school training experiences which allowed exposure to the field, followed by advice and encouragement from school professors, and direct involvement with research and teaching; and personal perceptions of competence. Recognising these natural personal competences was important for some participants in Lindholm's study (2004), in deciding that an academic career would be an appropriate professional choice. While some participants acknowledged an early propensity for certain types of work, others cited that it was during graduate school or postdoctoral work when that heightened personal awareness that they would likely flourish as faculty members occurred. According to Lindholm (2004), the attraction of an academic profession started early with family experiences, some

participants had at least one college professor as a parent, which made the decision to pursue a career in academia more natural, and others who did not have academic parents, had their parents support sinse an early age, through conversations and exposure to environments of interest to education that laid the foundation for what became an attraction to academic work during their undergraduate career. Lindholm (2004) also indentified one basic human need from his respondents that influenced their career choice, namely the need for creativity and self-expression. This need emphasises desire for independence and autonomy in shaping professionals' career choice. Lindholm's (2004) participants expressed a desire to establish their own criteria for engaging as members of their departments and institutions.

The section above reflects how early, for instance, as undergraduate or graduate students, some professionals aspire to pursue a career in academia. However, some researchers (Betsworth & Hansen, 1996; Hart et al., 1971; Lindholm, 2004; Powell & Mainiero, 1992; Williams et al., 1998) also maintain that for some professionals the factors that influenced their decision to pursue a career in academia are random, or not planned. Specifically, for these researchers a career in academia for some academics just happened without a clear intentional plan, or without a strategic plan that their followed. For some, the interest in academia happened after an experience in a non-academic work environment (Lindholm, 2004). However, it is important to highlight that even without planning, professionals who pursue a career in academia express the same needs for a profession which allows them autonomy and independence as their colleagues who knew from early stage that they wanted a career in academia during graduate or undergraduate studies (Lindholm, 2004). They also display an interest in and passion for science and their fields of work but what is different is their career decision-making process was not a succession of linear choices that led to a professoriate (Diezmann & Grieshaber, 2019; Hart et al., 1971; Lindholm, 2004; Powell & Mainiero, 1992).

We now turn to the factors that contribute to women professors' success in their academic careers.

2.9. Predictors of Career Success

The literature on career research has highlighted the existence of a variety of factors that influence professionals' career success (Judge et al., 1995; Hirschi, 2012; Hirschi et al., 2018; Ng et al., 2005; Gasser & Shaffer, 2014). Although some of these factors are similar, they diverge in terms of the variables that they include as influencers of professionals career

success. For example, Kossek et al.'s study (1998) highlights an increasing trend that encourages employees to take an active role in the management of their own careers. According to Kossek et al. (1998), companies are seeking a human resource policy that shifts responsibility for career management from the employer to the employee. In this regard, Sullivan, Carden, and Martin (1998) aver that employees must increase their self-directed career management (SDCM) in terms of self-management, flexibility, and adaptability if they are to cope well with changes in the workplace and succeed in their career.

Hirschi (2012) conceptualises self-directed career management as personal dispositions, preparation or abilities. Further, Hirschi (2012) proposes four categories of resources related to each other as constructs of self-directed career management as predictors of career success, namely, human capital resources, social resources, psychological resources and identity resources. (i) Human capital resources are described as an individual's ability to meet the performance standards of a specific occupation (Fugate et al., 2004; Inkson & Arthur, 2001). Human capital resources include work-relevant knowledge, skills, abilities, factors such as education, experience, and training, as well as cognitive ability and available information that can improve a person's knowledge and talents (Hirschi, 2012). (ii) Social resources, also known as social capital are described as the goodwill available in social ties or networks that individuals or communities have that allows people to get employment and competitive professional outcomes like a higher wage or a promotion (Adler & Kwon, 2002, p. 23). Social resources lie outside of the individual, in the relations that they have. (iii) Psychological resources are positive psychological features and states of a person, such as cognitions, motives, and feelings that are generalised and exhibited in different circumstances, particularly in relation to the work function. Thus, psychological resources influence career development and include traits such as neuroticism, extraversion, conscientiousness, openness to experience, core self-evaluations, proactive personality, or positive and negative affect. (iv) Career identity resources and professional identity resources are resources relating to one's conscious awareness of oneself as a worker, of one's occupational interests, abilities, objectives, and values, of the significance of one's job, and of the meaning structure in which such self-perceptions are associated with career roles (Ibarra & Barbulescu, 2010).

Ng et al., (2005), in their meta-analysis of the predictors of objective and subjective career success used two perspectives: contest mobility perspective and sponsored mobility to identify four sets of variables used as predictors of career success. According to Ng et al. (2005), those set of variables are human capital, organisational sponsorship, socio-

demographic status, and stable individual differences. Similar to what is described in Hirschi's study (2012), human capital is conceptualised as educational, individuals, and professional experience that can increase career attainment (Becker, 1964). Ng et al. (2005) include diverse variables as indicators of individual human capital. They are understood as number of hours worked, work centrality (i.e., job involvement), job tenure, organisation tenure, work experience (i.e., number of years worked), willingness to transfer, international work experience, education level, career planning, political knowledge and skills and social capital (i.e., quantity or quality of accumulated contacts). Organisational sponsorship is perceived as the extent to which organisations provide extra help to employees in order to aid their career achievement. Among the predictors of organisational sponsorship are career sponsorship (the extent to which individuals receive sponsorship from senior-level employees to assist in advancing their careers), supervisor support, training and skill development opportunities, and organisational resources (measured by organisation size). Socio-demographic status represents individual demographics and social backgrounds. The common socio-demographic variables for career success discussed in the literature and identified by Ng et al. (2005) are gender, race, marital status, and age. Stable individual difference variables reflect dispositional traits identified as the Big Five personality factors (Costa & McCrae, 1992) of neuroticism, conscientiousness, extroversion, agreeableness, openness to experience, and proactivity. Human capital variables (such as job experience or expertise) have traditionally been employed to assess career success via the contest-mobility lens (e.g., Becker, 1964). Similarly, the sponsored mobility viewpoint has traditionally employed organisational sponsorship and socio-demographic status to assess career achievement. According to the contest-mobility model of professional success, people compete for job success in an open and fair contest. Because no one employee has an advantage over the others, the winners of favourable career outcomes are those who are the most skilled and willing to put forth the effort. A profession can thus be understood as a competition in which one must continually compete with others while developing oneself in order to thrive. Given this premise, one's human capital should be highly relevant in predicting career success because human capital is highly valued in the labour market (Becker, 1964).

Ng et al.'s (2005) meta-analysis results reported that human capital, organisational sponsorship, socio-demographic status, and stable individual differences were related to different measures of career success. Specifically, results suggest that career success is determined by hard work and career sponsorship. Successful professionals are those who are

skilled and willing to put forth the effort. Working hard is a merit-based explanation for professional success since improving one's competency through job-related knowledge, skills, and abilities is rewarded in job competition (Becker, 1964). Successful professionals are those who receive more sponsorship from the elites in their organisations, according to the sponsored-mobility model of career success. Access to such activities allows individuals to stand out from the crowd and, as a result, achieve better job outcomes. As a result, the sponsored-mobility model, unlike the contest-mobility model, indicates that not everyone can win a professional contest.

However, Ng et al. (2005) also report that organisational sponsorship is strongly associated with subjective career success, but human capital and socio-demographics are more strongly associated with objective career success. According to the authors, the rationale for this is that organisational sponsorship variables are seen as proximal predictors of one's affective reactions to work and career. Specifically, organisational sponsorship variables such as perceived organisational support, fairness perceptions, and psychological contract perceptions, have a strong influence on work attitudes. Furthermore, organisational sponsorship conveys important indications to employees that they are valued and have career potential; these signals are then likely to elicit positive affective reactions such as higher levels of career satisfaction and a stronger sense of career success. Organisational sponsorship concerns more proximal factors of one's experience of psychological well-being and thus is more important to one's subjective career success assessment. Ng et al.'s (2005) meta-analysis also reported that women had stronger connections between education and salary, as well as hours worked and salary, than men. The larger association between education and wage for women may indicate that in order for women to succeed in the job market, they may need to do more than males to prove their credentials. Women, in particular, may need to seek out more educational experiences to compensate for limited internal prospects to advance into higher-paying employment. The longer hours worked and salary link for women may be explained by men and women's differing workplace experiences. For example, according to Wallace (1999), women (generally) work fewer hours per week than men. Furthermore, due to gender role expectations, managers and decision makers may expect women to work less than men (Brief et al., 1979). As a result, women who work longer hours may be more easily recognised and rewarded by managers for exhibiting commitment to the organisation (Ng et al., 2005).

The scenario described above demonstrates how divergent and varied the research on predictors of career success is, presented in the literature. In general, besides the variety in

predictors of career success, there are scholars who focus specifically on predictors of women's career success exclusively (e.g. Diezmann & Grieshaber, 2019; Gasser & Shaffer, 2014). These scholars also highlighted the existence of a diversity of factors that influence women's career success namely, individual; academic work; academic environment; and social relationships (Diezmann & Grieshaber, 2019; Gasser & Shaffer, 2014). Below we focus on some of those factors and respective variables.

2.9.1. Individual Factors

In the literature, individual factors of career success are related to individual traits and personal behaviors that facilitate women's career success in academia (Beigi et al., 2017; Diezmann & Grieshaber, 2019; Judge et al., 1995; Makarem & Wang, 2020; Rehbock et al., 2021).

Rehbock et al.'s research (2021) about the factors that contribute to academics' tenure identified three main agentic qualities categorised as stereotypically male attributes reported by participants from their study as essential to reach high rank positions in academia: achievement orientation, competitive ambition and independence and self-management. (i) Achievement orientation is perceived as excellence in research; (ii) competitive ambition is understood as being competitive and willing to work hard to become the best and have inner drive to accomplish something great, or the ambition to achieve a successful project; and (iii) independence and self-management is perceived as the ability to work independently and to manage one's time and resources effectively, work autonomously and to take responsibility for one's own work, demonstrate that you overcame hurdles, sought alternate answers, and found ways to overcome problems that were not provided.

In the literature, agentic attributes are considered to be goal achievement and task functioning (competence, assertiveness, decisiveness) and communal attributes are linked to helpfulness, benevolence and trustworthiness (Abele & Wojciszke, 2014). According to Rehbock et al. (2021), the agentic qualities displayed by the participants of their study are considered stereotypically male characteristics associated with the ideal academic. The ideal academic is portrayed as independent, competitive and lone (Bleijenbergh et al., 2012). Gender stereotype research suggests that women are more linked with communal characteristics (e.g., caring, kind, supportive) than men are. Men, on the other hand, are associated with more agentic characteristics (e.g., competitive, dominant, proactive) than women (Hentschel et al., 2019). Therefore, agentic characteristics overlap with academic stereotypes such as independence,

competitiveness, and masculinity (Bleijenbergh et al., 2012; Carli et al., 2016). In sum, Bleijenbergh et al., 2012; Hentschel et al., 2019; and Rehbock et al., 2021; studies converge on the idea that agentic qualities classified as stereotypically male attributes are required to reach high rank positions in academia. Therefore, those who succeed in academia to reach the top rank positions display agentic masculine gender stereotype characteristics.

In their work about predictors of executive career success, Judge et al. (1995) speak more in terms of motivational variables. Indicators of motivational variables are perceived as hours worked per week, ambition, and work centrality. Work centrality is described by the authors as the significance of work in shaping an individual's identity. According to Judge et al. (1995), executives who developed their human capital, and who displayed a desire to get ahead, to willingly spend long hours at work and who worked during nights and weekends were substantially more likely to achieve objective success in their careers. Executives who want to work long hours find their work motivating, might attach a high importance to their work and are therefore willing to make significant investments in their careers (Judge et al., 1995). Chinyamurindi's study (2016) about perspectives of career success from women participants in South Africa observes that one of the factors perceived as contributors of career success are individual characteristics, specifically, individual attributes and activities such as hard work, persistence and determination. In conclusion, Judge et al., (1995) speaks more in terms of individual will to invest time and develop skills that professionals should have to be able to move ahead on the career ladder.

Kwiek (2019), in his work about highly productive European academics, reports that top performing researchers are driven by similar factors, whatever the country is, and they are a "universal academic species" (p. 67) driven by mostly individual, rather than institutional factors. Specifically, in Kwiek's work (2019), institutional-level predictors emerged as statistically insignificant for becoming highly productive researchers and succeed in a career, while being hard-working (the power of long working hours overall and long research hours), being much more research-oriented (the power of a single academic focus) and being international in research were more important.

Makarem and Wang (2020) on the other hand, in their systematic review and synthesis of empirical studies exploring the career experiences of women in (STEM) fields found three key individual characteristics that women exhibited in their pursuit of a STEM career, namely, motivation, self-efficacy, and passion.

(i) In terms of motivation Makarem and Wang's (2020) systematic review demonstrates that what drove women to pursue and persevere in male-dominated STEM fields to success were both internal and external motivations. The need to *validate oneself* was the most powerful external motivator identified in the literature. In this regard, the literature highlights that to earn the merit and the acceptance of the scientific community, women academics work hard and develop skills to prove their competency as engineers and scientists (Makarem & Wang, 2020). The themes of validation resonated in other studies. Diezmann and Grieshaber (2019), for instance, stated that women professors feel driven to prove their academic worthiness to themselves and to their family. In this contest, according to Diezmann and Grieshaber (2019), women professors are highly competitive to survive in a male-dominated environment.

However, being competitive is associated with masculinity stereotypes and is incompatible with the normative constraints of femininity (Diezmann & Grieshaber, 2019). Every time women professors compete, are driven and win large grants, they disrupt stereotypical representations of femininity in everyday life and the academy, and they challenge established power relations. Specifically, women who succeed in academic environments demonstrate how normative categories like traditional male norms and other rigid structures can be redefined and recreated in ways that destabilise established gender categories. Being driven and competitive are examples of resisting and challenging the traditional understandings of women and universities, and they provide opportunities to challenge stereotypes based on limited understandings of femininity (Diezmann & Grieshaber, 2019). Additionally, Diezmann and Grieshaber (2019) emphasise that the need for validation provides positive endorsement of how academic women develop their careers, which consequently strengthens their confidence. The intrinsic motivator identified as the drive for women academics to pursue a career in STEM and move up the career ladder is goal orientation or purposive drive. Women scientists have an internal drive to put in long hours despite the numerous obstacles they have to face in order to advance their careers (Makarem & Wang, 2020).

On the other hand, in their study White and Cooper (1997) reported that what most motivated successful women was the intrinsic drive to excel in their career and the desire for challenging and fascinating work and not the desire for promotion. One-third of the women claimed to be externally motivated by a desire to see tangible outcomes of their efforts and to be recognised by others for their accomplishments.

(ii) Self-efficacy, is defined by Bandura (1977) as the belief that one can successfully execute the required behavior to create desired outcomes. Bandura (1977) claims that self-efficacy

influences three dimensions: choice of behavior, persistence at a task, and persistence through emotional reaction. Similarly, Makarem and Wang (2020) define self-efficacy, as women's belief in their own capacity to pursue a career in STEM. According to the authors, women with self-efficacy addressed their profession with a strong orientation toward career concentration, competition, and personal growth. Buse et al., (2013) in their study of why women persist in U.S. engineering careers, conclude that self-efficacy was one of the distinctive personal characteristics that set the tenacious women engineers apart from those who chose not to pursue careers in engineering. In their study, women who had higher levels of self-efficacy were more equipped to locate new jobs, handle challenging circumstances, take on complex challenges, handle disagreements, and implement changes in their day-to-day work. According to these studies, women who had higher levels of self-efficacy had more persistence in STEM fields (Buse et al., 2013; Buse & Bilimoria, 2014). Furthermore, in their study about the portrait of successful women, White and Cooper (1997) reported that when asked how they achieved their success, the successful women felt that tenacity and perseverance had been major factors. High self-efficacy may have enhanced this tenacity.

iii) The third individual trait identified by Makarem and Wang's (2020) systematic review that women exhibited in the pursuit of STEM careers is passion for their work. San Miguel and Kim (2015), in their study of Latina scientists' lived experience and career development, noted that having a passion for and confidence in one's profession will ultimately facilitate career advancement in STEM. Similarly, Orser et al.'s study (2012) reports that women in the U.S. IT industry believed that they could only advance in their careers by being confident and having the correct attitude. Although the passion for the field is considered important, Pyke (2013) maintains that early entry into academia; early completion of a Ph.D.; and employment in new disciplines at a period when opportunities are expanding could explain women's career success, specifically, in disciplines with a high demand for skills, and with the implementation of equality agendas aimed at increasing women's representation.

Diezmann and Grieshaber (2019), in their study about women professors who make it to the professoriate, report the existence of individuals' catalysts that advance women's career success. Two of those individual catalysts are the enjoyment of academic work and satisfaction with the esteem that comes from doing academic work that women professors display throughout their careers. According to Diezmann and Grieshaber (2019), women professors are passionate about their work; this passion is driven by the fact that academia as a field of work allows them to continually develop through embracing new tasks, knowledge

production, creativity, and scientific inquiries that make a difference in society as a whole. In Diezmann and Grieshaber's study (2019), women professors stated that their ultimate goal was self-fulfillment rather them reaching a professoriate. Specifically, aspirations to become professors were entwined with commitment with work. Rosewell and Ashwin's paper (2019) about "Academics' perceptions of what it means to be an academic" reported that participants perceive being a researcher as one of the characteristics of being an academic. Research is perceived by the participants of the study as a creative process, and as a process of discovery that involves excitement and stimulation which allows for the opportunity to explore the unknown and ask questions that need answering. Rosewell and Ashwin's participants (2019) also mentioned being self-focussed and providing a contribution as features of what is to be an academic. The self-focus view of what an academic is, is connected with the perception of an academic career as fun, a career they had always wanted to do. Teaching and research were described as the driving forces in their academic careers, although they liked every element of their job and could not fathom doing anything else. Being an academic is also connected with the freedom to pursue your own work directions and reflect on what is going on in the world. Rosewell and Ashwin's participants (2019) mention being an academic involves providing a contribution, supplying society with the best-trained people, and doing something that ultimately helps to both support students in their professional, intellectual and personal growth, and contributes to society as a whole.

In same line, Baker's study (1999) reports that academic professors teach and do research because they enjoy research and teaching, connecting with students, and having creative flexibility and freedom of research and not for financial or quality of life benefits. Baker (1999, p. 211) also writes, "The road to success is through dedication, perseverance, and a true love for science." Baker continues:

> As is common to all successful women and men in science and engineering, passion and drive continue to propel their careers forward and help them overcome whatever difficulties are met. It is clear from each of … my interactions with successful women, that the dedication to and enjoyment of one's field is one of the most important indicators of success. (Baker, 1999, p. 217)

In the same vein, Beigi et al.'s work (2017) about the work–family interface in the context of career success with focus on distinguished professors, stated that the most prominent theme reported by distinguished professors of their study was intrinsic motivation for work. Intrinsic

motivation is perceived as the participants' attitude towards their work, which is described in the study as passion for work, making an impact, sense of accomplishment, perceiving academic work as being fun, curiosity, and not working for money. Beigi et al. (2017) state that all distinguished professors from their study mentioned that their career was driven by their profound affection for their research work, for the desire to solve problems, make discoveries and find solutions to their inquiries. They perceive the work they do as fun and interesting, and are also driven by the desire to want to move the field forward scientifically, and not by money. Dirnagl (2022) adds that the condition in which academic work is done is evidence that academics are driven by intrinsic motives. Specifically, Dirnagl (2022) argues that the degree of self-exploitation with which research is presently carried out, regardless of the type or length of contract after a very long apprenticeship and at any time of the day or night, as well as on moderate salaries, proves that motives other than convenience or profit drive academic researchers.

However, although academic women's enjoyment of their work is not dependent on their organisations, their success on the career ladder is recognise through organisational validation (Diezmann & Grieshaber (2019). Specifically, advancement in an academic career is still found in the traditional masculine roles of self-promotion and aggressive/assertive behavior (Baker, 1999). Research has maintained that women exhibit those characteristics less frequently and, although being as accomplished in their occupations, are regarded less highly because they do not express themselves in the traditionally preferred manner (Baker, 1999). Conversely, women from the present study, have made it up the career ladder, having specific characteristics that resembled their male counterparts and which allowed them to succeed in their academic careers. Therefore, confidence and perceived capability are identified in the literature as one of the individual factors that inhibit women's success in academia (Diezmann & Grieshaber, 2019).

Baker (2010) reported in his study of academic professionals that women and men have different expectations of reaching the professoriate, despite similar qualifications and jobs. According to Baker (2010), most women believed they would never become professors, whereas, in contrast, most men believed they would. Women openly questioned their cognitive abilities and most of them had not applied for promotion in years, believing their chances were slim. Most of the women from Baker's study (2010) come from gendered families, where men and women are perceived to have different priorities, responsibilities, and interests. Despite the fact that academic careers have flexibility in hours, more women than

men participants felt they could not devote the necessary hours to merit promotion to the professoriate. Furthermore, more women questioned their own professional competence. Finally, fewer women who reached the highest ranks were parents, implying that women who are responsible for the care of young children have a more difficult time advancing in a career. In White and Cooper's study (1997), successful women attribute they success to hard work, tenacity and a willingness to take advantage of the opportunities which 'luck' presented. In Martínez, Floyd and Erichsen's work (2011) about the strategies and attributes of highly productive scholars, respondents credited their success to individual traits such as persistence, discipline, and hard work. Martinez et al. (2011, p. 714) reported that highly productive scholars used self-descriptive traits to describe what makes them productive, such as, "perseverance," "persistent," "open-minded," and "patient" and respondents emphasised that they "work at it constantly" and "never give up".

The discussion above highlights how individual factors are important for individual career success in academia. Although researchers converge in the importance of the role of individuals factors for career success, they diverge in the variables to include as individual factors, suggesting that research aimed at exploring women career success in academia in different contexts is still needed. For exemplo, Bleijenbergh et al., 2012; Hentschel et al., 2019; and Rehbock et al., 2021; highlight agentic qualities categorized as agentic stereotypical male attributes such as competitiveness, assertiveness and decisiveness, as individual factors important for career success. While Beigi et al., 2017; Diezmann and Grieshaber, 2019; Kwiek, 2019; and Rosewell and Ashwin, 2019; emphasize the attitude towards work which is evidenced mostly through a passion for academic work and a will to work long hours.

Another important factor for career success emphasised in the literature is network. The section below discuss in detail the importance of network.

2.9.2. Network of Support

The support or endorsement of others is perceived in the literature as vital for women's career success (Adler & Kwon, 2002; Bourdieu, 1996; Haas et al., 2016; Makarem & Wang, 2020; Puwar, 2004a) as it provides individuals with critical opportunities and resources for career advancement. This support can be demonstrated formally by the institution through peers, superior colleagues, students, and by family and friends.

Puwar (2004a) argues that women can enter masculine-dominated fields when recognised insiders accept them, assist, adopt, and show them the way in a foreign space. Specifically, Puwar (2004a) maintains that everyone requires supporters who understand the rules of the field and the work environment to advocate that they are trustworthy and respected to advance, and to show them how to play the game and rise in the hierarchies of institutions. Puwar (2004a, 2004b) speaks of women and non-white minorities in the public work place as space invaders. He continues by saying that the presence of women and non-white minorities in areas from which they have been historically excluded, spaces where they do not belong and are not meant to be in, require advocates to advance and they need exposure to major people in the sector to help them navigate the unknown terrain. Specifically, Puwar states:

> The further away they are from the somatic norm, the more they are in need of the blessing which facilitates a specific rite of passage, and, the more centrally located their advocates are to the field in question, the more reassurance is borne in their word. Thus, the carriage of the supporter has an impact upon one's own standing.(Puwar, 2004a, p, 121)

Women professors from the present study emphasised the importance of having an extensive social network both within and outside the institution for career advancement. Bourdieu (1996) highlights that such relationships are critical if one desires to pursue a career in academia. The most crucial thing, according to Bourdieu, is that through an influential supervisor or mentor, individuals can become a member of resourceful networks, which opens up opportunities to engage in joint research applications and qualifying teaching assignments. This occurs as a result of exposure to social relationships that improve an actor's ability to advance her/his interests. The central idea of social capital research is that the goodwill of people toward a person is a useful resource that helps people to gain access to valuable information about opportunities critical for mobility opportunities and for newcomers in the field (Adler & Kwon, 2002). Specifically, Adler & Kwon (2002) define goodwill as the sympathy, trust, kindness, and forgiveness shown to us by friends and acquaintances that comes in the form of information, influence, and solidarity. Therefore, the resource available to actors as a result of their position in the structure of their social ties is referred to as social capital and allows timeless access to information.

Career researchers acknowledge that diverse professional relationships support and sustain successful academic women. These relationships include peer support, senior colleague support, and a critical mass of other women in power. Makarem and Wang' analysis (2020)

noted that women's contacts and relationships with other people, both inside and outside the organisation, had a significant impact. Makarem & Wang' analysis (2020) revealed three sources of influence: (a) parents, (b) male coworkers, and (c) HR practices. Those relationships can come in the form of formal and informal mentoring. Mentoring is also recognised as an effective strategy for women, and it is especially important for newcomers to the profession (Van Balen, 2012; Diezmann & Grieshaber, 2019). Mentees were more likely to stay in academic careers, receive more grant income, have a higher level of promotion, and have a better perception of their roles as academics and about the academic system than non-mentored women. Mentoring can also help to boost confidence and self-esteem, as well as inspire leadership (Gardiner et al., 2007). Formal mentoring is perceived as beneficial for women in terms of retention and promotion rates, higher average research grant amounts, and more scientific publications (Morley, 2013). A mentoring programme exclusively for women, on the other hand, is not supported because, is perceived as remedial (Aiston, 2011, p. 288). As a result, a programme for all employees is more appropriate.

Male colleagues are acknowledged as having an impact on women's integration in STEM fields. Haas et al.'s study (2016) states that women's professional advancement in science was aided by the assistance of a seasoned male colleague and his wide-ranging social network, which also helped them land competitive jobs and grants. Yet, in the same study, several women experienced a lack of support from their male coworkers. Women highlight how male colleagues (supervisors, for example) adversely impacted their career development through lack of support (Haas et al., 2016), or actively resist female colleagues' job advancement by publicly stating that they will not make it in a career (Adya, 2008).

Another figure of support are students. Good students are perceived as helping to enhance research productivity of their mentors. In conversation with highly productive psychologists, Flanigan et al. (2018) argue that students, especially post-graduate students, boost the productivity of their mentors by initiating and leading investigations in their area(s) of expertise; they can act as daily supervisors and feedback agents for graduate students, thereby freeing up their mentor's time for other faculty commitments. Patterson-Hazley and Kiewra's study (2013) also reported the importance of good students in contributing to the success of their mentors. According to Patterson-Hazley and Kiewra's participants (2013), students were recognised for leading them along fresh and exciting research paths. Specifically, results showed that some interest research areas were prompted by student interests. They also

reported that many research publications were done through collaborations with engaged and committed students.

Career experiences of women in STEM are influenced by HR practices, particularly in the form of developmental possibilities (Makarem & Wang, 2020). Singh et al.'s study (2013) found that the self-efficacy and success of American women engineers were found to be positively correlated with access to developmental opportunities such as training and professional development programmes. Tenured women in Buse et al.'s study (2013) emphasise the importance of continuing learning opportunities as an important factor that influenced persistence in their academic careers. For tenured women, having the chance to work on novel technologies, initiatives, or products ranked highly for them to persist in an engineering career. However, women working in the U.S. IT sector have also highlighted the lack of training programmes and resources, restricted access to social networks and the prevalence of the 'Boys' Club' and its deterrent effect on women's career advancement as issues that they find related to HR practices (Orser et al., 2012).

Institutional culture is considered key in women's advancement in a career (Diezmann & Grieshaber, 2019). However, despite a lack of support in some institutional or faculty climates, Gladwin et al. (2014) argue that successful professors possess certain characteristics that allow them to succeed and influence this culture. Gladwin et al., (2014) affirm that those characteristics are resilience, persistence, the ability to form relationships, to be self-motivating, and to manage the emotional self, and imply a high level of emotional intelligence, that, in turn, enhanced their capacity to learn from, adapt to and influence their academic environment.

Despite the recognised importance of professional relationships (mentoring), some women academics experience a lack of mentoring support. In the literature, lack of mentorship support is recognised as a career hurdle for women to climb the career ladder (Nolan et al., 2008). Women's lack of mentorship is experienced in different dimensions that were highlighted in the sections above. However, one dimension of lack of mentorship worth mentioning and experienced by women is called "Queen Bees". This occurs when successful women are less supportive of their colleagues. Some successful women can be critical of their colleagues. These women are known as "Queen Bees" because they prioritise themselves over other women and, as a result, are at odds with other women colleagues (Ellemers, 2004). Queen Bee behavior, according to Bagilhole (1993), is a survival instinct. To survive, women academics remain committed to the male model of the profession. They do not display female

characteristics, feelings, and interests. They do not identify with women. They do not appear to favour members of the same sex as much as they do male colleagues (Bagilhole, 1993). Due to this fact, some authors affirm that if women are committed to academic advancement, they may prefer a male mentor over a female mentor in order to avoid perceived exaggerated identification with female colleagues (Aiston, 2011). However, role models are important for women, particularly in male-dominated fields (Bennett, 2011). Male mentors can help women advance in their careers by giving them access to the male power base, networks, and system rules (Thanacoody et al., 2006).

However, the value of male mentors for women is contingent on how they treat female mentees. According to Van den Brink and Benschop (2012), a female mentee acknowledged that her male mentor supported her when she asked for it, but he did not nominate her for the same opportunities as he did the male colleagues on his own initiative. Therefore, Aiston (2012) states that the disparity in treatment of female and male mentees might serve to maintain the status quo rather than promote women's advancement. Specifically, a lack of sponsorship by mentors can fail to achieve expected promotion results (Morley, 2013). Sponsorship occurs when a mentor goes beyond giving feedback and advice and uses his or her influence with senior executives to advocate for the mentee (Ibarra et al., 2010). According to Ibarra et al., (2010) high-potential women are over-mentored and under-sponsored, relative to their male peers. This supports Patton et al.'s study (2017) that reports that in academic medicine, both women and men who had academic sponsorship were more successful than unsponsored applicants.

The role of support in women career advancement extends beyond the working environment. The section below explores the support of the social environment, notably spousal support, which is mentioned in the literature as a critical component for women's career success in academia.

2.9.3. Family/Husband Support

Career research studies have highlighted the importance of a supportive husband or partner for women's career development (Beigi et al., 2017; Powell & Mainiero, 1992; Pyke, 2013; White & Cooper, 1997).

In his study about why or why not women seek promotion in academia, Pyke (2013) highlights three conditions or factors of the group of women who seek promotion, namely,

timing, absence of care responsibilities and support. By timing, Pyke (2013) refers to early entry into academe; early completion of a Ph.D. and employment in emerging disciplines at a time when opportunities are expanding, and support and encouragement, whether provided by a mentor, manager, or as a result of a cohesive work-team environment. Finally, another distinguishing feature of individuals pursuing advancement was the absence of care responsibilities. Care refers to the time spent ensuring that family members' physical and emotional needs are addressed. In this category, Pyke (2013) includes self-care, which was a big consideration for some of those who are not aiming for promotion due to health issues. There is evidence in the literature of unequal responsibilities for care as one of the major explanation for women's delayed advancement in leadership roles in general, and in academe in particular (Craig, 2006; Probert, 2005). In Pyke's study (2013), the group of women who seek promotion provide additional support for this perspective, with the majority having no children, a partner who took on main caregiving role responsibilities or children who had reached adulthood.

Beigi et al.'s work (2017) with distinguished professor participants in academic careers reported that almost all of the distinguished professors (both male and female) believed that without the help of their spouses, achieving their current professional status would have been either impossible or more difficult. The support was described in Beigi et al. (2017) as encouragement from their spouses to continue their studies or invest in their careers, assuming a major role in childcare and domestic responsibilities, following the distinguished professor and changing career despite the fact that changes did not always benefit the spouses' careers, and contributing to the work. Fotaki (2013) reported in his work about the underrepresentation of women in universities, that of the women who succeed in reaching higher positions some credited their success to support from a partner who had taken over domestic and family duties or to the lack of family obligations completely. Those women admit to working fifteen hours a day and having to sacrifice having a husband and children. Powell and Mainiero (1992) also contend that women's objective career success is likely to be achieved when their partners or husbands become more involved in their family roles and responsibilities.

Similarly, White and Cooper (1997) state that marriage does not appear to preclude female achievement in their careers, as 58 per cent of the women in the research were married. Conversely, family appears to function as a social support system. The majority of the successful women in White and Cooper's research (1997) reported that their partners were supportive of their careers. They all agreed that having a supportive partner was a solid

foundation on which they built their careers. Another important highlight from White and Cooper's study (1997) is related to maternity leave and children. Half of the women were mothers. Only the sample's elder women had taken career pauses. A prevalent pattern was for women to wait until their careers were well established before having children in their early 30s. Because a career break was viewed as stepping off the fast track, many women took only the bare minimum of maternity leave. This highlights the perceived relevance of continued employment throughout their career among women who have achieved professional achievement.

However, in White and Cooper's study (1997), contrary to Beigi et al.'s study (2017) where partners were reported to assume the majority of childcare and house work, successful women partners from White and Cooper (1997) do not help with household chores or child care. Although successful women take on the majority of domestic responsibilities, the majority of successful women employ home help.

Above the importance of professional and social support is discussed. However, the literature also state that individuals attribute success to uncontrollable circumstance that impact their career trajectories. Below the importance of luck in career success is explored.

2.9.4. Luck

Luck is mentioned in the literature as one of the predictors of career success by women academics, and is defined as fortuitous events that are beyond an individual control and that have a positive impact on their career success such as opportunity to pursue a Ph.D., obtaining a position, or a promotion (Diezmann & Grieshaber, 2019). Academic women highlight the role of luck, chance and favourable conditions with regard to achievements throughout their career path, downplaying their own abilities and potential (Deaux & Farris, 1977; Göktürk & Tülübaş, 2021; Loveday, 2018; Swim & Sanna, 1996). Specifically, luck rather than abilities and attributes are perceived as the reason for success in different steps of academic career due to differences in expectations for women and men's performance and also due to what Loveday (2018) claim as the position in which academics find themselves in terms of working conditions and working contracts.

In this regard, Diezmann and Grieshaber (2019) aver that women professors in their study used words like 'luck', 'chance', 'opportunity' and 'serendipity' to describe the reasons for their success in career, in pursuing a Ph.D., obtaining a professoriate position, promotion, a mentor, or a work role. For example, in some studies (Baker, 2010; Diezmann & Grieshaber,

2019) women professors declared that they did not plan to become professors, attributing that milestone in career to luck. Diezmann and Grieshaber (2019) also report in their study that women professors consider it being lucky to not want to have children. According to them, not wanting children is perceived as necessary to succeed in academia due to the incompatibilities of family and academic career (Airini et al., 2011; Doherty & Manfredi, 2010).

These perspectives of luck inadvertently undermine the value of individual agency, skills and individual will to work hard to reach success in academic settings, ignoring therefore the importance of individual self-management and motivational factors for career success.

In his work about perceptions of success and failure amongst fixed-term academic staff, Loveday (2018) maintains that perceiving success as a matter of luck displays an image of employees lacking confidence in their own skills and abilities. In same vein, Deaux and Farris (1977), in their work about the causes of individual own-performance evaluations, report that males evaluate their performance more favourably than do females, despite equivalent objective scores; males claim ability to their performance while women on the other hand are more prone to use luck to explain their performance. According to the authors, this occurs because men and women have different expectations of success. Man having positive expectations to succeed in a career and are more prone to justify their performance with ability, while women have less expectations to succeed and tend to attribute their performance to temporary factors such as luck. Other authors (see Ward, 2003), besides speaking about luck, explained that women took small steps to the professoriate. After achieving success in terms of promotion or appointment at the next level, the women professors turned their attention to the next attainable goal. As a result, they established a reasonable road to the professoriate. This perspective highlights how consciously women took action to develop their career, although fail to recognise and therefore attribute their success to favorable circumstances.

Not using the traditional influences such as having the required skills, having higher grants and publication records as the reason to succeed and attribute success to luck, chance, and being in the right place at the right time, expresses a reluctance to recognise accumulated competence and experience and also the ability to perform at the required level (Diezmann & Grieshaber, 2019). Justifying success as being due to luck is interpreted in the literature in several ways.

One possible explanation for justifying success as luck is the impostor syndrome (Clance & O'Tool, 1987; Clance & Imes, 1978; Diezmann & Grieshaber, 2019). According to Clance and O'Tool, impostor syndrome is defined as "an internal experience of intellectual phoniness which seemed to be particularly prevalent among a select sample of high achieving women" (Clance & O'Tool, 1987, p. 51). Despite the existence of objective external evidence that supported their competence, these high-achieving women believed they were unworthy of success. Instead, they attributed their success to "hard work, luck, knowing the right people, being in the right place at the right time, or interpersonal assets such as charm and the ability to relate well, rather than ability or competence" (Clance & O'Tool, 1987, pp. 51–52). Parkman (2015) states that impostor syndrome is related to high degrees of perfectionism and workaholism.

Another plausible explanation for the role of luck in women's discourse of success is offered by Diezmann and Grieshaber (2019) in three viewpoints, namely, (i) safety as a precaution or protection, (ii) earlier socialisation roles as females which influence how women perceive themselves, and (iii) part of a deconstructive event, where there is gender normativity in academia and it causes tensions that force women to speak about their success in terms of luck. As precaution or protection, in a male-dominated environment as academia 'luck' may be a safe term to avoid challenging the established academic power structures, and implies that only a few women will be successful. As a result, explanations based on luck may be viewed as a safe way of 'playing the game'.

These explanations of success are employed in the academic setting and may explain why women who are recognised in their fields for their vast scientific contributions are hesitant to acknowledge their abilities and competencies. However, while luck can play a part in career success, its unpredictability makes it less reliable. This unpredictability shifts the attention to more consistent influences that individuals experience, for exemplo, during early age. One of those important influences mentioned in the literature is upbringing. Below upbringing is explore in detail as an important factor that shapes individuals career success.

2.9.5. Upbringing

Research (Gasser & Shaffer, 2014; Ng & Feldman, 2014b; Puwar, 2004a; White & Cooper, 1997; Whiston & Keller, 2004) has shown that parental involvement and children exposure and identification with their parents' occupational area have long-term effects on career development. Gasser and Shaffer (2014) claim that exposure to environmental learning, or

socialisation, can shape a person's career path. According to White and Cooper (1997), women's relationships with parents and experiences, provide antecedents for career success. A stable and supportive relationship with parents that encourages women to pursue their goals and achievements, encouraging autonomy of decision-making, promote women in their achieving, striving and independence. The majority of successful women in White and Cooper's study (1997) had a strong bond with one parent, usually the father. They participated in activities with their fathers that are often reserved for sons. According to the authors, this results in a less limited sex role. Their mothers were described as strong women with a lot of energy who provided strong female role models for the female academics. In similar vein, Whiston and Keller (2004) claim that family have a positive influence and facilitate career development of individuals in different stages of a life span. This influence is established through family structure variables such as parents' occupations, and family process variables such as, warmth, supportiveness, attachment, and autonomy. Whiston and Keller (2004) further maintain that children strongly identify with their parents' occupational area, which confirms that parents' educational level influences individuals' aspirations and expectations of a career. The study also reports that parents' constant interaction with their children and adolescents about career and work challenges creates a supportive environment that encourages autonomy and respect.

A significant proportion of women from both countries of the present study reported a stable and supportive relationship with their parents. The various patterns of parent-child relations or family relations described among the successful women professors in both countries all served to facilitate the development of a sense of autonomy and decision making of the participants in terms of their abilities and attributes. According to White and Cooper (1997), an early developing experience of coping independently with the environment generated a strong sense of competence and self-confidence in the women and was important to succeed in a career. However, some studies (e.g. Ng & Feldman, 2014b) have reported that background factors were not significantly related to career success. Puwar (2004a), in his work "Space Invaders", asserts that there are specific backgrounds and social trajectories which favour professionals to be more prepared to succeed in their fields of work, specific familial and educational circumstances that produce attitudes that are adapted to the needs of a field. In this regard, Puwar states:

> We all participate in the games of our field. However, some people, due to
> their social trajectory – most especially their class background and scholastic

training – are much more inclined to have a sense of the game, as well as the ability to play it. Their social trajectories have immersed them in a habitus that is 'immediately adjusted to the immanent demands of the game. (Puwar, 2004a, p. 126)

2.10. Conclusion

This chapter addressed the background to the focus area of the study, the factors of women's career success in the academic context, specifically in Sweden and South Africa. A careful look at the literature portrays that at a global level higher education institutions face changes in terms of economics, purpose, structure, priorities, governance and autonomy (Bozzon et al., 2019; Courtois & O'Keefe, 2015; Dirnagl, 2022; Huisman et al., 2002; Slaughter & Leslie, 1997; Rhoades & Slaughter, 1997; Wedlin, 2008) that affect professionals and academic institutions at a national level differently. Specifically, although academic careers are becoming global, academic structures are shaped by national contexts (Finkelstein, 2015) which dictates differently how academic work and careers are pursued, the challenges, and the coping mechanisms of institutions and professionals in the academic systems. However, comparative studies, or cross-cultural studies remain insufficiently researched concerning how different professionals, especially women as the underrepresented group in higher rank positions and as knowledge producers in the system at a global scale (Ceci et al., 2014; UNESCO, 2018), and specifically in the context of this study, overcome challenges and reach the top in the career ladder. Specifically, while literature addresses challenges in specific national contexts, there is a gap in comparative cross-cultural studies that examine how different academic systems and cultural norms impact women's career success. Thus, the study covers this gap by exploring how women from South Africa and Sweden considered successful from the standards of academic career, overcame the challenges they have faced in academia throughout their career and remained in academia and strived for success.

The literature review further revealed evidence of the changing economics, purpose, priorities, governance and autonomy of academic systems and differences in challenges faced by Swedish and South African systems according to each of the contexts. However, there is a limited research on the effectiveness of institutional policies and initiatives designed to support women's career development in academia and how these policies are implemented. Successful women's careers in Sweden and South Africa may be comparable to others in a global scale but the context, conditions and expectations unique to each country will provide a

further knowledge upon which the present research explores the debate of women in academic science careers.

The literature reveled that the focus is on a traditional academic career trajectories. There is a need for research on non-linear career paths and how they may offer different opportunities and challenges for women in academic context, but also research that consider other aspect beyond gender such as, race, class, sexual orientation to influence career success.

CHAPTER THREE
THEORETICAL FRAMEWORK

3.1. Introduction

This study employs grounded theory to investigate the key factors that allowed successful women full professors from South Africa and Sweden to remain and succeed in academic careers. A theory helps to explains or predicts a behaviour. According to Glaser and Strauss (1999), one of the purposes of a theory is to enable a prediction and explanation of a behaviour. Theory is also perceived as a way of handling the data in research, providing conceptualisations able to predict and explain behaviours (Glaser & Strauss, 1967). Therefore, theory should suit and be applicable to the data studied. Grounded theory suggests the use of a theory that is generated from the data, not deduced logical assumptions from existing theories. Generating a theory from the data entails that concepts and hypotheses come from the data and are systematically generated in relation to the data during the research process (Glaser & Strauss, 1967; Thornberg & Charmaz, 2014). Charmaz (2006, p. 2) defines grounded theory methods as "systematic, yet flexible guidelines for collecting and analyzing qualitative data to construct theories 'grounded' in the data themselves". Tie, Birks and Francis (2019, p. 1) state that "grounded theory sets out to discover or construct theory from data, systematically obtained and analysed using comparative analysis". The data gathered form the foundations of the emergent theory, ensuring that the researchers analysis is grounded in the participants experiences rather than preconceived notions (Glaser & Strauss, 1967). The deductive model, on the other hand, accurately operationalises proven notions in theories and deduces testable predictions regarding the links between concepts, therefore, the study in this model is bound to the original concepts of the theory (Charmaz, 2006).

The chapter presents the common theoretical frameworks used to understand the predictors of career success, and the justification for the adoption of grounded theory for this study.

3.2. Theoretical Frameworks Used in Predicting Career Success

In the literature, there is a diverse and competing theoretical framework used by career scholars to explain and predict career success achievements. Spurk, Hirschi and Dries (2019) in their critical evaluation of the results of a systematic analysis of the theoretical approaches used to empirically study the antecedents of objective and subjective career success, reported

that literature on career research has looked into the factors that contribute to professional success using a wide range of theoretical approaches. However, according to Spurk et al. (2019), some theoretical approaches predominate within such studies, namely, theories focussing on the *social environment* (34.0%; e.g., social capital theory), on *career agency* (27.4%; e.g., social cognitive career theory), on *human capital* (21.2%; e.g., human capital theory), and on *roles and identity* (16.6%; e.g., gender role theory). Further, Spurk et al. (2019) analysed the time trends of theoretical frameworks. Specifically, they explored whether the dominance of theoretical approaches had shifted over time and reported a declining interest in human capital, roles and identity, and work environment and a growing interest in career agency as a theoretical framework to research career success. Theoretical approaches regarding the social environment have also remained similarly prevalent.

In line with this view, Hirschi et al. (2018) also acknowledge the existence of different theoretical frameworks that explain career success. In their study, Hirschi et al. (2018) focussed on assessing key predictors of career success among workers and students and state that previous studies theoretically explained career success using one or a combination of three theoretical perspectives, namely: social capital, human capital, and motivational factors. Further, Hirschi et al. (2018) add that aside from these three approaches, current career literature has placed a major emphasis on career self-management and the proactive role that individuals must play in order to advance their professions.

Social capital theory contends that the goodwill accessible through social ties enables people to secure jobs and competitive professional outcomes such as a high income or a promotion (Adler & Kwon, 2002; Seibert et al., 2001). Specifically, social capital is perceived as a key organisational asset that provides information, resources, and networks required for career development (Timberlake, 2005). According to *human capital theory* (Sweetland, 1996), career success is determined by a person's degree of education, knowledge, skills, and competences, which enable him or her to get and perform properly in jobs. According to human capital theory, career success is defined by investments in knowledge, skills, and competencies that individuals build over time, allowing them to acquire positions and perform properly in them (Becker, 1985; Sweetland, 1996). *Motivational theories* attribute success to individuals' decisions to develop their careers (London, 1983). London (1983, p. 620) defines career motivational theory as "the set of individual characteristics and associated career decisions and behaviors that reflect the person's career identity, insight into factors affecting his or her career, and resilience in the face of unfavorable career conditions". According to

London (1983) motivational theory has two components, individual characteristics and career decisions and behaviours. The individual characteristics' dimensions reflect needs, interests, and personality traits that may be significant to a person's career. The needs that individuals attempt to fulfill can vary (Ramlall, 2004). Similarly, Locke and Latham (2004) write that motivational theory refers to both internal factors that drive action and external circumstances that can induce action. Specifically, for Locke and Latham (2004) motivation can influence three aspects of action, choice, effort, and persistence. Motivation can influence how people acquire skills and abilities, and to what extent they use those skills and talents, how they persist in the pursuit of their dreams and how they might endure even challenging situations. *Self-directed career management theory* refers to the proactive behaviour that individuals engage in to build their professions, such as taking action in their jobs by finding opportunities and persevering in difficult situations (Eby et al., 2003; Thomas et al., 2010). Ahmad (2017) emphasises the importance of *structural theories* to explain career success. According to Ahmad (2017), structural theories argue that to understand the predictors of career success scholars need to focus on organisational characteristics, social structures, and labour market conditions.

Self-directed career management constructs are composed of specific domains that help understand the prediction of career success. Hirschi (2012) stated that within the domain of self-directed career management six domains exist, career adaptability, employability, career motivation, career self-management, career competences, and a protean and boundaryless career orientation.

(i) Career adaptability is defined by Savickas (1997) as a construct that deals with how a person develops a career and that enables people to effectively integrate their self-concepts in occupational jobs. In a later study, Savickas (2005) defines career adaptability as a psychosocial construct that implies an individual's readiness and resources for coping with current and upcoming vocational developmental demands, occupational transitions, and personal traumas. According to Savickas (2005), career adaptability refers to the attitudes, actions, and abilities that individuals employ to fit themselves to work that suits them. Savickas (2005) identifies four dimensions that comprise career adaptability: concern (planning, being planful), control (decision-making, being decisive), curiosity (exploring, being inquisitive), and confidence (problem-solving, being efficacious). Along the same lines as Savickas (1997; 2005), Kossek et al., (1998) define career adaptability as the ability to

adapt to changing work circumstances and propose it as a measure of openness to change and the ability to deal with the demands and stressors of a new job context.

(ii) Employability, Hirschi (2012) stated that the concept of employability varies in terms of focus, person employability radius, employability skills, personal qualifications and contextual factors. However, in this work the focus in on employability as it refers to the individual. Fugate, Kinicki and Ashforth (2004) define employability as a type of work-specific active adaptability that allows workers to discover and realise career opportunities, and it consists of four dimensions: professional identity, personal adaptability, human capital, and social capital. According to Rothwell and Arnold (2007), employability is the ability to keep one's current employment or to obtain one's desired work, and it consists of abilities and behaviours that contribute to effective performance. The authors define fundamental characteristics of employability as resilience, defined as the ability to adjust effectively to changing circumstances; networks of contacts that give information and support; and job-seeking and labour-market knowledge. For Forrier and Sels (2003) employability implies the competence of knowing how, knowing whom and knowing why.

(iii) Career self-management is used to describe career management behaviours. Career self-management is conceptualised by Kossek et al. (1998, p. 938) as "the extent to which one regularly gathers information and plans for career problem-solving and decision making". Sturges (2008) identifies core career self-management strategies as networking, visibility, positioning, and building human capital. According to Kossek et al. (1998), career self-management consists of two key behaviours: (1) developmental feedback-seeking, which aims for continual improvement in one's current career; and (2) career mobility readiness, which includes career exploration, networking, and parts of planning.

(iv) Career competences is conceptualised by Kuijpers, Schyns and Scheerens (2006, p. 305) as "competencies that are relevant for all employees to develop their own career, regardless of the specific job they have". Hirschi (2012) stated that literature proposes three main competencies necessary to predict career development as, knowing how (career-relevant skills and job-related knowledge), knowing why (motivation, personal meaning and identification) and knowing whom (career-related networks). Eby, Butts, and Lockwood (2003), in their study about "Predictors of success in the era of the boundaryless career", suggest that these three competencies predict career success in a career world without boundaries, specifically in a boundaryless career. Inkson and Arthur (2001) refer to the three competencies as career capital required for career success. Forrier and Sels (2003) on the other hand, refer to them as

movement capital, which influences the chances of mobility in the labour market; and Parker, Khapova and Arthur (2009) rely on them as the foundation of their intelligent career framework.

(v) Career motivation is defined by London (1983) as human qualities and associated career decisions and behaviours that reflect a person's career identity, awareness of variables influencing his or her career, and resilience in the face of adversity in the workplace. Career identity relates to how important a person's career is to their identity and is divided into two sub-domains: job involvement and desire for upward mobility (London, 1983). Career insight refers to the degree to which a person has realistic impressions of himself or herself and his or her organisation, as well as the ability to relate these perceptions to career goals. These two elements are professional identity resources. A person's resistance to career interruption in a less-than-ideal setting is the third component of professional resilience. This component is divided into three sub-domains: (generalised) self-efficacy, risk taking and reliance.

(vi) Protean and boundaryless career orientations, are conceptualised by Briscoe and Hall (2006) as those in which the individual is values-driven and self-directed in their personal career management. A boundaryless career, according to Sullivan and Arthur (2006), is one that involves physical and/or psychological career mobility.

Apart from the heterogeneity of theoretical approaches to measure career success, the literature also highlights the existence of divergent variables to explain the same theoretical approach. Therefore, for instance, Spurk et al.'s (2019) systematic literature review acknowledged that although the literature has identified a diversity in theoretical approaches used to understand career success, the theoretical framework that most fits the understanding of the predictors of career success was not yet identified. Spurk et al. (2019) also acknowledged the lack of studies that understand career success from a contextual perspective, even though research (Mayrhofer et al., 2016) has emphasised that the meaning of career success can differ between cultural/global regions and occupational sectors. Therefore, for the present research to stand on one of the above described theoretical perspectives singularly or in combination might yield impractical results when it comes to understanding the factors that influence women's career success from different and specific contexts, from the women's perspective. Therefore, in this research a more integrated theoretical approach to examine the data is proposed, a constructivist grounded theory. Constructive grounded theory is adopted in this study to derive a nuanced understanding of success directly from the experiences of women full professors. This approach facilitates the development of a context-specific theory

that illuminates the unique factors influencing their career trajectories. Specifically, the intention with this approach is to not influence the data but, in contrast, to let the data speak and bring to light the specificities of each context of research. The principles of grounded theory are presented below.

3.3. Grounded Theory Principles

The constructivist grounded approach proposes that the theory should be grounded in data, meaning that the theory of the study is derived from data systematically collected and analysed in the research process (Glaser & Strauss, 1967). Therefore, in grounded theory data collection, analysis and theory stand together. The study does not start with a preconceived theory (unless the aim is to extend existing theory). Rather the study starts with an area of study and allows the theory to inductively emerge from the data gathered (Glaser & Strauss, 1967).

A grounded theory approach is more likely to resemble the reality of the two contexts of the present study rather than a theory that is derived from speculation about how things work, and might offer the study insights, enhance the understanding and specificities of each context and provide a meaningful guide for action to understand contextual theorisations of women's career success in both countries.

Babchuk (1996) reported that since the publication of *Discovery of grounded theory* in 1967, numerous guidelines of grounded theory have emerged, therefore, the researcher needs to state clearly, whose guidelines were used in their specific studies and which steps were followed in the research process. Specifically, the literature pointed out the existence of predominant traditions of grounded theory that has evolved over time, having the same roots and sharing the original methodological techniques, namely, classic, Straussian, and the constructivist grounded theory (Kenny & Fourie, 2015) and feminist grounded theory (Walsh et al., 2015).

Constructivist grounded theory is part of the interpretive tradition and is described by Charmaz (2006, p. 130) as an approach that "places priority on the phenomena of study and sees both data and analysis as created from shared experiences and relationships with participants and other sources of data". Specifically, constructivists investigate how and why individuals create meanings and behaviours in given situations; they investigate how individuals view and interpret their situations. Constructivist grounded theorists believe that data and analyses are social constructions, reflecting both the researcher as well as the

participant. As a result, any analysis is contextualised in terms of time, place, culture, and situation (Charmaz, 2006; Thornberg & Charmaz, 2014). In this regard Charmaz (2000, pp. 523–524) stated

> A constructivist grounded theory recognises that the viewer creates the data and ensuing analysis through interaction with the viewed. Data do not provide a window on reality. Rather, the 'discovered' reality arises from the interactive process and its temporal, cultural, and structural contexts. Researcher and subjects frame that interaction and confer meaning upon it. The viewer then is part of what is viewed rather than separate from it.

Further, Charmaz (2014) also stated that Glaser and Strauss' (1999) classic version of grounded theory did not consider that the researcher affects the research process, through producing the data, representing the data to participants, and through positioning his or her interpretation as the researcher.

In sum, theorists of grounded theory (Birks & Mills, 2015; Bryant & Charmaz, 2007; Glaser, 1978; Strauss & Corbin, 1998; Thornberg & Charmaz, 2014; Tie et al., 2019) identify the guiding principles of the theory that are presented below:

(i) Start a research without a preconceived hypotheses;

(ii) Data collection and analysis are conducted simultaneously in an iterative process. The practice of concurrent data creation or collecting and analysis is central to a grounded theory research methodology. To accomplish this, the researcher generates or collects data using an originally purposeful sample. Before new data is collected or generated, and the analysis procedure is repeated, the data from these early interactions is coded. This concept distinguishes grounded theory from other types of research designs, which require the researcher to either collect data first and then analyse it, or to construct a theoretical proposition first and then collect data to test their hypothesis (Glaser & Strauss, 1967).

(iii) Constantly comparing new data to previously acquired data to detect similarities and differences. This includes, for example, comparing incidents to incidents, incidents to codes, codes to codes, codes to categories and categories to categories on a regular basis. Constant comparative analysis is an iterative analytic process that continues until a grounded theory is fully integrated (Charmaz, 2006).

(iv) Grounded theory methods are inductive in the sense that they are a process of building theory from facts. Theory is inducted by consecutive comparison assessments (Birks & Mills, 2015).

(v) To fine-tune data gathering processes, theoretical sampling is used. Theoretical sampling is used by researchers to focus and feed their ongoing comparative study of data. It will become clear via this iterative analytic procedure that more information is required to saturate categories under development. Theoretical sampling then dictates where the researcher receives material to saturate the understanding of a category (either in the literature or by additional participant sample).

(vi) The use of coding, categorising, and memos (notes produced for the researcher's own use) to capture emerging 'themes' (important variables and patterns in the data), interrelationships, and theoretical hypotheses. Memos are written notes of a researcher's thoughts while doing a grounded theory investigation. As a result, they differ in terms of subject, intensity, coherence, theoretical content, and usefulness to the final output. Memo writing is a constant practice for grounded theorists, as memos are written from the very beginning of a study's planning through its end. Memos are translated into grounded theory conclusions over time. Writing frequently and extensively contributes to the development of intellectual assets (Birks & Mills, 2015; Holton, 2007).

(vii) Coding approach: Grounded theory studies employ a coding strategy that entails moving through different stages of coding. When data is theoretically saturated, codes become categories. At this point, fresh data analysis yields codes that only fit into existing categories, and these categories are well defined in terms of their features and dimensions (Birks & Mills, 2015; Holton, 2007)

(viii) Using a review of literature as one component of data collection, and the development of a theory. Disagreements remain, however, as to whether the literature should be studied before or after the field research. Authors such as Glaser and Strauss (1999), Glaser (1998) and Strauss and Corbin (1994) believe that the literature should be reviewed only after the empirical inquiry so that the findings are not biased. Glaser (1998) contends that when literature is reviewed before conducting field research with the goal of developing new theory, the preliminary literature review may deviate the emerging theory from its genuine discovery path because it influences the findings. Strauss (1987), on the other hand,

argued that literature can be utilised to increase theoretical sensitivity and produce hypotheses (Glaser & Holton, 2004).

(ix)   Theoretical sensitivity is a quality of grounded theory research. The ability to generate concepts from facts and relate them to standard models of theory in general, and theory development in particular, is central to theoretical sensitivity. In order to generate a theory from data, most assumptions and concepts must be systematically worked out in connection to the facts during the course of the research (Glaser & Holton, 2004).

3.4. Criticisms of Grounded Theory

While grounded theory is lauded for its inductive approach and flexibility, it has also faced criticism. The criticisms of grounded theory question the core methodological characteristics of the theory, for its potential subjectivity and the challenges it poses for novice researchers. This section therefore addresses some of the concerns which grounded theory scholars identified and addressed especially in the literature. First, Hallberg (2006), although she recognises how the method of grounded theory is strict to help researchers to explore the data, the author also states that the theory is not "saddled with so many strict rules to be too rigid for a grounded theory researcher" (pp. 143). According to the author, grounded theory mentions guidelines rather than fixed and constant rules for conducting qualitative research, indicating therefore that guidelines can be used in a flexible way. This can be challenging for a novice researcher due to the fact that the quality of a grounded theory study relies on the the researcher's expertise, knowledge and research skills.

The second concern relates to the idea of perceiving constructivist grounded theory (the version used in this research) as story making. Specifically, critics of Charmaz' constructivist grounded theory argue that in grounded theory the researcher does not compose the study, because according to them grounded theory is not a description, as in Strauss and Corbin's work, nor is it story making, as in Charmaz' work that reflects the researcher and the interviewee perception (Glaser, 2007). Glaser (2007) on the other hand, claims that the outcomes of a grounded theory study results from a rigorous use of the constant comparative method and theoretical sampling. Furthermore, the author also says that Charmaz' constructivist grounded theory is a misnomer, where the concept 'constructionism' is used to legitimise or force what should be called Qualitative Data Analysis (QDA) because he ignores the basic features of abstraction analysis. Specifically, he argues that a more suitable name for

Charmaz' method would be QDA because it is considered to support the QDA requirements for accuracy.

3.5. Conclusion

The study starts with purposive sampling, then moves on to concurrent data creation and collecting, data analysis and various phases of coding, all while using constant comparative analysis, theoretical sampling, and memoing. Until theoretical saturation is reached, theoretical sampling is used. In grounded theory, these approaches and processes result in an evolving, iterative system of actions and interactions (Tie et al., 2019). Figure 1 depicts the different strategies and the process of creation in grounded theory discussed above.

Figure 1

Research Design Framework: Summary of Grounded Theory Methods

Purposive sample

↓

Generating/Collecting data

↓

Initial coding

↓

Intermediate coding

↓

Advanced coding

↓
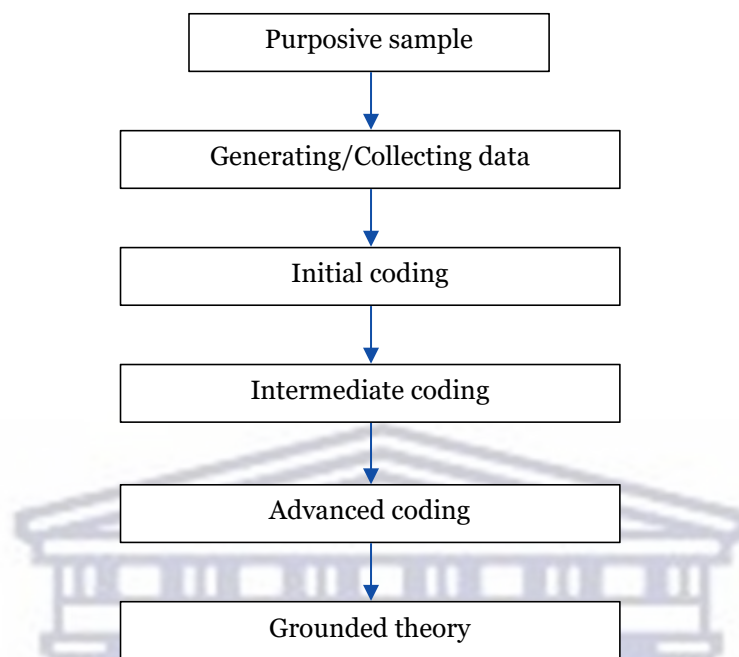
Grounded theory

Source: Adapted from Tie et al., (2019)

In conclusion, grounded theory provides a robust framework for this study, enabling an in-depth exploration of the factors influencing the success of women full professors in South Africa and Sweden. The inductive nature of this approach ensures that the resulting theory will be deeply rooted in the lived experiences of participants. Literature offers a diverse array of theoretical frameworks to analyse career success, however, none of them is claimed as the most accurate. As a result, to reflect the reality of the specific contexts under research and its unique dynamics, the present research adopts an inductive approach to generate a theory that speaks to the reality of both countries studied.

The next chapter provides a concise account of how data for this research was gathered and the methodological decisions of the study.

<div align="center">

CHAPTER FOUR

METHODOLOGY

</div>

4.1. Introduction

The focus of this chapter is on a description of the methodology used in collecting data to answer the question of this study. Broadly, this chapter discusses the research design and rationale for the methods used. The chapter also describes the sampling criteria and selection of research sites. Furthermore, the various instruments and techniques employed in the collection of data are presented. The study's credibility, transferability, confirmability, dependability, and ethical considerations that were given to conduct the research are also addressed to pave the way for data presentation and analysis in the following chapters.

4.2. Research Design of the Study

The research design of the study is perceived as the guide to a research undertaking (Babbie, 2008; Babbie & Mouton, 2001; Creswell & Poth, 2016). Creswell and Poth (2016) state that the research design is associated with the entire research process, from the development of research questions to data collection methods, data analysis and interpretation, and report writing. Further Creswell and Poth (2016) also assert that the research problem helps the researcher to define the research design for the study.

Given that the study's goal was to explore the factors that influenced women professors to remain and succeed in academia in South Africa and Sweden, a qualitative methodology was chosen. Qualitative research studies "things in their natural settings, attempting to make sense of, or interpret, phenomena in terms of the meanings people bring to them" (Denzin & Lincoln, 2005, p. 3). The intention was to try to understand from the successful women's perspective, the factors that resulted in them to climbing the career ladder and reach top ranking positions in academia. The aim was to come out with a profile of successful women academics in both settings of the study, and identify the specificities and similarities of women in academic careers to light. Specifically, qualitative research is conducted to explore the meaning that individuals give to situations, therefore, researchers through qualitative research they give voice to individuals to tell their stories. Hammersley defines qualitative research as:

a form of social inquiry that tends to adopt a flexible and data-driven research design, to use relatively unstructured data, to emphasize the essential role of subjectivity in the research process, to study a number of naturally occurring cases in detail, and to use verbal rather than statistical forms of approach (Hammersley, 2013, p. 12)

This definition of qualitative research emphasise the flexibility of qualitative research to capture individual experiences in their contexts. Specifically, qualitative approaches allowed for an in-depth investigation of the lived experiences, perceptions, and motivations of successful women ful professor in academic career. Chen et al. (2018) state that qualitative research offers a thorough understanding of occurrences, attitudes, intentions, and behaviours by giving voices to individuals, allowing them to express themselves and delve deeper into underlying concerns, based on personal meanings. Research (Cohen et al., 2018; Creswell, 2007) also emphasise the distinct approach of inquiry and flexible methods used in qualitative research such as data collection in a natural context sensitive to the people and places under investigation, and data processing that is inductive and establishes patterns or themes suitable to capture the nuances of participants experiences in different cultural settings. Specifically, Creswell (2007) state that qualitative research is a distinct approach to research individual experiences because of characteristics such as: (i) *natural setting,* qualitative researchers typically collect data at the site where participants encounter the issue or problem being studied; (ii) *multiple sources of data*, qualitative researchers collect various types of data, including interviews, observations, and records, rather than relying on a single source. The researchers then sift through all of the data and make sense of it, organising it into categories or topics that span all of the data sources; (iii) *inductive data analysis*, qualitative researchers organise data into abstract units to identify patterns, categories, and themes. This inductive approach involves researchers switching back and forth between themes and databases until they have a thorough list of themes; (iv) *participants' meanings*, during the qualitative research method, researchers prioritise understanding the participants' perspectives on the problem or topic, rather than relying on their own interpretations based on literature; (v) *emergent design*, qualitative researchers use an emergent flexible research approach. This means that the initial research plan cannot be strictly followed, and that all stages of the process may vary or shift once the researchers join the field and begin collecting data. For example, the questions, data collection methods, and individuals investigated, as well as the venues visited, may change. Qualitative research involves gathering information from

participants to better understand a topic or issue; and (vi) *holistic account*, qualitative researchers aim to create a nuanced picture of the problem or issue being studied. This includes reporting from numerous perspectives, identifying the various aspects involved in an event, and drawing the overall image that emerges. Researchers focus on uncovering intricate interactions between elements rather than strict cause-and-effect linkages.

The study research design further constitutes a comparative cross-national element. According to Hantrais and Mangen, research is considered a cross-national comparative when,

> One or more units in two or more societies, cultures, or countries are compared in respect of the same concepts and concerning the systematic analysis of phenomena, usually with the intention of explaining them. The expectation is that the researchers gather data about the object of the study within different contexts and, by making comparisons, gain a greater awareness and a deeper understanding of [the phenomena being studied]. (Hantrais and Mangen, 1996, p. 2)

Although the unit of analyse of the present study is individual – women full professors in academic careers in South Africa and Sweden – there is one comparative level of observation in the study worthy of consideration, the cross-national level and the individual level. The present research is considered a cross-national comparative study because it explores successful women full professors located in two different countries, South Africa and Sweden. As a result, the two countries offer a context of the academic system where women full professors operate. Research has emphasised (Brannen & Nilsen, 2011; Hantrais, 1999) that context is an important component of a cross-national study since it enhances comprehension of the conditions that influence the phenomena under investigation. Therefore, for instance, to understand the factors that allowed women full professors to succeed in South Africa and Sweden in academic careers, the conditions of the academic systems and the academic professions where women professors operate are explored. At the individual level the study explores the experiences of successful women full professors throughout their careers. This was done with the aim of identifying and providing an explanation for the similarities and/or differences between the two samples of women professors (Hantrais, 1999). The notion behind case comparison is that social events in similar environments may parallel each other sufficiently to allow for comparison and contrast (Bradshaw & Wallace, 1991; Ragin, 1997; De Vaus, 2008).The two countries were thus chosen on purpose for this research study based

on the notion of resemblance and difference (Brannen & Nilsen, 2011). In the next section, the reasons for selecting South Africa and Sweden as the settings of the study are explained.

4.2.1. Rationale for the Selection of South Africa and Sweden

The justification for the selection of the two countries of the study rests on two practical aspects worth consideration, such as the condition of women in academic careers in both countries and the legacy of different histories (although different) in the two countries, which have inevitably influenced their academic careers. These two practical justifications are explored in each context below. However, before discussing them is important to emphasise that literature point out some challenges for studies that use a cross-cultural analysis. Some of those challenges described in the literature by authors such as Cohen et al. (2018) are, the applicability of instruments developed, tested, and validated in one nation to another. Specifically, if is there enough cultural similarity to use the same instrument meaningfully across cultures, taking into account their specific characteristics and sensitivities. In this regard, Banville et al. (2000) state that items in one culture may not be present in another and may have distinct meanings or importance. Therefore, researchers should produce constructs for each culture to prevent imposing one culture's constructs on another, allowing specificities of each culture to emerge. This is evident in the present research when is acknowledged that in cross-cultural research, it's crucial to consider meaningfulness and relevance because if a construct or element of culture exists in two cultures, its meaning, weight, or significance may differ. Another challenge pointed out in the literature regarding cross-cultural studies is the validity in instruments of data collection. Cohen et al. (2018, p.261) states that

> There are several techniques that researchers can use to address validity in cross-cultural research. For instruments such as questionnaires, a common practice is to use 'back-translation', undertaken by bilinguals or those with a sound ability in the second as well as the first language.

In the present study the instruments were written and conducted in English in both settings of the study. Therefore, no back-translation to one language to another undertaken by bilinguals was required to ensure meaning and semantic equivalence in both scenarios of the study.

The study focusses on successful women full professors in the STEM field. In this study, successful women professors are defined as being full professors, the highest academic professional ranking, and as having high research productivity performance in STEM. Research productivity is considered paramount to assess institutional and individual

performance, research grant awards, promotion, salary and hiring decisions (Mayer & Rathmann, 2018). In fact, in academia, success in a career is heavily attached to measurable performance standards (Haddow & Hammarfelt, 2019). Women full professors are focussed on because full professorship is considered the most senior academic rank and is ideally reached based upon extensive publications and recognition in the field (Henningsson et al., 2018) and also because full professors are seen as the gatekeepers of academia, in charge of hiring and promoting people as well as assessing and allocating resources in science and access to information (Kahlert, 2014; White, et al., 2010).

Equally the study focusses on the field of STEM. The STEM field is considered interesting because in many countries, including in South Africa and Sweden, women remain a minority (She Figures, 2018; UNESCO, 2018). Researching the patterns of individual research performance in STEM might help inform possible future policy changes in the field.

4.2.1.1. Sweden

Sweden is identified as an excellent case study because the country has a well-documented self-image as one of the most modern and gender-equal countries in the world and is advanced in policies to ensure equal opportunities for women and men (Danell & Hjerm, 2013; Martinsson et al., 2016). According to the Swedish Higher Education Authority (2022) higher education in Sweden is free of charge for both Swedish citizens and for EU/EEA citizens and only incoming students from other countries have to pay an application fee and tuition fees, unless they are taking part in an exchange programme. However, research states (Martinsson et al., 2016) that in reality women and men remain unequal in the country. For instance, in higher education, men comprise 54% of all academic staff, while women comprise 46% of the staff (Swedish Higher Education Authority, 2022). In terms of statistics, those early career positions or career development positions, including postdoctoral researchers, associate senior lectures, and postdoctoral research fellows, constitute 11% of all academic staff. Lecturers comprise 16% of the staff. Mid-career positions/senior lecturers are the largest group, comprising 31% of the staff, and professors comprising 16% (Swedish Higher Education Authority, 2022). In Sweden the most high-ranked positions are dominated by men, and the gap distribution between women and men is considerable. The gender distribution by employment position, reported by the Swedish Higher Education Authority (2022) reveals that professors had the most unequal gender ratio in 2021, with 32% being women and 68% men. Of the senior lecturers, 48% are women and 52% are men, whereas in the early career positions or career development positions, 45% are women and 55% of the staff are men.

The Swedish academic system has tenure track position, which is defined as a mechanism for academic careers that allows for advancement following evaluation. Tenure track is defined by Henningsson and Geschwind (2022) as the probationary time following which candidates are evaluated by peers based on predefined criteria and those who meet the criteria are awarded tenure, a permanent academic position at a higher level; that allows professionals a sort of academic freedom, ensuring not only employment security but also participation in decision-making (De George, 2003).

In the Swedish higher education system there are three nationally regulated academic positions: the early career position of assistant professor or early career development positions, the mid-career position of associate professor/senior lecturer and the most senior position, full professor (Henningsson & Geschwind, 2022). According to Burneva (2022), early career development positions are temporary positions intended to carefully develop early academics in research and teaching. An assistant professorship is an early career position that one can apply for "up to 5 years after obtaining a Ph.D." (Burneva, 2022, p. 31). This early position offers four to six years for career development after which the academic has the right to apply for associate professor. The requirements for this promotion depend on each higher education institution. The same is applied for tenure track; the evaluation criteria and length depend on each institution (Burneva (2022). The convergent point is that after applying and getting a permanent position, academics do not have to go through a selection process in competition with other academics for positions. Another appointment that the early career development positions in the Swedish system include because they are regarded as required for a successful career, is postdoctoral fellowship (Danell & Hjerm, 2013). They are fixed-term research positions, not centrally regulated and can be sponsored by an employment contract, with a duration of two years that can be extended. However, this position does not give researchers the right to apply for a promotion to associate professor (Burneva, 2022; Danell & Hjerm, 2013).

4.2.1.2. South Africa

South African higher education is characterised with 45% of women researchers, one of the highest averages on the African continent (UNESCO, 2018). Mouton et al. (2019) reported that South Africa has the third highest percentage of headcount researchers that are women in selected African countries and BRICS countries, with only Argentina and Malaysia having a higher proportion. However, although this figure is relatively high, it masks the conditions of women in academic staff in South Africa. Academic staff are defined as professionals who

work in higher education institutions in instructional and research activities, comprising five academic ranks, junior lecturers, lecturers, senior lecturers, associate professors, and professors (Breetzke & Hedding, 2018; Breetzke & Hedding, 2016).

Women are more strongly present in lower levels of academic careers than their male counterparts (Corneilse, 2009). The higher the rank, the fewer women there are. Men hold the majority of professoriate positions, with women usually working as junior lecturers or lecturers (Mabokela, 2001). Of the various ranks of academic staff in South Africa, women comprise 19% of professors, associate professors 30%, senior lecturers 39%, lecturers 51%, junior lecturers 56% and below junior lecturers 56% (Maurtin-Cairncross, 2009). Below than junior lecturer are postdocs and temporary positions. Those professionals are considered to be in lower positions than junior lecturers who are already in permanent contracts. For example, postdoctoral fellows hold a position in the university system that differs from that of academic employees, even those on fixed-term contracts, because postdocs at most South African universities are registered as postgraduate students and are not employed by the university (Simmonds & Bitzer 2018). They are funded mostly by external funders such as the National Research Foundation (NRF), philanthropic funders, or industry. "The scholarship is lower than an entry-level permanent lecturer salary, for which a PhD may or may not be a requirement" (Kerr, 2022, pp. 553), but research activities are nearly identical to academics in permanent contracts. In similar vine, Simmonds & Bitzer (2018) also state that the stipends are stagnant, they do not increase from one year to the next. Additionally, postdocs do not receive employment benefits such as medical insurance or a pension (Simmonds & Bitzer, 2018).

In a more recent study, Thege et al. (2014) aver that women today have exceptional qualifications, half of all doctorates awarded in South Africa being received by women. Over the last ten years, the share of women holding professorships has steadily increased. Despite this, women continue to be underrepresented at the very top of the scientific establishments in the country. The 2018 Higher Education Management Information System (HEMIS) figures report that women represent 31% of professors at South African higher education institutions, and the 2016–2017 Commission for Employment Equity's annual report (RSA DoL, 2017) indicates, similarly, that women occupy the minority of positions at top (31%) and senior (33.4%) management level in universities. Mdleleni, Mandyoli, & Frantz (2021) state that in South African universities, women occupied only 27.5% of professorial positions, whereas 56.6% of lecturer positions were filled by women. More recently, during the UN Women's

Participation in Higher Education in Southern Africa event on May 4, 2023, the Minister of Higher Education, Science and Innovation, Dr Blade Nzimande, claimed that women continue to be underrepresented in South Africa public higher education institutions, accounting for 43%. Further the Minister state that the underrepresentation is noticeable at senior academic positions, where women comprise 18.5% of female professors and 29.8% of associate professors.

Higher education institutions in South Africa are also characterised by a patriarchal culture and ideologies applied to promotion and a lack of support and mentorship for women is considered to hinder women's advancement on the career ladder (Mabokela, 2001); this also contributes to women not being taken seriously or being regarded as lacking skills for positions (Eggins, 2016). Eggins (2016) maintains that only around 20% of higher education institutions have female vice-chancellors, and these women are frequently the first in the institution's history, evidence of the long-standing patriarchal system of South African higher education.

Another deeply felt characteristic of the South African higher education context is the legacy of apartheid. Apartheid's ideological foundation was based on 'separateness' by colour (Cottrell, 2005). According to Eggins (2016), the higher education system in South Africa was developed from a legacy of apartheid where gender inequalities and racial differences were the norm. Under apartheid, Black South Africans were only allowed to attend specific higher education institutions designed for them. As a result, higher education in the country was designed to entrench the ruling White minority's authority and privilege, and White institutions were better supported and resourced than their Black African equivalents (Breetzke & Hedding, 2018).

The lack of transformation in higher education is another characteristic of the system. Frustration with lack of transformation led to large-scale and violent student protests in 2015 and 2016, sparked by student discontent with the country's escalating cost of higher education (Breetzke & Hedding, 2018) calling for free higher education (Sadiq et al., 2019). Breetzke and Hedding (2020) stress the urgent need for transformation of the South African academic system, gender and racial transformation, and also the transformation in terms of decolonisation of existing curricula. Therefore, as Eggins (2016) states, the condition of women in higher education cannot be isolated from race relationships.

In South African higher education institutions, few Black people are associate professors or full professors. Price (2014) report that in the country only 34 African women were among the

193 African professors. A similar figure was observed concerning the Coloured professors. Out of 94 Coloured professors, women constituted only 29 of the country's full professors. For example, Price (2014) writes that institutions such as the University of Cape Town argue that the lack of Black academics in the country and in the institution in particular, is due to an absence of Black candidates for professoriate. The institution provides twofold justifications for the scenario.

First, it takes more than 20 years after receiving a Ph.D. to be promoted to professor. Professionals stay roughly five years per level from junior lecturer, lecturer, senior lecturer, associate professor to professor. Second, few Black people pursue a career in academia, preferring instead to work in the government service and private sector. Unlike the justification presented by Price (2014), for the absence of Black professors in South African academic higher education institutions, in a more early study Mabokela (2000) investigated faculty diversification programmes in two historically White universities in the country, the University of Cape Town and Stellenbosch University. This study concluded that the condition of Black professionals and women at these two higher education institutions has remained unaltered for the past 20 years, since employment and recruiting of Black academics remains dismal. Mabokela (2000) continued by saying that despite the existence of an institutional Equal Opportunity Employment Policy, no active effort was made to recruit and hire suitable Black academics. The justification given was that Black people pursue careers outside of academia. Mabokela (2000) reported that Africans made up 4.01% of permanent faculty members at the University of Cape Town in 1994, Coloureds 2.14%, and Indians 1.60%, compared to Whites who made up 92.25%. Women made up 22.72% of faculty members in the same year, but only 14.63% (6 out of 41) of executive administrators.

In a more recent studies, similar findings persist. The higher education system in a democratic South Africa still faces challenges regarding equity and transformation, gender and racial balance in the academic positions throughout the system (Breetzke, Hedding, & Pijper, 2022; Teichler et al., 2013). White academic professionals dominate the higher education institutions (Breetzke & Hedding, 2020; Department of Higher Education and Training, 2019). According to the Department of Higher Education and Training (2020), white people account for 42.7% of academic staff, although making up only 9% of the country's population. African females are the most underrepresented group, with a 16.1% representation in universities (Department of Higher Education and Training, 2019). Zulu (2021, pp.240) state that there is a "scarcity of Black women professors within the South African landscape". Only 15% of

Universities are led by women (Seale, Fish, & Schreiber (2021). The South African system uses a cost-sharing policy for the funding of university education (Wangenge-Ouma, 2012) which relates to a shift in the burden of higher education expenditures from being solely or primarily borne by the government or taxpayers to being shared with parents and students (Johnstone, 2003).

4.3. Selection of Participants

The purpose of this qualitative study was to explore the factors that allowed women full professors from STEM fields who are considered successful by the standards of academic career in South Africa and Sweden, to remain and succeed in academia. Therefore the sample for this study was purposively selected. In purposive sampling, people are accessed on the basis of their expertise and experience in the subject under research (Bryman, 2016; Cohen et al., 2018). According to Ball (1990) purposive sampling is often used to identify knowledgeable sources of information. Specifically, people with in-depth knowledge of specific topics, such as those with a professional job, power, access to networks, expertise, or experience to comment on the matters of the interest of the researcher. Cohen et al., (2018), in same vein, state that purposive sample is undertaken to achieve representativeness of a particular group, to focus on a specific issue of a case and enable therefore comparisons. Further, however, Cohen et al. (2018) state that whilst purposive sample may meet the researcher's goals, it does not represent the general population. It is intentionally selective and biased. Therefore, to mitigate the bias and ensure representation in the participants of the research according to Cohen et al. (2018, p.219) researchers "will deliberately seek to include a sufficient number of participants to ensure appropriate statistical analysis or representation in the sample". In the present research to minimise bias and ensure representativeness of participants, successful women full professors were selected from the diverse academic disciplines within STEM fields.

In academia, research productivity is considered the paramount measure of academic success for individuals and institutions as mentioned in the chapters above (see Chapter Two). Therefore, to select the participants of this study purposively, the individual research productivity of women academics was calculated, ranks of highly productive academics were built, and the academics in the higher positions were interviewed. The steps taken to calculate the research productivity and build the ranks of women from the sample in both countries of the study are explained in detail below.

In the literature, bibliometric data from national or international databases is considered appropriate for research productivity assessments (Kwiek, 2018). Therefore, the study combines two methodological approaches inspired by Joy (2006), and Mayer and Rathmann (2018). The methodology focusses on combining (i) a bibliometric web scraping, which is measured by the number of publications by a country, institution, research group, or individual, and the citations received by such publications (Abramo et al., 2008; Bertocchi et al., 2015; Broadus, 1987; Borokhovich et al., 1995; Finardi, 2013; Heberger et al., 2010; Kaur et al., 2015), and (ii) manual curriculum vitae (CV) modes of data collection. This methodology was undertaken in four phases.

The first phase consisted of searching extensively and manually, the web pages of all intensive research-oriented universities in South Africa and Sweden that offer degrees in science, technology, engineering, and mathematics (STEM) fields and collecting the names of all listed women full professors in the field and their CVs for further analysis. The women were identified using their complete names and pictures (in cases that were found on the home pages). The institutions were identified using the list of national university rankings in each country (see Swedish Higher Education Authority, Council for Higher Education Accreditation – South Africa, and Universities South Africa – USAf). In this phase it was possible to collect the names of 120 (presumed) women full professors from South Africa and 427 (presumed) women full professors from Sweden. However, after a thorough analysis of the universities' web pages and individual personal web pages of all women professors from both countries, those who were not women or full professors were excluded from the sample. The data was also thoroughly cleaned to avoid repetition in the names. Thereafter, two criteria were used to refine the data set used in this study. First, only women were included in the sample. Second, only women who are full professors were included. After applying the exclusion criteria, the final dataset of women full professors for this phase totalled 70 women full professors from South Africa, and 390 from Sweden. Table 1 provides a detailed overview of the dataset of each country and the exclusion criteria applied.

Table 1

Dataset of Each Country, First Phase

	South Africa	Sweden
Number of professors	120	427
Professors excluded	50	37

Exclusion criteria	42 associate professors	23 associate professors
	5 emeritus professors	5 emeritus professors
	3 men	3 men
		6 repetition
Total	70	390

The second phase focussed on conducting a CV analysis for all women full professors. This procedure consisted of collecting available data from the universities' web pages, and individual personal web pages of all women full professors. In cases where a full CV could not be found on the university web page, Google was used to obtain such a document. Demographic information about the women professors was gathered and information related to their career paths. The study established the year in which the women full professors were awarded a doctoral degree, age appointed to full professor, years taken from Ph.D. to full professor and academic experience. In some cases, mostly in the sample of Swedish professors, it was possible through the CV analyses to gather personal information related to age, marital status, number of children, and if the woman professor took maternity leave and for how long. Regarding the South Africa the demographic information was collected through interview guide, in the section reserved to respondent's backgrounds. In this section women full professors were asked information related to age, country of origin, marital status, number of children, time spent on maternity leave, and at what stage of life they had children. In total, information concerning 70 women full professors from South Africa and 390 women full professors from Sweden was obtained.

In the third phase, data on research productivity for every woman full professor was captured from the publication period of 2017 to 2006. As opposed to a women full professor's entire career, the present study specifically limits the time from 2017 to 2006, although the measurement of individual research productivity for a specific time span is considered challenging due to it being a time-consuming process and limited to the publication count and citation count from a specific set of years from the entire research portfolio of a scholar (Duffy et al., 2008).

Research has acknowledged that identifying the most productive scholars is a challenge. According to Martínez, Floyd, and Erichsen (2011), this problem can be overcome by building on earlier research and employing productivity indices determined using a variety of methods, such as a basic numerical tally of how many articles a researcher has authored and

taking into account an author's position relative to his or her co-authors. In this study, research productivity is measured through Fractional Scientific Strength (FSS), a proxy of research productivity developed by Abramo and D'Angelo (2014). According to Abramo et al. (2020), individual research productivity is calculated in two different forms, with and without accounting for cost. Furthermore, the objectives of an assessment of individual research productivity determines if is pertinent to include costs of research. It is only necessary to include the cost of research when the objective of the assessment is to reward best performers or "to decide where to allocate funds to maximize returns" (Abramo et al., 2020, p. 7), and it is not necessary to include cost when the aim of the assessment of individual research productivity is to identify the most experts professionals in a field. Therefore, in this research cost is ignored. Hence, FSS is calculated through the formula:

$$FSS = \frac{1}{t} \sum_{j=1}^{N} \frac{c_j}{\bar{c}} f_j$$

Each variable is defined as:

t = number of years of work of the professor in the period under observation

N = number of publications of the professor in the period under observation

c_j = citations received by publication

$\bar{c}$ = average of the distribution of citations received for all cited publications in the same year and subject category of publication

f_j = fractional contribution of the professor to publication

The number of years of work of the professor in the period under observation is calculated in two ways. First through the difference between the current year and the year the Ph.D. was earned. Second, through the difference between the current year and the year of the author's first available publication in a database (Duffy et al., 2011; König et al., 2015; Mayer & Rathmann, 2018). For the purpose of this research the second method was considered.

Abramo and D'Angelo (2014) state that the process of assessment of research productivity involves some assumptions and simplifications. Thus, in this study, is assumed that authors have different contributions to a publication and that the distribution of authorship in a publication is an accurate representation of the authors' contribution. Therefore, the fractional contribution is calculated by attributing different weights to each co-author according to their

order in the byline and the character of the co-authorship[1] (intramural or extra-mural). These values were computed for each woman's total list of publications in each country to create a total author fractional contribution value for the publication period under research.

To determine the research productivity of each women full professor in each country, information retrieved from Scopus was relied on, which is considered the largest database of bibliographic citation and abstract of peer-reviewed literature in the world (Ball & Tunger, 2006). According to scholars such as Copes, Khey, and Tewksbury (2012), information must be collected over a short period on Scopus because this database updates and refreshes its information frequently. Therefore, the information corresponding to each productivity measures to calculate FSS was collected over three months, from September to November of 2021. This phase required that the researcher manually go through each author's publications portfolio in the database and subtract publications and citations of those publications that corresponded to the specific period under research. This procedure was done for each woman professor from both countries. Additionally, the data set was manually cleaned to avoid repetitions and counting publications that were written by other individuals with the same or similar names.

Rather than sampling a narrow period (e.g., three years as Mayer [2018] and Joy [2006] did), this study covers 11 years of the careers of all the sample members. The choice of a long period of career allowed for the capture of variations and patterns of productivity thoroughly through the publication activities and citation metrics of each researcher during their trajectory in their academic careers. Also, to allow for a fair comparison of professors, the publication period from 2017 to 2006 was divided into four triennia: 2017–2015, 2014–2012, 2011–2009 and 2008–2006. The decision to divide into triennia was because three years of publication period is considered more reliable to assess individual and institutional research performance and is in line with previous literature (Abramo et al., 2012; Abramo et al., 2017; Ductor, 2015; Gonzalez-Brambila et al., 2013; He et al., 2009). The analysis starts from 2017 because according to Abramo et al. (2011a) for the citations count to be considered a reliable indicator of research impact and be a robust indicator it is necessary to observe a distance-time from the publication date and citation observation; this time is two to three years.

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[1] If the first and last authors belong to the same university, 40% of citations are attributed to each of them; the remaining 20% are divided among all other authors. If the first two and last two authors belong to different universities, 30% of citations are attributed to first and last authors; 15% of citations are attributed to second and last but one author; the remaining 10% is divided among all others. As Abramo, D'Angelo, and Murgia (2017) state, the weighting values can be changed according to specific practices in different contexts.

Exclusion criteria was also applied in this phase. Women professors who had no publication in one of the triennia were excluded from the sample. This procedure was also applied in previous research (Abramo et al., 2017).

Table 2 shows an overview of the final dataset obtained in this phase in each country. The assessment of individual research productivity must be done by field due to the variations of publication and citation behaviour across disciplinary field (Abramo et al., 2013). Therefore, in each country under research, academics were grouped in eight clusters of academic disciplines that best represent the current structure of the STEM field, with women full professors (see Table 3), and Table 4 shows an example of the type of data gathered to calculate FSS; this information was collected for each woman full professor's portfolio throughout all four triennia in all disciplines in both countries.
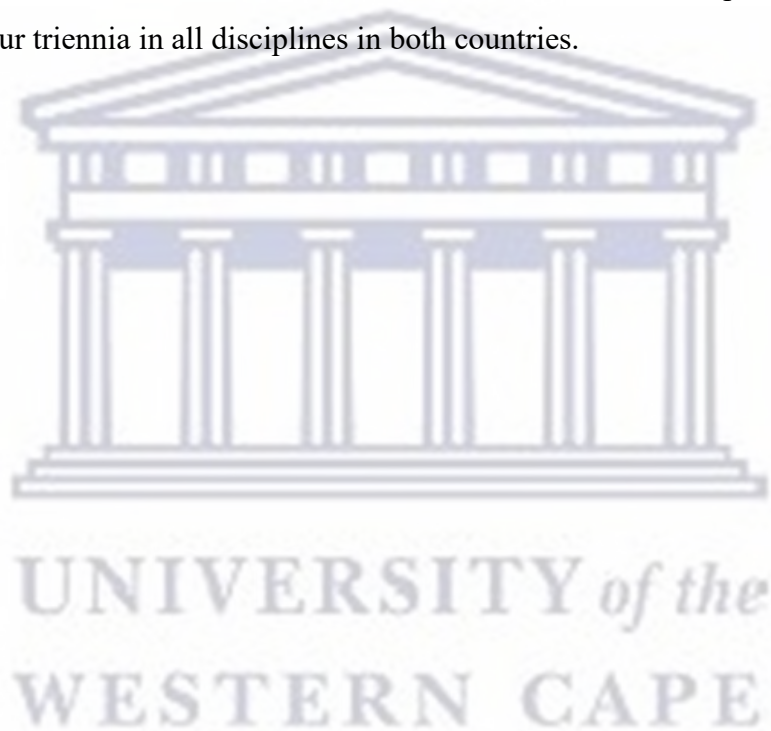
Table 2

Dataset of Each Country, Third Phase

	South Africa	Sweden
Number of women professors	70	390
Excluded	6	66
Total	64	324

Table 3

Women Full Professors Grouped in Eight Clusters of Academic Disciplines, in Each Country

	Sweden	South Africa	
Discipline	Number of women professors	Number of women professors	
Biology	67	27	
Chemistry	44	10	
Computer Science	31	7	
Earth and Environment	34	7	
Engineering	75	9	
Mathematics	19	3	
Physics	29	1	
Technology	25	0	
Total	324	64	

Table 4

SCOPUS ID	University	Country	N - #pub 2017-2015	cj - #Citation 2017-2015	t - #2017-2015 Years of work	c¯ - #2017-2015 Averge D citations	#fj - 2017-2015	#FSS - 2015-2017
825258	Stellenbosch University	South Africa	50	1542	17	30,84	18,86	55,46
700573	University of Pretoria	South Africa	40	1006	30	25,15	8,77	11,69
660251	University of Pretoria	South Africa	42	510	23	12,14	16,53	30,18
563595	University of Pretoria	South Africa	26	212	21	8,15	9,90	12,25
660266	University of Cape Town	South Africa	5	106	14	21,20	1,61	0,57
572083	University of Pretoria	South Africa	19	225	22	11,84	5,10	4,41
355608	University of Pretoria	South Africa	16	3783	25	236,43	3,95	2,53
700436	Stellenbosch University	South Africa	23	3629	20	157,78	8,33	9,57
700333	University of Cape Town	South Africa	17	242	24	14,23	4,47	3,17
700448	Stellenbosch University	South Africa	21	221	25	10,52	2,47	2,07
886936	Stellenbosch University	South Africa	13	311	15	23,92	3,82	3,31
700583	University of Cape Town	South Africa	11	549	33	49,91	3,15	1,05
670164	University of Pretoria	South Africa	17	171	24	10,06	5,45	3,86

SCOPUS ID	University	Country	N - #pub 2017-2015	cj - #Citation 2017-2015	t - #2017-2015 Years of work	c̄ - #2017-2015 Averge D citations	#fj - 2017-2015	#FSS - 2015-2017
700660	University of Pretoria	South Africa	10	133	21	13,30	1,48	0,77
355493	Stellenbosch University	South Africa	5	76	33	15,20	0,95	0,14
650799	University of Pretoria	South Africa	17	420	19	24,70	3,08	2,76
660347	University of Pretoria	South Africa	7	94	18	13,43	3,33	1,29
700465	University of the Witwatersrand	South Africa	6	228	22	38,00	1,15	0,31
824567	Stellenbosch University	South Africa	13	867	12	66,69	1,21	1,31
660327	University of Pretoria	South Africa	9	168	21	18,67	2,86	1,22
720290	Stellenbosch University	South Africa	12	332	21	27,67	2,67	1,52
720144	University of the Witwatersrand	South Africa	9	345	29	38,33	1,87	0,58
140224	University of the Witwatersrand	South Africa	10	78	19	7,80	3,57	1,88
660386	University of Cape Town	South Africa	2	63	37	31,50	0,50	0,03
806547	University of Cape Town	South Africa	5	122	29	24,40	0,89	0,15

Data Gathered to Calculate FSS in One Triennium – 2017-2015 – Biology – South Africa

| 720248 | University of the Witwatersrand | South Africa | 9 | 82 | 33 | 9,11 | 2,66 | 0,73 |

In the fourth and last phase, rankings of highly productive academics in each country of the study were created based on the data gathered in the last phase. Further, academics in the top rank positions were interviewed using a semi-structured interview to collect individual information about the factors that had an influence on their success. Specifically, a unique data set for each country was created for all women full professors in STEM in South Africa and Sweden, and their publication record and impact during their careers for the publication period of 2017 to 2006.

To obtain the ranks in each discipline the women professors were ranked based on their average scores of FSS in the four triennia. Specifically, once the FSS scores had been obtained for all samples of women professors for the four triennia, they were ordered from first to last in each triennium and then averaged per their specific ranks. Finally, an average rank for each author was calculated, using the four different rankings from each professor throughout the triennia. This is in line with previous research (Copes et al., 2012). Table 5 shows in detail an example of the ranks built through FSS of women full professors calculated in one discipline throughout the triennia.

This procedure allowed for the determination and identification of the top women professors in each STEM discipline in each country (for further semi-structured interviews). The procedure also allowed the researcher to observe that in both countries, individual research productivity follows a well-known pattern of productivity distribution in science – the large variations of the individual research productivity (Abramo et al., 2020; Cortés et al., 2016; Kwiek, 2018). The best performing researchers in each discipline comprised a small number of professionals who produce the majority of top publications and citations in their fields. Specifically, consistently, throughout the disciplines and the triennia, it was a small minority of women full professors in both countries who produced the majority of all publications and citations. This is observed in Table 5.

Further the data allowed comparisons between countries, specifically, cross-disciplinary variations. South Africa has a higher performance in biology, with one professor presenting the highest FSS, and positioned at the top throughout the four triennia under analysis. While professors from Sweden dominated mathematics, earth and environment, chemistry, computer science, engineering, physics, and technology. Table 6 show an example of this comparison.

Table 5

Ranks of Women Full Professors Calculated in Biology Throughout the Four Triennia

SCOPUS ID	University	Country	#FSS – 2017-2015	#FSS – 2014-2012	#FSS – 2011-2009	#FS – 2008-2006	Total FSS	Rank
700580	Chalmers	Sweden	21,2818 (1)	6,434 (3)	8,664	20,650	29,314	1
720307	Chalmers	Sweden	9,624 (3)	16,946 (1)	5,483	14,711	20,194	2
660356	Lund U	Sweden	2,939 (7)	4,063 (8)	16,500	22,380	38,880	3
700492	Lund U	Sweden	12,641 (2)	5,501 (6)	7,134	10,159	17,293	4
885043	Umea U	Sweden	2,078 (9)	8,743 (2)	8,545	4,857	13,402	5
700414	Lund U	Sweden	8,504 (4)	3,188 (9)	3,118	7,665	10,783	6
660286	Umea U	Sweden	3,073 (6)	6,361 (4)	5,326	2,941	8,268	7
660278	Lund U	Sweden	4,533 (5)	5,750 (5)	4,300	1,012	5,312	8
700519	Uppsala U	Sweden	0,825 (16)	5,426 (7)	2,944	1,467	4,411	9
555847	Uppsala U	Sweden	0,994 (14)	2,417 (11)	2,014	2,414	4,428	10
560866	Umea U	Sweden	1,499 (10)	2,344 (12)	1,388	0,667	2,055	11
355667	Lund U	Sweden	1,051 (13)	1,118 (13)	0,574	2,861	3,436	12
150734	Uppsala U	Sweden	2,086 (8)	1,261 (15)	1,904	0,187	2,090	13

SCOPUS ID	University	Country	#FSS – 2017-2015	#FSS – 2014-2012	#FSS – 2011-2009	#FS – 2008-2006	Total FSS	Rank
700395	Uppsala U	Sweden	0,190 (20)	0,052 (25)	0,784	2,971	3,755	14
720288	Uppsala U	Sweden	0,008 (24)	2,606 (10)	0,607	0,473	1,080	15
670185	Umea U	Sweden	1,375 (11)	0,213 (21)	1,231	0,190	1,421	16
660389	Stockholm U	Sweden	0,113 (22)	0,831 (16)	0,824	1,226	2,051	17
700702	Uppsala U	Sweden	1,372 (12)	0,246 (20)	0,584	0,317	0,901	18
700434	Uppsala U	Sweden	0,098 (23)	0,186 (22)	1,133	0,923	2,056	19
660238	Uppsala U	Sweden	0,256 (19)	1,435 (14)	0,144	0,429	0,573	20
700415	Umea U	Sweden	0,937 (15)	0,621 (17)	0,208	0,121	0,329	21
670181	Umea U	Sweden	0,127 (21)	0,313 (18)	0,038	1,097	1,135	22
572078	Uppsala U	Sweden	0,440 (18)	0,128 (23)	0,263	0,579	0,842	23
660216	Umea U	Sweden	0,441 (17)	0,267 (19)	0,556	0,001	0,557	24
670173	Umea U	Sweden	0,004 (25)	0,088 (24)	0,381	0,006	0,387	25

Table 6

Comparison of Research Productivity of Women Professors in South Africa and Sweden

	2017-2015					2014-2012			
Prof. ID	**Country**	**Institution**	**FSS score**	**Rank**	**Prof. ID**	**Country**	**Institution**	**FSS score**	**Rank**
572082	Sweden	Chalmers	122,258	1	160322	Sweden	Uppsala U	64,492	1
572103	Sweden	Luleå U	40,365	2	572082	Sweden	Chalmers	33,569	2
160322	Sweden	Uppsala U	39,888	3	710238	Sweden	Linköping U	23,778	3
357846	Sweden	Lund U	27,522	4	572103	Sweden	Luleå U	19,456	4
670168	Sweden	KTH	22,403	5	357846	Sweden	Lund U	18,656	5
650584	Sweden	Chalmers	13,884	6	670181	Sweden	KTH	16,375	6
710238	Sweden	Linköping U	11,513	7	239897	Sweden	KTH	14,800	7
660256	Sweden	KTH	11,230	8	700702	Sweden	KTH	12,840	8
740283	Sweden	Luleå U	11,064	9	650584	Sweden	Chalmers	12,538	9
367245	Sweden	Chalmers	10,990	10	670168	Sweden	KTH	12,525	10
700529	Sweden	KTH	10,394	11	150457	South Africa	SU	12,114	11
239897	Sweden	KTH	9,991	12	572046	Sweden	KTH	11,616	12
670155	Sweden	KTH	9,545	13	367245	Sweden	Chalmers	10,795	13
141205	Sweden	Linköping U	9,467	14	141205	Sweden	Linköping U	9,333	14
660318	Sweden	Luleå U	9,311	15	660318	Sweden	Luleå U	9,008	15
572046	Sweden	KTH	8,393	16	551913	South Africa	UCT	8,643	16
700614	Sweden	Lund U	8,157	17	660325	Sweden	KTH	8,007	17
239929	Sweden	Chalmers	7,398	18	740283	Sweden	Luleå U	7,588	18
558023	South Africa	SU	6,789	19	710228	Sweden	KTH	7,046	19
710199	South Africa	SU	6,650	20	572080	Sweden	Linköping U	6,960	20
660325	Sweden	KTH	6,443	21	700428	Sweden	KTH	6,694	21
660299	Sweden	KTH	5,665	22	148188	Sweden	KTH	6,046	22
700702	Sweden	KTH	5,289	23	700603	Sweden	Lund U	5,871	23

		2017-2015					**2014-2012**		
Prof. ID	**Country**	**Institution**	**FSS score**	**Rank**	**Prof. ID**	**Country**	**Institution**	**FSS score**	**Rank**
564696	Sweden	Chalmers	5,128	24	700546	Sweden	Chalmers U	5,407	24
700428	Sweden	KTH	5,105	25	660256	Sweden	KTH	5,029	25
700546	Sweden	Chalmers	5,056	26	558023	South Africa	SU	4,833	26
670181	Sweden	KTH	4,626	27	700529	Sweden	KTH	4,750	27
150457	South Africa	SU	4,560	28	140496	Sweden	Luleå U	4,740	28
148188	Sweden	KTH	4,432	29	572075	Sweden	KTH	4,635	29
660359	Sweden	KTH	3,850	30	564696	Sweden	Chalmers	4,300	30
660255	South Africa	UP	3,750	31	710199	South Africa	SU	4,136	31
239715	South Africa	UCT	3,693	32	700574	Sweden	KTH	4,029	32
551913	South Africa	UCT	3,630	33	660359	Sweden	KTH	3,368	33
157589	Sweden	MidSweden	3,333	34	670155	Sweden	KTH	3,102	34
700574	Sweden	KTH	3,033	35	559241	Sweden	KTH	3,084	35
556113	Sweden	Chalmers	2,489	36	239871	Sweden	KTH	3,000	36
140496	Sweden	Luleå U	2,483	37	660286	Sweden	Luleå U	2,979	37
572075	Sweden	KTH	2,196	38	660299	Sweden	KTH	2,609	38
700388	Sweden	KTH	2,081	39	650715	Sweden	KTH	2,067	39
660388	South Africa	UP	1,955	40	122448	Sweden	KTH	1,942	40
101427	Sweden	KTH	1,650	41	239929	Sweden	Chalmers	1,863	41
127864	Sweden	Linköping U	1,575	42	845033	Sweden	Linköping U	1,855	42
559241	Sweden	KTH	1,572	43	650812	South Africa	UP	1,850	43
851720	Sweden	Chalmers	1,435	44	851720	Sweden	Chalmers	1,774	44
217388	Sweden	Lund U	1,400	45	127864	Sweden	Linköping U	1,723	45
130038	Sweden	KTH	1,269	46	700388	Sweden	KTH	1,722	46
700484	Sweden	Chalmers	1,113	47	710218	Sweden	Lund U	1,578	47
368689	Sweden	Luleå U	1,080	48	700484	Sweden	Chalmers	1,513	48
558270	Sweden	MidSweden	1,048	49	984399	Sweden	KTH	1,444	49
660330	Sweden	KTH	1,020	50	239715	South Africa	UCT	1,432	50

| | 2017-2015 | | | | | 2014-2012 | | | |
Prof. ID	Country	Institution	FSS score	Rank	Prof. ID	Country	Institution	FSS score	Rank
660367	Sweden	Luleå U	0,921	51	660388	South Africa	UP	1,421	51
700508	Sweden	Lund U	0,820	52	130038	Sweden	KTH	1,415	52
650812	South Africa	UP	0,812	53	356116	Sweden	Luleå U	1,406	53
984399	Sweden	KTH	0,800	54	660250	Sweden	Lund U	1,365	54
239871	Sweden	KTH	0,789	55	660330	Sweden	KTH	1,276	55
700396	Sweden	Lund U	0,776	56	158242	Sweden	KTH	1,225	56
660286	Sweden	Luleå U	0,687	57	700614	Sweden	Lund U	1,185	57
700657	Sweden	Lund U	0,625	58	101427	Sweden	KTH	1,178	58
243451	Sweden	KTH	0,614	59	720226	Sweden	Lund U	1,120	59
710218	Sweden	Lund U	0,602	60	700396	Sweden	Lund U	1,109	60
127793	Sweden	Lund U	0,591	61	157589	Sweden	MidSweden	1,056	61
572080	Sweden	Linköping U	0,577	62	700508	Sweden	Lund U	0,969	62
556397	Sweden	KTH	0,570	63	556113	Sweden	Chalmers	0,834	63
845033	Sweden	Linköping U	0,513	64	700657	Sweden	Lund U	0,793	64
158242	Sweden	KTH	0,458	65	556397	Sweden	KTH	0,750	65
660317	Sweden	Chalmers	0,426	66	217388	Sweden	Lund U	0,714	66
660275	Sweden	KTH	0,407	67	660255	South Africa	UP	0,711	67
356116	Sweden	Luleå U	0,372	68	136112	Sweden	Chalmers	0,641	68
780165	South Africa	UP	0,342	69	139077	Sweden	KTH	0,590	69
670146	Sweden	Chalmers	0,289	70	558270	Sweden	MidSweden	0,500	70
700603	Sweden	Lund U	0,279	71	243451	Sweden	KTH	0,483	71
720226	Sweden	Lund U	0,278	72	660275	Sweden	KTH	0,468	72
139077	Sweden	KTH	0,225	73	392615	Sweden	Linköping U	0,413	73
710228	Sweden	KTH	0,205	74	368689	Sweden	Luleå U	0,400	74
660334	Sweden	Lund U	0,173	75	660367	Sweden	Luleå U	0,200	75
136112	Sweden	Chalmers	0,169	76	660334	Sweden	Lund U	0,174	76
700560	Sweden	Lund U	0,111	77	127793	Sweden	Lund U	0,174	77

	2017-2015					2014-2012			
Prof. ID	**Country**	**Institution**	**FSS score**	**Rank**	**Prof. ID**	**Country**	**Institution**	**FSS score**	**Rank**
650715	Sweden	KTH	0,106	78	700560	Sweden	Lund U	0,167	78
660250	Sweden	Lund U	0,090	79	700332	Sweden	Uppsala U	0,156	79
122448	Sweden	KTH	0,082	80	660317	Sweden	Chalmers	0,129	80
392615	Sweden	Linköping U	0,082	81	572106	Sweden	Lund U	0,123	81
660297	Sweden	Luleå U	0,063	82	670146	Sweden	Chalmers	0,053	82
700332	Sweden	Uppsala U	0,017	83	780165	South Africa	UP	0,013	83
572106	Sweden	Lund U	0,010	84	660297	Sweden	Luleå U	0,006	84

	2011-2009					2008-2006			
Prof. ID	**Country**	**Institution**	**FSS score**	**Rank**	**Prof. ID**	**Country**	**Institution**	**FSS score**	**Rank**
160322	Sweden	Uppsala U	78,751	1	572082	Sweden	Chalmers	51,563	1
572103	Sweden	Luleå U	44,672	2	572103	Sweden	Luleå U	21,458	2
572082	Sweden	Chalmers	30,164	3	700529	Sweden	KTH	20,407	3
357846	Sweden	Lund U	21,340	4	572080	Sweden	Linköping U	20,150	4
148188	Sweden	KTH	19,535	5	650715	Sweden	KTH	15,833	5
650715	Sweden	KTH	19,067	6	700702	Sweden	KTH	12,091	6
700702	Sweden	KTH	16,811	7	670168	Sweden	KTH	11,667	7
700529	Sweden	KTH	16,333	8	239715	South Africa	UCT	10,800	8
650584	Sweden	Chalmers	13,400	9	367245	Sweden	Chalmers	9,921	9
851720	Sweden	Chalmers	13,370	10	660359	Sweden	KTH	6,683	10
367245	Sweden	Chalmers	11,391	11	357846	Sweden	Lund U	6,300	11
556397	Sweden	KTH	10,925	12	710199	South Africa	SU	6,300	12
572075	Sweden	KTH	10,898	13	572075	Sweden	KTH	5,670	13
710199	South Africa	SU	10,625	14	670155	Sweden	KTH	5,506	14
710228	Sweden	KTH	8,173	15	660318	Sweden	Luleå U	5,133	15
559241	Sweden	KTH	7,920	16	551913	South Africa	UCT	4,500	16
700574	Sweden	KTH	7,885	17	710238	Sweden	Linköping U	4,225	17
660359	Sweden	KTH	7,345	18	572046	Sweden	KTH	4,200	18

2011-2009					2008-2006				
Prof. ID	**Country**	**Institution**	**FSS score**	**Rank**	**Prof. ID**	**Country**	**Institution**	**FSS score**	**Rank**
239897	Sweden	KTH	6,696	19	670181	Sweden	KTH	3,986	19
670181	Sweden	KTH	6,653	20	700546	Sweden	Chalmers	3,917	20
101427	Sweden	KTH	6,188	21	148188	Sweden	KTH	3,750	21
136112	Sweden	Chalmers	6,110	22	851720	Sweden	Chalmers	3,459	22
572080	Sweden	Linköping U	5,429	23	660286	Sweden	Luleå U	3,320	23
660325	Sweden	KTH	5,400	24	700396	Sweden	Lund U	3,080	24
217388	Sweden	Lund U	5,200	25	559241	Sweden	KTH	3,023	25
670168	Sweden	KTH	5,163	26	564696	Sweden	Chalmers	2,875	26
572046	Sweden	KTH	4,767	27	740283	Sweden	Luleå U	2,741	27
650812	South Africa	UP	4,582	28	650584	Sweden	Chalmers	2,650	28
150457	South Africa	SU	4,375	29	130038	Sweden	KTH	2,250	29
239715	South Africa	UCT	4,100	30	700332	Sweden	Uppsala U	2,113	30
700428	Sweden	KTH	3,798	31	140496	Sweden	Luleå U	2,100	31
660286	Sweden	Luleå U	3,728	32	556397	Sweden	KTH	2,095	32
660299	Sweden	KTH	2,978	33	984399	Sweden	KTH	2,000	33
700332	Sweden	Uppsala U	2,638	34	239929	Sweden	Chalmers	1,600	34
710238	Sweden	Linköping U	2,459	35	660330	Sweden	KTH	1,527	35
660256	Sweden	KTH	2,409	36	217388	Sweden	Lund U	1,500	36
670155	Sweden	KTH	2,408	37	141205	Sweden	Linköping U	1,500	37
660318	Sweden	Luleå U	2,200	38	700388	Sweden	KTH	1,430	38
660388	South Africa	UP	2,125	39	160322	Sweden	Uppsala U	1,400	39
368689	Sweden	Luleå U	1,875	40	101427	Sweden	KTH	1,361	40
239871	Sweden	KTH	1,662	41	136112	Sweden	Chalmers	1,357	41
740283	Sweden	Luleå U	1,639	42	127793	Sweden	Lund U	1,338	42
564696	Sweden	Chalmers	1,629	43	660255	South Africa	UP	1,333	43
130038	Sweden	KTH	1,600	44	700428	Sweden	KTH	1,295	44
700396	Sweden	Lund U	1,350	45	700560	Sweden	Lund U	1,244	45

	2011-2009					2008-2006			
Prof. ID	Country	Institution	FSS score	Rank	Prof. ID	Country	Institution	FSS score	Rank
660330	Sweden	KTH	1,243	46	150457	South Africa	SU	1,200	46
158242	Sweden	KTH	1,177	47	558023	South Africa	SU	1,200	47
700546	Sweden	Chalmers	1,167	48	127864	Sweden	Linköping U	1,029	48
127864	Sweden	Linköping U	1,100	49	368689	Sweden	Luleå U	1,000	49
660250	Sweden	Lund U	1,071	50	720226	Sweden	Lund U	0,914	50
139077	Sweden	KTH	1,050	51	845033	Sweden	Linköping U	0,914	51
700508	Sweden	Lund U	0,887	52	158242	Sweden	KTH	0,850	52
127793	Sweden	Lund U	0,694	53	700657	Sweden	Lund U	0,761	53
660367	Sweden	Luleå U	0,692	54	660325	Sweden	KTH	0,688	54
243451	Sweden	KTH	0,638	55	356116	Sweden	Luleå U	0,667	55
700603	Sweden	Lund U	0,600	56	139077	Sweden	KTH	0,643	56
700388	Sweden	KTH	0,589	57	660299	Sweden	KTH	0,567	57
710218	Sweden	Lund U	0,529	58	700484	Sweden	Chalmers	0,560	58
551913	South Africa	UCT	0,500	59	660250	Sweden	Lund U	0,545	59
558023	South Africa	SU	0,467	60	660275	Sweden	KTH	0,465	60
239929	Sweden	Chalmers	0,467	61	670146	Sweden	Chalmers	0,400	61
780165	South Africa	UP	0,404	62	710228	Sweden	KTH	0,375	62
157589	Sweden	MidSweden	0,400	63	239897	Sweden	KTH	0,367	63
660317	Sweden	Chalmers	0,386	64	780165	South Africa	UP	0,280	64
700657	Sweden	Lund U	0,385	65	660334	Sweden	Lund U	0,253	65
984399	Sweden	KTH	0,383	66	392615	Sweden	Linköping U	0,250	66
660255	South Africa	UP	0,333	67	558270	Sweden	MidSweden	0,233	67
122448	Sweden	KTH	0,325	68	710218	Sweden	Lund U	0,183	68
660275	Sweden	KTH	0,250	69	700508	Sweden	Lund U	0,165	69
700614	Sweden	Lund U	0,242	70	650812	South Africa	UP	0,150	70
392615	Sweden	Linköping U	0,200	71	243451	Sweden	KTH	0,129	71
700560	Sweden	Lund U	0,200	72	700574	Sweden	KTH	0,104	72

	2011-2009					2008-2006			
Prof. ID	Country	Institution	FSS score	Rank	Prof. ID	Country	Institution	FSS score	Rank
660297	Sweden	Luleå U	0,188	73	660317	Sweden	Chalmers	0,100	73
720226	Sweden	Lund U	0,176	74	239871	Sweden	KTH	0,100	74
558270	Sweden	MidSweden	0,133	75	700603	Sweden	Lund U	0,083	75
140496	Sweden	Luleå U	0,080	76	660297	Sweden	Luleå U	0,072	76
141205	Sweden	Linköping U	0,067	77	157589	Sweden	MidSweden	0,067	77
660334	Sweden	Lund U	0,062	78	572106	Sweden	Lund U	0,048	78
556113	Sweden	Chalmers	0,048	79	660367	Sweden	Luleå U	0,040	79
670146	Sweden	Chalmers	0,042	80	660256	Sweden	KTH	0,038	80
845033	Sweden	Linköping U	0,040	81	700614	Sweden	Lund U	0,019	81
700484	Sweden	Chalmers	0,031	82	660388	South Africa	UP	0,015	82
356116	Sweden	Luleå U	0,013	83	122448	Sweden	KTH	0,015	83
572106	Sweden	Lund U	0,012	84	556113	Sweden	Chalmers	0,006	84

4.4. Data Collection

In order to answer the questions of the study a description of the specific method of data collection is presented in this section. Marshall and Rossman (2016) identify four main methods of gathering data in qualitative research, namely, participation in the setting, direct observation, in-depth interviewing and reviewing of documents. For the purpose of this study, in-depth semi-structured face-to-face interviews were undertaken and constituted the most important source of information for this study. Interviews as a method of data collection technique are utilised to collect qualitative data by allowing participants to discuss their experiences on a phenomenon and give their own interpretation (Yin, 2018). Shanahan and Gerber (2004) also aver that an individual's social experiences can be examined through in-depth interviews. As such, forty-four semi-structured in-depth interviews with successful women full professors from STEM, 29 from Sweden and 15 from South Africa, provided the empirical data for the study. In each country, academics in the top ranking positions were emailed to explain the purpose of the research and to seek their involvement in the research. All those who agreed to be interviewed were included in the research. The interviews were conducted from March of 2022 to February of 2023. Due to the Covid-19 pandemic, 19 interviewees from Sweden and five from South Africa were conducted via Zoom. The remaining interviews (25 interviews) were conducted face-to-face at the participants' universities. All interviews lasted 45 minutes to an hour each to allow data saturation (Lincoln & Guba, 1985). The interview sessions were audio-recorded with permission from the women academics to enhance accuracy of the information captured (King & Harrocks, 2010) and transcribed verbatim by the researcher.

4.4.1 Interview Process

Interviews are used to collect qualitative data by arranging a scenario that allows participants to discuss their experiences on a specific phenomenon (Cohen et al., 2018; Seidman, 2006; Yin, 2018). This method is useful for reporting and interpreting human matters through the participants' perspectives (Yin, 2018). The present research uses interviews as a data collection tool to gather in-depth knowledge about women experiences in higher education careers, allowing for thorough responses to the research questions (Bryman, 2016). Moreover, interviews are employed because they allow participants - interviewers and interviewees - to explore their perceptions of the world in which they live and express how they see circumstances from their point of view (Cohen et al., 2018). Therefore, interviews were the

most effective technique for gathering the necessary data to answer the research questions of the present study. Interviews were performed with forty-four participants, allowing the researcher to reflect on their own experiences in a study of this kind.

Interview questions were designed to align with study questions and objectives, allowing for comparative analysis of cases. Participants were carefully and particularly chosen based on their expertise of the factors that contribute to women's career success in academia. As a result, women full professors in STEM who were regarded successful by the standards of academic career were chosen.

To align the interviews with the study research questions Cohen et al. (2018) state that the researcher can perform pilot study to identify the categories, items, and variables that are relevant and meaningful to participants, and then translate them to the interview for further examination. In this regard, in the present study a pilot study was conducted with participants with similar characteristics of the participants of the study to ensure that the meaning, and relevance of the tool is preserved to answer the research question of the study. As a result of the pilot study some questions of the interview were refined to be aligned with the research questions of the study. For this process face-to-face interviews were chosen as the most effective data collection tool to gather high-quality data for the information needed. According to Seidman (2006) in-depth interviews can provide detailed insights into an individual's social experiences. According to the author, "at the root of in-depth interviewing is an interest in understanding the lived experience of other people and the meaning they make of that experience" (Seidman, 2006, p.9). Therefore, through in-depth interviews, successful women full professors shared their ideas that answered the research questions of the study.

Interviews followed a plan that addressed key study topics. Questions arising from the interviewees' comments were pursued further to gain clarity on some of the issues. The researcher used a conversational approach to clarify questions and issues that respondents did not fully understand. According to Loiselle et al. (2010:269), member checks involve asking study participants about their reactions to preliminary findings and interpretations. Member checking might occur informally during data collection or formally after analysis. Therefore, in-depth interviews enabled the researcher to do cross-checking and follow-ups with respondents to clarify issues after reviewing transcribed notes. Specifically, through cross-checking, inconsistencies in the participants' answers were rectified. This procedure facilitated the collecting of detailed data and improved the quality of research findings. The

interviewees were reassured that their answers would be kept confidential. Permission to record their responses was asked, as stated in the section above, and to ensure accurate responses, all interviews were taped with a tape recorder (Lincoln & Guba, 1990). The interviews in both countries were open-ended, allowing for more discussion and probing by the interviewer. The interviews were conducted in English because it was suitable for both the interviewer and the interviewees. However, services of a translator was contacted to ensure that the transcription of the interviews made by the researcher as non-native English speaker reflected accurately the descriptions made by the participants of the study.

The conclusion of the interviews was as important as the beginning. The researcher enabled each responder to summarise some key features of their comments. This procedure corrected errors in the participants' responses. At the end of each interview, respondents were thanked for their time. Specifically, interviews were concluded with statements and queries such as "I have no further questions; is there anything else you would like to add?" Thank you for taking time out of your busy schedule to speak with me now. I really appreciate it. Please contact me if you have anything additional to share with me. This approach provided an opportunity for each participant to share any further experiences, which Seidman (2006) believes is a useful approach.

4.4.2. Profile of Successful Women Full Professors

In the interview guide there was a section about respondent's backgrounds. For example, women full professors were asked information related to age, country of origin, marital status, number of children, and at what stage of life they had children. As a result, the mean age of the successful women full professors in South Africa and Sweden is 58 years old and 53 years, respectively. The academic experience, calculated through time since the first publication in the Scopus database, is 18 years for Swedish professors and 21 years for South African professors. The observed difference in age between both countries may be explained by the time-to-completion rates for doctorate degrees of many successful women full professors, and by the time taken to reach full professorship position after completing a doctoral degree. Specifically, the mean age of completing a Ph.D. degree was 30 years old for Swedish professors and 32 years old for South African professors. In terms of the time taken to reach a full professorship position, the mean number of years for Swedish professors is 12 years, while for South African professors it is 14 years. This examination of successful women full professors depicts a profile of academics who had considerable time and space to develop their careers and move to high ranks in their academic careers before reaching retirement.

Regarding the marital status, the majority of successful women professors from this research are married and had children. Specifically, 26 out of 29 Swedish professors are married, two are divorced and one is single. In South Africa 10 out of 15 women professors are married, three are single and two are widowed. In the Swedish sample only two women professors do not have children, and in South Africa five women professors do not have children. In relation to the time of their career when those women professors had children, of the 10 women professors in South Africa who had children seven had them before their Ph.D., while others during associate professors and lecture positions. In Sweden, of the 27 women full professors who had children, three had them before getting their Ph.D.s, while others had children in professor positions or during tenure track positions. Regarding the country of origin of the respondents, the data revealed the diversity of the higher education systems in both countries in terms of professionals who work in academia. In Sweden, more them a half of women full professors interviewed were not originally from Sweden. Specifically, of the 29 interviewees 18 women full professors are not originally from Sweden. Similarly, in South Africa, half of the women full professor are not originally from South Africa, i.e., eight of 15 women full professors were not South Africans. In terms of parents' level of education, a considerable number of women full professors had parents with higher education degrees. In Sweden more than half (18 out of 29) of women professors had parents with higher education degrees in natural science fields, and some of them were professors at universities. In South Africa, half of the interviewees (seven out of 15) had parents with a higher education degree. However, in both countries even in cases were the parents had no higher education degrees, respondents stated that their parents had encouraged them to pursue their education, revealing therefore, that women full professors from both countries came from families that value education for women. Table 7 displays the women full professors' demographic variables.

Table 7

Successful Women Full Professor Demographic Variables

Participants	Gender	Country	Age	Marital Status	Number of Children	When had children	Country of origin	Age completed Ph.D.	Years to full professor	Years of academic career	Number of papers
WP01Sweden	Female	Sweden	59	Married	2	After Ph.D.	Germany	30	14	33	134
WP02Sweden	Female	Sweden	44	Married	2	Associate Professor	Canada	28	9	20	116
WP03Sweden	Female	Sweden	64	Married	2	Professor	France	28	11	39	325
WP04Sweden	Female	Sweden	41	Married	2	During Postdoc	Germany	29	10	14	57
WP05Sweden	Female	Sweden	55	Married	2	Before Ph.D.	Sweden	35	8	22	85
WP06Sweden	Female	Sweden	58	Married	1	Associate Professor	Italy	32	9	27	160
WP07Sweden	Female	Sweden	52	Married	2	Assistant Professor	Germany	30	11	22	86
WP08Sweden	Female	Sweden	61	Married	3	Research fellow/tenure track	Greece	30	8	32	200
WP09Sweden	Female	Sweden	56	Married	1	After Postdoc/Junior researcher	Sweden	29	13	26	87
WP10Sweden	Female	Sweden	43	Married	2	Assistant and Associate Professor	Sweden	28	11	15	143
WP11Sweden	Female	Sweden	46	Married	0	N/A	Sweden	28	14	13	90
WP12Sweden	Female	Sweden	40	Married	1	Professor	Finland	27	8	17	161
WP13Sweden	Female	Sweden	55	Single	2	Before academic career/master	Germany	36	12	21	79
WP14Sweden	Female	Sweden	50	Married	1	Professor	Romania	33	13	21	96
WP15Sweden	Female	Sweden	53	Married	3	Before Ph.D.	Sweden	29	10	17	46
Participants	Gender	Country	Age	Marital Status	Number of	When had children	Country of origin	Age completed	Years to full	Years of academic	Number of

Participants	Gender	Country	Age	Marital	Number	When had Children	Country of	Age Ph.D.	Years to professor	Years of career	Number papers
WP16Sweden	Female	Sweden	67	Married	2	Before academic career/master	Sweden	47	13	39	185
WP17Sweden	Female	Sweden	44	Divorced	1	During Ph.D.	Sweden	31	11	15	94
WP18Sweden	Female	Sweden	50	Single	0	N/A	Italy	29	15	24	135
WP19Sweden	Female	Sweden	48	Married	2	Assistant Professor	Sweden	28	12	22	152
WP20Sweden	Female	Sweden	48	Married	2	Permanent research position	Sweden	30	14	19	79
WP21Sweden	Female	Sweden	52	Married	3	Associate Professor	France	26	13	19	99
WP22Sweden	Female	Sweden	53	Married	3	After Ph.D.	Finland	27	15	22	180
WP23Sweden	Female	Sweden	54	Married	2	Assistant Professor	Sweden	28	12	27	248
WP24Sweden	Female	Sweden	63	Married	1	After Postdoc	India	25	20	24	177
WP25Sweden	Female	Sweden	57	Divorced	5	Before academic career/Industry	USA	38	15	18	93
WP26Sweden	Female	Sweden	56	Married	3	During Ph.D. and Postdoc	England	35	10	23	117
WP27Sweden	Female	Sweden	45	Married	2	Research assistant position	Sweden	30	13	15	1081
WP28Sweden	Female	Sweden	51	Married	2	After Postdoc	Finland	27	9	25	207
WP29Sweden	Female	Sweden	58	Married	3	During Ph.D.	China	31	10	33	299
WP01SouthAfrica	Female	S. Africa	56	Married	3	Before Ph.D./after master's	South Africa	29	12	17	94
WP02SouthAfrica	Female	S. Africa	64	Married	2	Before Ph.D.	Zambia	31	9	34	417
WP03SouthAfrica	Female	S. Africa	62	Widow	2	Before Ph.D.	South Africa	35	15	22	67
WP04SouthAfrica	Female	S. Africa	53	Married	0	N/A	England	31	14	26	87
WP05SouthAfrica	Female	S. Africa	64	Married	0	N/A	South Africa	31	9	36	95
WP06SouthAfrica	Female	S. Africa	64	Married	0	N/A	Uganda	27	16	28	148

				Status	of Children	children	origin	completed Ph.D.	full professor	academic career	of papers
WP07SouthAfrica	Female	S. Africa	53	Single	1	Associate Professor	England	37	15	18	67
WP08SouthAfrica	Female	S. Africa	63	Married	3	During Ph.D.	South Africa	34	9	27	150
WP09SouthAfrica	Female	S. Africa	54	Widow	2	Before academic career	India	33	15	25	188
WP10SouthAfrica	Female	S. Africa	53	Married	1	Associate Professor	USA	29	20	24	53
WP11SouthAfrica	Female	S. Africa	68	Married	3	During Ph.D.	Netherlands	31	14	42	94
WP12SouthAfrica	Female	S. Africa	47	Married	1	Lecturer	Zimbabwe	28	16	18	63
WP13SouthAfrica	Female	S. Africa	54	Married	2	Before Ph.D./Started career in industry	South Africa	41	9	23	56
WP14SouthAfrica	Female	S. Africa	57	Single	0	N/A	South Africa	26	17	32	168
WP15SouthAfrica	Female	S. Africa	61	Single	0	N/A	South Africa	30	13	26	150

4.4.2. Data Collection Procedures

Before starting the data collection process, ethics approval was obtained from the Humanities and Social Sciences Research Ethics Committee of the University of the Western Cape (UWC). Ethics approval from all the universities where the respondents were found did not apply in both countries due to the target group of the study and specifically because of the selection procedures (see sections above) undertaken to select them. After identifying and building the rankings of the successful women professors in both countries, they were emailed and an interview was requested. Letters were sent to the participants explaining the objective of the research and the procedures undertaken to identify them. The letter of approval for the Ph.D. project from the UWC Humanities and Social Sciences Research Ethics Committee was attached to the email.

4.5. Ethical Considerations

Bryman (2008) emphasises the significance of confidentiality, privacy, and informed permission, all of which was ensured for the protection of the successful women full professors that participated in this research. In this regard, ethical guidelines aimed to respect the dignity and privacy of all participants in the study were followed. Participants were made aware of the nature and purpose of the research, the risks and benefits associated with it and were informed that participation was voluntary and that they had the right to withdraw from this research at any time (Foreman-Peck & Winch, 2010). Participants were also made aware of the procedures that would be used to gather the data, as well as how the data's confidentiality and anonymity would be ensured (Creswell & Creswell, 2017). Overall, anonymity and confidentiality was secured by assigning codes to participants to protect their identity in the research or in any other subsequent publications emanating from this study. The data was kept secure and only the supervisor and researcher had access to it. Specifically, the project's records were saved on the researcher's computer, which was password-protected. Furthermore, as required by the University of the Western Cape's rules, the data obtained was saved on compact discs and safely stored for five years. Only the researcher and the thesis supervisor, have access to the research records.

Literature acknowledge the existence of ethical implications of conducting research in different countries. In this regard, Cohen et al. (2018) observe that each study project presents ethical challenges for researchers, and ethical decisions are influenced by several contexts, including social, political, institutional, cultural, and personal factors. Therefore for Cohen et

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al. (2018) ethical considerations are culturally situated, they vary globally, and what is considered acceptable in one Western culture may not be applicable in another culture.

The present research is a cross-national comparative study, which brings specific ethical implications for conducting research across different countries with therefore potential varying ethical standards. To navigate these differences the researcher gained permission in each setting of the study with an informed consent, indicating to participants the objectives and benefits of the research. According to Cohen et al. (2018) informed consent is based on the participant's autonomy and right to self-determination. The self-determination allow participants to consider the risks and rewards of participating in a research and make their own decisions to be part of the research or withdraw once the research has begun (Cohen et al. 2018). Therefore, in this research participants were informed about the objectives of the study and they had the autonomy to freely choose whether or not to participate in the study, once they have been told what it is about and what it requires. Further Cohen et al. (2018) observe that it is important first to gain official permission to undertake research in the target community, city or country, by contacting an official department, for exemplo, seeking permission and clarifying the nature and scope of the research. This procedure was done in both countries through the requirements established from each researcher host university. Prior to this procedure the researcher had a total picture of what entails the research, the precise scope and nature, to define the exact demands. For exemplo, the researcher identified the design, methods and procedures to be used, which participants are to be interviewed, how to guarantee confidentiality, and how findings can be disseminated. In this regard Cohen et al. (2018) state that planning ahead is important for both researchers and institutions, countries or communities where the research will take part because it helps to anticipate the demands of the research and resolve practical problems.

The size of the sample and the timetable within which the research is to be encompasses was difficult to determine due to the nature o grounded theory. As noted in Chapter 3, in grounded theory the theory is generated from the data, therefore the researcher will not know in advance what range of data will be necessary, the sample size required, or the exact time-frame for the fieldwork. Data is collected until no changes are made to the grounded theory in light of ongoing comparisons, specifically, until saturation is reached (Glaser and Strauss, 1967).

4.6. Trustworthiness of the Study

Qualitative methodology is distinguished by its focus on the phenomena or context under investigation, rather than generalizations. Therefore, trustworthiness of qualitative studies is described by concepts such as credibility, transferability, confirmability, and dependability (Graneheim & Lundman, 2004; Lincoln and Guba, 1985; Morse et al., 2002). This concepts are used to ensure the quality of qualitative data and to replace the positivist terms of validity, reliability and generalisability, used in quantitative research (Loh, 2013). Specifically, research (Lincoln and Guba, 1985; Morse et al., 2002) emphasise that rigour in qualitative research can be achieved by specific strategies such as, peer debriefing, negative case analysis, audit trails of evidence, member checking/respondent validation (confirmation by participants) when coding or categorizing results, and triangulation. In this vein, the present research used credibility, transferability, confirmability, and dependability to strengthen the study's trustworthiness (Lincoln & Guba, 1985). Those concepts are discussed in the section below.

4.6.1. Credibility

Credibility in qualitative research addresses the accuracy of data in reflecting the observed social phenomena (Lincoln & Guba, 1985; Loh, 2013). Specifically, the credibility of a study is related to whether it genuinely measures or tests what was intended. Yin (2014) states that the selection of knowledgeable participants who will respond to the questions of the study is perceived as a practical step towards ensuring the legitimacy of the study's findings. In this regard, the sampling strategies used to select the successful women full professors for this study were used to ensure that only the right participants – women considered successful by the standards of academic career – were selected in order to meet the set research objectives. In addition, an evaluator triangulation, also known as peer debriefing (Lincoln & Guba, 1985), was used not only at the data analysis stage to check the consistency of data coding, but also in identifying other perspectives on the research project which may have been overlooked by the researcher. Loh (2013) affirms that validation by scholars familiar with the phenomenon under investigation might assist with the analysis process. Therefore, the services of an independent coder were used to ensure uniformity in the coding process and to provide a fresh perspective, as the independent coder is from a different field of study.

4.6.2. Transferability

Transferability is understood as the level of applicability to various contexts or situations (Beck, 1993; Lincoln & Guba, 1985). Specifically, Cooney (2011) asserts that transferability

is concerned with establishing that the findings of the study have the same meaning to others in similar contexts. Further, Lincoln and Guba (1985) aver that to improve transferability it is crucial to provide a detailed and thorough explanation of research situations. In this vein, although this research does not give a generalisation regarding the factors that allowed women full professors to succeed in academia, the principles of the theory and the procedures used in collecting data and selecting the participants can be replicated in other contexts of study. Specifically, the application of grounded theory methods and the sampling procedures in different environments and contexts help address matters of transferability. The extensive descriptions of the study's settings and background characteristics were also provided to enable the generalisation of the findings according to their own contexts.

4.6.3. Confirmability

Confirmability relates to the extent to which others can confirm the findings of the study, ensuring that the results reflect the observed participants' understandings and experiences rather than the researcher's personal preferences or subjectivities (Creswell & Creswell, 2017; Lincoln & Guba, 1985). To avoid subjectivity and ensure confirmability, the study used different measures. The process of producing the data was documented and a reflective notebook was kept to follow the progress of the research process. Memos and interim summaries were included in the reflective notebook. That information acted as an audit trail, allowing an analysis of both the research process and research outcomes by following the path of the research. Peer assistance to cross-check the coding development was also employed to help to enhance confirmability of the study (Loh, 2013).

4.6.4. Dependability

Dependability relates to the notion that the environment is dynamic and that research conclusions must account for changes in context and how these differences affect the study's conduct (Lincoln & Guba, 1985). Specifically, dependability entails taking into account all of the changes that occur in an environment and how these affect the way research is conducted. Therefore, dependability was achieved in the current study through a clear explanation of the research strategy and procedure, allowing future researchers to follow a similar research framework. Specifically, dependability was achieved by providing a detailed explanation of the methodological design, and data collection procedures. By leaving an audit trail through documentation and records used in the study which include: raw data; records of analysis and data reduction; reconstructions and syntheses of data; and field notes on how the research and

analysis are proceeding; notes on following intentions and dispositions of the researcher as the study advances; and information concerning the development of instruments for data collection. As stated in Chapter three, in grounded theory data collection and analysis are conducted simultaneously in an iterative process. Furthermore, the ethics certificate, consent and complaint forms, interview guide, audio recordings of interviews, participant information sheet, invitation letters to respondents, transcripts and letters of acceptance are systematically arranged and documented in the study. Lastly, the study applied replication logic to ensure that the findings of the study are dependable.

4.7. Data Analysis

Data analysis is the process of producing sense and meaning out of raw data. It entails scrutinising, establishing themes, putting out or recombining evidence to answer the study's research questions (Yin, 2018). The grounded theory approach emphasises conducting data collection and data analysis simultaneously to allow the researcher to shape the data collection process to inform the analysis. Specifically, data analysis helps researchers delve deeper into the study topic while also engaging in category development (Charmaz, 2006; Glaser & Strauss, 1967; Thornberg & Charmaz, 2014).

In this research, data analysis began with the recording and transcription of the recorded interviews, which were then analysed using Charmaz' (2006, 2008) grounded theory analysis technique. Charmaz (2006, 2008, 2011) proposed flexible grounded theory guidelines by having three stages of coding instead of the four stages of Glaser (1967): initial (open) coding; focussed coding; and grounded theory (also referred to as theoretical coding). Coding is the first analytic step of interpretation of the data. Through coding the researcher begins to make sense of the data gathered and gains an understanding of the problem studied (Charmaz, 2006). According to Charmaz (2006, p. 43) "Coding means naming segments of data with a label that simultaneously categorizes, summarizes and accounts for each piece of data". Through coding, the researcher interprets the data and develops a theory that explains the data (Charmaz, 2006). Through coding researchers endeavor to understand participants' ideas and actions from their points of view (Charmaz, 2006).

The first step of coding in this study was initial coding (Charmaz, 2006). Initial coding involved a detailed reading of the data and consisted of labeling each segment of the data. In this step the researcher has to be open to all possible theoretical paths that might emerge from interpreting the data (Charmaz, 2006). Therefore, researchers using grounded theory look for
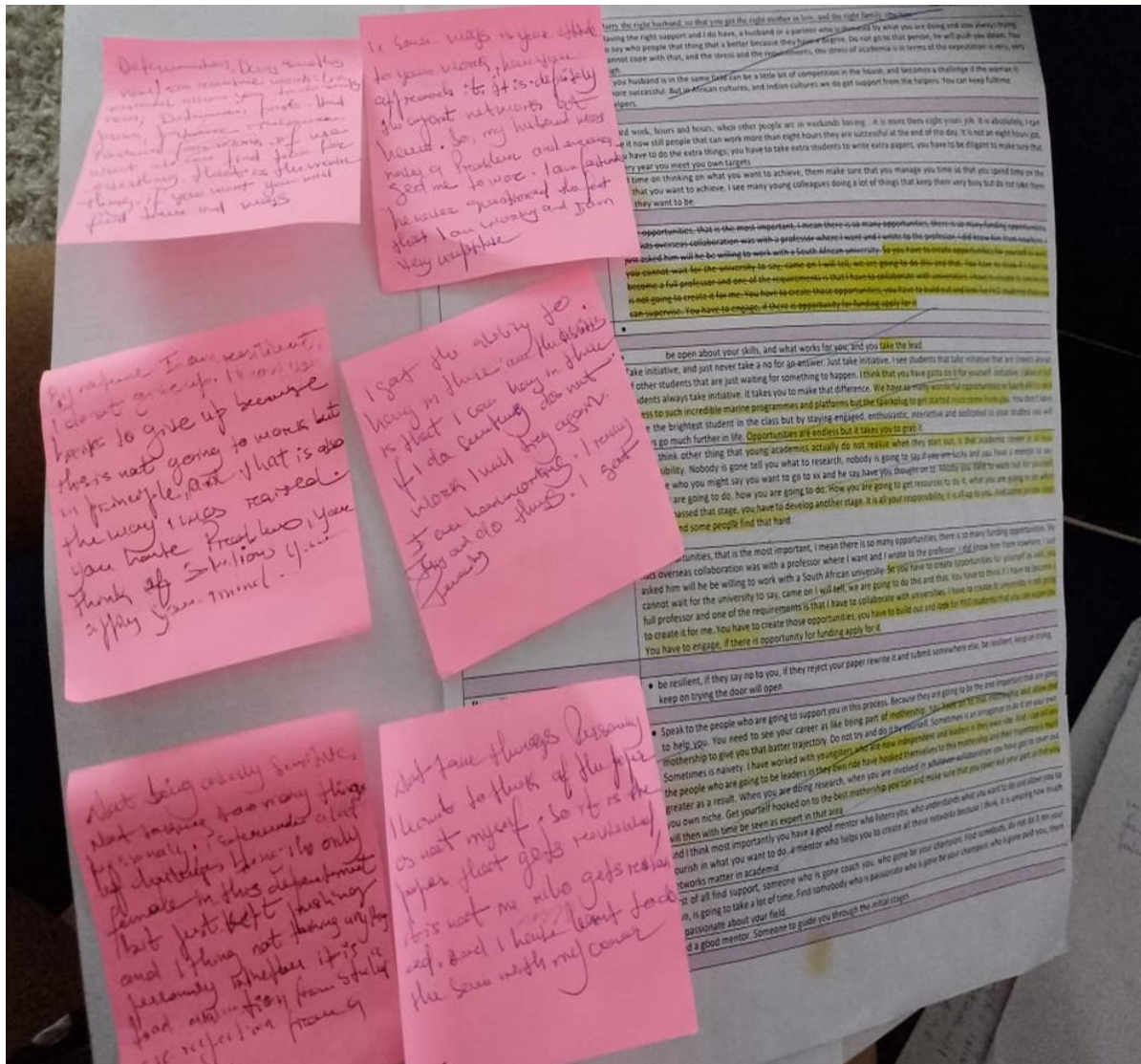
actions in each piece of the data rather than applying preconceived categories to the data. Using predefined categories, according to Charmaz (2006), prevents ideas from arising as researchers code events. The initial coding should stimulate thinking and allow new ideas to develop and might help a researcher to identify areas where data is missing (Charmaz, 2006). The benefit of using grounded theory approaches is that researchers can learn about gaps in the data from the beginning of the investigation, then find and collect the necessary data (Glaser & Strauss, 1967). Therefore, in the present study, after the first two interviews, the audio recordings of the interviews were immediately transcribed to allow the researcher to review and code the transcripts. This process was critical to allow the researcher to code the initial data, start perceive the emerging categories and possible theory about the phenomenon under investigation and best determine how to proceed (Charmaz, 2014). In practice, the initial coding was undertaken by taking the interview transcriptions line by line, and highlighting or bolding rich or significant quotes or passages, which were referred to as codeable experiences in relation to the stated research objectives, worthy of further attention, see an exemplo in Figure 2. The line-by-line analysis is a procedure of open coding in grounded theory (Corbin & Strauss, 1990), and throughout the open coding phase, codes were examined, contrasted, and categorised based on semantic similarities and overlaps, as well as relevance to the research objectives. Coding occurred by constantly comparing current transcripts to prior ones, allowing the formation of categories and their attributes. As the coding progressed, new categories appeared that had not previously been explored. Because coding is a cyclical process, the first cycle of coding data was not perfect. Further attempts at re-coding may have regulated, filtered, highlighted, and concentrated the important characteristics of the qualitative data record for producing categories. Throughout the process post-it notes were also used to keep track of codes, as illustrated in Figure 3. That information became crucial to support propositions, assertions or theory in further stages of the process.

Figure 2: Exemplo of interviews transcriptions bolding rich or significant quotes or passages

South Africa – Predictors of Career Success

11. In general, what factors have helped you to accomplish what you have accomplished in your career? (external: e.g. social support, mentor, professional support, social capital, human capital; internal *Looking for the Agency of successful women*)

Personal factors, I am a hard worker; I am persistent; I am resilient; I like creating new opportunities. *WP01SouthAfrica*

By nature, I am resilient: I do not just give up. I know you have to give up because this is not going to work but in principle, and that is also the way that I was raised. You have problems, you think of solutions, you apply your mind, you think again and you reconsider. But, you try and go for as long as it makes sense to go, but that being said not also to be abusive. You work with what you have, you cope and you move forward. *WP02SouthAfrica*

A thick skin: I had a very difficult time being the only female and there were things that upset me a lot, but it did not stop me, and I think it makes you stronger in a way; When you are a scientist and you submit a publication, and it comes back and is rejected, let us say. You have to have a strong thick skin. You have to have a strong character to say OK we're going to move forward. Because if you do not, and you take these things personally you will never move on. You take it so personally that you do not want to publish, you are so nervous to publish again. You have to move forward. **So, not being overly sensitive. Not taking too many things personally: I experienced a lot of challenges being the only female in this department but I just kept pushing and I think not taking anything personally whether it is a bad evaluation from a student, it is a rejection from a paper,** or it is a problem within head staff member situation. Just never, let that get you. That is the main thing. **Taking initiative:** Taking initiative and just not taking a no for answers I think, and just keep going. It is not always easier, it was not easier for me, but you just keep going. So it is having a tick skin, it really is. Because you as a scientist, will always experience some negativity and not let that get you. **Time management:** One of the things I am very good at, I am very good at time management. So I live in an inbox area. At the end of the day, there is no email that I never respond to, so I am always on top of everything, which means I am on top of opportunities, research projects, and all of those things. *WP03South Africa*

I have the ability to hang in there: One of my abilities is that I can hang in there, and if I do something that does not work I will try again. I can stay some minutes blooding in the toilet but I get off and I will try again. And I think that is where a lot of people do not do it. And I think I see the bigger picture; Sometimes when something goes against you, you may think it is personal, but I always try and think you know, WHY? Why did this happen, usually it is not personal, most of the time it is not personal. **I must be bright. I am hardworking. Honesty:** If somebody asks me to do things and I think I cannot do it, I say this is not me, I cannot do this. I have tenacity: I might moan and cry sometimes, but I do think OK this is going to be done, how am I going do it, I have to backtrack, and I think that is why. *WP04SouthAfrica*

Resilience: I think you need to develop stamina as an academic because it is not nice to get those negative reviews and so on, so you need to have experience. Not take things personally: I learnt to think of the paper as not myself. So it is the paper that gets reviewed, it is not me who gets reviewed. And I have learnt to do the same about my career. I learnt to look at that as if I am not looking at myself. So you do not identify yourself with that. *WP05SouthAfrica*

Time management: I think when you are young you have to be very good at time management. And you have to package your life, you must put your work and your personal life separately; As you get older and you become more senior, your life integrates, because you do not have to look after small children anymore, then the dynamic is very different. And when your children leave your home you almost have nothing else to do but work. So you work nonstop. **Putting in extra hours:** If you are at the top of your pyramid, those people, I think those people at the top I think they work seven days a week; Because you cannot be at the top and not putting extra hours. I cannot really see people succeeding without putting in so many hours; You really have to put in more hours. **I am very curious:** So curiosity is a big thing. **I am very driven. I am very passionate about what I do. So I was so determined.** *WP06SouthAfrica*

Determination. Doing something new/non-routine work: Doing something new. Like research allows you to do something new; I started my career as a school teacher and I was not happy. Teaching school kids, was a routine type of job, it was not so much fun until I started research during my master's studies and also my honours project. So that research fact was very nice for me, something new and novel. And that is how I ended up making a record of the number of patents at the University of

Figure 3: Exemplo of initial coding

The original open coding phase yielded various codes, as an exemplo bellow some codes are presented:

To myself

Stubbornness

I have been working pretty hard

I worked quite a bit for it

My love for research/ I love what I do

Resilience

Optimistic outlook on things

It is like no magic and is not up to someone else is just up to you

If you work, hard, and you are reasonable smart and you have sufficient amount of social skills, you can work your way through the system

Being driven by research more then ambition

I wanted to achieve things and I dared to take some risks

I wanted to stay in academia

There are opportunities if you really want to pursue this academic career

Time management

A supportive husband

I think is sort of part of a good deal of lucky to meet the right people to work with

It is a bit of luck to select the research field which leads to success

I have been lucky in my choice of research subject

If you fail, you cannot stop. You need to be determined in getting this

To my background/upbringing: I think that I came from a family where women were very well supported and recognized

Character matters very much. You need to be sure that you want this. And I wanted from the age of maybe sixteen

I had challenges but they did not stopped me. I have this internal drive. I am riding always

My will to take over responsibilities, and to become active

You need to create your own opportunity

Willing to work hard

Support of my husband, and family

Try to understand how the system works

Role models in the family

It could not have happened without myself.

It comes with any effort

When things are tough you keep going and then one day you solve it

Keep going, not giving up

Support from my environment. Both at home, and at work

Having an idea and the knowledge about how to implement it

Managing the amount of open codes in the initial open coding phase is challenging. A refocused code is necessary to reduce the number of codes by constant comparing their meanings. This leads to the next code level. The focused coding or selective steps and focussed on using initial coding to organise and synthesise data through continual comparison

(Charmaz, 2006, 2008, 2011). This coding step was repeated after each interview collected. During this step the researcher developed categories of the data and the theoretical integration of the information or of the data start (Charmaz, 2006). In this step codes were identified that were recurring or particularly significant in explaining the factors that allowed successful women full professors to remain and succeed in academia. These codes were raised to provisional theoretical categories, which then required selective or concentrated coding using grounded theory techniques such as theoretical sampling, theoretical saturation, and memo writing (Charmaz, 2008). Coding was also done collaboratively, as illustrated by previous research (Erickson & Stull, 1998; Guest & Macqueen, 2008), by engaging with an independent co-coder to verify and authenticate the findings and to address possible researcher bias. Grounded theory coding logic varies from those that apply preexisting categories or codes to data. Grounded theory researchers generate codes by specifying what they perceive in the data. As they examine the data and develop meanings inside it, codes emerge. Researchers connect with data repeatedly and ask a variety of questions using active coding (Charmaz, 2006). In this step careful and precise data collection and analysis is conducted and the researcher refines particular elements of the research topic (Charmaz, 2014). Paying attention to the patterns that emerge from the data allows the researcher to know when saturation of the data has been reached to propose insightful suggestions of theoretical relationships among those data (Charmaz, 2014). In the present study saturation was reached after conducting 20 interviewees in Sweden and 10 in South Africa. "The common use of the term saturation refers to nothing new happening, 'I kept finding the same patterns'" (Charmaz, 2006, p. 113). This initial set of codes was used to identify incidents or indicators of something happening (Holton, 2010) in the data and the comparison of such incidents across data transcripts captured interviewees shared experiences (Charmaz, 2014). The second coding segment, referred to as focussed (Charmaz, 2014) or intermediate (Birks & Mills, 2015) coding, allowed the researcher to categorise the initial codes, keep those that seemed to signify a line of inquiry worth further pursuit and set aside those that appeared to represent anomalies (Charmaz, 2014). The final result was a concise, categorical assessment of the phenomena under study, which informed the selection of additional participants as well as the recoding and re categorising of data until a main set of categories emerged (Birks & Mills, 2015). Figure 4 presents an exemplo of focused coding.

Figure 4: Exemplo of focused coding
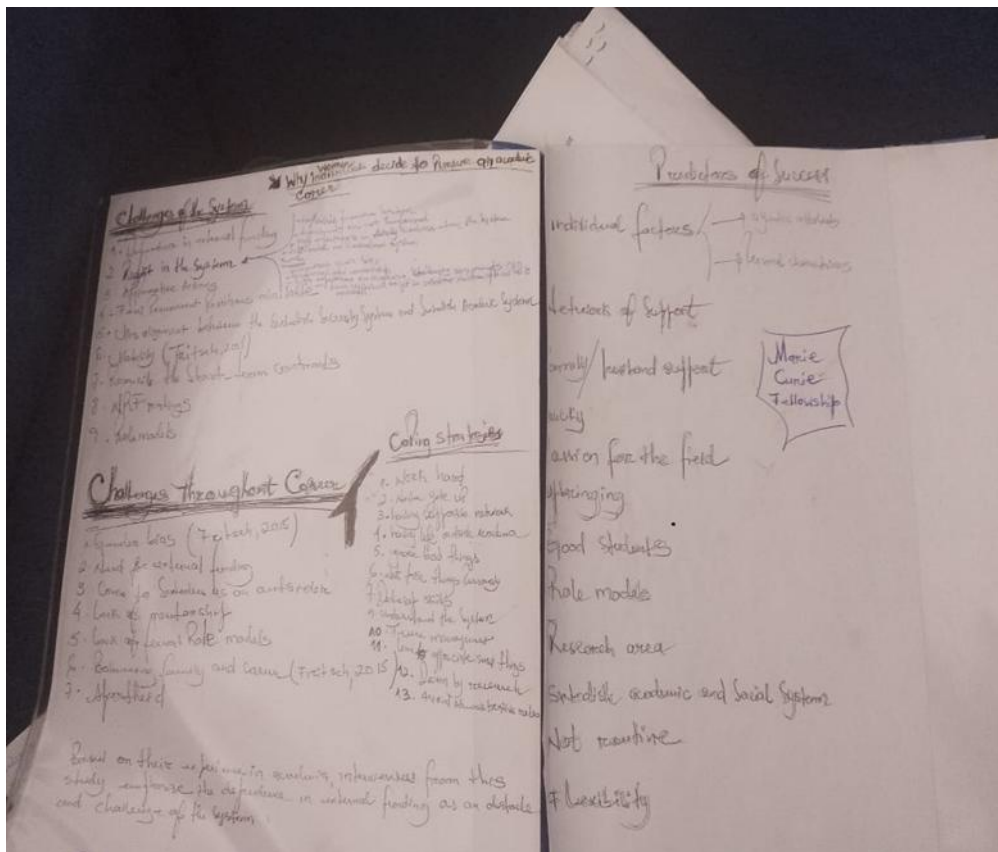
The third type of coding, is considered theoretical coding (Charmaz, 2006). Theoretical coding is an advanced level of coding that builds on the codes the researcher has chosen during focussed coding. Therefore, theoretical codes are selected, not created, by the researcher to demonstrate abstract ideas found in the data (Glaser, 2013). The use of theoretical codes elevates a study from a description of a phenomenon to a "high level of conceptual abstraction" (Birks & Mills, 2015, p. 115). In summary, theoretical codes specify possible relationships between categories developed through focussed coding (Charmaz, 2006). In this stage connections between categories began possible and this resulted in the clustering of categories developed by its various sub-categories. As a result, in this study theoretical coding took a summary of women professors' experiences and transformed it into a theory of women full professors' success grounded in the career women professors' experiences. Charmaz (2014) considers this technique controversial and perhaps beyond the skill of the novice researcher, her argument being that the researcher's claim of a theory emerging from the data may very well just be the researcher's desire to see the application of codes in the data. Glaser (2013), however, provides an outline for "staying open" (Introduction, para. 1) to the emergence of codes and has published several books of

established codes. One such tome (Glaser, 2005) was used by the lead researcher for the theoretical coding process in this study. The choice of this particular work was based on its relative recent publication among Glaser's (2005) books. Additionally, as this text served as an addendum to previous works, it provided a short list from which to work as a first-time grounded theory researcher. To curb the tendency to force theoretical codes to emerge, this segment of the coding process did not occur until the last participant in the study had been interviewed and the audio file transcribed.

4.8. Conclusion

To investigate a specific issue, one must do research such that the related phenomena is understood through a process of data collection, analysis, and interpretation (Lodico et al., 2010). Therefore, the present study was implemented based on a cross-national, comparative, concurrent, qualitative methods design, guided by the grounded theory framework. Sampling and data collection, including interviews, were used to collect data. Data analysis procedures that aligned with grounded theory were used.

The following chapter covers the presentation of the data gathered, specifically, the findings of the study are discussed.
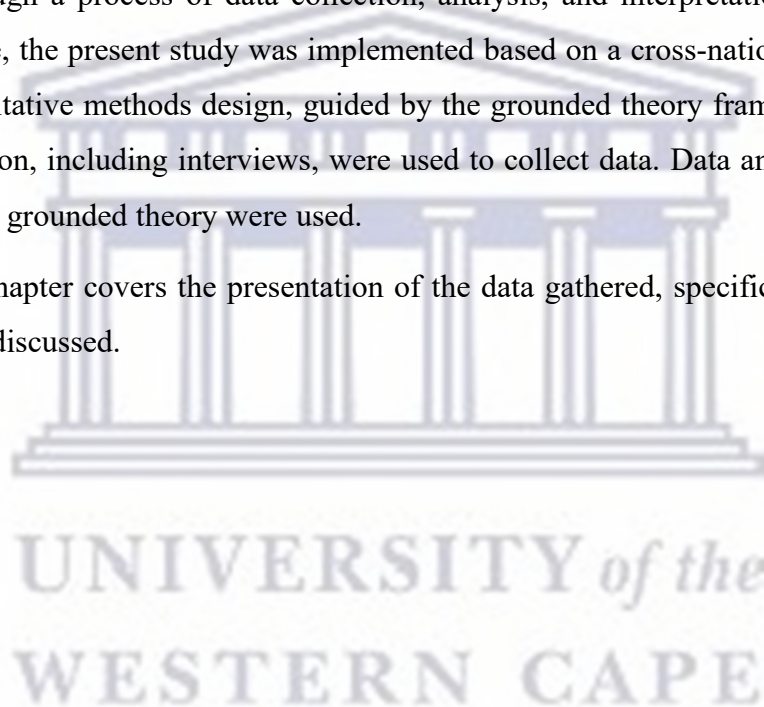
CHAPTER FIVE
DATA PRESENTATION AND ANALYSIS

5.1. Introduction

This chapter provides the presentation of the data generated during the research. The data is based on the information collected through semi-structured interviews conducted face-to-face and via zoom with the participants in the two settings of the research. The participants of the study are women considered successful by the standards of academic career - high research productivity performance in their areas of research. Specifically, the successful women in this study are academics with a extensive number of publications in their fields or research (see the methodology Chapter), therefore they are well-known in their scientific communities and, in some cases, regarded pioneers of their research fields. They have substantial experience in their fields -18 years for Swedish academics and 21 years for South African professors. They completed their PhD degrees at 30-year-old, Swedish professors, and 32-year-old, South African professors, and their careers progressed to high-ranking positions in academia. Swedish professors took 12 years to advance to full professorship, while South African female professors took 14 years.

A theme and research questions are posed first, and the data from the two countries of the study is presented. Specifically, the study explore the factors that allowed women full professors from STEM field, from South Africa and Sweden to remain and succeed in academic career. The chapter is structured in six subsections. First, presents the successful women full professor perspective of success in academic career and consequently the dominant discourse/narratives of success shared by women full professors in academia; the coping strategies adopted by women full professors do navigate academia and its demands; the factors that allowed women professors do pursue and remain in academic career and strive for success, and the factors that contribute to women full professors career success in academia. Finally, a summary of the chapter is also provided.

5.2. Definition of Success

This section presents the perspectives of successful women in South Africa and Sweden regarding the criteria they use to describe what success in a career means to them. Specifically, the section considers the objective and subjective constructs of success in academia and

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shares the interviewees' understanding of success in their own careers. This section subsequently presents the dominant discourse around success in academic careers. It is important to highlight that career researchers have shown that professionals' views on their career success might influence their choices on meeting (or not meeting) the institutional external measures of success (Dries, 2011). Therefore, it is crucial to understand how women in academia understand their success because these findings might be relevant to explain what moved successful women to become a success in their career. Furthermore, these results may help to explain the gender inequalities in high ranking positions in academia and, therefore, shed light on the literature of underrepresentation of women in science. The guiding research question for the section is: *How do successful women in research and innovation, in South Africa and Sweden perceive and interpret their success in an academic context?* The data from both countries is presented simultaneously, and the similarities and differences between the countries are also described throughout the section.

5.2.1. Women Professors' Perceptions of Career Success

In Table 1, themes around objective career success in academia are displayed, derived from the responses provided by women professors when asked why they thought they were described as successful scholars in the present research. Table 2 represents subjective career success constructs in academia, which comes from interviewee's answers to the question related to what success in a career meant to them. The key themes are presented in order of popularity (by how frequently a theme was mentioned) among women full professors in each country and the sub-themes of each theme are also listed by how frequently it was that the interviewees mentioned them. For instance, 'research productivity' is considered the most emerging theme in objective career success in both settings of the research, and within this theme, 'publication output' and 'getting grants funding' were the most mentioned sub-themes. In terms of subjective career success, women full professors mentioned more 'define and achieve individual goals' than 'contributing to society,' and 'recognition' was seen as more important than 'freedom,' for instance. It is important to highlight that, even though the emerging themes appear similar in many cases, in both countries, the interpretation given to those themes may vary according to each setting of the research. For example, 'position' emerged as one of the themes of objective career success in both countries. However, in Sweden, 'position' is interpreted as having a permanent position and having a management position, while in South Africa, 'position' as a construct of objective career success means only having a management position. The data also reveals that there are constructs of success

specific to each context of the study. In the constructs of objective career success, National Research Foundation (NRF) ratings emerged as a specific to the context only in South Africa, while 'develop the field' or 'move the field forward' emerged exclusively in the Swedish context as a construct of objective career success. For the purpose of confidentiality, interviewees are identified by pseudonym and country when they are quoted in this research.

Table 1

Objective career success Categories from the data	Subcategories generated from the data	Sweden	South Africa
Research Productivity	• Publication output/number of publications • Bringing in grants funding • Leading big research projects • Delivering Ph.D. students • Metrics	• Publication output/number of publications • Bringing in grants funding • Leading big research projects • Delivering a lot of Ph.D. students	• Metrics • Delivering Ph.D. students • Bringing in funding
Promotion	• Being promoted to full professor position • Being a woman full professor in STEM/ a male-dominated field • Early promotion to full professor • Early qualifications	• Being promoted to full professor position • Being a woman full professor in STEM/ a male-dominated field • Early promotion to full professor	• Being a woman full professor in STEM • Early qualifications
Status	• <u>National and international recognition in the field:</u> • Prizes • Awards, • Invitations to conferences, to congresses • Visibility in media • International and national collaborations • National and international visibility • Leadership positions in hiring, promotion and grant assessment committees, and pro vice chancellor and vice chancellor • <u>Being nominated to prestigious academies of science, prestigious and competitive prizes</u> • <u>Prestigious recognition for contribution to the field</u>	• <u>National and international recognition in the field:</u> • Prizes • Invitations to conferences, to congresses • Visibility in media • International and national collaborations • Leadership positions in hiring, promotion and grant assessment committees • <u>Being nominated to prestigious academies of science, prestigious and competitive prizes</u>	• <u>National and international recognition in the field:</u> • Won awards • National and international visibility • Project the field internationally • <u>Prestigious recognition for contribution to the field</u>

Constructions of Objective Academic Career Success, as Perceived by Women Full Professors

Objective career success Categories from the data	Subcategories generated from the data	Sweden	South Africa
Position	• Having a permanent position • Having management position	• Having a permanent position • Having management position	• Having management position
Develop the field/Move the field forward	• Being part of a new emerging field • Found a new niche of research	• Being part of a new emerging field • Found a new niche of research	N/A
NRF Rating	• Having a good NRF rating at the national level • Good science rating early on from the NRF	N/A	• Having a good NRF rating at the national level • Good science rating early on from the NRF
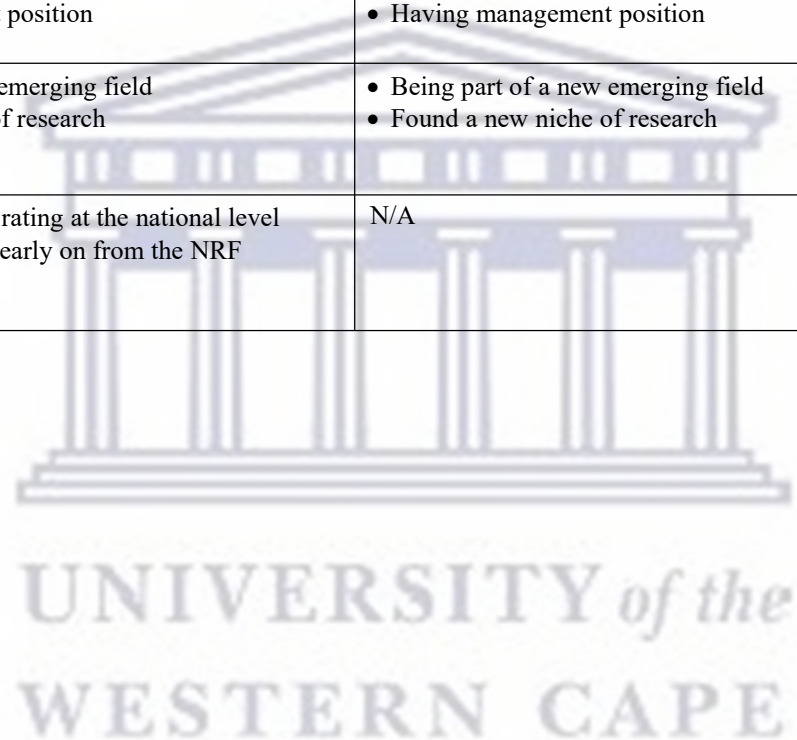
Table 2

Constructions of Subjective Academic Career Success, as Perceived by Women Full Professors

Subjective career success Categories from the data	Subcategories generated from the data	Sweden	South Africa
Job satisfaction	• Training and developing Ph.D. students • Having joy in your work • Develop the field • Having an impact in the organisation • Receiving positive feedback	• Training and developing Ph.D. students • Having joy in your work • Develop the field • Having an impact in the organisation	• Developing young generations • Having joy in your work • Develop the field • Receiving positive feedback

Recognition	• National and international recognition in the scientific community
	  • Being asked for opinion
	  • Invited to talks
	  • Invited to conferences, organise conferences
	  • Invitations to committees
	  • Invitations to fill positions
	• Recognition by peers
	• Recognised by students
		• National and international recognition in the scientific community
		  • Being asked for opinion
		  • Invited to talks
		  • Invited to conferences, organise conferences
		• Recognition by peers
		• Recognised by students
			• National and international recognition:
			  • Invitations to committees
			  • Invitations to fill positions
			• Recognition from peers and superiors
			• Recognition from the students

Define and achieve individual goals	• Achieving individual goals • Following your dreams • Being happy with your achievements	• Achieving individual goals • Following your dreams • Being happy with your achievements	• Being content/satisfied with what you have achieved • Meeting the standards set by yourself • Meeting personal standards
Contribution to society	• Making an impact with your research in the field • Wanting to make a difference • Making an impact in society • Influencing and impacting others through your work	• Do research that is having an impact in society • Making an impact in society • Influencing and impacting others through your work	• Making an impact with your research in the field • Wanting to make a difference

Subjective career success Categories from the data	Subcategories generated from the data	Sweden	South Africa
Life satisfaction	• Having control of your life, being able to do what you are interested in • Being able to control the time you spend on things • Spending your time in a meaningful way • Having a balance in life	• Having control of your life, being able to do what you are interested in • Being able to control the time you spend on things • Spending your time in a meaningful way • Having a balance in life	• Being happy, having inner joy • Having a balance between work and family life
Do excellent science	• Do excellent science • Be able to attract funding continuously • The possibility to build and sustain a research group	• Do excellent science • Be able to attract funding continuously • The possibility to build and sustain a research group	N/A
Change the demographics in the department	• Changing the demographics in the department male/female ratio • Changing the demographic aspects to transformation black/white ratio	N/A	• Changing the demographics in the department male/female ratio • Changing the demographic aspects to transformation black/white ratio

5.2.2. Women Full Professors' Perspective on Objective Career Success in Academia

The external and measurable indicators of success are presented in this section. They were identified as research productivity, promotion, status, position, develop the field, and National Research Funding (NRF) ratings. Each measure is presented in detail below.

5.2.2.1. Research Productivity

Research productivity was considered by the women professors as the key objective criterion (36 out of 44 interviewees mentioned this theme) according to which they are hired, rewarded, promoted, and recognised as successful in academia. Respondents almost unanimously agreed that women have to have high research productivity in order to be successful in academia. Sub-themes within this theme reveal some insights about what women full professors consider constitutes research productivity and what they perceive as valuable criteria to climb the career ladder and be recognised as successful in the academic institutions. Specifically, (i) publication output was reported among interviewees from both countries as the most mentioned sub-theme with 36 out of 44 interviewees mentioning this sub-theme. Women professors perceived that the valuable currency that they have in an academic context to become successful is publication output, for instance, how much an academic has published and where, what his/her H-index is, what the impact factor of the journal is, and how many times he/she has been cited. In this regard, the quotes below from Swedish interviewees attest to this argument,

> *I have high rank publications in top journals, like science and nature ... The publications in Scopus also are good, the H-index is also good. (WP06Sweden)*

> *Looking at bibliometrics and things like that, I think that I have come up to the numbers that people tend to think to characterise as successful academic. (WP08Sweden)[2]*

From the responses given by the interviewees it was possible to observe that it is not only the extensive list of publications that is viewed as important. Where/in what publication one has published is also considered essential, as highlighted by women professors from Sweden and South Africa, respectively:

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[2] All quotes were directly transcribed from recorded interviews and reflect the speakers' manner of speaking and expression.

What is important to be successful in academia is that you pull in prestigious grants, awards and for that actually you need to have long publications. Not necessarily, just long, but you also you need to have publications in good journals. (WP23Sweden).

I suppose I have done well because I have produced quite a lot of papers, some good quality papers. (WP06South Africa)

Another sub-theme significantly mentioned (16 out of 44 interviewees) is 'getting grants funding'. In the Swedish context, this sub-theme appeared as the second-most mentioned sub-theme of research productivity, while in a South African context it was the less mentioned. Women professors reported having brought in a considerable amount of money to the university that helped people. A South African professor argued, "I brought in a lot of money to the University, I have helped other people. So I think that is quite right" (WP06South Africa).

Although getting grants is perceived by interviewees from both countries as important to succeed in academia, women professors from Sweden considered that it is also essential to get the grants continuously and from prestigious agencies. Grants from agencies considered prestigious are understood as a label of excellence in the field and having won some generates the possibility of further research grants funding, which creates what in academia has been called the "Matthew effect" (Merton 1988, p. 606), implying that more opportunities will be given to those who already have. Interviewees from Sweden stated,

I got different funding from many places in Sweden, significant funding. And I know for instance that having funding from the Swedish Research Council is some kind of label of quality. So ... as a researcher it is important to try to get this funding because it is like a label of quality. (WP21Sweden)

I have been quite successful in getting external grants both from the Swedish Research Counsel and from the Wallenberg Foundation. (WP17Sweden)

I have any ERC grant which is always helpful in all these situations. (WP10Sweden)

The subcategories less mentioned that women professors understand to constitute research productivity are 'delivering Ph.D. students' (eight out of 44 interviewees mentioned this) and 'leading big research projects' (six out of 44 interviewees mentioned this sub-theme). Only interviewees from Sweden mentioned 'leading big research projects' as one of the subcategories of research productivity. According to them, being in charge of grants with large amounts of money allowed them to earn the attention of the academic community in the

field, which consequently facilitated their progress up the career ladder. One Swedish professors stated,

> *I run a lot of big projects, I have been the head of very large million Swedish Kroon's in Sweden and that was a very successful. That got a lot of attention. (WP05Sweden)*

Conversely, interviewees from both countries perceive 'delivering Ph.D. students' as one sub-theme of research productivity. Women professors stated that a successful scientific career in academia is based on publishing a lot of papers but also producing Ph.D. students who will continue to develop the science. A professor from South Africa affirmed, "I think that also influences how people see you as successful may be following your career delivering Ph.D. students" (WP01South Africa). In the same vein, a Swedish professor mentioned, "I guess I have a sort of successful scientific career because I published a lot of papers, I produced quite a lot of Ph.D. students" (WP09Sweden).

5.2.2.2. Promotion

'Promotion' is also featured in the interviews, with 18 out of 44 interviewees mentioning it as one of the themes of objective career success in academia. This theme emerged in the Swedish data as the second-most mentioned theme. Specifically, women professors from both countries recognised that being promoted to a position of full professor as a woman in a male-dominated field, is comprehended as a label of success in academia. This view can be justified by the fact that the literature (She figures, 2018; UNESCO, 2019) recognise only a few women full professors in the STEM fields, therefore, women who have succeeded in climbing the career ladder to such higher positions in the academic ranks are perceived as successful. This argument is attested to in the quotes below,

> *I would speculate that one possible reason is that it is mentioned that are few women in physics that reach high academic level beyond Ph.D. I think at Ph.D. level the number of men and women is quite even nowadays, but perhaps beyond Ph.D. there are fewer women who have higher academic levels. And maybe in that context the fact that I am a professor in physics could be considered successful. (WP14Sweden)*

Full professors from South Africa stated similarly,

> *I supposed it is because I am full professor at the end of the day, right. There are only less than a dozen of us in the faculty of science who are women at the university – I*

think it is less than that; I think we are nine who are women. So, you can count on your hands. It is very, very, few. (WP10South Africa)

I am a full professor, and I am a full professor of chemistry, and at the point when I was appointed as a full professor I was the first, I am still the only female professor in chemistry department at the university. So I think that probably explains it all in itself. (WP14South Africa)

However, some interviewees (10 out of 44 interviewees) also acknowledged that being part of a minority group or a woman full professor in a male-dominated field alone would not lead to being recognised as successful if one is not a productive academic in research. Specifically, women full professors recognise the importance of research productivity outputs in academic career development. The quotes below attest to this argument:

In my field although there are women sort of coming up, this is a field considered traditionally a male-dominated field, I mean just by being a female and being able to be active in research, and publish and get grants and all of that makes you in a sense turn successful. (WP20Sweden)

Well if you look at the school I was, it was a very male-dominated environment, I was the sixth woman professor ever, and I was forward in terms of my research. (WP25Sweden)

Moreover, interviewees from South Africa added,

I was fairly prolific in terms of publishing and writing. I used my time to publish and to move forward as I can, so my publication record is not so bad. (WP03South Africa)

What pushed me is that I was always keen to write papers, get involved, I am very much a people person, so I was always happy to go to committees. So suddenly, I was in the international market, on the national market and I was also doing my research. (WP04South Africa)

The respondents speculated that while been promoted to full professor as a woman in a male-dominated environment may been seen as a label of success, being active and productive in research were also components of their being viewed as successful. Early promotion is also identified as one of the reasons why they might be viewed as successful, specifically, being promoted to full professor before 40, or taking fewer years after getting a Ph.D. to be promoted to a full professor position. Women from both countries acknowledge that:

I made it to the professor level before I was 40. I am in the engineering faculty as a woman, we are not too many. (WP10Sweden)

I guess I am successful academically… (smiles) … even though myself … I do not always think of myself in that way, but … you know, I got this position which really people get at a much higher level. I got it directly after my Ph.D., so I became a professor directly after that, just six years after my Ph.D. (WP08Sweden)

Additionally, an interviewee from South Africa mentioned getting qualifications early on as a label of success. This can be justified as a label of success in this context, by the fact that in South Africa some academics start their Ph.D. after having positions in academia.

I got my qualifications at a very early stage, at the time it was considered young, I had my Ph.D. at 35 years, and that I passed with distinction, because I was really passionate. (WP03South Africa)

5.2.2.3. Status

Status is considered one of the objective measures of success in academia for women from both countries (17 out of 44 interviewees mentioned this theme). Status was the second-most emerging theme in the South African context. In academia, 'status' is related to national and international recognition within one's field, which comes in the form of prizes, awards, invitations to conferences and congresses, visibility in media, international and national collaborations, national and international visibility and leadership positions. Being asked to take on leadership positions in evaluating committees, committees for promotion, hiring, grant assessing and also to fill positions as pro vice chancellor and vice chancellor are also seen as measures of status in academia. Women professors from both countries see those roles of responsibilities as a way of giving back to academia and trying to change the system. They reported that as they become more senior, they feel the need to contribute to the system and change it by using their reputation and status built throughout their career in academia. In this regard a professor from Sweden stated,

The more senior I get I like to be involved in a bigger picture, in the organisation, in the academy, at the university level. I think that maybe I need to take a step to some more power position if I want to change the system or make it better. The academy might need a new head in the future; the academy has never had a female leading the academy. I feel like I need to use my capacities to … or maybe be that kind of being

good in science, that kind of recognition, to use that actually to change something. (WP24Sweden)

In similar vein, a professor from South Africa emphasised that one way of changing the system and mentoring young generations is through assuming leadership positions. That gives women professors a possibility to become role models for women in their own early career stages. This is attested to in the quote below:

On average women have a tendency to want to nurture, mentor. And they not always understand that one of the ways that you can do that it is actually by taking up ... a leadership position. (WP02South Africa)

Results also revealed that status in academia is also gained by being nominated to prestigious and Nobel Academies of Science, as well as prestigious recognition for contribution to the field. Women full professors from this study are well-recognised academics in their fields of research, some belonging to the few researchers that have the 1% or 2% of the more distinct publications in the world in their fields.

I have got recognition through being identified as one of the standing field top 2% scientists in the world. (WP08South Africa)

I have been placed in the top 1% of the Essential Science Indicators list for publication citations in the discipline. (WP09South Africa)

Women professors recognise the status that they acquire with those nominations, although they also acknowledge the existence of affirmative actions that help women to get further in their career to reach high positions. Specifically, some women professors, although being conscious that they are skilled and well-prepared for the positions and nominations that they acquire, acknowledged that they had those positions and nominations because there are few successful women to choose from out of the pool of candidates and also because of affirmative actions implemented in academia to push women's career development to high positions. A woman professor reflected on how being a woman created opportunities at a higher level:

I am in the academy, the Nobel committee which is like the dream I had for a while, in part because I am a woman. Which maybe, I kind of know that I am good enough for that so I do not care that I am in it because I am a woman, because I want to be in it. But I know of course that if I had been a man it would be ... they would have to pick more of them than they would have to pick a woman. (WP23Sweden)

However, such affirmative action which are mostly highlighted by the Swedish professors, although perceived by some professors as beneficial for women's career development, is also interpreted as detrimental for women in a sense that they make women question their merit every time there are recognised through distinct prizes and nominations, or when they win research funding and grants. One woman professor commented in this way:

> *I have been asking myself do I get this, this funding, this prize, because I am a women or is it because, really because of my work. This has been a question. I am not giving an answer to that but this has been a question mark all over ... Because at the moment there is this quota discussion everywhere; and the prize ohh there is only men that got this prize it should be a woman ok, who can we take? And all of these discussions are going all over the place. So I cannot tell, thinking ok did this apply to me as well when I got this prize? Did this apply to me as well when I got this funding? So I think this is something we have to live with, there is no good answer to that. (WP03Sweden)*

5.2.2.4. Position

According to respondents (12 out of 44 interviewees), 'position' in academia is considered to be one of the measures of external success. In the South African context, 'position' appears as the less-mentioned theme, while in the Swedish context it is the third most mentioned theme. First, 'position' appears to relate most particularly in terms of securing a permanent position. One of the challenges faced by academics in a global scale and mentioned by women professors from this study particularly, is that the further one goes up the career ladder in academia, there are fewer permanent positions available. Which makes academic careers competitive, for instance and causes some professionals to opt out of academia to industry to ensure financial security. Therefore, securing a full professor permanent position can be considered an objective measure of success for academics. This is attested to in the following quotes,

> *The further up you get, the fewer positions are available, so at some points people get deselected. When it comes to the permanent positions it is just the ones who really, really, want to stay who actually stay in. It does not necessarily mean that they are the best; they are the ones who sort of struggle harder, so try the most, so to speak. (WP05Sweden)*

> *Maybe success can be on the fact of getting permanent position and build you own group, and that is already a measurement of success. (WP18Sweden)*

I am in mathematics, and I have publications and I have permanent position in academia. In this sense I think I am successful. (WP04 Sweden)

Second, 'position' refers to getting a managerial position which gives status, visibility and power to academics. Professors from both countries mentioned this sub-theme. One woman professor describes herself as successful because of the management positions that she has accumulated over time throughout her career. The women professor expressed this in these terms,

The position that I held, the fact that I was in management, and currently in management as well, some people perceive that as success. (WP01South Africa)

Similarly, another women professor from Sweden reported that having had different positions in management allowed her to gain visibility in the academic community necessary for career development. "I have had different positions in management, in academia management, and that calls attention…" (WP15Sweden).

However, interviewees also considered that success is reached when one is able to combine the managerial positions and being productive in research. Specifically, women professors emphasise the importance of research productivity as an external measure of success in academic settings and responsible for academic career development. In this regard, women expressed that success comes from having a leadership position while being able to maintain a track record of publications in one's field. This finding came from the Swedish data. Women professors expressed this in thus,

I have been able to harmonise between the traditional views of what constitute scientific excellence with academic leadership without sacrificing one or the other. (WP02Sweden)

If I look at my career I have been doing research for many years, a decent one, I also have had different positions in management, in academia management, and right now, I am the deputy vice chancellor, and I was the dean before that and the deputy dean of the department. And I have combined these two line, management and research almost all years. (WP15Sweden)

5.2.2.5. Develop the Field

Women professors acknowledge 'move the field forward' as one of the measures of objective career success in academia. Only Swedish interviewees mentioned this theme. Developing the

field refers to being part of a new emerging field of research in a male-dominated environment, or finding a new research area and introducing new research results that allow the field to grow scientifically. The quotes below attest to this argument,

> *I have been doing quite good work on my field so, some novel findings that can make a difference. (WP28Sweden)*

> *I created and paved my own way. I started working with digitalisation way before people even talked about digitalisation, working with social networks, you know ... so I think it is both because I kind of paved my own way, with my own area of research and I did it in a very male-dominated environment. (WP25Sweden)*

> *I have sort of found a new research area I would say. We are a small niche working with it in a bit more long time, and it was a little bit path braking, asking new types of questions, and I have kept on working in that field. I think I am well known. (WP05Sweden)*

While the measurements of this theme may be unclear, it is possible to conclude that in academic settings, objective career success gravitates around observable and external indicators.

5.2.2.6. National Research Foundation (NRF) Ratings

National Research Foundation ratings are considered an external measure of success in academia. This measure is exclusively identified in the South African context and brings to light the fact that although academic careers are global, academic structures are shaped by national contexts, therefore they embrace specificities of the contexts worthy of consideration (Finkelstein, 2015). In the South African system, being rated by the National Research Foundation is seen as a measure of success and can create opportunities for academics to get positions, promotions, prizes and research grants. This argument is confirmed by the excerpts below, from the interviewees:

> *I have a good, reasonable NRF rate. So by those metrics I am successful. (WP05South Africa)*

> *I have a good NRF rating, which is pretty good I think. This is at national level. (WP07South Africa)*

> *I got a good science rating early on in my career from the NRF. (WP08South Africa)*

You know the South African system, so there is NRF rating, I think that a lot of people that are looking for people, they look for NRF rating, and then they consider that to be success. (WP13 South Africa)

5.2.3. Women's Perspective of Subjective Career Success in Academia

The notion of subjective career success is considered intrinsic to the individual rather than extrinsic and, based on external institutional standards, is less researched in-depth and captured in institutional hiring and promotion documents in academia. Interviewees identified seven themes of constructs of subjective career success: define and achieve individual goals; contribution to society; job satisfaction; recognition; freedom; do excellent science; and life satisfaction**.**

5.2.3.1. Job Satisfaction

The interviewees consider job satisfaction the most emerging theme (22 out of 44 interviewees) in subjective career success. For women full professors, job satisfaction is related to being passionate and happy about one's work, giving back to academia and contributing to the field in a noteworthy way by training Ph.D. students, developing research that brings new knowledge, being able to move the field forward and receiving positive feedback from peers. The subcategories under job satisfaction are:

(i) *Having joy in your work.* Women professors declared that success comes through being passionate about the work one does, by being happy in one's career and with the achievements one has made in a career. In this regard, Swedish women full professors stated,

Success for me is being happy in your career and what you have. Are you happy with what you have achieved? I love what I do and I am very happy with what I have achieved. So I think success for me is more intrinsic then extrinsic, the motivation right? (WP25Sweden)

I think to be happy with what you have achieved. For me it is not really academic success, or economic success, but, am I fulfilled? Am I happy? Am I doing the job that I like? That is success for me. (WP26Sweden)

Similarly, her South African counterpart emphasised the importance of happiness, pleasure, and excitement one can have for work as a measure of success in a career,

For me the most important thing is that I really enjoyed my career. For me, the thing is about waking up in the morning and wanting to do that work. I have a document

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that I am working on now and that is such fun. To me that is the most important thing…. I get to retire next year and it is quite scary. (WP02South Africa)

Another interviewee from South Africa augmented this,

I am very passionate about my field. Everybody who knows me knows that when you talk with professor [her name] it is about my field of work. I am very passionate about that field and I am passionate about bringing capacity into the field. Bringing people to know more about the field. (WP12South Africa)

(ii) *Training Ph.D. students*. Training and developing students and seeing them flourish scientifically and in their career within or outside academia is perceived as one way of defining individual success by women academics. Specifically, women professors reported that success for them is the rewarding feeling of seeing students get their degrees, developing their skills and becoming successful in their careers. This is attested to in the quotes below,

to have educated some Ph.D. students, some students, seeing them continuing in research or doing a nice career in industry. (WP03Sweden)

When I see that a Ph.D. has passed the exam and you see that that person has grown. That is a success for me. That is why I think it is nice to be in academia. (WP09Sweden)

Interviewees from South Africa also define success as mentoring, developing skills and training the next generations of future academics or professionals that will make changes in the world with their work. This argument is expressed in the excerpts below,

To me success is passing skills and knowledge on to the young people so that they can go out there and make changes to this country. That is what to me success means. Success is not about how many papers I have published, what my citation is, or what is my H-index, no it is not. (WP12South Africa)

Success is to see my students grow. They come in very unaware of science and naive in some ways, and you see them develop and grow into young researchers and then move out to postdoc positions overseas, and that in a way is the really big success. It is seeing that generation coming through that you have mentored. (WP04South Africa)

Success means training young students, so that they do well and they get good job opportunities. If they are successful, they get awarded, that is my success as well. (WP09South Africa)

(iii) *Develop the field*. 'Develop the field' is conceived of as one of the sub-themes of job satisfaction by women professors. In both countries women professors reported that success is the satisfying feeling of witnessing a field of research developing through their own research, even if the recognition for that work does not come from the scientific community. For those women professors, success comes by making society better, by impacting people and the academic discipline with one's work.

> *Having an impact, making a change. So is not just the number of publications, the amount of money that you bring in, but for me personally my personal success is that I have an impact. I make changes, in an organisation, in my scientific environment, and I do not need a lot of publications for that. People listening to me that is successful. (WP07Sweden)*

> *The bigger question is how much difference has this person made? How much has this person moved the field forward? That is really in my mind what makes someone successful. Move the field forward in a good way. That I think constitutes success. (WP05South Africa)*

> *I think it must be horrible to live all life and then to look back and ask yourself you know… what difference did I make? Well I could see things that are happening today that are new, that I started or I initiated. And maybe I will not be remembered for it but I know in my heart I was a person who established that or initiated that, and made sure it happened. I think that is an incredible feeling. (WP08South Africa)*

It is possible to observe from the excerpts above that women professors in both countries understand success in other ways rather than only having any extensive list of publications and that intrinsic motivations of success are behind their definition of the word.

(iv) *Receiving positive feedback*. This subcategory emerged only in the South African context. It is perceived as receiving feedback from peers and superiors about one's performance. Women professors believe that success is the positive feedback from peers and superiors that one is doing good work and it is a recognition that is associated with feelings of success in a career. One professor expressed this thus,

> *I think being content and getting feedback from your peers, and from your managements that they think that you are doing a good job. That is for me success. (WP01South Africa)*

5.2.3.2. Recognition

'Recognition" features in both countries as one of the subjective career success themes (15 out of 44 interviewees mentioned this theme). In the South African contexts, recognition is the second-most mentioned theme and is understood as the respect one enjoys in the scientific community for the work that one does in the field. It is international and national respect and recognition by peers and students. Women professors from the present study perceive recognition to be an indicator of some form of success that comes when one meets the standard criteria as an academic and therefore gets invited to national and international committees where they can contribute. Recognition can also come through promotions, positions and prizes. This argument is reflected in the quotes below,

I think it is recognition, internationally and nationally. It's recognition through being invited to committees, maybe becoming a vice president in a committee. (WP04South Africa)

I think invitations to international committees where I feel like I make a contribution, that makes me feel like there are a lot of people they could ask if they ask me that is a good, I think that makes me feel that I have succeeded in my field. (WP07South Africa)

I think the recognition that comes is an external indicator of some form of success, and that recognition is the promotion within the university, citations of papers, and also invitations that I get to serve in various things, both in South Africa and abroad. Those give great satisfaction. I supposed that is a measure of being successful. (WP14South Africa)

A Swedish counterpart also acknowledged recognition as one of the subjective career success indicators. Women professors emphasised that it is important to be recognised by peers and students, and revealed that one is respected in the scientific community for what one does in the field through international collaborations; and publications in journals with a higher impact factor. Women professors expressed,

would consider myself as respected in the scientific community, I have a lot of international collaborations, I know everybody who is relevant in this field. People are asking me for my opinion, and I think this is probably what is considered to be successful. (WP13Sweden)

Recognition by peers, this is the first thing for me ... ahh ... like people seeing that you are doing a good job in ... supervision, research and teaching. When you are

considered by students as being a good supervisor, a good teacher ... that ... you are producing good research. To me that is success, it is not about position. (WP21Sweden)

I do not think that being very famous and successful is the goal. But, I think that I would like to think that I am a good supervisor, good teacher and my students also appreciate me. (Smiles) ... like they nominated me for this best supervisor prize ... I think that that is success for me. That you are doing good work and people appreciate it. (WP22Sweden)

I know what I have done, I know the work, the discovers if you say, the results that I have gathered, but it is also I think in part other people's impression of me, I know I am recognised in a way, and maybe that should not matters much but it does, because I think if other people think I am good that makes me happy, it makes me strong you know! And it shows when you are invited to a conference, when you can organise the conference, if you can be international level, be part of ... somebody that people know. (WP23Sweden)

The quotes above highlight the validation that women professors seek from their scientific community or professional environment. Specifically, for women full professors it is important that their scientific community respects them and recognise the work they do in their fields.

5.2.3.3. Define and Achieve Individual Goals, and Contributing to Society

'Define and achieve individual goals' is one of the subjective themes mentioned by interviewees (14 out of 44 interviewees). This was the uppermost mentioned theme in the Swedish contexts and the third theme in South Africa. Interviewees perceive that success is a very personal concept and it has to do with individual aspirations, therefore it can differ from one woman to another. Women professors' individual aspirations are reported in this study as individual career choices made by professionals throughout their career, choices that women make regarding which career path to follow, for example, "that [if] you want to do more administration work, [for] that you go to an HOD position, or if you want to become a full professor [you] work to meet all the requirements to reach there. (WP01South Africa)

Choices can also be perceived as being satisfied with what one wanted to achieve in a career, meeting individual standards of success, setting individual goals and achieving them and having control of one's life and time, by being able to control the time you spend on things

you are interested in. Specifically, the data reveals how professionals may have different perspectives of success that are not aligned with the imposed institutional external standards of success to climb the ladder. Women professors report that success is not just the number of publications or the amount of money that academics bring in to the institution, but for some academics it is having an impact, making a change in an organisation, in the scientific environment and, according to a Swedish woman full professor, "I do not need a lot of publications to impact society, people, and the organisation. To have people listening to me that is successful" (WP07Sweden). The excerpts below reinforce this argument,

> *Success is setting your own goals and achieving them. Success is being able to define goals and achieve them. Understanding what really makes you happy and figuring out what are those goals that will make you happy, and feel successful and being able to achieve them. Success is different for everybody. Some people are happy getting their Ph.D. and not doing anything more in academia, because that is what they want to do, and that is their goal. So I think for me it is so individual. (WP25Sweden)*

> *I think it is mostly to be happy with what one has reached. I think is very hard to define for other women, I think a woman who has brought up her children and is happy with it and has a satisfactory social and whole life that is probably success. There are woman who do not want to have children who are very successful, so there are different ways to feel successful or to have success. I think it is reaching what you wanted to reach. (WP01Sweden)*

> *I think if I say I am successful is what I really want, my dream, what I really want to achieve I have done it. Of course, you can say success is to have a career, you are a professor, you publish a lot of papers, and you are very recognised. This is not so important for me, it has not been important for me. (WP29Sweden)*

> *It is actually not the number of papers. But to do something that I find rewarding as well ... So what really drives me is meaningfulness and impact. (WP11Sweden).*

Defining and achieving individual goals according to the interviewees is therefore perceived in two different ways, by contributing to society and by doing excellent science.

(i) *Contributing to society in a meaningful way with your ideas and work* is one of the individual goals reported by women professors in both countries as a measure of subjective success. Women professors claim that being successful is to spend your time working toward goals that can change society and transform it into a better place.

I see as an ability to realise your goals. That you have something that you want to do and you think is meaningful and you think, will the world be a better place or your life better, if you are able to achieve it, and work toward it? I think that is kind of what success is to me, you are able to do what you want to do. (WP12Sweden)

The quote above highlights that in academia in the two settings of the study, career success for women full professors entails not only the external observable standards of success imposed by institutions but also individual aspirations. In this regard South African interviewees stated,

I think contentment, happiness, a feeling of you have made a difference that you can see the impact of what you have done. (WP06South Africa)

It is also about wanting to make a difference, an impact with your work. (WP01South Africa)

(ii) *Doing excellent science*, and conversely for some respondents, being able to do what you want, is aligned to objective constructs of career success. When asked about what success in a career mean to them, respondents (three out of 44 interviewees) answered that science should come first, therefore, being able to attract funding continuously to be able to maintain and sustain a research group and to meet the job expectations was considered success. Those definitions highlight external indicators of success, as stated in these quotes,

Success means that you are able to do what you want. I mean to attract funding ... to keep your research group. (WP16Sweden)

Success is recognising that you are meeting with the standards that are out there, and that are set by the institution. (WP03South Africa)

The quotes above revealed that the narratives that dominate the discourse of objective career success in academia are conveyed by academic professionals.

5.2.3.4. Freedom

Freedom is considered a construct of subjective academic success in both countries. This theme was one of the less mentioned themes in the South African context. Women professors from both countries acknowledged an academic career as a flexible career for women. Women academics reported having control of their own destiny while working as academics was important to them. According to the interviewees, professionals have the freedom to define their own success by deciding what to put emphasis on, which direction to focus on

and also the collaborations to engage in. The data also revealed that the freedom of academics comes not only by working in academia or at each stage of an academic career but specifically when one reaches higher levels of academic ranks, i.e. the full professorship position. Being full professor is to reach a level where academics have "a better life, basically. They have a permanent position that is safe, a reasonably good salary, and some kind of freedom" (WP05Sweden). They can decide to work for themselves in their projects, what they want to do, how, and they "do not have to fight all the time. Because before you become a professor it is a struggle, it is basically a fight, many years of really, really hard work" (WP05Sweden). The statement below reinforces these argument,

> *One thing that I have got no question about is that academic life allows you flexibility; it also allows you the illusion that you are in control of your own destiny. I am quite convinced that I am in control of my own destiny. (WP02South Africa)*

> *The thing I like about the university is that you can define your own success. So you can decide what is important, where you want to put emphasis, which topic you want to research. For me success is a bit about being able to do that. There are so many ways. It is about getting funding, developing other people. It is about teaching and learning. Maybe about getting some recognition in academia that is nice. Success also comes with good collaboration with colleagues, working together, that kind of thing. (WP13 South Africa)*

> *climbing the ladder and taking these steps will also enable you to climb in sort of more philosophical steps. So this combination of being a professor at the university gives you a lot of this freedom and control and possibilities, it comes together in a sense. But I would say that the success comes with feeling that this position enables these other aspects. Because if they do not come together I would not see it as a success. So they have to be together. (WP20Sweden)*

5.2.3.5. Life Satisfaction

'Life satisfaction' emerged in both countries as a construct of subjective career success in academia. This theme was one of the less mentioned themes in both contexts. Life satisfaction for women full professors represents having control of your life through being able to do what you are interested in, being able to control the time you spend on things, therefore, spending your time in a meaningful way and having a balance between life and work. Interviewees from Sweden described it thus:

I mean one thing to be successful in a sense of having control of your life, to be able to do what you are interested in and to be able to control the time you spend on things. And that you spend your time in a meaningful way. And by that can contribute to society in some way. (WP20Sweden)

The other thing is to have a life balance, it is not always research, you need to have something outside the science also. (WP28Sweden)

Interviewees from South Africa also stated,

I am very much a family person. So if my children are good and my family are good. Yanhh so it is not just career, but the other side as well. (WP09South Africa)

I think that one thing for me that was always important is to be happy, not just pursuing that goal of being more famous, and get the numbers out, but to be happy in whatever I am doing. It must bring inner joy for me. (WP03South Africa)

5.2.3.6. Change the Demographics in the Department

This criterion of subjective career success is exclusively related to the South African context. According to the interviewees, South Africa has a challenge to achieve both gender and racial change in the academic context. Therefore, for women professors be involved in this change is seen as a measure of subjective success. This argument is highlighted by the following quote,

changing the demographics in the department, particularly the male and female ratio substantially but also overall the demographics aspect to transformation, I am very pleased about that and I consider it success. (WP11South Africa)

5.2.4. Dominant Discourse of Success in Academia

This section presents the dominant discourse concerning success in academia. The research question that guide the section is: *What discourse of success is dominant among successful women in the field of research and innovation in South Africa and Sweden?* The answers to this section were given by the interviewees to the question: "*What aspects do you consider define a woman as successful in your field?*". The answers are divided in two groups as shown in Table 3: objective career success answers and subjective career success answers. The results revealed that 23 out of 44 interviewees understand success in an objective way. In both countries, objective success is the most mentioned construct of success in an academic career. For those interviewees, success is understood as complying with academic requirements to get

ahead on the career ladder. Those requirements are aligned with research productivity, mostly producing articles and raising funding continuously; transferring knowledge to students; and status. Women professors emphasised the importance of research productivity to climb the ladder. One Swedish professor stated, for a woman to be successful "she should be high producer" (WP02Sweden). Another women professors also maintained, "well you need to put together scientific achievements to succeed" (WP06Sweden).

The interviewees also acknowledged that it is important to not only produce a lot of articles but to focus on producing good quality articles. Good articles or higher quality articles is perceived as those articles that bring new results and allow for developments in the field. In this regard women professors declared,

> *The variables for me are the same for women and for men, and this is to produce good articles and to get new results to move forward. (WP03Sweden)*

> *In our field, publications are important, also it is important if these are quality publications. (WP13South Africa)*

Table 3
Dominant Discourse of Success in Academia

	Categories and subcategories from the data	Sweden categories and subcategories from data	South Africa categories and subcategories from data

Objective career success	• Complying with academic requirements:
	  • Produce good articles
	  • Get good results to move the field forward
	  • Get good students to continue the research
	  • Metrics
	• The possibility of sustaining a group
	• Transferring knowledge to students
	• Status:
	  • Occupying an important position
	  • Being invited to talks, reviews, panels
	  • Visibility (keynotes, invited presentations, special issues or attracting good students)
	• Being woman full professor
	1
		• Complying with academic requirements:
		  • Produce good articles
		  • Get good results to move the field forward
		  • Get good students to continue the research
		• The possibility of sustaining a group
		• Transferring knowledge to students
		• Status:
		  • Occupying an important position
		  • Being invited to talks, reviews, panels
		2
			• Complying with academic requirements:
			  3 .
			Metrics
			• Being a woman full professor
			• Status:
			  • Visibility (keynotes, invited presentations, special issues or attracting good students)

4	Categories from the data	Sweden categories from data	South Africa categories from data
Subjective career success	• Defining and achieving individual aspirations • Being happy with your work • Being content with your own place • Making an impact on other people • Having control of your own life • Having work-life balance • Freedom to choose research direction 5	• Defining and achieving individual aspirations • Being content with your own place • Making an impact on other people • Having control of your own life • Having work-life balance • Freedom to choose research direction	• Defining and achieving individual aspirations • Being happy with your work

Raising funding continuously is considered fundamental to do research and maintain a research group. For some respondents, a woman is considered successful in academia when she has the ability to attract funding to be able to attract young and skilled people and the newest technologies to do the lab work. Specifically, respondents highlighted the dependence that academics have on attracting grants to be able to maintain research groups and be active and productive in research. To be productive continually, having a research group is crucial for an academic who wants to climb the career ladder. One woman professor stated,

I have been able to attract funding continuously for the last 20 years and that made it possible to keep my group and to continue to work and not to lose competence when someone leaves. (WP16Sweden)

Transferring knowledge to students is also mentioned by women professors as an important aspect considered to define a woman as successful in her field. Women professors maintain that it is important for successful women to help develop students by giving them "a platform or a network where they can grow as individuals so that in the end they are prepared and skilled to produce good research" (WP11Sweden).

Another aspect that emerged from the data that is important to define a woman as successful in her field is status. Status is perceived as having a respected position and being considered an expert in one's field, which comes from recognition with prizes and invitations to talks, reviews and panels. Specifically, according to women professors, success is defined by how others look at you, on "whether you are invited for invited talks. Whether people trust you to do a good job, and people listen to you" (WP07Sweden). It is also perceived as occupying important positions or by being " associated with some important organisation when you are considered an expert in something" (WP24Sweden). Further interviewees also acknowledged that it is having visibility and this can also come in the form of "keynotes, invited presentations, special issues, or attracting perfect students" (WP13South Africa).

Conversely, 21 out of 44 interviewees defined success in a subjective way. They perceive that for women to be considered successful in their field of work they should have the ability to define and reach individual aspirations; be content with their own place; make an impact on other people; have control of their own lives; have work-life balance and have freedom. Women professors perceive that success is an intrinsic and subjective concept that describes personal will, what one thinks is meaningful and what one thinks is success. Therefore, a successful woman is someone who is happy with what she has reached and that can differ from one women to another. In this regard women professors from Sweden stated,

For me it is to do things that you find rewarding, work with the people that you like to work with, that you have good collaborations with, creates good energy ... the freedom to define your agenda a little bit, and stay away from things that you do not like, that stills your energy, brings you down, that is success to me. (WP05Sweden)

What I see as success, is the ability to realise your kind of purpose. (W12Sweden)

I think success is a very personal thing and I think something which sometimes I do not like when some people say you must be successful if you have to reach this or that. You are successful if you can define your own goals and if you reach those and somehow you are successful. (WP13Sweden)

In same line, the South African interviewees also emphasised that the meaning of success depends on the individuals and the career aspirations they have. They also perceive success as an intrinsic concept.

I think it depends on the person, because I do not think I am more successful as the women academic who also delivers Ph.D. students, delivers her classes, and she is just a lecturer. I think it is just I had another path and she did not choose that path. So we are both successful, I think for me successful is that at the end of the day getting satisfaction from your job and doing your job well so that people acknowledge that you are doing what you are supposed to do. (WP01South Africa)

Success is also perceived as being 'content with your own place'. Women professor reported that a woman who is successful in general is a woman who is content with where they find themselves. Specifically, respondents in this study reported that success is not exclusively defined by having a career and a family, and children at home, or any measures like these. Success is highly subjective. One women professor expressed what success is in this way, "if I am asking someone are you content with your life? If the answer is yes, then I would say ok you are successful" (WP14Sweden). In the same vein, a South Africa interviewee explained that success is to achieve personal goals. Those goals can be aligned or not with the institution's objective measures of success,

have you really achieved some of the goals that you set? I mean I do … Maybe this is what I see in success, riding that way, whatever that way is that you want … and part of riding that way is that you get up in the morning and you are already thinking about it, you are thinking about the next step and the trajectory. What you are thinking about when you shower in the morning, or in the evening, are you excited? Are you alive?" (WP02South Africa)

Making an impact on other people is emphasised as one aspect to consider to determine the success of a woman in her field of work. However, respondents also emphasised that this impact on other people has to be made without compromising the individuals' aspirations. In this regard women professors declared,

Impact, I would say, on other people. Which is not normally how people see it in this field, but that is my measure of success. (WP18Sweden)

In order to feel successful I supposed you have to make a meaning[ful] contribution in the world on your own terms. So you are not compromising who you are in order to do that whatever that is, whatever that field is. Making some sort of meaningful contribution to the world. (WP10South Africa)

Having control of your own life, is also perceived as a way to define and consider a women successful., i.e. to be able to control the time you spend on things, and that you spend your time in a meaningful way. Women professors reported that for some academics, defining success in that way does not involve climbing the career ladder. The following quote attests to this argument:

I mean in a sense if you just look at success from the philosophical perspective you do not have to be professor for that in principle because you can enjoy the things you are doing and feel that you have the freedom and control in how you spend your time, in other means as well. (WP20Sweden)

However, results also reveal that climbing the career ladder or complying with the institutional requirements and becoming successful by the standards of an academic career is essential in order to enjoy success in a more philosophical (or intrinsic) way. Specifically, a higher academic position might come with the necessary freedom and power that enables professionals to experience success intrinsicly. The quote below attests to this argument:

This combination of being a professor at the university gives you a lot of this freedom and control and possibilities, it comes together in a sense. But I would say that the success comes with feeling that this position enables these other aspects. Because if they do not come together I would not see it as a success. So they have to be together. (WP21Sweden)

Having work-life balance is another aspect considered by women professors to define a women as successful in her field of work. Very few interviewees from this study mentioned balancing work and life as one measure of subjective success. Women professors believed that the challenges involved in balancing the two realities of their life is an obstacle that one cannot avoid if climbing the career ladder is the goal. One interviewee stated, "I would like to define it as having work-life balance; that is ok, but also, to think realistically that you have to have elbows, and, you have to fight for what you want" (WP26Sweden). An interviewee from

South Africa similarly acknowledged that it is important to have a balance between one's outside life and work but it is not always possible to achieve if one wants to succeed in a career.

> *Any woman who is successful, they really need to be strong in themselves, and they really need to believe in themselves and they need to ... very important, I think it is not all women who are successful end up marrying, and not all successful woman end up having children ... that if you have been able to be successful in your work and you have raised children and they become successful and you still end up in a marriage, because a lot of people end up out of a marriage because the pressure is too much. If you can balance those three bowls, I think wow. For a woman who is really, really great because the price you pay is high. (WP08South Africa)*

Freedom to choose research direction is also seen as measure of subjective success. This argument is reflected by the following quote,

> *I think doing research that you can yourself determine what you are doing, like independent research, not working in somebody's group and doing what somebody is telling you. Like you have an independent line of research, and of course, you have some funding, because otherwise you cannot do research, so that is of course one way to measure it. (WP28Sweden)*

5.3. Coping Strategies

This section presents the coping strategies adopted by women full professors to navigate academia and its demands. The section is guided through the question: *How do successful women academics in South Africa and Sweden understand and cope with the social and professional demands and strive for success in their careers?* Answers to this section were collected through semi-structured interviews conducted with women professors in both settings of the study. The presentation of the results is displayed in two main subsections. The first subsection concentrates on the challenges faced by women full professors in academia. Those challenges were divided into two groups. Perceived challenges of the academic system, and challenges faced by women professors throughout their academic career. The guiding research question is, *what do you perceive as the obstacles of the Swedish/South African academic system and the obstacles that you have faced in your career?*

The analysis reveals that the South African and the Swedish academic systems are confronted with the following obstacles: dependence on external funding, rigidity of the system,

affirmative actions, few permanent positions available, misalignment between the Swedish security system and the Swedish academic system of promotion, mobility, short-term contracts, NRF ratings, and lack of role models. The data also revealed that women full professors from South African and Sweden face seven major obstacles on their career path, namely need for external funding, gender bias, being an outsider, lack of mentorship, lack of female role models, challenges balancing family and career, and apartheid.

The second subsection of this section focusses on the coping strategies adopted by women full professors to overcome those obstacles in order to succeed in academia. Interviewees were asked, the following question, *"How do women ... cope with social and professional demands and the decision to remain in research and innovation and strive for success"* The answers generated twelve strategies among the interviewees that are presented in order of popularity. The strategies include: never give up, work hard, having a supportive network, ignore bad things, having life outside academia, not take things personally, develop skills, understand the system, time management, learn to appreciate small things, be driven by research, and avoid administrative roles. The challenges of each academic system are addressed below.

5.3.1. Perceived Challenges of the Academic System

This subsection presents the perceived obstacles of the systems mentioned by women professors in each country in more detail.

5.3.1.1. Dependence in External Funding

Dependence on external funding was the first most mentioned challenge, 15 out of 44 interviewees mentioned this challenge. Dependence on external funding emerged in both countries as one of the obstacles of the system; it was also the first most mentioned challenge in the Swedish context. According to Swedish professors, the system lacks stability because there is insufficient funding and it does not offer a guaranty of a successful career for an academic by just being in the system because academics need to find additional finance for their their positions and the work they do. Academics have to acquire external funding, which is considered to be extremely competitive, to finance their research and their salaries even when they have reached the level of professor with a permanent position. This situation creates instability and uncertainty among academics because they cannot predict their long term prospects, for instance create and maintain a research group or hire promising researchers. In this situation, academics face a challenge to produce, especially if they do not

have a research group and they work alone and produce on a more small scale. In this regard, respondents made statements such as:

we have bad funding from the university. We do not actually get all of our salary if you are a professor, [with a] permanent position still you have to get external money to fund your salary. (WP22Sweden)

The Swedish system is not that easy in a way because the academic system lacks stability because we are always depending on external funding. You do not know from one year to another if you are going to get that funding. You are not able to build up a team. So that is one of the deficiencies in the system. If you have a team you can build and work together, and I think that will also be less of a burden for the researchers, and what I feel is that we miss out on recruiting a lot of very good people who could have stayed on in academia. It is quite fragile, the system in my opinion. (WP24Sweden).

all the research needs to be paid by external funding. Which means that you need to apply to have the funding in order to conduct the research. Is difficult to get the funding because you need a large funding to carry out the research. The other thing is that it seems that there are more professors, more people who really want to stay in academia so the competition becomes much more high. (WP29Sweden)

Although women professors recognised that the funding situation is competitive, which contributes to the existence of few permanent positions in specific fields, they also acknowledged the positive side of having a funding-based system. According to interviewees, a competitive funding system allows academics in early stages of their careers to become independent once they start receiving grants and also allows the system to reward only the best researchers. Specifically, anyone can apply for the grants and the system has the opportunity to always reward the best researchers, which in turn benefits the quality of scientific work done in the country. However, at the same time, it limits the opportunities in academic careers to only the best academics, for those who are able to reach the competitive requirements to get further in their careers. Further, the respondents acknowledged that this situation is challenging for early career scholars who are starting in the system without experience and support. The statements below reinforce this argument as follows:

In Sweden, it is a larger pressure to get these grants, but once you've managed to get the grants then you can be on your own even at a quite young age. (WP17Sweden)

We have rather low basic funding in Sweden, we have at the moment a quite high degree of competitive funding which is good once you are established, or once you start getting the money in, but it makes it very challenging to start, and it also means that we have a system where there are rather few open-ended assistant professorship positions in certain subjects ... On the other hand, I inherently sort of like that we grant research funding to the best science, which means that I am in favor of project funding and sort of competitive funding because I think then all the scientists have a possibility to come up with the best ideas, but it possibly hinders new people coming in, where you need quite substantial support in the beginning. (WP10Sweden)

However, one argument coming from Swedish professors suggested that the challenge with competitive funding is more evident when academics are established rather than when they are in an early stage of their career. Respondents declared that it is a challenge for established researchers to maintain the standard and status of their research because of high costs. The higher position (full professor) implies high costs in terms of salary and costs in terms of research such as research groups, and labs. Therefore, collecting the sufficient amount of grants and being able to sustain and maintain that continuously is a challenge for established researchers. However, for early career academics there are more opportunities of grants to start a career in academia in Sweden and in the European Union. The statement below attest to this argument.

The challenges is that you must be aware that the salary for anybody is not granted by the university, but it comes from external funding and it is extremely challenging when you reach this level of full professor because of very high costs, like overheads and your salary is really high and to collect all grants it becomes really, really an issue. So right now the major challenges I think are when you are an established researcher, not when you are a junior. Because for juniors [there] are a lot of possibilities for getting grants if you are clever and motivated enough. So there are like several IRS grants at European level [and] internally, the Swedish system has a lot of grants, but when you are established it becomes more difficult to maintain your status, but it is not only for women in the system. As a junior it is good to be in Sweden. (WP06Sweden)

Conversely, although in the South African context the dependence on external funding is also perceived as an obstacle of the academic system, South African professors do not mention the need of the funding to finance their salary. According to respondents, the emphasis is on

dependence on funding to conduct research and to support students in exchange programmes with other universities in the world. Further, it is worth mentioning that, despite acknowledging the existence of challenges to get funding, South African professors pointed out that with hard work it is possible to get the funding. This argument may emphasise how individualised the discourse of success and failure is as it is perceived and enacted in academia. However, it also may highlight how intrinsic motivations play an important role to help academics to endure challenging situation and strive for success. Respondents observed the following:

> *Funding can be … but that is like everywhere. Academic career you know I have been to other countries I think it is comparing well in South Africa. (WP09South Africa)*

> *There was very little funding available, but again, by working hard you can make it happen, it was not funding for me but to support students and try to have the money to send them overseas … trying to find money to provide for students the best of the world was hard. I do not know how aware you are of the NRF system but getting funding is tough. So that is an obstacle that we have to fight. It's not that it is perfect in other countries in academia by the way, I have seen that in other countries that I have worked too. It is always hard. (WP11South Africa)*

South African women full professors also acknowledged that the challenges of getting funding depends of the field, and that another way of increasing the chances of getting funding is by strengthening collaborations with foreign colleagues. However, according to respondents, this makes South Africa lose the power of the research. According to respondents, a lot of the power in who owns and who drives the research gets sent abroad, as opposed to being in South Africa, due to funding restrictions. Consequently, the country loses a lot by seceding that power to the international collaborators. This argument is attested to in the following quote:

> *I think the other real obstacle in South Africa is financial. I think the money situation is an issue. I think … that you end up having to form your strongest alliances research wise with foreigners because otherwise you just do not get, particularly if you want to do large scale science, or have larger money. Because we just do not have access to all the opportunities. It depends obviously, where you sit. Obviously people who are doing work into infectious diseases, they have access to big scale money. Most of us academics, we do not have access to those big pots of money overseas, unless you*

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have collaborations overseas, they [have] gone to the Principal Investigators.
(WP10South Africa)

5.2.1.2. Rigidity in the System

According to respondents from both countries, the academic system is perceived to be rigid; with 14 out of 44 respondents mentioning it; this was the second-most mentioned challenge. In the South African context, rigidity of the system was the most mentioned adversity. For South African respondents the rigidity of the academic system refers to:

(i) An inflexible promotion system: respondents mentioned that the promotion system is challenging and it does not take into consideration the situation of each academic. According to women professors, the promotion system does not consider achievements as achievements per se. Specifically, all women academics are judged similarly based on their achievements, not taking into consideration if they are mothers, if they have small children to take care or if they went for maternity leave. According to some, women professors having other responsibilities outside work really challenges women to meet the promotion criteria at the same time with professionals who do not have the same external obligations. This result may emphasise that having children or family responsibilities may decrease women academics' productivity and delay progress in their careers. There is no consensus in the literature regarding what hinders women's productivity in their careers. Two lines of research are observed in this regard. Some researchers (Sax et al., 2002) defend that family-related variables, such as having dependent children, had little to no effect on women's productivity. Childrearing does not reduce research productivity, possibly because mothers try to make the most of their limited time when at that stage of their life (Sax et al., 2002). Another avenue of research maintains that it is difficult for women to achieve higher productivity and advance in their career if time is taken up with child-rearing and interrupted career development (Khan, 2012).

The quote below emphasises interviewees' concerns with the promotion system as follows:

> *While the university is very proud of their academics and they say, look if you made it to full professor it is really just you deserved it. I think the system is too rigid, it is so rigid ... At the university, to be successful is to move up the academic ladder. So you start as a lecturer and you move to full professor, and it takes time, and the process is very, very hard, and is very strict and based on your publication, based on your teaching, your evaluations and your standing internationally. If you are at work*

during the day and of course at home you have children you have to nurture, you have to do homework, school, all of that, it is harder to meet the targets that you need to be promoted. The promotion committee do not look at the situations that particularly women find themselves in. They are academics during the day, but they are mothers and wives during the evening, and I feel that the university needs to balance that better. They need to be more accepting that you know, if you have children, you are not going to be able to finish these papers at the rate people without children are able to do. (WP04South Africa)

(ii) Departments are not transformed: one of the problems mentioned by women professors from South Africa is that the academic system is not transformed in terms of race (Black and White). At higher levels of academic careers, the majority of academics are White. This result may be justified by the history of apartheid that South Africa has and was felt at all levels of South African institutions. In this regard, Eggins (2016) states that the higher education system in South Africa was developed from a legacy of apartheid where gender inequalities and racial differences were the norm. Black South Africans were allowed to attend specific higher education institutions designed for them. As a result higher education in the country was designed to entrench the ruling White minority's authority and privilege, and White institutions were better supported and resourced than their Black African equivalents (Breetzke & Hedding, 2018). Therefore, for Eggins (2016), the condition of women in higher education cannot be isolated from race relationships. One woman professor stated,

The department is not transformed. So we were all White academics. When we had the FEES MUST FALL[3], the students came to me and said why do we not have any Black staff members? We have good postgraduate, you are producing really good postgraduate students where are they? We had women, we had males, but we did not have any Black staff, so it took me four years. We have one Black lecturer. (WP04South Africa)

(iii) High expectations on academics: respondents mentioned that universities place high expectation on early career academics who enter the system, which has to do with the requirements to be able to maintain themselves in the system. For example, being able to build research on a large scale while teaching and pursuing other academic activities. According to women professors, those expectations are defined in an environment that lacks

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[3] In South Africa in 2015, students across the country engaged in sometimes violent protests demanding accessible higher education through free decolonised education for Black people. This was widely referred to as the #fessmustfall movement (see Mutekwe, 2018).

support and guidance/mentorship for early academics and women to thrive in their careers. Specifically, women professors reported that there is no mentorship structure or collaborative environment for early career academics. They face an environment where they have to train students, publish papers, with heavy teaching loads and they have to try managing that because they cannot say no as they are young and inexperienced. The data also revealed how women full professors had to work individually and competitively emphasising therefore, the new academic culture driven by competition and performance, where the ideal academic takes individual responsibility and ownership of their career, and works harder to be successful.

When I think on what we expect from people coming in, you do not just want a Ph.D., but you want a Ph.D., a postdoc and also a bunch of publications, teaching. It is a lot to be expecting of people who are starting their careers ... it is not enough to work away in your own little laboratory, do some nice pieces, there is that expectation that you must be doing something that is world-class, or world leading and training a lot of students. So I think the expectations are extremely hard, really, really, tough. And I think that is the same in the world. What possibly makes it harder in South Africa is that we do still have quite an old-fashioned single academic lone-wolf atmosphere. So it is not as common for people to work in a more supportive larger team where the team success is seen as more important than the individual success. (WP14South Africa)

(iv) Patriarchal and hierarchical system: women professors consider the South African system hierarchical, which hinders equality and the possibility for early career academics to thrive in academic careers. Specifically, respondents maintain that the system is dominated by White and men academics at the upper levels, who make the rules of the system and choose their equals to rise in the rankings and keep women and Blacks at junior levels, which in turn challenges the transformation purposes of the system and a supportive working environment for all academics. Respondents made observations such as,

The South African academic system is very patriarchal, so the reporting up the structure and down the structure is kept so strict that it feels to me that you cannot, it is very hard to level the plain field. And it feels like you are always fighting against this top-down approach, and I find it very difficult. It makes people who are more junior in the system not feel like they have a voice, or they are not empowered. Which is really hard in a context of transformation because most junior faculty members,

most women and people of color are junior, and most senior are White, White men in particular. (WP10South Africa)

I think is very patriarchal, it is a boys-only type of academic system. I mean how many women leaders do we have as vice chancellors in South Africa? Those that are there are not taken really seriously. It is very patriarchal and it does not give opportunities for women to lead. You ask people ok if I want to become a woman leader in an academic field what is that I need to do. No one will tell you what you need to do. No one will tell you what it is that you need to do. No one will tell you what you need to do to improve yourself. (WP12South Africa)

However, in the South African context, although women professors consider the academic system rigid, there are academics who contradicted this view and perceive the system as being fair and not problematic. Those academics emphasised that the problems are more at the individual level and are related to individual choices and also to the fact that some women academics do not work hard and are not willing to seize the fullness of opportunities of an academic career to move up on the career ladder. They do not focus on doing research, the main requirement to progress in a career, stay in the lecturer position and are not willing to invest time and hours to develop their careers, because for them time should be spent in other things outside of a career. According to respondents, educated and well-remunerated women in South Africa are in an exceptional position to balance a demanding career and family life. This is perceived as particularly true in South Africa where domestic work can be delegated to paid help. In this regard, research reports (Gaitskell et al., 1983; Jinnah, 2020) that in Africa, and South Africa in particular, domestic work is one of the major sectors of the South African labour market, albeit poorly paid, and professionals from academia can use it to relieve the tension between work and family demands.

This finding highlights the attribution of individual responsibilities for one's success in academia, and also emphasises the characteristics of the women professors who rise to the top in this context. Women who comply with academic requirements to climb the career ladder are driven, passionate about their work and willing to take the necessary risks to grow in the ranks. The quotes below emphasise this argument:

I do not think that in the system itself there is any obstacle, not at the universities that I was. I think everywhere where I was involved there were opportunities and if you worked hard and you did what was expected of you, you could get and you could rise on those opportunities. So I do not think that there were obstacles per se, except for

the personal obstacles ... and I see that all the females they struggle more with the fact that they have to juggle everything. So that is on a personal level. In the system itself, I do not think that we have an unfair system. (WP01South Africa)

I am not convinced that our system has huge obstacles, or more huge obstacles than the northern hemisphere. And the actual fact is that we have access to cheap labor for support. You know, the fact that when you get home you not only have to feed the husband and feed the kids, you're probably having to clean the house as well, what you do over the weekends, you are trying to vacuum or whatever… So my sense is that I do not think that there are any more hurdles, certainly not more hurdles in South Africa. I think if there is any problem, it is the fact that women tend to kind of linger in the lecturing positions and do not necessarily grab the opportunities to go further. People have this perception that being an academic is a really easier place to be. Yes, if you are a schoolteacher then you want to get a lecturing position, and you see that you do not lecture eight hours a day, this looks like an easier position. But an actual fact, if you want to grab the fullness of what the career offers, it requires a huge amount of passion and time, and I think that also may contribute to women not necessarily climbing that ladder, because they see their time has been better spent in other places. I mean I have one colleague she says she is quite happy being a senior lecturer, she likes to go home at four o'clock in the afternoon and she has a really nice garden and she spends time in her garden. I do not go home at four o'clock in the afternoon and maybe I do not have a nice garden. But I think I am having more fun, but maybe she is having fun also. (WP02South Africa)

The above quotes also emphasise the subjectivity of success in a career, how one view of success based on objective and external indicators may not fit all professionals in academic career.

Conversely, in the Swedish context, the rigidity of the academic system is perceived as,

(i) Unconscious gender bias: according to respondents although Sweden is considered to be an equal country, women academics are still judged and measured according to male norms, participation and achievements. Men are still dominating the power structure of academia in terms of who is promoted or gets the research grants. Even though the system claims that it has an equal way of evaluating positions and making sure that when positions are announced they should be both female and male applicants and they should be viewed in the same way, women professors reported that that is very hard to get. They believe that the merits are not

viewed as equal when professionals are applying for funding and positions. One woman professor stated,

I think that there are things which we do not really see as closely, it is not easy to see what it is, but there are some kind of patterns that are always niggling a little bit on the female rather than on a male. (WP09Sweden)

Respondents also mentioned that the academic systems in Sweden or power structures in all kind of companies or organisations are the same of the rest of the world, they are few women in the top. Men run everything and have the power. Specifically, respondents emphasised that although in Sweden the country was early compared to other countries regarding gender equality policies, equal salary and day care, the country still has a lot to do and women are still treated differently when it comes to earning power, such as getting grants and higher positions. The quote below reflects this argument:

We only came to a certain distance in gender equality from other countries and then the Swedish logo was good enough. We kind of stopped there. It feels like people kind of accepted. Ok we have day care, this and that. These are all good and nobody fought for more, or nothing more happened. I see a lot of people happy about those bringing the women. But when it [comes] to who is going to be the head here, or who is going to get this funding grant, these kind of power structures, there is always something wrong for women. I mean my head of department … he did not mean anything, he talks about my two colleagues that I was division head of, "Ohh the guy, he has so many collaborators, he is so interactive…" and the woman, "she has so many collaborators I wonder if she is independent." And both were supposed to … we were talking about them being promoted, and he did not mean that, but is just like it is in your system. (WP23PER Sweden)

Interviewees also reported that, although the country is considered one of the most gender-equal countries in the world, the reason why the gender bias towards women is rooted in the structure of institutions in Sweden is twofold. First, in Sweden there is nothing structural in principle that would prevent women from going into science and progressing in an academic career. There is a good parental leave system, education is free, "there is no cultural constraint that says that women cannot do physics or mathematics, but still, many women choose not to" (WP27Sweden). And the reason is found in the fact that maybe there is much more unconscious bias than people are aware of in Sweden. Since people can choose anything, people tend to choose in a very biased way because girls and boys are still taught from a very

early age what is a female behaviour, and what is a male behaviour. One professor maintains, "We still treat our sons and daughters in different ways" (WP27Sweden).

Secondly, Sweden is considered to be a gender-equal country because all women work, they are not stay-at-home moms. More precisely, the equality claimed about Sweden is not extended to position of power in the hierarchy of organisations, including academia, but is limited to the fact that men and women have equal access to the job market. In this regard, Lane and Jordansson's work (2020) traces the Swedish gender equality discourse and interrogates how equality was problematised. In their study, the authors maintain that in the formative gender equality policy process the problem of gender disparity in the employment market was seen in terms of inequalities at home, specifically, men's and women's unequal sharing of unpaid housework. Therefore, the emphasis was on women's admission to the labour market, not in the gendered and discriminatory practices of the labour market. Gender segregation was evident in the labour market according to the authors, through differences in wage for the same task, defined positions or areas of work for women and men, with men remaining in positions of power. The quote below represents the typical view in this regard,

> *What is perceived as egalitarianism is that lots of women work, like everybody works here, right! All the women … they are not staying home. We are not staying home does not mean that they do not have a lot of workload at home … (smiles). In a way, you get then triple work. You have to work double – at work [and] you have to work at home. Unless you have a partner who … I have a partner who, you know, we have worked very, very well together, we have taken care … that has been a precursor otherwise I could not have put in all that work unless we shared everything. But not everybody has that, so that means a lot of women just cannot, they have to work so much, they have no choice but … you cannot survive on really one salary here. So there is no choice … [other] than both working. But that does not propagate into sharing the homework, the work with children, responsibilities equally. (WP08Sweden)*

(ii) Traditional and conservative system: according to respondents the Swedish system is traditional and conservative in a sense that it is a consensus society, with little conflict and things that are not explicitly shared and informed, which makes the system rigid and slow. Specifically, it means that changes in academic institutions, which are quite traditional, becomes even more traditional in a Swedish context. Respondents also reported that the system has little diversity in foreign academics occupying top positions. The following interview responses represents the typical view in this regard:

there are these mechanisms that I perceive in Sweden to ensure that there is structure and sometimes this means that unless things are explicitly allowed then they are forbidden. So unless someone says yes you are allowed to do that the assumption is no you cannot do it. Which means that it creates a rigidity in the system. (WP02Sweden)

This is a consensus society, you know, everybody would agree on, you know, at least say that they agree on everything and this is how things go forward. But on the other hand, that is quite oppressive in some way. That means the views are not coming up, there is a very little diversity on top levels. Just have a look at each university's top people, and see how many ... I am not talking about women now because they have recognised the women thing so [they] put in women now, but just look for foreigners' names, for example, at the top, and look what it looks like at a university. So non-Nordic, names, look for those and I do not think that you would find many. And I have both of those aspects. I mean I am a woman and not Swedish. (WP08Sweden)

(iii) High expectations on academics: according to Swedish professors the academic system is tough to get into and has challenging requirements to get to the level of full professor, followed by the fact that each academic has to apply for funding to conduct research, and in some fields that are not applied science, funding is challenging. Another expectation is related to the time stipulated to get an assistant position after a Ph.D. Participants considered that time narrow. Swedish women professors mentioned that the time required to get an assistant professor position after a Ph.D. is narrow and does not allow professionals wanting to enter academic career to do informed and bold postdocs. The following views explain the arguments stated above:

My university has very high expectations to get your full professorship ... This is an obstacle, they did not give us funding but they ask us to have three Ph.D. students defended before we are allowed to apply for a professor position. And this is clearly one of the obstacles here; especially in my field, mathematics, where you have hardly any, funding is not like in the more applied subjects. (WP04Sweden)

We are trying to get to a more universal tenure system. Where if you think of it, for a faculty where you can have an assistant professorship position until, currently five years after your Ph.D., which the way I look at it, is a little bit too soon. I think that limit should be extended, you should have a possibility to do bold postdocs, you should have the possibility to travel and explore without feeling rushed in outputs, to be able

to get your faculty position. I think that should be a little bit more flexible. (WP10Sweden)

5.3.1.3. Affirmative Action

Respondents from both countries perceive affirmative action as an obstacle of the system, eight out of 44 interviewees mentioned this challenge. According to respondents, the academic systems in both countries have active programmes of promoting women, for instance, gender representation in boards and committees, quotas for women, programmes and call applications open for women and long periods of maternity leave (exclusive for the Swedish contexts). Those actions can create some kind of demand for female researchers for different types of positions,and, in those cases, it might be perceived as an advantage. However, in some cases this is perceived as detrimental to women's progress for reasons such as:

(i) They create a burden on women: Swedish professors stated that because of these actions to promote equality in the system women are asked to participate in all kinds of committees and work. Because they lack women and there are so few women, they get overloaded with work that does not really help them progress in their careers. Specifically, in fields where the number of women is few, women who are in those fields have to participate in all examination boards and committees to be the quorum, thus creating a burden on them and reducing the amount of time that they have to dedicate to other activities such as research that is important for their career progress. Women professors declared,

> *Sweden has a very active programme of promoting women in academia. Whenever [they have] equal qualifications, the woman is promoted. There are calls that are meant for promoting women and so forth. Generally, this is a positive thing. It's not always a positive thing because if you come from a department with very few women as is the physics department and if these actions to promote women are saying that well every committee at a physics department has to have at least one women, every examination board has to have at least one woman, every whatever decision board has to have at least one women and you have five women, you end up as a woman taking part in all of these things and you are actually doing more work than you are supposed to do, only for the sake of showing that women are represented. Which is correct yes, but in fact, this is an extra burden on the few women that are already at the department. (WP14Sweden)*

Everything is supposed to be 50-50 in representative committees, though as a woman you are asked to sit in faculty positions or other positions, you are much more likely to be asked, while quite a percentage of men can get away and just spend time on their careers and not do these things. (WP01Sweden)

(ii) They create a sense of doubt in women achievements: although affirmative actions might be well intentioned to promote the participation of women in academia and to raise the ratio of female to male, women professors claim that this should be done carefully and only those who qualify should be supported because, contrary to the purpose of affirmative action, it can lead to a decrease in the quality of science and make women question their achievements. Women professors maintain that affirmative action should be applied wisely. Women and other minorities should be trained to gain skills to be able to fill those positions. Merit-based assessments should be the priority even in affirmative action because if people do not have the skills and fill the positions solely because of gender or race, that can reduce the quality of science. Specifically, women professors report that the academic systems are aware of the benefits of having a mixture in a female/male ratio. However, because of affirmative action it is difficult for women to recognise that they have the merit to get the positions, the grants, or the prizes and not just because of their gender. In this regard women professors stated,

it also gives you sometimes a little bit of a doubt like, would I have reached here if it was not that additional step to support me, being a minority or historically disadvantaged? So it is good but it can also leave a bit of a sour taste sometimes. I think it is important to do it but I also think people who would otherwise not qualify should not be accepted because you are damaging the goal of what is wanted to achieve… it should be done with care actually, even though is a proactive motion. (WP11South Africa)

In terms of promotions, I think that merit is the best thing. I am actually anti this thing of promoting somebody just because you want to fill the quota. I think if you want that person to become promoted and you want to push the, South Africa for example has this thing of wanting to push the quota for Black people. Like I said if you want to push the quota for Black people, train them, so that they have those skills. And it is the same thing that I am saying with women, we need to be trained, we do not want to be parachuted into those positions. I do not want to be parachuted into a leadership position. But I am asking, what do I need to do? What are the skills I need to have so that I get into that position? So it is the same thing with the promotions again. Do not

promote some people because they are Black. It does not work. It also [brings] down the quality of the institute as [a whole]. So for me I think they are really big issues when it comes to the academic environment, especially in South Africa. (WP12South Africa).

(iii) They create the idea that everything is easier for women: Swedish professors stated that there is a conception from outside that in countries like Sweden where there is more awareness of gender equality, career progress in the system is easy for women. It is perceived as easier for women to win a position because the policy is in place to promote women in academic careers. This is highlighted in the quotes as follows:

> *when I won the Swedish fellowship they were saying ... they actually said that expected that that position was only for women and that is why I got it. And indeed it was in full competition and I was actually, yanhh ... in the last selection two women and one man, but it was not at all, it was both for men and women. So there is this expectation that here is easier because you are a woman; [that] is the perception from outside. (WP18Sweden)*

However, although the systems in both countries have awareness for gender equality, and put in place actions to increase the number of women in academic careers some respondents from Sweden declared that women are still evaluated in a biased way and affirmative action is not being effective. According to respondents, the bias toward women is rooted in the mentality of society and power structures of the academic system. Women reported feelings of lack of respect for their work and resistance towards their applications for promotion to higher positions in the system. Women also reported that the bias in the system toward females is quiet, surreptitious and rooted in the system and mentality of academic professionals. Women further maintain that this behavior may be a reaction due to being bombarded by the pressure to report on how women-friendly the system is, which creates a negative reaction such as asking why all this attention is paid to women. In this regard women professors remarked as follows:

> *I was the first female professor in this department which had existed for maybe twenty years. And the mentality of most, let's say old-generation men, when I was sitting on the board, the way which they were thinking – thinking not expressing because they were not allowed – is really old-fashioned and I think ... no one directly told that to me, but for many things I think one assumes that because I am a woman, [they] do not value my work. I felt on many occasions that there was a lack of respect for my*

professional role, which of course is never expressed in terms of being a women but in a way, I was not expected to be in that position in their head. But it is not something that was really touchable and I even got resistance to applying for promotion to professor. So is the way people really think. You cannot force than to believe or convince them that we are equal… But you could perceive that they do not think it should be, I would say. (WP18Sweden)

Swedish society claims to be not so hierarchical and there are not probably so many explicit hierarchies but these hierarchies exist implicitly, which does not make it any better from my point of view. (WP13 Sweden)

(iv) They create a comfortable position for women: according to women professors the affirmative action in place in Sweden creates a comfortable position for women that allows them to quit academia, stay in half-time jobs and not thrive in their careers to reach higher ranking position. Women have support from the system to have long periods of parental leave that allows them to reenter the system through half-time jobs, and also have good childcare that, according to respondents, instead of helping women to succeed in their careers, creates an opposite result. They create comfortable positions for women that make it difficult for them to fill the requirements for climbing the career ladder and succeeding in academia. One professor stated,

I know here a lot of efforts are [made] here in Sweden to provide equal opportunities or this kind of [thing], but sometimes I think they are not so successful. They are putting money … all these things but this also can back fire. They generate these comfortable in-between positions for women where they never get out. So if you are looking at the statistics I do not think that in Sweden they are especially good in having women in high positions and why is that? I observe for example that even fathers have taken parental leave as much as they [want] to. They are leaving for a half year and they are coming back 100%. The women are leaving and they are not coming back 100% because it is comfortable in Sweden. You get support; you get a [part-time] job. You get good childcare, you get good support, you can make yourself very comfortable in this situation and sometimes if life is tougher you can fight for coming back, you are probably there for 100%. I do not really want to judge that, I do not want to say that is wrong [if] a woman decides to take a comfortable position, maybe this is the best she wants, I do not know. But there are always kind of risks to all these approaches…" (WP13 Sweden)

5.3.1.4. Few Permanent Positions Available

One of the drawbacks of the Swedish and South African academic systems mentioned by women full professors is that there are not many permanent positions available; in 44 interviews, seven respondents spoke about this issue. According to the interviewees, to get a position after a postdoc is always difficult for younger researchers, especially if they want to go to higher academic levels, and if they want to have a family, which is not always possible. The higher one goes on the career ladder, the fewer are the permanent positions available in the system. This situation makes academia lose professionals because they opt for permanent positions in industry. However, women professors maintain that the lack of permanent positions in academia is a global challenge, therefore the competition is higher and professionals have to work hard and only those who really want to pursue an academic career and are willing to put in the hours and to move to other cities, stay and strive to maintain themselves in the system. In this regard, Swedish professors stated,

> *The further up you get the fewer [are the] positions available, so at some point people get deselected. When it comes to the permanent positions it is just the ones who really, really, want to stay who actually stay in. It does not necessarily mean that they are the best; they are the ones who sort of struggle harder, so try most so to speak. You have to be the best to pass that selection, to get to the top. And that means that you have to work extremely hard, and I think that as a woman you probably have to work harder to be even better because I think we are still a little bit misjudged; you are often evaluated by men, [who are] looking for men, looking for young men who resembles themselves. (WP05Sweden)*

> *I know one of my postdocs, she just left because she got a permanent position in industry, because she said that she needs to have a permanent position because she cannot move around looking for positions because she has two kids. So that is why she decided to leave academia, which I fully understand; small children suffer especially when they are studying at school. (WP28 Sweden)*

> *I think the Swedish system is good in general. But it is also very difficult to get the assistant professor position, and that is in every country not just here. I also think it is the same, it is not because I am a woman, it is same for everyone. It would not have been different if it had been a man, it is the same. That is the academic system – there are very few permanent positions, there are very few professor positions, and there are very many who want [an] academic career. If you are young and you want an*

academic career, the challenge is that there a very few permanent positions, and there are very few assistant positions, so it is extremely competitive to get any assistant professor position. (WP19Sweden)

In South Africa, only two interviewees mentioned the existence of few permanent positions in the academic system. Nevertheless, from the statement below it is evident that similar to Swedish professors, South African professors acknowledged that that there are few permanent positions available in the system. According to respondents there are many people wanting to pursue a career in academia, however the system does not offer enough positions.

> *The one thing that is a challenge is that the positions are very limited. There are not so many positions in academia. In our department, we are getting so many young academics, assistant lecturers, people are doing their honours, and they get a part-time, 24-hour appointment. Then they want to go for their masters. All of them dream they want this permanent appointment. But there are six, or seven or nine or ten of them. But that is a company specific thing. Because the company also has [costs] when they appoint you ... they have to pay pensions, child support if you pass away, whatever, ok. That is the thing. But it is not really the system itself. (WP03South Africa).*

5.3.1.5. Misalignment Between the Swedish Social Security System and the Swedish Academic System

This challenge emerged exclusively in the Swedish context (four out of 44 interviewees mentioned it). Respondents claimed that there is a misalignment in the country between the Swedish social security system that offers a long period of parental leave that is shared by both parents and the Swedish academic promotion system. Specifically, while the security system allows women to interrupt their career for long parental leave, the academic system of promotion punishes academics with interrupted career paths. If women take all the time out for parental leave they risk losing the track of their career. To progress in academia, academics have to be continuously publishing and getting research grants. The other issue reported by women professors is that although the social security system offers long parental leave, the academic system does not assess individuals according to their specific personal conditions (having children or having taken parental leave). Women are judged in the same way as academics who have an uninterrupted career path in the system and high track record of research outputs. In this regard, women professors stated,

I mean the social security system in Sweden is fantastic. However, the obstacle is also connected to that because the academic track record [do not complying with the social security system, in a sense. Because for example, if you on parental leave you stay, I think for one kid in Sweden you have 480 days. Just for one kid, and normally in Sweden you divide that for both, mother and father. That is then 240 days, and that is working days. So it is quite good time, but then everyone is saying, ahh you cannot take all this time, because you need to stay and publish, you need to get grants, otherwise it is up or out. In a sense the social security system should be very, sort of, well set for supporting a career, however, the requirements, the official career requirements are not complying with the system, because they are more set in an international arena rather than a national arena I would say. (WP20Sweden)

After all, if there are academics who spend 100 or 150% of their time doing science because they do not have children, their science output will be higher, their publications will be more and it is still not really, I have not still for a few years now, but when I was reviewing for the Swedish research council, I did not see that everybody looked at achievements as achievements per time. So say one scientist could have spent three years of parental leave or worked 50% for parental leave and another person worked full-time not with breaks and they would not compere the specific output accordingly. That is still a challenge. Still a challenge even the Swedish system when people apply for positions so women have to, independently of their family status, show the same amount of work and level of dedication. So that is still sort of a gap. (WP01Sweden)

Results also revealed that as a consequence of the misalignment between the the social security system and the academic system of promotion, some academics avoided taking extended periods of maternity leave to avoid breaks in a career that can hinder career progress and instead, shared with their partners. This allowed them to have time with the child and continue to work to maintain the pace of their career and work. Academics reported that long periods of maternity leave are detrimental for women because science develops quickly and academics with extended breaks and more than one child may miss opportunities. The following interview response represents the typical view in this regard:

Parental leave is perfect ... but I did not take a super long parental leave; many women they are away for more than a year, and then there is a risk of losing that momentum, so I think because we shared completely half way, it was not too long a

break ... I think that [is] balance, not be away for too long, I must say that. If you share more with you partner I think it is better than you know away for ... particularly if you have several kids you are away suddenly, you feel this moving forward so quickly, you lose too much. (WP26Sweden)

My first parental leave was, you could see within my publications and citations, there were two years that I could not go to a conference and people forget it, so you need to be aware that people forget about you if you are not present. (WP07Sweden)

5.3.1.6. Mobility

Mobility was mentioned as an obstacle of the system by women professors from both countries, especially for women with family (four out of 44 interviewees mentioned this as an issue). Specifically, women professors highlighted how mobility can be a constraint for women's career development, especially those who have children and family responsibilities, in terms of travel abroad for international postdocs or to fill positions in other cities where they are available. Results also reveal how some successful women from the present study tried to find solutions to this constraint through negotiations with partners to assume the responsibility of the children while they took small periods of the year to be abroad, and also how some women professors endured the consequences of not doing an international postdoc due to family responsibilities. Respondents declared,

I think one obstacle and that goes for men and women, it might be more difficult for women, at least women with kids, if you think that travelling or being abroad for some time, maybe doing an international postdoc or something, that might be difficult if you have a family. When you are not able to move for a year for example. That might be one obstacle. Me, I tried to overcome that [when] I was in Bergen in Norway, I was there one week each month for one year, because I already had the three kids. My husband could not move and so on. But then I could be away for one week and then I was at home for three weeks. That was one way of getting over that kind of obstacle. (WP15Sweden)

Here it is expected to do a postdoc, to go abroad and when it was the time for me I had one child and was divorced. So, no way. There was no way. So that is an obstacle because it took me many years when I wrote applications, because I was offered a postdoc but I had to turn it down, in California, I could not go. And for many years when I wrote my applications for research funding, it always said "she has not done a

postdoc", and that was so ... yah. Now they stopped because I passed that phase, and that I think is a problem ... a year or two years that is a long time, particularly if you have kids with special needs or family members. (WP26Sweden)

What I tell my Ph.D. students who want to be in academia is that you cannot choose a specific place where you want to be, it is very unlikely that a position will open up exactly in the city where you want to be. So that is, of course, a challenge, and also becomes a challenge if you have a family, you have dependents, this mobility. But there should be some flexibility, we should know exactly the system. (WP12Sweden)

Although a South African counterpart mentioned mobility as an obstacle, the emphasis was not on external postdocs as in the Swedish context, but more in terms of travelling for weeks, for conferences, or collaborations. A South African professor stated,

For women, international travel is sometimes difficult. My husband [and I] have a good understanding. So I always saw this as an opportunity for him to bond with the kids... In my case [it was] never more than a week or two of travelling. (WP13South Africa)

5.3.1.7. Reconcile the Short-Term Contracts

This obstacle was evidenced only in the Swedish context and reflects the consequences of the restraints of available permanent positions in the system that force those who want to pursue a career in academia to adhere to short-term contracts. Women professors report that it is a challenge to reconcile the short-term contracts with having a family, due to uncertainty in terms of finances and plans for the future. Women professors stated,

I think is common, it is not only the Swedish academic system, it is common throughout academia, it is a challenge to reconcile the short-term contracts and having a family ... it takes a lot from the individual to be able to organise their lives in the way you can adapt to that, of course, it also makes those people vulnerable, for instance in supporting their families. And it puts pressure and requires things from the families of the academics to adapt to the system; of course these are the challenges, and it is hard. (WP12Sweden)

If you do not have a fixed position that also could be stressful, even if you have a position that ends in a certain time, even if you get it then it might be stressful. You

might worry for economics and what will happen after that, being able to plan for the future is of course, also important. (WP15sweden)

However, respondents also recognised that it is important to have short-term contracts and do external postdocs because it benefits the excellence of science. It allows the researcher to focus on research, gain experience and build networks in the process of mobility, and is important for career development. In this regard, a women professor stated,

I think it has been valuable for me not to have a long term contract when I was a Ph.D. student, or that I had to go and do a two years postdoc elsewhere, and that there is this kind of evaluation system. I think it somehow benefits the excellence. (WP12Sweden)

5.3.1.8. National Research Foundation (NRF) Ratings

NRF ratings are perceived as an obstacle in the South African academic system. This obstacle emerged exclusively in the South African data and is perceived by women professors as a mechanism that can exclude and marginalise women from the system, depending on the rate that they have. In South Africa, the NRF is used as a facility tool in promotion committees to assess academics in higher education institutions. Those who have low rates or are not rated can be marginalised in academia. However, the rating is also seen as an important mechanism to boost the academic career of those academics who manage to get rated with a good rank early on in they careers because it can open doors to access to grants, visibility in the field and facilitates progress in the system. A respondent from South Africa stated,

I think the opportunity and obstacle of the South African academic system was the NRF rating system, which if you got a good rating it really opened a lot of doors. But a rating system, also in a way became an exclusive system where if you did not get a rating, a higher rating, you were almost marginalised. And I think a lot of women in that period between your Ph.D., and your children and establishing your career, a lot of them battle to get themselves to a competitive level during that period. So their science rating is not very high and then you spend a big part of your career suffering from that, and it is very difficult to step higher. You really need to put a lot in, so it goes both ways, it can be an obstacle and opportunity. (WP08South Africa)

5.3.1.9. Role Models

Swedish women professors mentioned a lack of role models as one of the obstacles of the system. According to respondents, women role models that are in the system behave like men to be taken seriously. In this regard one women professor stated,

The role models who I could have looked at who are before me, females in the field, they are not very pleasant because they have thought that they have to be really tough and really almost aggressive to stay in the field, and that is something that is not appealing to many females and not also to many men as well, and I think we are filtering out. (WP08Sweden)

5.3.2. Challenges Women Faced Throughout Their Career

The challenges women academics encounter during the course of their careers are discussed in this subsection.

5.3.2.1. Gender Bias

Gender bias is perceived by women professors from both countries as one of the challenges they have faced throughout their career. Women professors reported that they were perceived as less skilled and capable in meetings or to perform a task by their male counterparts and superior hierarchies, just by being a woman. According to one woman professor, "being perceived of as a woman, identified as a woman is not something that you can easily hide from. You get judged for it immediately in the interactions" (WP02Sweden).

Women professors also reported being asked to perform activities that were perceived as women's roles, which were linked to their femininity. Results also revealed how women from this study stood up for themselves to cope with those situations and, in some cases, how the support from the social environment, specifically supportive parents, was crucial for them to cope with challenging situations and pursue their dreams of having a career in STEM fields. This challenge is understood in the South African context, as the main challenge mentioned by respondents, while it was the less mentioned challenge amongst the Swedish counterparts. Nine out of 44 interviewees mentioned this challenge. In this regard, South African women professors stated,

I had a head of department who think I should not be there. That was when I was a lecturer, and he used to expect me to make and serve teas at the meetings. And that

[put] me a bit off; [I] stood up for myself, and again I was fortunate that my colleagues supported me. (WP14South Africa)

I did not have an understanding head of department, he was actually very unprofessional, and nasty, whether that was because he saw me as a woman or because he just did not liked me. But I really had a tough time but I got through because I have a really tough skin, and I just dealt with all the stuff. I really think that has been the hardest obstacle because if you feel like that you are also nervous to ask for, I need this, can I have leave, it just puts a wall between you and your head of department, and that was really I think the hardest thing for me. (WP04South Africa)

There are certain barriers that have been usually things in meetings when a woman says an idea people just ahhh, and when it is a man people say that is brilliant. That sort of thing, which I think happens more than people admit, because they do not remember your ideas. I think there was quite a lot of that, and a lot of the feeling like sort of settled power dynamics on the currency about who is who in the meeting and whose word carries weight, and things like that. (WP07South Africa)

It started very early in Switzerland when I wanted to go, I grew up in Switzerland, in the education system we have different groupings and I wanted to go to high school that leads to university and the teacher said that is not necessary she is just a girl, so put her in the middle class that would not lead to that. And then in the middle class the boys got different classes from the girls. They had algebra and the girls had to go to cooking classes, and knitting and sowing. And I wanted to do the algebra because I loved mathematics already then. So my father intervened; he was always very supportive, so he intervened with the school and said if she wants to do algebra she should do algebra, and they said but then she cannot take the sowing and cooking classes and she will not be ready for life later on. That was the background that I grew up in. But he pushed and said let her do it and that allowed me to go to middle school and to university. (WP11South Africa)

5.3.2.2. Need for External Funding

Respondents from both countries acknowledged the need for external funding as one of the challenges that they have faced in their career, with seven out of 44 interviewees mentioning it. According to respondents the constant struggle within academia is to find funding. The funding situation is perceived as challenging (see section 6.1.1.). Academics have to

continuously work to bring in money, which creates feelings of insecurity and anxiety. The external funding is perceived as important, according to women professors, to do research, sustain research groups and consequently sustain the women professors in the academic system. Women professors reported how competitive, uncertain and unsafe the future was because of the need to constantly apply for funding. Results also revealed how women professors from the present study overcame challenges resulting from funding constraints and maintained themselves in the system through the passion that they have for their work and the willingness to remain in an academic career. They worked hard to prove themselves and to make sure that they always had funds, developed writing skills to be able to write proposals and compete at high levels, and individually looked for funding opportunities. This behavior highlights the proactive roles taken by women full professors from both countries. The quotes highlight this argument as follows:

The negative side is generally the life in academia that involves applying for grants, at every single stage of your career; I mean we know that this is how it is in academia. But at the same time when we choose that path, we do not choose the academic path because we have in mind that you know, I will spend that much of my time applying for money, or thinking about managing projects but thinking that well I am going to do research on very exciting topics. So this is how we all start and we end up facing the more pragmatic side of working in academia. Which means that you have to think about projects, you have to apply actively, you have to fail to get one application granted, and so forth. So this is the inherit side of academia which is never positive, of course. It promotes competition, and to some degree, this could be regarded as something positive, but at the same time, it also gives some level of anxiety I would say. Because you never know if a project will be successful or not, an application will be successful or not. That is negative, and drains you from time to time of energy. (WP14Sweden)

The difficulty is when you get the assistant professor position to learn how to [get] grants, if you want to get permanent you have to bring in grants, you have to learn and it is not easy, I would say many grants have 10% success. So 90% who apply do not get and 10% get it. So it is very competitive, very, very competitive especially in the postdoc to assistant professor, and then to get permanent. So that is when you will go to build your own group, you have to be competitive and you have to be better than 90% after 10%. Otherwise, you will not enter the system. (WP19Sweden)

Along the same lines, a woman professor from South Africa stated,

The problem was on funding for research, the big issue. But again, you had to have passion to learn how to write proposals. So I used to … there is a university newsletter that used to come out. So I used to spend a lot of time every week through this newsletter to see if there are some courses, or some course for writing research proposals, or some courses for funding that I could try, because no one would come and say apply for funding here. So you go looking for funding yourself. So I used to spend a lot of time looking at that newsletter that came online every time to see where I could apply for funding. And my first breakthrough was Carnegie research grant for emerging researchers, for young researchers, after I attended a workshop on how to write research proposals. So I think the biggest issue for me was the lack of finance. Which I guess is still the same, funding is a big issue up to now. (WP12South Africa)

5.3.2.3. Coming to Sweden as an Outsider

This obstacle arose exclusively from the Swedish data, and was mentioned by women who are not naturally from Sweden, and by those who are Swedish but stayed outside of Sweden for long periods pursuing their education, consequently did not know the Swedish academic system; how it works and how to work strategically to move up the career ladder; and did not have the support of a powerful supervisor or a strong network of connection. Six out of 44 interviewees mentioned it. Women professors admitted finding it difficult to comprehend the Swedish academic system, especially because of the lack of mentorship to guide them and help them navigate through the system and also a lack of networks due to them being outsiders, which contributed in same cases to delaying their progress in their academic careers. Specifically, women professors highlighted that not being Swedish affected their career, because according to respondents, for native Swedish women who want to stay in academia and are willing to work hard and rise in the ranks it is easier because they already have their mentors and networks in their reach to help them navigate the system. Those who come from another academic system or outside of the country find this much more difficult. Specifically, what the data demonstrated is how women from other academic systems or not familiarised with the Swedish system find it challenging to navigate the system and are excluded from networks of academics who for example, write research applications and receive research funding. They do not have the support and sponsorship of a powerful mentor to refer them to appointment positions. Women professors also declared that the non-Swedish women

professors who reached full professor position faster had a conducive environment, specifically someone to help and push them or had to do double work.

However, although women recognise this challenge, they also reported not having regrets about their career path because pursuing an academic career and becoming professors and doing research is what they always wanted to do. The following quotes attest to this argument:

When I came to Sweden, my naivety about how things are, there are many things, again that are not explicit in Sweden. There are things that if you do not know what is going on, and people do not tell you, then you are hindered. You strive in a direction that is already dead, and nobody told you, and nobody indicated that this will not lead to anything. When I came to Sweden I invested a lot of time in building up things that I was wondering why nothing happened because the university actually did not want to support that. And nobody ever told me that. The structure in Sweden is that you either teach or you get your own money. The problem is that when you come as new, a person from outside, you do not have any connections. Without connections to industry, you need an industrial partner, and you get no industrial partner without somebody helping you to connect. And coming to a new environment you do not have anybody to connect. There is no somebody who takes you up in your umbrella and connects you. (WP07Sweden)

I was very determined, so I wanted to be a scientist and I wanted to be a professor. So that is what I wanted and I cannot say that I found obstacles, definitely there are some gender issues at universities, like for instance for women it takes much longer to be promoted from one position to the other and this is a fact and it does not depend on sometimes or where you are, depends on your networks of collaborators, for instance if you are most probably native. Imagine if you are Swedish and you are so determined, maybe it would have been easier, and shorter to become a full professor, for instance, because your mentor is within your reach. So I cannot say that there were obstacles, there were some delays. But this are most probably due to the fact that I was not Swedish. Being Swedish it would have been easier to become full professor in a shorter time. But there were no obstacles. The thing is that because you come here and you are not from here, you do not know the system in the beginning very well, and somehow you need a mentor. If you do not have a mentor who is somehow pushing you at different stages, it becomes a bit more complicated too. And also because you do not think like a Swedish [person], and somehow there are some tricks

here in academia that you need to know if you are Swedish. You do your part, but then the steering board of the university needs to want you and so somebody should speak for you. And if you are not Swedish you do not have all the connections to get somebody that speaks for you. My personal feeling is that the non-Swedish that are reaching so fast the career, they had the environment, and they were pushed. The other [thing is] gender. [Women] need to [do] double work, they need to do more. (WP06Sweden)

Similarly, to emphasise the views of non-Swedish respondents regarding the challenges in navigating the system when you are an outsider, a Swedish native professor who stayed outside of Sweden for a long period pursuing her education and starting her academic career and therefore, was not familiarised with the academic system stated,

My main challenge was coming to my university. I was abroad, like I said I am from Sweden, I know Swedish and so on but I was abroad for nine years and then I came back and I … the last time I lived in Sweden I was a basic student, undergraduate student and all of a sudden I came back as an assistant professor, at a different university. So there were a lot of challenges in understanding the system, and understanding how to navigate, what is strategic and what is not, but at that point I had a personal mentor, and I had a career development programme here in my university that helped me out tremendously. So that sort of guidance support and personalised support for young faculties is the most important from a career perspective. (WP10Sweden)

Another challenge mentioned by non-Swedish women full professors is the lack of access to information, and not knowing how to speak Swedish. Respondents acknowledged that the lack of information and not knowing Swedish limited them in building networks and having access to opportunities. Information is shared through a mentor or in network groups, which are inaccessible for many non-Swedish academics because of the restriction of language. In those circles the language used by the members is Swedish. The quotes below highlight this argument:

I would say my main challenge here in Sweden is that I did not speak Swedish, so that has limited me a lot in networking. Networking is not about meeting the person in the conference, it is about what you talk about afterward at the table, or during the coffee break, small talks, etc. ... network goes this way, and ... being not able to follow or to talk Swedish has been a setback. But I handled those challenges by being part of some

groups where Swedish is used only ... like now I am part of a board ... everybody speaks Swedish, the meetings are in Swedish, etc. ... in the beginning it was extremely hard, but people get to know you and you understand better, and that is a new door that opens another door, etc. But I still speak Swedish when I am sure that people will not understand me. So this has been my way ... to push myself to places where it is not comfortable. (WP21Sweden)

In some sense not having the access to information, in some way the experience that I had before from outside of Sweden where I managed to create my own group and progress. I knew that normally you need to apply for money; you need to ask for information if you are not given. So one of the biggest obstacles is the lack of information, the way around is to look for that information, and go beyond the individual local. (WP18Sweden)

The above quotes, although showing how challenging it was for non-Swedish women full professors to navigate the system, also reflect how actively they engaged themselves in trying to find solutions to the challenges they were facing in their careers to be able to maintain themselves in the system.

5.3.2.4. Lack of Mentorship

Lack of mentorship emerged in both contexts as an obstacle. Although respondents agreed that having someone to advise and champion you is vital for career advancement, they reported being able to succeed without mentoring. Women professors claimed that they did not have help from a mentor throughout their career, specifically, someone to show them the system and how it works, someone to guide them, share vital information, teach the structure of the university, to write reference letters, integrating them in projects, collaborations, or even plan their career. They claimed to have survived and thrived in the system solely on their own. Their passion and drive for their work became the deciding factor. According to women professors, if one lacks passion and drive they easily fall behind or become complacent and do only the basic thing such as teaching and consequently do not rise on the career ladder because to progress in a career, research output is essential. The quotes below support this argument:

The biggest challenge that I had was the, you know you come in, I do not know if it is the same for all universities, but this university when you come in nobody tells you what direction you are going to take. Nobody tells you anything, they just put you in

there, you are going to teach this, whatever you do, nobody tells you anything. So I came in here, I had no clear direction. Even to say if I want to move from being a lecturer to senior lecturer, professor, nobody told me what I needed to do, I learned that one along the way. So no one's telling you anything, you are just put in there … so that is where your passion and your drive becomes key. If you do not have passion, if you do not have the drive you can easily fall of the side, you can easily become complacent and say ok I am just going to teach because nobody checks and nobody says anything. They will just check if you did teach, if the students pass, but other… your research, what you are doing after your teaching, nobody really cares. It only becomes a concern when you want promotion, so if you want promotion, but some people are, whatever, as long I teach and students pass, that is it. So, there was not that mentoring type of environment, I did not have a mentor. (WP12South Africa)

In line with the same argument a Swedish professor stated,

One of the obstacles is that many people do not expect women or maybe that is changed hopefully, but 20, 30 years ago people did not expect women wanting to continue in academia, and in university, so nobody really suggested ohh I can write you a reference letter, things like that, that people really did not plan or think about integrating women into projects, into collaborations … plan their career, so that was certainly an obstacle. (WP01Sweden)

Conversely, another argument that emerged from the data is that mentoring can be detrimental when done inadequately and is not essential for professionals to thrive in their career. In this regard, a respondent stated,

there is one person who said that he was going to mentor me, but basically what he meant is like, I would be like one of his servants. And I just said I am not going to do this, I want to grow. Basically he just wanted a little servant who would do his dirty work and that would be mentoring. But I do not think I really lost out [by] not having somebody mentoring me … sometimes the mentor can think that they have a little slave, and I think that is why I sort of backed off from it, and also I can be pretty independent and do what I want to do within all the rules, ethics and regulations. (WP06South Africa)

5.3.2.5. Lack of Female Role Models in the Social Environment/Family

Lack of female role models was mentioned as one of the obstacles for women professors from both countries. Women professors who highlighted this challenge, mentioned coming from nonacademic backgrounds where they are the first generation in the family in academia, where in some cases, the mother was a stay-at-home mom and therefore, they could not get advice from them. They also mentioned how important this figure of a successful women is to give an assurance that it is possible to succeed in a male-dominated environment such as academia, as a woman. The quotes below emphasises this argument,

> *I think the obstacles have been mainly that I come from non-academic background, because my parents, no one in my relatives had an academic experience. And I also could not get advice from anyone. I come from a small town in the middle of northern Sweden so there really were not big role models that you could follow as an example. (WP16Sweden)*

> *Very often, not only for me but what I see with colleagues is that obstacle is on your head. It is not really there. That why I said the female role models are really important so you can see that... As I said my mother was a nurse, she never worked, this was in the 50s and I think it was just the way it was in those days. But when I joined the university my supervisor was quite successful, I would say. She went on to become the director for research at computer science research at Microsoft. She was very fun [when] making food for her kids and so on. So for me I happened to see that you can be a woman and also be successful in your career. So that for me was kind of, "OK then I can also do it". Before that I was always in my head constrained by this picture of my parents where my father worked and my mother did not work. (WP13South Africa)*

5.3.2.6. Balancing Family and Career

Balancing family and career is an obstacle mentioned by respondents from both countries. Women professors claimed experiencing challenges in managing time to be able to complete all the activities required and also reconcile the demands of academic career (e.g. mobility, academic activities) and building a family. Balancing the demands of children and career posed daily dilemmas for the women professors in the present research. In this regard, women professors stated,

I have never reflected on the obstacles so much. I do not know, I mean there is a saying that there is never an obstacle that is more like a hinder, somethings just take a bit longer but it depends on how much you want them. So in terms of my career, it is always an obstacle for somethings like, because we have to divide, as an academic you have to divide your time between so many different tasks, and there is also a lot of administration and somehow managing with the time of putting everything together. So I would say that is probably my major obstacle. I have to spend a lot of time just managing my time. Which you also noticed that I have not being able to respond to all my emails immediately. That is the major obstacle I would say. (WP12Sweden)

If you have a family it is more difficult to move around. And I think for the women especially that is a limitation, in a way you are required to do a postdoc and that is most of the time. (WP28Sweden)

A woman professor from South Africa stated similarly,

I think in my career I never felt that I was for instance inferior to men. I think the biggest obstacles were kids. Raising kids, also managing a career, and a husband, and a house, and building your career at the same time. I think the big obstacle was having time to really be a good parent at the end of the day as well. I am not sure if I have been a good one, but one does one's best. (WP01South Africa)

5.3.2.7. Apartheid

Apartheid is a challenge that emerged only in the South African context. Women professors mentioned that the apartheid regime was tough for academics. They were hindered from travelling for conferences and the philosophy of apartheid was propagated throughout society, including academia, where one class of individuals, especially White males, had the control and power of all resources in the system and also defined who moved on the career ladder. Respondents made observations such as:

So when I started out, when I was beginning my career, you know those were the sort of days when the apartheid straggle was really ... it was the major thing that was going on all around us. South Africans were not supposed to mostly go to conferences, although sometimes organisations would write letters to say what this person is doing is not aligned with apartheid, it is fine if they go to a conference. I found that uncomfortable. And many overseas academics would not come here. (WP05South Africa).

There is a little bit of exclusivity, I think it has to do with the way we were in South Africa with apartheid. You know the privileged and the non-privileged society, and that was perpetuated in academia. So you had academics who had everything, they usually spoke about the white ivory towers, those, it is usually men. What they did is to build everything around them. They never included other people, so you had all these research chairs, people in centers of excellence, but they did not uplifted the whole group. They were just uplifting, taking themselves higher, and then I really battled to deal with and I still have incredible resentment towards the people who have it all. And it is very common in my field that some fields, they always had the all attention, all the money, all the opportunities, all the equipment. And for others we really battled, we had to walk [an] extra mile to really get something. (WP08South Africa)

Despite the fact that the majority of women professors of the present study (36 out of 44), had acknowledged to have had challenges along the way in their career, interviewees from both countries, eight out of 44, stated that although they worked hard they had a relatively smooth path, because they were not challenged by situations that they faced in their career, and that the obstacles encountered throughout their career where more from the private sphere and not connected with the structure or culture of academia. In this regard, women professors stated,

I think the challenges there are more; it is not that the system itself or people around me have ever limited me. I mean you could claim that academia, and research is hierarchical and you know we are very title driven, and is difficult if you are in a certain position and all of those things, and yes, we have a system, but everything has a system. So I have myself never been challenged by those types of more external limitations, whatever you would like to call them. The challenges for me maybe have been to find ways in which to, they are more personal. How do I prioritise, or what do I prioritise. How do I manage to collaborate with this many people and companies? I mean it is more about myself rather than anything else. (WP11Sweden)

I do not think I have had obstacles. I have had downs ... I mean of course some things have not worked out. Maybe I am a fighter somewhere, and I do not let this turn me down. I can tell you that I had more obstacles in my private life almost because of difficulty to have children, and now I am going to be very personal, having children very much too late and one of them has some psychiatric sickness. So somehow obstacles have been more in my private life than in my career as I see them as difficulties. (WP03Sweden)

I have been very fortunate ... I have not been harassed. Like I said I had a relatively smooth path. I worked very, very hard but it has been quite smooth. And also my university has been very good to me as well. (WP07South Africa)

The strategies used by female professors from both countries to overcome the obstacles that they faced throughout their career are outlined below.

5.3.3. Coping Strategies Adopted by Women Full Professors

After diving into the challenges women professors perceived from the academic system and the challenges they have faced in their careers, this section focusses on the coping strategies adopted by women full professors to navigate academia and its demands. The data revealed eleven coping strategies adopted by respondents, namely: never give up; work hard; having a supportive network; having life outside academia; ignore bad things; not take things personally; develop skills; understand the system; time management; learn to appreciate small things; and act like a boy. Table 4 displays in detail the coping strategies adopted by women professors from the study. Each strategy is described in detail below.

5.3.3.1. Never Give Up

Never give up appears to be the most emerging coping strategy adopted by women full professors, 12 out of 44 interviewees mentioned this theme. This was the second-most mentioned theme in Sweden, and one of the less mentioned coping strategies adopted by South African women professors. 'Be patient because things might not occur at first try', 'having the ability to understand that it takes time to develop the skills needed to succeed', 'insist and continue to fight' was used as a way to get to the top by women professors, as illustrated by the comments below:

One strategy is not really giving up, but really insisting. (WP01Sweden)

Research does not happen overnight. There is a certain thing with being patient, and that is what I meant when I said you keep working. When it comes to yourself, it takes time to actually develop the skills within research that we need as researchers. But it is frustrating at times when you feel that you do not get clear on something you wish for a deeper understanding and you cannot really grasp what it is. I mean then I get frustrated, but you just have to accept it, keep going. (WP11Sweden)

In the same vein women professors from South Africa said,

It is just that stubbornness, not giving up and keep going on, that worked out to bring me to different levels. (WP11South Africa)

I think I have got the ability to hang in there. I used to run marathons, and I have won some. But one of the abilities is that I can hang in there, and if I do something and it does not work I will try again. I can stay some minutes blubbing in the toilet but I get off and I will try again. And I think that is where a lot of people do not do it. (WP06South Africa)

5.3.3.2. Work Hard

Working hard was also mentioned by 12 out of 44 interviewees. This theme emerged in both contexts, but it was the most mentioned theme in the Swedish context. Working hard, being better than anyone else and being competitive is perceived as one of the strategies used to reach the top of the career ladder. Specifically, often women attributed their success to hard work and being willing to take up opportunities. Women professors sought to overcome any perceived discrimination or negative attitude by working hard to demonstrate that they were good, capable enough, and they believed that as a result their gender would be insignificant. A respondent opined,

One strategy is to really work harder and be more well-prepared in all situations than the male colleagues will [help you] be competitive. (WP01Sweden)

Other respondents claimed,

My strategy was just to be the best. I had to be better then everyone. No questions asked. It is like I worked really, really, really, hard. (WP05Sweden)

I always worked all weekends, and over the weekends ensured that I knew what is going to happen in my week that comes, and to make sure that I was prepared" *(WP01South Africa)*

On the other hand, an argument by a respondent adds that the time that is expended in work is not seen as hard work because academia is perceived as a hobby. This is illustrated by the quote below:

I think my work is fun, as I said my work is my hobby. So I do not mind to pick up the computer, so for example, I joined my son for a tournament and I worked, and I do not mind, I think it is fun. So I try to find times which maybe many do not use. If I am in a bus I work, I would say my computer always works. Many maybe just look on the

phone or something, I work. And I think that is something that comes with being in academia and to have children, you have to learn that when you have an opportunity to work that you can work, you have to take it, you have to turn 15 minutes if you have that in spare somewhere you have to take it. (WP19Sweden)

5.3.3.3. Having a Supportive Personal Network

Having a supportive network that you trust and you can turn to in moments of difficulty, anxiety and doubt, is mentioned as one of the coping strategies adopted by women full professors from both countries (10 out of 44 professors mentioned this theme). In South Africa this was the second-most mentioned theme. Women professors reported the importance of asking others help, having people who one can trust and speak with when things are not well. Those people played an important role in women professors' career, they are sources of energy for women professors, people who support them and they can discuss matters with. A supportive husband is mentioned mostly as one of the main figures of this supportive personal network. This argument is emphasised by the quotes as follow:

I have my family and my husband … (smiles). He is also in academia, he is also not from Sweden, he is not a woman but he also had to face barriers and he is an amazing scientist. So us together have helped each other. We have not had anyone pushing but we have had each other. So that was an enormous coping strategy for me, to have a such partner. I do not think we would have succeeded, either of us without helping each other. And the help of my family. Everybody has helped with the kids. We have three kids you know, and we had everybody helping out. Otherwise, we would not cope! So that has been the essential thing for me. (WP08Sweden)

Two South African counterparts also aligned with the same argument,

Well it helps to have a support… My husband has been extraordinary patient and supportive and, you know, he does not give me a hard time when I have to come to the office on Saturday or Sunday, and when I am home at seven and there is no supper. So that has been a big help. (WP05South Africa)

I know you should not talk about your husband a lot, but my husband and my son really, they really, have been supportive. I remember that there was a time when I could not cope, when my son was young, I was struggling to cope. He was in primary school; I would drop him at school in the morning, and then he used to stay over in after care, and I would have to run home, leave here early to pick him up and take him

home, and then I had to help him with the homework, and things like that. And then he goes to bed and I start doing my work that I did not finish. And it was a big, big struggle for me, really challenging, I could not cope, I could not handle it, you know. And then my husband was like, "Look you need support. We need to find support for you because you cannot do this. You are passionate about your work but now you have to balance with the family so we need to find support." He was very supportive. That is why we ended up getting any help for my son, who would take him up to school, picking up from school, and do homework with him, whatever was needed. Every time I am struggling I think of my husband, I think of my siblings, my sisters, they would just tell me that you are a super woman. You can do these things, it is small, it is not a big thing to you, and you can do it. That support I do not know, it really made a difference to me. (WP12South Africa)

On the other hand, an argument by a respondent highlights the importance of respecting individual boundaries and individual ambitions and perspectives on what a good career is for each professional.

I think for me personally I was always willing to work away. It was always on my own terms, and I had the means to work away because I had the support of my husband who had a job. Because I do not think, I think if you do not have that kind of back up you have to do. So it was always going to be on my own terms. Even when things were very difficult … in my head I knew that if things would have gotten to a point where I could not handle I would just leave. I supposed for me that is the kind of person I am and is the kind of support system that I had, that I was never willing to compromise my own mental health. So just keeping that perspective meant that I will never pass the boundaries. That I would stay in what is good for me, and if that would have not worked I would have left. (WP10South Africa)

5.3.3.4. Ignore Bad Things

Ignoring bad things is mentioned by seven out of 44 interviewees as one of the coping strategies. This theme emerged from the Swedish interviewees. According to women professors ignoring bad things and looking only at the positive side makes you focus and go further. Women professors reported developing a positive outlook even in bad circumstances and displayed a strong image of themselves and by so doing they were able to protect and empower themselves. Specifically, by using this strategy, female academics were able to

change situations and possibly even benefit from a precarious situation. In this regard, Swedish women professors stated,

> *You pretend you don't see it ... I mean it is as clear as that ... you pretend that ... you try to ... you build some kind of armor ... some kind of shell and you ... even if sometimes you are ignored ... even if sometimes you feel a bit upset you never show it, you never show this frustration because then you also feel like people will feel you are unstable. So you always build this armour that you are tough, strong, you are not affected ... then you can discuss with other people outside ... but during the time you play a role of being as strong as everybody else, I would say. (WP21Sweden)*

> *I think it was always kind of try to convert failure to a new challenge right. That whatever goes wrong you can twist it and you try again. Because sometimes when things go bad, you feel and there is too much you feel like nothing worse. But if you have a plan like you can rewrite this, or I can do that, try that, then you have something new to look forward to. You are always waiting for something. (WP23Sweden)*

5.3.3.5. Having a Life Outside Academia

Seven out of 44 interviewees from Sweden and South Africa mentioned having a life outside academia as one of their coping strategies. Having a life outside academia is perceived as a helpful mechanism to distract the mind, make space for reflection, to have another perspective on life and not be defined only by work, and that, according to respondents, can be done in different ways, by getting out into nature and exercising, cycling, running or riding. Interviewees also reported that having a family is also important to create that balance, because a family forces academics to focus on other things than work, to have an escape world to go to. Women professors from both countries acknowledged these arguments as follows:

> *I think the main important thing is to have life also outside academia so that you are not entirely defined by your [work] identity. As an academic, I think that is the most important coping strategy. And also to recognise that it is ok to be different, but then it is important obviously, that you have other environments [in which] you feel totally accepted and safe. (WP12Sweden)*

> *I think that academia is greedy in a sense that it always asks for more and more, but it also turns people into greedy people. So I think it is greedy in both ways. I think I have*

a hard time not prioritising work. So I really had to … my family for instance needs to help me to not be [always] prioritising work. It is good to have children in that sense because they really force you to think about other things, and it gives you [another] perspective of life. You realise that other things than academia are important. I can see some of the colleagues around me that do not have children work is the only thing they do right. I am happy that I have a family who can distract me a bit.. (WP27 Sweden)

Moreover, the South African professors also argue in the same vein as follows:

to me that is one of the strengths to having children. When you leave work and you going to pick them up little John and Susan does not care that you had a bad day at work. And they actually do not care that you are having some huge argument or stress or something, they just want mammy to deal with them. So the kids can be your destress[ors]. To me that certainly helped, because I did not then spend the rest of the evening thinking about whatever that problem was. Having that other world, whatever that is, maybe for some people that is cycling, running. (WP02South Africa).

You have to have your own little sanity. Some people ride a bicycle, some climb mountains. Everyone does something else. You have to have you sanity space. Where you can just unplug and revive your mind. So when you sit on your horse you cannot think of your work otherwise you fall off. The horse can read, he feels your anxiety. (WP08South Africa)

5.3.3.6. Not Taking Things Personally

Not taking things personally was understood as one of the coping strategies adopted by women full professors (six out of 44 interviewees mentioned this theme). This strategy emerged only in the South African context, and was the most mentioned theme. Not taking things personally and believing in yourself is mentioned as important to move up the career ladder. These coping mechanisms include avoiding taking criticism personally in situations such as, application for promotions, positions or when papers or grant proposals get rejected. The strategy is to remain emotionally detached and maintain your composure even when things get challenging. Specifically, women professors maintained that when things get reviewed it is crucial not to take it personally, instead understand that it is something outside of yourself because one can use the comments to improve the next product. If one takes it personally you may lose the opportunity of improving. Women professors also mentioned the

importance of learning to not take work too seriously; if something fails, instead, one has to move on and never give up. This strategy is consistent with what participants from Fritsch's study (2015) adopted to overcome the barriers they face to reach leading academic positions. The following quotes attest to this argument:

> *I think to stay strong you must not take things overly personally. You need to put them into perspective and you need to always believe in yourself. Believe that you are a good teacher, that not matter what people say to you that you are doing the best that you can, and what you can to do it good. I think you have to believe in yourself. (WP04South Africa)*

> *I have got a recipe for my rejected papers which I apply, which is depersonalise the whole thing, and that practices well on rejection. Is just a routine now that many things get rejected you just have to keep going and say well it won't got accepted in this journal but my plan B is this. So I guess having a plan B it is part of it. (WP07South Africa)*

5.3.3.7. Develop Skills

Developing skills is seen as one of the less mentioned coping strategies. Only Swedish professors mentioned this theme (four out of 44 interviewees. According to women professors, it is important to develop skills and be prepared to seize opportunities when they come. This coping strategy emphasises the competition that pervades the academic environment and the need that academics have to maintain themselves skilled and good at their work to compete for the few available positions existing in the system.

> *To be prepared, you have to gain these competences, even if there is an opportunity you should be able to match this one so that you can get the position. So you have to build up this knowledge. (WP29Sweden)*

> *Get involved in things, and I think you can get more support, and people get to know you, and see that you do a good work, and also like doing a good work. Like those assignments that I took like performing well in those things that I took for myself. Being prepared for the meetings and all that kind of thing. Trying to make yourself not important in that way but appreciated. (WP21Sweden)*

5.3.3.8. Understand the System

Swedish and South African professors perceive 'understand the system' as being one of the coping strategies to move up the career ladder (four out of 44 interviewees mentioned it). Interviewees mentioned how important is to know the rules of the academic system, whereby you are able to plan and be strategic in the steps one has to take to reach to the top or meet the expectations of the roles. Being strategic in terms of which steps to follow, is perceived by interviewees as knowing with whom to collaborate, avoiding administrative roles, being driven by research and looking for diverse sources of funding to increase the chances of acceptance and therefore improve one's research outputs to move ahead on the career ladder. The quotes below attest to this argument:

Be strategic and try to understand how the system works ... Being strategic, I mean, well try to find your way in the academic puzzles, to find ways of trying new avenues of getting funded, so not just look at one funding agency but try to find others. Seeing where you can have collaborations that could lead to funding in some way. And I also have been applying for funding in the U.S. and I am a part of research team there right now. So is like being strategic and also seeing the patterns and seeing well how can I sort of navigate this, which sometimes can be difficult to understand. (WP09Sweden)

Another Swedish professor said,

What I have done is that I have avoided all administrative positions, head of division, for instance, to be able to focus on my research/ You have to give up a lot, and what is affected is your personal life. And having that family support that has been good because I have been able to work quite a lot. (WP24Sweden)

5.3.3.9. Time Management

Time management featured also as one of the coping strategies mentioned by women professors from Sweden and South Africa. Being able to manage your time efficiently and plan everything is perceived as important to succeed in a career. Data revealed that because of challenges with balance between family and work realms, and the different academic activities that academics have to be involved in, women professors had to be able to plan everything ahead, from daily activities to conferences with long periods in advance.

I organise my life very diligently. I ensure that all my emails are read every day, I have a system if I get an email and I cannot immediately attend to it but I know I can

do it in one week then I put it on my task list. I think if you cannot manage your time properly, you cannot be successful. You must be able to know what all your tasks are and how you can manage all of them. (WP01South Africa).

Another South African professor added,

I plan much ahead. Sometimes people make fun of me. For me planning is very important, then you are not like last minute overwhelmed. So planning, planning. I also learned from my mentors, by talking with people. I said ok you guys are very successful how did you manage, and one of my mentors said he plans one year in advance. I would pick up his conferences so that they fit with children's holidays, like that. So one year in advance, that has been my policy. One year of planning. (WP09South Africa)

Along the same lines, a Swedish professor claimed that it is essential to manage your time as an important requirement to succeed in an academic career, but she also highlights the role of prioritising things as illustrated in the following quote,

I am generally a very organised person. I think being organised, and planning very carefully almost everything helps and it could become a strategy, and prioritising in that sense, [other] things. So it becomes a strategy you know organising things ... because in academia there are many things that one has to do. Applying for money as we discussed, managerial tasks at different levels and also education. I have levels of priority, this is what I have to do and I am not compromising on that at all. This is what I should do and this is what I could do, and I follow them strictly. (WP14Sweden)

5.3.3.10. Learn to Appreciate the Small Things

Learning to appreciate small achievements is perceived by women professors from South Africa as one of the coping strategies that they adopted to succeed in their careers. Respondents reported the importance of coping with small and seemingly inconsequential things to recharge from stressful and challenging moments. Women professors stated,

I would say small things amuse small minds. I need small things. I put flowers in my office, just looking at fresh roses makes me feel good. I would put small things, sweets in my office. So I would do small things ... just small things that I need to just step away and refresh my mind. (WP03South Africa)

I think to appreciate the small successes, and to look after your body, mind and soul.. (WP08South Africa)

5.3.3.11. Act Like a Boy

Women professors in the study reported that to fit in and blend with their male colleagues they had to learn to play like boys, specifically, learning to not show their emotions in moments of tension with peers or superiors, appearing as if they did not require special treatment and engaging in camaraderie, also by conforming to organisational norms and displaying masculine behaviour to avoid stereotypical performance expectations based on one's sex. This coping strategy emerged only in the South African context. The following quote confirms this argument:

I think it helped that quite early on in my career I sort of honestly looked around and kind of thought all these boys and I decided to play like a boy. There were a lot of things that that involves, things like when we have a department meeting and there is a fight, because there were always fights, I realised that I needed to separate my emotions from the actual fight. That is not an easy thing to do. But I realised, when I say play like a boy, what I realised was happening is that the males would fight one another, like mad and half and a hour [later] they are having a cup of tea together and it is all over. And I think most women, myself included, find that quite hard to do because I get all emotional, you know. But I have learned some ways of managing, and just kind of, trying to pull my emotions out of it. that helped from the point of view of recognising that OK that is what happened and now I have to just go ahead. (WP14 South Africa)

Table 4

Coping Strategies used by Women Professors

Coping strategies	Subcategories generated from the data	Sweden	South Africa
Work hard	• Work harder and being more well prepare in all situations • Be the best, be better then everyone; worked really hard • Work hard as I can • Work hard and focus on my work	Work hard	Work hard
Never give up	• Not give up, but really insisting • Be Patience; keep working • Being persistence • Believe in yourself and not give up	Not give up	Never give up
Having a supportive network	• Having someone, you can call when you have questions and when you need support • I have my partner we help each other; Help with family for the kids • Support of personal network; my husband;	Having a supportive network	Having a supportive network
Having life outside academia	• Have life also outside academia, so that you are not internally defined by your work; • Focus my energy in other things • Surround myself with people that I trust • It is good to have children because they can be your distress. They force you to think about other things	Having life outside academia	Having life outside academia
Ignore bad things	• Try to convert failure to a new challenge • Pretend to not see bad things • Ignore that things might go wrong	Ignore bad things	N/A

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Coping strategies	Subcategories generated from the data	Sweden	South Africa
Not taking things personally	• Not taking things personally; Believe in yourself • Depersonalise the bad things that happened	N/A	Not taking things personally
Develop skills	• Being adaptive to different ways of work • Be prepared, you have to gain competences • Prove that you are good at what you are doing	Develop skills	N/A
Understand the system	• Learn the system • Try to navigate the system	Understand the system	Understand the system
Time management	• Good planning • Plan much ahead	Time management	Time management
Learn to appreciate small things	• Do small things to get energy • learn to appreciate the small success	N/A	Learn to appreciate small things
Act like a boy	• Learn the system and play like a boy	N/A	Act like a boy

5.4. Decision to Remain in Academia

The factors that influenced women full professors' decision to remain in an academic career are discussed in this section. Answers to this section were collected through semi-structured interviews conducted with women professors in both settings of the study. The guiding research question for the section is, *"How do institutional policies and leadership, social and cultural values, in South Africa and Sweden influence successful women academic's decisions to remain and succeed in their careers?"* To address this question, first we looked into the reasons that led female professors to choose a career in academia. As a result, there are two groups of answers presented in this section; the first group is related to the factors that influenced women professors' decision to pursue an academic career, while the second group of answers is related to the factors that drive women professors' decision to remain in academia and strive for success. The data revealed that women professors' decisions to remain in an academic career are mostly associated to academic work related factors/influences.

5.4.1. Women Professors' Decision to Pursue an Academic Career

This section is guided by the question *"what factors influenced your decision to pursue an academic career?"* Seven themes emerged as a result of the data collected and are presented in detail below. The themes are: driven by research; not planned; make an impact; freedom; role models; and flexibility with family and mentors. Table 5 displays in more details the factors that influenced the decision of women professors to pursue a career in academia.

5.4.1.1. Driven by Research

Interviewees from both countries mentioned being driven by research as the main factor that contributed to their decision to pursue an academic career. Twenty-one out of 44 interviewees mentioned this theme. Being driven by research is perceived as involving the enjoyment and satisfaction that women professors experience doing academic work, having a passion for the rational scientific way of solving problems, passion for scientific fields, for discovering new things and being motivated by curiosity to do meaningful things. Women professors revealed how they were interested in research and scientific fields from early age and how well they did at school in related subjects. This argument is confirmed by the following quotes:

> *I pursued academia because of the research ... I thought that was super, super nice ... I liked that way of working, just have a question and you have to pursue the best you*

can. I like the logic, the sort of systematic approach, with scientific methods, I like the discussions, I like how to sort of look at things. (WP05Sweden)

I was interested in science, in scientific subjects. It was clear I wanted to do research in basic science; I wanted to discover new things that others did not see and look at them. That was clear from the beginning; there was no surprise when I stayed in academia. That is what I wanted. (WP06Sweden)

From the beginning I wanted to work with research and I wanted to do that because I wanted to do something that mattered, so that was my plan. (WP19Sweden)

A South African counterpart also emphasised the importance of research and wanting to discover things as one of the influencers in their decision to follow an academic career,

I wanted to do research; I wanted to be able to find things out, and that is why I am still here. Because I still want to find things out. (WP05 South Africa)

I was always interested in science; I always wanted to know why that this happened, why, what is going on, how does this work ... I wanted to do something that of worth worldwide. (WP06South Africa

I was working for an Non-Governmental Organization and I was enjoying it but I got really intrigued by the science underpinning [the work] ... I had to write policy documents about it and I realised I could not answer those questions without long-term information ... so I designed my Ph.D. to answer some of those questions; I remember quite clearly thinking this is interesting but I cannot answer it quite clearly, to answer it properly I need to go back to academia; So I did it and when I was back in academia I realised that is what I like doing, I really like doing science. I could go back outside academia but I wanted to stay, I really enjoy it. (WP07South Africa)

5.4.1.2. Not Planned

Women professors argue that their academic career was not planned, instead, that it occurred by chance (seven out of 44 interviewees mentioned this theme). Respondents reported having a shorter-term focus on the next academic step rather than the ultimate step or the final goal. Therefore, some women expressed surprise that they reached career success. A few women professors described their career decision-making process as specifically lacking any sort of coherent structure or intentionality. Specifically, they describe their it as random, incoherent,

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or accidental career planning. This was one of the less mentioned themes in the South African context. Interviewees from both countries made statement such as:

That was by chance, it just happened; it was never planned, it just happened; my husband was at Vaal University of Technology and when I was finished with university, they had a position open and I never thought, I wanted to be a schoolteacher. And then the opportunity came to go to the university and I just, it was never planned, it just happened. (WP01South Africa)

I am not so much defined based on career goals, rather … that this is fun for now, I enjoy it, I have the possibility to continue, let's see where it takes me. (WP10Sweden)

When I graduat[ed], it was rather difficult to get work in that field in Sweden, so I asked myself what I could do now; At the moment they started a Ph.D. in Programming in Information Systems, and I felt that might be a solution for me; It was not anything that I have planned or looked at as a future. (WP15Sweden)

The quotes above emphasise how some women full professors psychologically detached themselves from taking any proactive role in shaping their career paths. This was most evident among women full professors who completed their graduate degrees under a period of tight academic labour market conditions and who consequently saw their career choices blocked by a variety of factors over which they had little influence. However, it should be highlighted, that these women full professors displayed the same passion and love for academic work as those academics who knew from early age that they wanted to pursue a career in academia and had clear professional interests and ambitions. They revealed that the essentially unplanned decision-making processes described to secure their initial professorial appointments in academia were redefined after exposure to academia and other work environments.

5.4.1.3. Make an Impact

Making an impact was considered one of the factors that were behind women professors pursuing a career in academia. Interviewees from both countries mentioned this theme (seven out of 44 interviewees). None of the women professors' responses suggested that they had aspirations to become successful in their careers. Rather, their reflections on becoming successful were entwined with their commitment to their jobs. Women professors reported that their focus was self-fulfillment rather than aspirations to success per se. In the South

African context, making an impact was the second-most mentioned theme, before ''driven by research". In this regard, respondents stated,

I wanted to work with some sort of development, not just routine work, I wanted to develop new things ... I just wanted to work with something interesting, I wanted to feel that I contribute; I wanted to have stimulating work where I feel that my ideas, and visions are having any impact. That is what has been driving me really all the way. (WP20Sweden)

I realised this is where I want to stay, I want to be an academic, and I do not want to work in industry; I think it was at a phase of my life when I realised that the work I was doing makes a big impact. Because I had a patent and a lot was happening; I knew that you can make a huge impact in society. (WP08South Africa)

Results also revealed that some women full professors who desired to make an impact with their work are academics who started their careers in industry and felt that the work they were doing in industry was not making a difference, or having an impact. Specifically, rapidly recognised their lack of fit in a non-academic work career. Women professors stated,

When I finished my first degree I was working in industry, I did not feel like I was making an impact, you know; like you go in there, you face the operational problems, I spent some time, I think about six months working in a company… But I did not feel like I was making any difference you know. I am just running a plant that is producing some metals, and that is it. I did not feel like I was making any big difference; that is when I realised that maybe I have to look to another option, maybe a different career path. (WP12South Africa)

Another woman professor who started her career in industry argued,

I was working in industry but I did not make any impact; I wanted to do something fun, interesting; I have done interesting different things [here] that I would not be able to do if I were in a private company. (WP13South Africa)

5.4.1.4. Freedom

Freedom emerged in both countries as one of the factors that made women professors pursue an academic career but was most mentioned in the Swedish context (five out of 44 interviewees mentioned this theme. Freedom refers to: freedom of expression, freedom to

research what one wants; freedom to influence others; freedom of creativity; and also freedom with time. Women professors stated;

You have freedom of expression, I have freedom to do research that I want to; I have the ability to influence the career of the next generation; It is an incredible feeling to have that freedom to do what you want to do every day, and that you enjoy doing, to help students and to see them awaken, to see them finding their passion, you can see the lights going on. It is wonderful. (WP08South Africa)

I like the freedom, I like the creativity. (WP10Sweden)

The freedom in an academic career is also mentioned by women professors who had a previous career in industry as a key factor that influenced their decision to pursue a career in academia. According to those interviewees, an academic career is a better choice because it allows for freethinking, pursuit of intellectual puzzles and individual lines of research, as opposed to work in industry towards objectives predefined by the company. This argument is highlighted by the quote,

The flexibility to think freely, to have that academic freedom or the freedom to work all the time as many people; I am a curious person, I like to find out things, and Mackenzie was good but you cannot get to the bottom of anything, it is just about delivering; the timing in my field (internet) was just starting. So many research questions. (WP25ROB, Sweden)

Although respondents acknowledged the freedom of an academic career, they also argued that this freedom is restrained and guided by the available research funding. This argument is emphasised in the quotes below:

Academia gives you an opportunity to try your ideas, and ... also see what is happening around the world; In that sense it is free, I would say. Because in the industry you might not be that free ... you have to do what the industry is wanting you to do, and then if that does not work you have to go to something else. In our case, we have some kind of freedom, but that also is guided by the funding that you are getting. (WP24Sweden)

You do get a fair amount of freedom in academia [but] it is not total freedom; in academia you can more less research what you like as long as is not unethical, is not hurting people and you can get the money to do it. (WP06South Africa)

5.4.1.5. Role Models

Role models emerged as one of the factors that influenced women full professors to pursue a career in academia. This theme arose in the South African context. Respondents declared that there were people who inspired them to pursue such a career. Those people did not necessarily give women professors advice or guidance concerning a career but they were crucial for women professor because they were people who women professors admired and whose behaviour was inspirational. The quote below reflects this argument,

> *Role models; Second year of physical chemistry. I can tell you almost exactly the day. Margaret Neven was the only woman who ever taught me as undergraduate student. And she was teaching crystallography, solid-state chemistry and I remember sitting there and thinking I want that job. And I had no idea what that involved, I had no idea what that meant, what I have to do to get there. But I do remember that day saying that is what I want to do. She was inspirational. She was a phenomenal woman; she was just so enthusiastic and so passionate about the science she was doing but she also made a connection with the students. (WP14South Africa)*

5.4.1.6. Flexibility with Family

Flexibility with family is also considered a factor that influenced women professors to pursue an academic career. This factor emerged in both contexts of the research, South Africa and Sweden. Interviewees considered that pursuing an academic career allowed them the possibility to have a career while also having family and raising kids due to the flexibility that one has with work. Women professors reported that academia gives them the possibility of working extra hours or even during weekends when something happens during the day and they have to attend family commitments. This factor was mentioned by women full professors who are mothers and had worked in industry. In this regard, Pocock and Charlesworth (2017) maintain that academic work is flexible because it allows flexible working schedules that favour working from home and therefore the possibility of balancing work and family realms.

> *When my children were small, I noticed that at university one has much more freedom to choose and decide about time and what to do. So then, I decided that I would continue in a university career; academic life allows you flexibility and freedom to decide what to do. (WP01Sweden)*

> *Academia is very flexible in terms of time. I had kids and I could put in extra hours, or work in the evenings; Academia, in that sense, worked well for me but I also find it a*

very stimulating, very creative environment and that is why I never went into the industry again. (WP03South Africa)

Another interviewee added,

I realised that academia is good because you can still look after your family. Like I said for me I am a family person I never wanted to neglect my family. So I said ok, in this career you get leave, you can still work after hours. It is not like school teaching. An academic career at university level is very good for the woman, because then you have flexibility, you can work ... for me Saturday and Sunday does not matter. If I feel like working, I will work to catch up; but in school, I taught Umtata Technical College for six years. When I compare to that it was not really, really good. You have to be there at 8 o'clock and you cannot leave before 3 o'clock. So then, whether your child is sick or not sick, you are tied. That is why I thought no this is a good one; the same with industry, you do not have so much flexibility, even if you are senior you still have to work from time to time. (WP09South Africa)

5.4.1.7. Mentors

Undergraduate and postgraduate mentors emerged in the data as one factor that influenced women professors to pursue a career in academia. However, this factor was the less mentioned factor mentioned and emerged exclusively in the South African context.

I supposed it was probably my mentors, I guess, when I was doing my Ph.D. I do not think they ever said you should do a career in academia. But I think it was just expected and they encouraged me to go on to a path and ultimately apply for jobs. (WP10Sweden)

Table 5

Factors that Influenced the Decision of Women Professors to Pursue a Career in Academia

Decision to pursue academic career	Subcategories generated from the data	Sweden	South Africa
Driven by research	The excitement of research I wanted to do research, I wanted to discover new things that others did not see and have not looked at I am a true researcher I was rather good at it and I got a lot of positive attention	Driven by research	Driven by research
Not planned	I was not really planning that this really would be my life I took one step at the time, I had no plans I am not so much defined based on career goals, rather than based on that this is fun for now That was by chance, it just happened; It was never planned	Not planned	Not planned
Make an impact	I just wanted to work with something interesting, I wanted to feel that I contribute I realised that the work I was doing makes a big impact. I was working in industry, I did not feel like I was making an impact, I was working in industry but I did not make any impact; I wanted to do something fun, interesting	Make an impact	Make an impact
Freedom	Flexibility and freedom to decide what to do I like the freedom, I like the creativity Flexibility to think freely, to have that academic freedom	Freedom	Freedom
Role models	Role models	N/A	Role models
Flexibility with family	I realised that this teaching job is good because you can still look after your family. Academia is very flexible in terms of time. I had kids and I could put in extra hours or work in evenings	Flexibility with family	Flexibility with family
Mentors	I supposed it was probably my mentors	N/A	Mentors

In summary, the data of the present study revealed that the factors that influenced women full professors to pursue a career in academia are mostly related to the passion academic women have for academic work. Respondents are passionate about their work, they emphasised how academia fits their career aspirations by providing opportunities to have a work that fulfills their individual needs related to flexibility with work so they are able to balance work and family life; freedom and autonomy to decide research direction and pursue individual research inquires; and the need for one's work to have an impact.

Below we focus on the factors that influence women professors' decision to remain in an academic career.

5.5. Women Professors' Decision to Remain in an Academic Career

This section presents the factors that drove women professors to remain and strive for success in academia. From the question that guides this section seven factors emerged, namely: passion for the field; freedom; driven by research; less routine; making an impact; flexibility; and support from senior colleagues. Table 6 displays in detail the factors that drive women professors to remain in an academic career. Those factors converge largely with the factors that influenced women professors' decision to pursue an academic career to start with.

5.5.1. Passion for the Field

Passion for the field is considered the most emerging theme that drove women professors to remain in an academic career (13 out of 44 interviewees mentioned this theme). Passion for the field can be a driving force for some women professors. Women professors were highly motivated and passionate about their academic work and, in some cases, were willing to pay a personal cost in order to pursue their needs and interest. In South Africa, passion for the field was the main mentioned reason that emerged from the responses as the factor that influenced them to remain in an academic career. Interviewees described their strong attraction to an academic career and to their work. Nearly unanimously, women professors expressed a sense of comfort, satisfaction and joy in what they perceived to be the defining characteristics of their academic work. In this regard, respondents stated:

> *I am very passionate about my field; I am very passionate about that field and I am passionate about bringing capacity into the field. [Helping] people to know more about the field; mentoring young Black students through capacity building, giving them the skills that they need so they go out there and be better for themselves;*

passing skills and knowledge on to these young people so that they can go out there and make changes to this country. (WP12South Africa)

It is a passion for ecology, I love to work on how ecosystems work; So there is a kind of intellectual curiosity and I am trying to make my work relevant and useful to conservation and to people; So there is a feeling like becoming useful and then the teaching and the postgraduate training in particular is very rewarding; I have a lot of intellectual freedom, I do really work hard but that is my choice. Like I choose to work hard because I like it. (WP07South Africa)

Swedish women professors also expressed how they enjoy working in their research areas, how interesting and fun their work was. Specifically they reported that their work was so interesting and fun that it was "like a hobby" (WP19Sweden). One Swedish professor expressed the passion for her work and area of research in these terms, "I really like my research topic; I could not do what I do outside of academia. I do basic research. So no company would work with that." (WP17Sweden)

5.5.2. Freedom

Freedom is considered a factor that drove women professors to remain in academia. This theme emerged only in the Swedish context and was the most mentioned factor that caused women to remain in academia, besides the challenges they have faced (11 out of 44 interviewees mention this theme). According to women professors, academia allows professionals different dimension of freedom that, in some cases, work in a non-academic environment may not allow. The freedom is related to the following factors.

(i) Freedom with the research topic/to research what one wants: women professors remain in academia because it allows them the ability to explore what they want to explore. They can research any topic without having to follow the direction of others. One professor declared, "Where else can you get the freedom to formulate your own work, to decide for yourself exactly what you are going to do, and what you are going to work on?" (WP10Sweden). In the same vein, another professor stated that in academia "I can really go out and research what I want without having to dance to the beat of somebody's drum" (WP25Sweden).

Those quotes emphasise the need that women full professors have for a job that allows them autonomy, independence and individual expression. The quote below highlights the constraints that a work in non-academic environment imposes on those women professors

where they had to limit their individualism and do research in line with the organisational goals.

> *The freedom I would say; the freedom you have in research. You can choose exactly what you want to work on; I did my postdoc in industry so I did also research in industry and felt a little bit frustrated sometimes because there where things popping up but it was not interesting for the company so we could not pursue in that direction; we had to pursue the goal of the company, and ... that was a bit frustrating so ... in academia after[wards they] gave me this freedom if I want to change, if I realise that I find something interesting, I can apply for funding to dig into that if I want to. So freedom of the topic. (WP21Sweden)*

(ii) Freedom to determine how to spend time: for some women professors one of the important aspects of academic work is the possibility to determine how they spend their time, particularly, having the freedom to invest time into specific research question. According to women professors that freedom is invaluable and it is the reason they do not opt for non-academic work.

(iii) Freedom to be a free thinker: Another important dimension of freedom mentioned by women professors' is being allowed to think freely, to have any idea and follow up or put it into practice. Specifically women professors reported that they enjoy the fact that in academia there is room for individuals to express themselves freely.

> *The fact that I can really be a free thinker; I can explore whatever I want; this freedom, and this perspective that I can discover new things, makes me interested in being here.. (WP06Sweden)*

5.5.3. Driven by Research

Being driven by research is also perceived in both countries as one of the factors that cause women professors to remain in academia (seven out of 44 interviewees mentioned this theme). Women professors reported that their interest in doing research was to a large extent what made them remain in academia. Specifically, for those women professors the research is what made it worth enduring all the challenges faced throughout their career; defining your questions, finding your methods, learning more; understanding things, finding intriguing things that one does not understand and just deciding to find out how they work. Women professors stated:

Curiosity for research; that is what I say when I hire Ph.D. students. I ask them why they want to be in academia. I tell them that is really hard and I truly believe that the only thing that can drag you up from down periods, which always come, is if you are curious about the problem you are researching nothing else, really nothing else. (WP08Sweden).

The excitement of research. Certainly the research, that excitement, the passion, that is the fun part; Is you wake up in the morning and do fun stuff, and then they pay for it. The success of the youngsters. I truly believe that everybody should give back. (WP02South Africa)

5.5.4. Less Routine

Less routine is considered one of the emerging factors that cause women professors to remain in an academic career (six out of 44 interviewees mentioned this theme). According to interviewees, academic work is fascinating because it is a job that involves less routine. Women professors mentioned that there are always new projects, new collaborations and the production of knowledge is developing all the time, making professionals learn and do new things all the time. Each grant academics apply for is a new chapter in the direction of new research questions that involve in varying degrees, new collaboration and mobility, nationally or internationally. This theme was mentioned only in Swedish context. Women professors stated:

I would say that the fact that the work involves routine to a lesser degree. I worked in the hospital and although it was a starting year and everything was new to me to some degree, I experienced at some point this routine feeling; Then I had this opportunity to go back to academia and it appeals to me because it was moving, moving the routine. (WP14Sweden)

Is changing so much. So there are new projects, it feels like it is developing all the time; I think if I did not have the research funding, if I did not get that I probably will have done something else, because just teaching ... I mean sometimes it will be nice to just teach but I think I will get bored. It is that it is developing all the time; It is like you are having a new job every three years you get a new research funding. (WP26Sweden)

5.5.5. *Make an Impact*

Making an impact emerged only in South Africa as one of the factors that led women professors to remain in academia. This was mentioned by five out of 44 interviewees.. Making an impact is understood to be wanting to change the system through one's work and developing work that allow others to benefit from it and that leaves a legacy in the field to inspire other early career academics. Another form of making any impact was reported to be through developing young generations, passing skills and knowledge on to young people and empowering them so that they can grow and develop the field. Women professors reported that what is rewarding for them is to work with people and make a difference in their careers, seeing how they develop and contributing to that development through mentorship.

> *Teaching students, interacting with them, that face-to-face; the love of the science; I love teaching students. Taking a student to sea and watching them learn and seeing their eyes light up when they first board the SA Agulhas II is extremely rewarding. It is so rewarding to see young inexperienced students join a cruise and leave imbued with a new confidence and a passion for their discipline. (WP04South Africa)*
>
> *I wanted to see my students succeed. My students are very important to me. And it is so rewarding to see them achieve what they have; so I am really driven by my post-graduate students. (WP15South Africa).*

5.5.6. *Flexibility*

Flexibility is considered another of the factors that influenced women to remain in academia (five out of 44 mentioned this theme). Flexibility emerged in both countries and is perceived as the possibility to define one's own agenda. Women professors reported how academic work allows them to define their own *schedule*; specifically the idea that if they need to do something personal during the day, they can just do it and compensate by working during nights or weekends. Flexibility is also perceived as the possibility of having a balance between work and family while working in academia. One professor stated, "You can do everything. You can have a balanced life as long you are willing to put in extra hours, you can have your own time." (WP09South Africa)

However, although women professors recognise the flexibility given by the academic work, they emphasise that this flexibility is only effective if one is willing to put extra hours, working nights or during weekends. This then, respondents reported, creates a burden on women professors essentially, if they have other family responsibilities than work.

You have a lot of flexibility with your kids. Taking them where you want to and then you work extra hours in the evening; Which of course, puts a burden on you when you have other things to do, but there are very few other jobs where you have this flexibility to look after your kids. So I like that. That was what kept me here for many years. (WP13South Africa)

On the other hand, an argument by a respondent seems to contradict an assertion that academic career offers a balance between work and life. Women professors declare that there is no balance between work and family if one wants to progress on the career ladder and reach high ranking positions. Women full professors emphasised that to be successful and reach high positions, professionals in each field, not only academia, have to work extra hours. This is illustrated by the quote,

There is no balance. Some of the youngsters they like this idea of a balanced life and I go like ohhhh really that is a nice idea. Do you expect an achiever in any other field, do you actually expect them to have a balance? If you are high tennis player or golf player or whatever, do they really think that, they are only going to spend eight hours in whatever they are doing in a day? I mean that is just not going to happen. If you want to succeed in climbing the ladder there is no balance. (WP02South Africa)

5.5.7. Support from Senior Colleagues

Support from senior colleagues was the least-mentioned factor. It emerged from the Swedish context. Women professors maintained that the reason why their remained in an academic career was the support they had in the working environment from peers and superiors throughout their career.

I found a lot of support. I mean especially in the particle physics group actually; I was interested in particle physics during my undergraduate and I did some projects in the group and so on. They were really nice at supporting me you know, writing recommendation letters so that I could go to centres to be a summer student; I just felt very welcome and supported by the senior members of the group. (WP27Sweden)

Table 6

Factors that Drive Women Professors to Remain in Academic Careers

Factors that drive you to remain in academia	Subcategories generated from the data	Sweden	South Africa
Passion for the field	I am very passionate about my field It is a passion for ecology, I love try work on how ecosystems work I love the subject and I love teaching it It is fun; it is so interesting and fun; It is like a hobby	Passion for the field	Passion for the field
Freedom	Freedom with the research topic/to research what one wants Freedom to determine how to spend time Freedom to be a free thinker	Freedom	N/A
Being driven by research	Interest in doing research that got me to stay In academia the currency is knowledge and not money Curiosity for research; Work with research; defining questions; finding methods	Driven by research	Driven by research
Less Routine	I would say that the fact that the work involves routine to a lesser degree It is changing so much. So there are new projects, it feels like it is developing all the time You can learn new things all the time, it is not routine	Less routine	N/A
Make an impact	Changing the system Developing young generations	N/A	Make an impact
Flexibility	Flexibility to define one's own agenda Flexibility is also perceived as having balance with family	Flexibility	Flexibility
Support from senior colleagues	Support with recommendation letters	Support from senior colleagues	

In conclusion, regarding the factors that contributed to women full professors' decision to pursue and remain in academic career the data highlighted aspects of both women full professors' personal needs and characteristics of academic work as operating together to shape their decision to pursue work and remain in academia. For some women full professors their attraction to research did, in fact, serve as the foundation for academic career aspirations. The passion to pursue inquisitive questions and research directions that are interesting, having a flexible schedule, in most cases to be able to meet personal demands were also perceived as crucial features of the academic work that influences women full professors' decisions. For others, the need to have an impact was influential in shaping their academic career aspirations. Some respondents expressed the difference between academic work and other professional contexts and they reported how academia allows them to impact other people's lives. The data also reveals that women full professors' interest in academic work derives from a combination of factors such as intellectual curiosity, opportunity, and encouragement. For some women full professors the alignment between personal nature and the perceived features of academic work grew in relation to their interest in a particular topic, usually after postgraduate studies. Some women full professors on the other hand, recognised the correspondence between their own demands and preferences and the characteristics of academic work even before deciding on a specific disciplinary topic to pursue. They knew from an early stage that they wanted to pursue a career in academia.

Below we discuss the factors that allowed women full professors to succeed in their trajectories in academic career.

5.6. Predictors of Career Success

The following section presents the factors that facilitated the success in academia that women full professors from both countries have experienced. The section is guided by the question: *What factors influence women in the research and innovation field to remain and succeed in an academic career?* To answer this questions participants responded to the question *"what factors have helped you to accomplish what you have in your career?"* Table 7 presents the predictors of career success for women professors in both countries. According to the answers there are twelve themes that emerged from the data as factors that contribute to women's career success in academia, namely: individual factors; network of support; family/husband support; passion for the field; luck; upbringing; good students; role models; research area; Swedish academic and social system;a stable social life; flexibility; and no fixed routine. The factors are presented in detail below.

Table 7

Predictors of Career Success in Academia

Predictors of career success	Subcategories generated from the data	Sweden	South Africa
Individual factors	Hard work Putting in extra hours I am very competitive Stubbornness Persistence Not giving up Tenacity Determination Resilience The ability to cope in difficult situations Thick skin Not being overly sensitive Patience Tolerance Not taking things personally Be open to criticism Not be afraid of failure Ability to hang in there Honesty Work ethic Curious Creativity Driven Passion for work Willing to be in academia	Individual factors	Individual factors

Predictors of career success	Subcategories generated from the data	Sweden	South Africa
Individual factors	Building your own skills Create opportunities Not missing opportunities Asking for information Taking initiative Time management Looking to things internationally Be strategic Ability to prioritise Be focussed Be organised Long-term projects Play like a boy Recognise the rules of the game and play them Understand the system Career that suits my natural ability Be knowledgeable High self-esteem Have social skills My own thinking and approach to solving problems	Individual factors	Individual factors
Network of support	Support from supervisors Support from colleagues Support from research groups Support from sponsors Support from a mentor Support from peers Support from students Support from the university leadership Support from collaborations	Network of support	Network of support

Predictors of career success	Subcategories generated from the data	Sweden	South Africa
Family/husband support	Husband support	Family/husband support	Family/husband support
Luck	Lucky to be in the right place and meet the right people to work with Lucky to select the research field that leads to success, Lucky to be part of a new emerging field of research, Lucky to work in the same field during the whole career Lucky to find the opportunities Lucky to be in a country like Sweden	Luck	Luck
Passion for the field	I am passionate about my work: It is not a burden for me to write an article; my work, I enjoy I am very passionate about what I do Passion for the field	Passion for the field	Passion for the field
Upbringing	Coming from supportive families Coming from families that did not put obstacles on women Coming from families that value education Having parents that empowered women	Upbringing	Upbringing
Good students	The moment you have good students then you can do good research Is important to find the right postdocs and Ph.D. students to work with These youngsters who just inspire me to do things and go places I would never go to on my own	Good students	Good students
Role models	Inspiring examples from the work environment Inspiring examples from the family environment	Role models	Role models
Research area	Found a niche where not many people were working Being in a field where there are many opportunities	Research area	Research area
Swedish academic and social system	Academic system in Sweden is fair Swedish social security system with parental leave and the unemployment funding,	Swedish academic and social security system	N/A

Predictors of career success	Subcategories generated from the data	Sweden	South Africa
Stable social life	Stable marriage, financial security, family and health	Stable social life	Stable social life
No routine	Having different tasks	N/A	Not routine
Flexibility	Flexibility to be able to raise kids while building a career	N/A	Flexibility

5.6.1. Individual Factors

The interviews revealed that individual factors are perceived as the main factors that contributed to women professors' success in academia (39 out of 44 interviewees mentioned this theme). In both countries, individual factors emerged as the principal reason for women full professors' success. Individual factors are displayed in the interviews as agentic attributes and personal characteristics that helped women to succeed in a career. They are identified as: having the ability to create and find opportunities; the ability to take initiative; ability to take risks; to not be afraid of failure; ability to work long and extra hours; the ability to recognise and understand the rules of the system; being able to play like a boy; being strategic; looking to things internationally; building your own skills; the ability to collaborate with others; time management; choices; building a long-term project; being a hard worker; being competitive, persistent, determined and resilient; having the ability to cope in difficult situations; not being overly sensitive; not taking things personally; being open to criticism; being driven; being passionate about work; being willing to stay in academia; and personal will.

Overall, participants spoke about how they were resilient, determined and persistent in the pursuit of their career goals. Nearly without exception, women full professors emphasised the need to 'never give up', 'work hard', 'pick yourself up and keep going' and 'find solutions' when problems arise, presenting themselves therefore as agents in charge of their own careers. Women full professors maintained:

> *I had a very difficult time being the only female in the department and there are things that upset me a lot but it did not stop me, and I think it makes you stronger in a way. When you are a scientist and you submit a publication, and it comes back and is rejected, let us say. You have to have a strong thick skin. You have to have a strong character to say OK we are going to move forward ... that is the main thing. (WP04South Africa)*

> *You need to have a state of mind [that] if you fail you cannot stop. So you need really to be determined in getting this. (WP06Sweden)*

Women professors emphasised how important it is to have a positive outlook in challenging circumstance. For example when a grant application is rejected instead of giving up or think that one did not get the grant because of the gender, be open and try to see the reviewers comments and improve in next opportunities. A women professor stated,

if you do not get the grant instead of thinking or saying I did not get the grant because I was a woman it is much better and efficient to look at ok what the reviewer wrote? Ah ok I did not get the grant because I was strategically wrong on my area, I have not got grants because I have not had the highest novelty, the novelty was not high enough; If I do not get something, I look at it from a scientific point of view. (WP19Sweden)

Linked closely to the importance of never giving up, was the need expressed by women full professors for working extra hours to succeed in academic career. This sentiment was pervasive among women full professors from both countries. For example, respondents often replied that success is not something that comes "for free", instead it comes with "hard work" and sacrifices made in other realms of one's life because they worked a lot. Women professors believe that without putting a lot of time and effort, one does not become successful, because it comes with any effort. Specifically respondents from this study believe that, "If we want, we can find time for everything. That is the main thing, if you want to you will find time and ways. (WP09South Africa). In this regard, other women full professors stated,

If you are in the top of your pyramid, you work seven days a week; because you cannot be at the top and not putting extra hours. I cannot really see people succeeding without putting in so many hours; you really have to put in more hours. (WP08South Africa)

The major reason why I succeeded is hard work, I put it in a very much time; I think many does that, otherwise, I think how to be successful is to put in a lot of time. (WP19Sweden)

Also associated to hard work was the will displayed by many women full professors to want to do the hard work and put in extra hours. The will to take responsibilities, and to become active. The will to stay in academia and take the risks that come with it. As one professor explained,

I was not a sheep waiting that somebody does things, you cannot wait until things happened, you need to be active, and you need to create your own opportunity. Tell people heee I am available, I would like to do that, can I do that.. (WP07Sweden)

Similarly, another woman professors also emphasised,

I am hard working; and I want to achieve things; and I dare to take some risks. I worked quite a bit for it. I wanted to stay in academia; do you really want it? Do you

dare, it is always the question do you dare to take the risk. You have to decide after your Ph.D. or postdoc, mainly Ph.D. do you take the risk or not to stay in academia? (WP04Sweden)

In this regard, for the majority of women full professors of the present study, in both countries, success in academia is perceived as individual responsibility. According to respondents there is no magic and it is not up to someone else, just up to the individual, one has to work hard, be productive and responsible for oneself. A woman professor maintained the following,

You can always have the networks, you can have opportunities, but at the end of the day, the only one who does is you. You have to get through that. So it is definitely my persistence, and my 'I can do this'. (WP25Sweden)

Specifically, women full professors emphasise that one has to be the driver of your own achievement and reported that if professionals work hard, are smart and display sufficient amount of skills they can make it up the career ladder, because there is opportunity in the system for those who are willing to put in the effort. Acknowledging the importance of individual will for women's career success, women full professors also highlighted the influence of being driven or having any internal drive because it helps professionals face hard situations, and keep them interested in continuing. If you do not enjoy it, you do not have the drive according to respondents, then it is difficult to reach and maintain a successful career. Specifically, women professors affirm that you need to be willing to maintain yourself in the system, because it is easy to get frustrated due to lack of results. For example, in competitive funding situations academics apply for funding and most of them are rejected and it is hard to get published. One professor stated how important it is for academics to "know that this is the case in academia, it goes a bit up and down, and it is just to continue. Sooner or later, you will get the grant and the papers" (WP16Sweden). Another woman professor emphasised,

Character matters very much. You need to be sure that you want this, and I wanted it from the age of maybe sixteen, fifteen at high school. I wanted to be this; I had challenges but they did not stop me. I have this internal drive. I am riding always. I have any internal clock that never stops. I finish something and immediately I want to do something else, so it is an internal drive that you need for doing this stuff. (WP06Sweden)

Another important result also displayed by the data in both countries is that an internal drive allows individuals to exert proactive behaviour towards their career that keeps them looking

for information, developing skills, understanding the system, being strategic and being competitive and assertive in their pursuit of career success. In this regard, respondents reported the importance of being strategic in one's career. Women professors emphasised the importance of thinking about which grants to apply for, the wise collaborations to make to increase successful results in grant applications and also to broaden the chances of getting fund by applying for different grants. A Swedish professor stated,

> *Be strategic by trying new avenues of getting funded, so not just look at one funding agency but try to find others. See where you can have collaborations that could lead to funding in some way. So is like being strategic and also seeing the patterns and seeing well how I can sort of navigate this, which sometimes can be difficult to understand. (WP09 Sweden)*

Respondents mentioned the importance of understanding how the system works, as well as how knowing the rules and how to play them, was essential for career success. One South African professor maintained, "You should understand the system. You need to have the rules and play" (WP13South Africa). In similar vein, one respondent from the Swedish context declared,

> *I learned to play the game the way it should be played, or has been played: I survived because I kind of played the way one should, and I could do that. I always published a lot. I was very independent, and I think that I took charge on my on a lot which helped me a lot because I was there for myself and I managed to be my own principal investigator actually. (WP23Sweden)*

Understanding how to play the game for some women professors meant resembleing the traditional male academic without family and domestic responsibilities who is strictly devoted to his work. Some women professors reported that they had to choose to not have children or family responsibilities to not interfere in their academic work. A South African professor expressed,

> *I somehow survived and made a long-term project which is what is needed in an academic career. I have been fortunate, choices! I mean that I have been able to be quite selfish in my career. I do not have children, I've never been married and I never had long-term relationships that have caused an interference in my career. So that has probably made it possible for me to pursue my career. (WP14South Africa)*

Another way of understanding the system mentioned by women professors from Sweden was through learning to speak Swedish. In this regard a women professor stated, "I learned Swedish, which was very important for my career development because I know better the Swedish system" (WP29Sweden).

5.6.2. Network of Support

A supportive network is considered the second-most mentioned factor – before individual factors – that allowed women professors to succeed in academia (29 out of 44 interviewees mentioned this theme). A supportive network refers to the support that women professors got throughout or in some stages of their career from the professional environment. It is includes support from supervisors, colleagues, research group, sponsors, a mentor, peers, support from students, support from the university leadership, and collaborations. Those people have encouraged women professors to go after what they wanted, helped women professors to understand and to navigate the system. According to respondents, they also represent a conducive professional environment that allowed women to flourish in their careers. Specifically, women professors stated that they had people along their career path who took the time to explain how the system works and how they could be part of the system, how to apply for research grants and where to find funding that allowed them to stay relevant and connected and therefore pave their way in the academic system. One women professor explained as follow,

> I was fortunate that my Ph.D. supervisor gave me good training in what mattered and in what did not: define a research question that matters, work on something that is worthwhile, and collaborate as far as you can, publish in good journals where people are going to see it, work with good people, and do not waste your time.. (WP05South Africa).

Although women professor recognised the importance of other people and other circumstances for their success, some interviewees mention that the main factor that allowed them to succeed was their individual effort, their hard work. This is illustrated by the following views:

> I think that I have achieved this because I am hard-working, but I have gotten support, that I should say. I have a professor who was a mentor when I started my career, also

gave very good support, but I think I am here today a large part of it because I am a hard worker. (WP19Sweden).

Another woman professor stated,

I had some sponsors around me at different time. People who not only formally like a boss or something, but persons who have helped me. I think it is a combination, but mostly I think it is my own work. (WP15Sweden).

The quotes above highlight the importance that women full professors attribute to individual agency or the proactive role that professionals have to take in order to achieve success in their career.

5.6.3. Family/Husband Support

Family support emerged as one of the vital factors for women professors' success in both countries (19 out of 44 interviewees mentioned this theme). This is the third most mentioned factor in the Swedish context. Family support is mostly highlighted as coming from a figure of a supportive partner that shares responsibilities of taking care of the kids, the house, or even sometimes takes on more responsibilities for kids and the home, and also supports in professional decisions that women make. One important point that emerged in Swedish data is the importance of having a partner in the same field for career advice. These arguments are attested to in the following quotes:

My husband has been extremely supportive in my career because he has been taking care a lot of the family while I was in conferences, while I was busy writing grants on the weekends, so he has been really strong support for me. (WP21Sweden)

The first thing I am thinking about is my husband. We take equal responsibility at home. To be honest sometimes he takes more responsibilities for kids, the home. So that has been certainly one of, or the most supporting factor. (WP20Sweden)

[I owe] a lot to my husband. We share responsibilities at home and as I said he is in the same field so we always have been supporting each other; actually, it has been a big bonus for us that we can always you know, there is somebody to talk to at home, have feedback when you have difficult decisions to make, or you want feedback on something that you have written. (WP27Sweden)

In similar vein women professors from South Africa also emphasised the importance of a supportive husband for women's career development. However, in contrast to Swedish

professors' partners where the support was mostly emphasised in terms of responsibilities at home with kids and family, women professors from South Africa evidenced partner support more in terms of psychological support, advice, and as role models at home.

> *We have not talked very much about him, but he is ... has been one of my greatest supporters. He always supported what I wanted to do. He allowed me to make those decisions even if he did not necessarily agree with them. He supported me in all sorts of ways. There is no question that we talk science most of the times. (WP02South Africa).*

> *My husband is an extremely hard worker. Seeing him as an example of someone that worked very hard and being successful, I realised that nothing can stop the fact that you work hard. The factor that stood out is the fact that my husband he was an example to me and I followed his example. (WP01South Africa).*

> *He has been always supportive and finds my career very important; he is equally proud if not more of where I am. Despite [my] working hard, I think we had a very good and happy family life and still that is also very good. (WP11South Africa).*

5.6.4. Luck

Some women professors from the present study credited the success in their careers to good luck. Being lucky is considered one of the key factors that allowed women professors to succeed in academia (11 out of 44 interviewees mentioned this theme). This factor emerged in both context of the research. In the Swedish context it is the fourth factor, while in South Africa it is one of the less mentioned. Women professors used luck to explain achievements they had in their career, such as success in their fields of research, finding positions or having a good mentor. Specifically, luck is considered to be:

(i) Lucky to be in the right place and meet right people to work with. In this regard women professors mentioned that they had been lucky to connect with people who believed, supported and pushed them throughout their career path. They also reported that without those people their career in academia would have been difficult. One women professor expressed,

> *There are certainly few people that have been sort of enabling me to take this path, and without them that would not have happened. So meeting the right people and making the right connections have also been important. (WP20Sweden).*

(ii) Lucky to have selected the research field that leads to success. Women professors claim that they have been lucky to be a part of a new emerging field of research and to work in the same field along their career, because that allowed them to be part of the developments that occurred in the field. The quote below reinforces this argument:

> *I have been lucky in my choice of research subject, and I have been working almost in the same area during my whole career and I think that was very good. So I have been part of a new emerging field of research, so that has been a little bit lucky to be there at the right time and to go into this direction. (WP03Sweden).*

(iii) Lucky to find the opportunities in cities where they wanted to be. Respondents mentioned that it was lucky to be able to find opportunities of positions open in the cities were they wanted to be. This was mentioned particularly for a women professor with a husband who also works in academia. In this regard the respondent expressed,

> *a lot of luck circumstances that positions were open in the places where I needed them. My husband and I had always this kind of dual career problem. There were two positions in Stockholm opening up at the same time and we managed to get them, right. It is like the probabilities, zero in principle. That was not in our control but was an important factor. (WP27Sweden).*

(iv) Lucky to be in a country like Sweden, that has awareness of gender equality. Respondents reported that they have succeeded in their careers because they are in a country where women are not hindered economically, socially and culturally from pursuing their education and in choices of career path. That freedom of choice allowed them to seize the opportunities that they had in life.

> *I am lucky to be in a country which is quite equal, where you can go to university. I mean you do not have fees in the university. I mean there are for non-Europeans [now]. When I was studying this was not the case the fees for non-European they started recently. If you are Swedish or European, you can go to university without paying fees. Also the school where I grew up was quite equal so even someone from a non-academic family could go to university and have a career. So this is sort of society in general. (WP17 Sweden)*

In all the above quotes is possible to perceive how women full professors attribute their success to favorable conditions, such as meeting the right people or being in the right place. Specifically, the narratives of luck and chance in this research suggest how some women full

professors overlook their preparedness to win an appointment to a position. Claiming that luck was influential may indicate that these women professors were uneasy with recognising the appropriate job skills that they seemingly possessed for the positions. They portrayed their skills modestly, attributing success to opportunities that arose in their specific environment rather than having the abilities and potential to undertake the positions. The narrative of luck may also communicate how impostor syndrome and feelings of fraudulence pervade some academic women, even those who have succeeded in their careers.

5.6.5. Passion for the Field

Passion for the field emerged from the interviews as one of the factors that allowed women professors to succeed in academia (10 out of 44 interviewees mentioned this theme). This theme emerged in both scenarios of the research but was the third most mentioned theme in South Africa. Women professors mentioned their love for academia and their work as a key factor that allowed them to endure the challenges of their career and strive for success. Some of those women academics described the attraction to their academic career as most akin to what one woman full professor referred to as a 'hobby'. Women professors spoke about how passionate they were about the academic work and expressed a sense of joy and comfort with what their perceive as the defining characteristics of academic work, for example, writing papers, doing research, working with young people. In this regard women professors explained as follows:

> It is really, the kind of work I do what I really wanted to do. If I had not done this as job, it could have been my hobby. But in fact, my job is my hobby. That as some of these career advice call it as sort of win-win situation because you do not feel like you are really working. (WP05South Africa).

> I am passionate about my work: It is not a burden for me to write an article; my work, I enjoy, because it makes me happy, it is good. (WP03South Africa).

> The passion for my work: ... I think mostly it is the fact that I have had so much enjoyment out of what I am doing, that just drove me. (WP14South Africa).

> I am passionate about my work: I enjoy it, I like writing, like working with my students, I am interested in what we are doing, I like field work. So it is a good life, at this stage it is also like nicely paid as well, I am financial secure, I am very happy in academia, I like it. (WP07South Africa).

5.6.6. Upbringing

Upbringing is perceived by respondents as one of the factors that allowed women professors to succeed in academia. However, this theme was less mentioned in both countries. Only seven out of 44 interviewees mentioned this theme. Interviewees perceived that coming from a family where women are supported and recognised, families that did not put obstacles in the way of women's choices and having parents who taught them that they can do whatever they want when they put effort in, constituted one of the factors that has enabled them to succeed. This possibility may have helped women professors to not feel discriminated against due to gender in male-dominated fields. Another factor mentioned by women professors was being born and raised in Sweden, a welfare state, full of possibilities and opportunities, without structural barriers for women to pursue a career and that provided freedom of choice. Those arguments are attested to in the following quotes:

> *I think that I came from a family where women were very well supported and recognised; both me and my sister we are both full professors. I am in physics and she is in biology. It is something that comes from the fact that study was valued inside the family. We never had any obstacle in the choices, so we were really free from all levels to do whatever we wanted. (WP06Sweden)*

> *I would say probably my parents who have been really teaching us as a children that we can do whatever we want, when we just put effort in that, not just give up directly when somebody is not succeeding the first time. (WP28Sweden)*

> *I think part of it is because I come from Sweden right, and I am Swedish. I had the feeling growing up that I could do whatever I want. I did not have to go home and take care of my parents, I did not have to go home or become this and that as traditional for women or my family, relatives. I mean I could go and do as I want. And I think that helped me kind of playing around and that made me kind of coming to this career. (WP23Sweden).*

Similarly, a South African counterpart said,

> *I think the environment that I grow up in, there is no question about that. So we grew up in a house full of books about electrical engineering, and I was taught to wire an electrical plug probably before I was taught to cook anything. And my mother always said she wanted her girls to have some additional qualifications. I am one of four. (WP02 South Africa)*

Results also revealed that a humble and challenging upbringing made women professors strive for success, the need to change the future and have a better life. This result came from respondents with uneducated but supportive parents who valued education. One women professor expressed it thus:

> We did not have easy access to a lot of things. And I think if people ask me what made me succeed or what made me get where I am, it was that I had the drive and the passion and that vision to break free from the cycle of poverty that I was in. And I knew that there was nobody else that was going to give me the key to break free other than myself. (WP12South Africa)

5.6.7. Good Students

Having good students was mentioned by interviewees from both countries as one of the factors that contributed to women professors' success in academia, although only six out of 44 interviewees mentioned this theme. According to respondents, a dedicated and motivated Ph.D. and postdoctoral student represents an asset for their supervisors. They helped them to produce good research and to boost the research productivity of their supervisors and mentors. The women professors from the present study credit a large portion of their extensive list of publications and success in their careers to collaborations that they had with students. Specifically, through collaboration with dedicated and engaged students women professors were able to be inspired and explore new research directions and questions that contributed to developments in their field, which also culminated in recognitions and highly ranked publications in their fields of research. As an example the following quotes represent statements made by successful women professors regarding the importance of collaboration with postgraduate students as a major aspect of their successful careers:

5.6.8. Role Models

Role models appear to be one of the few factors that aided women to succeed in their academic careers. This factor emerged in both countries (five out of 44 interviewees mentioned it). Role models are understood to be people that inspired others and good examples to follow who come from the family or the work environment. Specifically some respondents reported not having had a mentor throughout their career but people who they could take as examples and follow. Those people indirectly showed women professors the way to work or what to do in some cases. Their example of rigorousness, hardworking and a top excellent scientists but also paying attention to the human dimension of people was

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critical for women professors in paving their path and also to believe that they could succeed in their fields. Swedish professors stated:

I never ever had mentors in a sense, other than a Ph.D. supervisor but I never saw him very much as a mentor, but I have had people who I took as examples, and then I thought well this is somebody who I really highly appreciate, and seeing how these people worked I think that sort of having good examples has really helped. (WP01Sweden)

My mom has also done research. She had her docentship when I was a kid, I remember her Ph.D. defense, she was a clinician who did her Ph.D. in the evenings and nights, I was eight years maybe when she did her Ph.D. defense, and then she started and kept doing research about half time at the same time as clinical work. So of course, that means that I knew a bit more about the game when I come to academia. (WP10Sweden)

A South African counterpart mentioned similarly,

There is a group of scientists, I found incredibly inspiring … Those guys are the guys who made me believe that I could contribute to that field. So they were sort of very inspirational. (WP07South Africa).

I have had a few, they were not mentors but role models, in my teens, and one of them is still alive and is much a friend. They were not in my field at all, and they were sort of, 'be honest', 'work hard', 'do the right thing but have fun', and I sort of tried to do that, I try my everything to have fun. (WP06South Africa)

5.6.9. Research Area

Research area is perceived to be one of the factors that contributed to women's success. It is mentioned in both countries (four out of 44 interviewees mentioned this theme). This refers to finding a new research area which few people are in and being in a field where there are many opportunities and less competitiveness, and therefore, more opportunities for funding. Women professors reported that being in those fields facilitated their career progress. This finding also evidenced the existence of differences in funding situations between fields in academia, where there are fields with more funding opportunities than others.

The research I do is more like an interface of two disciplines. So it is easier to make progress there, because not many people are doing it. So it was like I identify a niche, so that is sort of scholarly thing. (WP07South Africa)

I think the factors is being in my field where there are so many opportunities. I think that is a very unique thing, it is a fact that takes you into spaces where a lot of people battle to get in to because other fields are very competitive, and you have a lot of people operating there. (WP08, South Africa)

I have been in a field that has been very much in focus, digitalisation where it has been rather easy to get funding; of course that is important because you can be as good as no one else but if you do not get funding it is not possible to conduct research. I think that is one main thing. (WP15Sweden)

5.6.10. Swedish Academic and Social Security System

The Swedish academic and social security system are mentioned by women professors from Sweden as factors that aided them to succeed in academia, although this was one of the less mentioned factors. Women professors maintained that regardless of the challenges that the academic system has, they also acknowledged that the academic system in Sweden is fair. According to some women professors, as long as one works hard, the system has opportunities for those who want to thrive. Education is free and everyone has the same opportunity to pursue an education degree and can succeed in an academic career even without connections or someone to help throughout the system. For instance, respondents reported that the social security system allows women professors to take risks with its beneficial unemployment fund. This argument is attested to in the following quote:

One thing that I have very much appreciated, and have huge respect for is that regardless of these difficulties we are talking about, at some point, if you can prove something there is a logic in the system, so you feel like if you can show if you can do the double work, and if you can show that you are worth it, you will eventually get your due, which I do not think is the same everywhere. Even without connections, even without someone pushing you at some point when the actual evidence shows something, you know, the system is logical, rational in that way so that you can come through. Which I do not think is the same everywhere. (WP08 Sweden)

Another factor mentioned is the stability of the Swedish social security system with parental leave and unemployment funding which, according to respondents, allowed women

professors to take risks and keep trying to pursue a career in academia and be in short-term contracts without having feelings of insecurity or uncertainty regarding finances to support the family. This aspect is captured in the following response:

> *I mentioned parental leave and sick leave, but we also have this unemployment thing. And that I also think has supported me because even if I have had not the need, because I've never been unemployed actually, but just having the security and knowing that in case the position is terminated I knew that I can get the funding unemployment payment for some time, so I would not starve and that gives some sort of security. Which also enables you to take a little bit of this risk of fixed-term employment that has sort of helped me in academia. Because for sure in that period from Ph.D. degree up until I got this permanent research position [it was] almost 10 years actually, that is sort of when I was in these two-year contracts. But then knowing that if the contract runs out I mean I will still have food on the table, because if that system would not have been in place perhaps you make another decision. Perhaps you do not dare to take this year fixed-term employment because you feel I'd better go to the supermarket and then I have at least a long term. (WP20Sweden)*

5.6.11. Stable Social Life

Having a stable social life that did not interfere in a career is perceived as a factor that contributed to women's career success in academia in both contexts. Women mentioned that not having tragedies in the family, health problems, having a stable marriage and no financial problems that would require their attention and worries helped them focus on their career and strive to be successful. This result may emphasise the power of other aspects of life in women's career development and how women define career and success differently, taking into consideration both social and work realms.

> *I think it would have been more difficult if I would have had like big health problems for instance, if I would have had big problems in my family, you know. Things in my private life, which can always happen, you know. Like in that way, no one is protected from that. And I always have been lucky in that sense that I mean I have not had any huge tragedies in my life that would have been an obstacle or require my attention. (WP12 Sweden)*

Along the same lines a South African counterpart mentioned:

I was fortunate that I was able to spend a long time at university, going through all of my postgraduate degrees and I did not have to worry about [anything as] my parents supported me initially and I got some bursaries. But I never had to worry about not having a roof of my head, I never had to worry about where my next meal was coming from, so that was a huge boost early on. (WP05South Africa)

I think the game for me is that I was happy. I had a very happy marriage; it was not for long it was for 22 years. My sons, nobody is an angel but they never gave me problems. They have this intuitive understanding of what is an absolute no-no, what is just irritating and that is what they brought to the table. When [I] needed them they could step up. So that helped me a lot to be in an environment where you did not deal with work related difficulties and personal conflict. (WP03South Africa)

5.6.12. Flexibility

Flexibility was mentioned by women professors as one of the factors that helped them to succeed in academia. This factor emerged in the South African context and only one respondent mentioned this factor. Flexibility here is connected to the possibility of having a flexible schedule that allows for raising kids while building a career, as attested to in the following quote:

University flexibility, that to me is the nice thing about university. You are very flexible, is not like in a corporate environment where you are never available for your kids. So you are very flexible but you can still do the challenging stuff. (WP14South Africa)

5.6.13. Not Routine

Not routine also emerged in the South African context as one of the factors that assisted women professors to succeed in academia. This factor was mentioned by one respondent. Having different tasks is seen as helpful and exciting. Women professors enjoy the possibility of constant change allowed by the inherent characteristics of academic activities. One woman professor expressed her love for academic work in this terms, "Quality of life and variety, many different tasks in academia, there is no routine in academia" (WP07South Africa).

5.7. Advice for Women Early Career Academics

South African and Swedish professors were asked to supply women early career academics with advice for becoming successful in their fields. Interview responses offered to aspiring women academics are summarised in Table 8. This advice is grouped in three areas according to Flanigan et al.'s (2018) structure of types of advice reported in their work with highly productive German educational psychologists, namely, career, time-management, and research-management advice.

Table 8

Advice for Women Early Career Academics

Career Advice
Be passionate about your work
Take the initiative to create opportunities for yourself
Find a mentor who can help guide you
Define what you want from your career
Build a network
Carve a well-defined research agenda
Know the promotion criteria
Be aware of the impostor syndrome
Recruit motivated students
Be committed
Have a life outside academia
Show solidarity to other women
Trust in yourself
Be resilient
Find a supportive partner
Time management advice
Be prepared to work hard for many years
Be willing to work long hours
Arrange your schedule around the things that you want to achieve
Research management advice
Collaborate with others and cover your niche

1. *Be passionate about your work.* Women professors encouraged early women academics to do what they really like to do, what they find interesting, are passionate about, and consider fun, because with hard work, commitment and determination every one can make it. Women professors reported that people are a lot more productive and motivated and can endure challenging circumstances when they work on something they are interested in. A Swedish professor said:

> *To have a good academic career requires that you are genuinely interested in what you are doing because it is a lot of challenges, especially to find a permanent position and build you own group. You really have to find something that you are truly interested in, because the main motivation and driving force comes from there. First identify what you really want to do and you are interested in, because you need your inner motivation. You need to have a deeper motivation. (WP28Sweden)*

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2. *Take the initiative to create opportunities for yourself.* Seizing opportunities was one of the pieces of advice given by women professors. Respondents declared that professionals cannot wait for the university to do everything. One has to think ahead all the time, take ownership of one's own career, find out the requirements to move ahead in the career ladder for one stage to the other and create opportunities to reach them. Look for Ph.D. students to supervise. Engage and apply for funding opportunities. Specifically, find out the promotion criteria early on for each level so they can have the next goal in mind and always work towards that. Women full professors emphasised how progress and success in an academic career is an individual responsibility, how most of the time academics have to work it out for themselves, what to do, how to do and how to get resources to do it, And what to do when one has passed a particular career stage. It is all up to the academic and some people cope with that and other people find that hard. Women professors maintained that:

> *young academics actually do not realise when they start out that an academic career is all your responsibility. Nobody is going to tell you what to research, nobody is going to say. If you are lucky and you have a mentor to say, someone who might say you want to go to xx and he say have you thought on zz, only that. (WP05South Africa)*

> *You cannot wait for the university to say, came on we are going to do this and that. You have to think if I have to become a full professor and one of the requirements is that I have to collaborate with universities. I have to create it; the university is not going to create it for me. (WP01South Africa)*

3. *Find a mentor who can help guide you.* Women professors encourage early career academics to find a good mentor to help 'smooth' their career path. Someone to support them throughout the process, who listens to them, who understands what they want to do and allows them to flourish in what they want to do and helps to create networks. One woman professor referred to a mentorship as a 'mothership' to describe how early academics have to visualise their career path. The woman professor expressed:

> *You need to see your career as like being part of mothership. You hook on to the best mothership you can and allow that mothership to give you that better trajectory. Do not try and do it by yourself, it is going to take a lot of time. (WP02South Africa)*

> *Find a mentor, find someone to discuss with. A senior colleague who could explain for you what is going on and how does it work. Especially when you get to these things*

that are not that obvious you cannot read them, I mean there are no textbooks that you can read to understand. It is in the walls, in the dialogue. (WP09Sweden)

4. *Define what you want from your career.* Women professors advise early academics to first make sure that an academic career is the career that they want to pursue and then be determine to never give up. According to women full professors the first question one has to answer is "is this the career I want most? Am I absolutely committed to this?" Respondents continued by saying, if the answer to that question is, I think I want to be an academic but I am not entirely sure then "one needs to have some other eggs in a different basket. You need to have some plan B" (WP05South Africa). Respondents explained that what has happened is that some people are not sure if an academic career is a career they want to pursue, while if you want to do something, you stand a good chance of succeeding because one has to be interested in it, passionate. One professor stated, "If you have not got it, that passion, then it is a waste of time" (WP06South Africa). Further, another woman full professor maintained:

> *For me this is the most important thing in my life, everything else comes second, everything. Maybe you do not have to be quite so single-minded, maybe you can have a couple of other things in your mind and life that are equally important but this has been the central pillar around which I have built my life. And if you can say that with confidence you've got a very good chances of succeeding in academia, if you cannot say that I am not so sure. You might succeed but the chances I think are lower. (WP05South Africa)*

5. *Build a network.* Women professors advise early career academics to network as much as possible. To build the environment they want to work in, have access to people who will support when needed, with access to information, letters of recommendations and research collaborations. One woman professor expressed it thus:

> *Network with people at the top who will pull you through, who will enable you within in your field so you see where the interesting research questions are coming, so you can be writing that way, even afterwards. (WP25Sweden)*

Respondents also emphasised the need to develop a cohort of support with women because they can be understanding of the challenges one is facing.

6. *Carve a well-defined research agenda.* Further advice given by women professors to early career academic is to define a clear research agenda and see where and how they can

contribute in their field. Specifically, to find in their field their place in it from the wider world perspective. Identify where are the places around the world that do good work in that area. Who are the people who are doing interesting research? They need to have that sense of what the bigger picture of the field is, where they fit in it and can make a contribution. Then they need to make sure that they manage their time so that they spend time on the things that they want to achieve.

7. *Find a supportive partner.* Women professors advise to find the 'right' partner, a partner who is willing to support one's dreams professionally and understands that they want to achieve something in life. A woman professor affirmed:

> *Having the right support and I do have [is important.] A husband or a partner who is threatened by what you are doing and also always trying to say to people that thing that they are better because they have a degree, do not go to that person, he will push you down. You cannot cope with that and the stress and the requirements of academia. (WP03South Africa)*

8. *Be prepared to work hard for many years.* Respondents advise women in early career stages to work hard for what they want. They also emphasise that this advice is valid for any professionals who want to succeed in their career, therefore a woman professor maintains, "These are valid in any field and career"(WP14Sweden). More advice given by women professors is to not blame other factors for the lack of success, if deep inside one knows that you have not worked hard. Do not hide behind being a woman, being a foreigner, an immigrant, or whatever. A woman professor expressed:

> *One could hide the in-success or challenges behind things like gender, or being immigrant. My advice would be to search inside and think, ok have I actually done what I could have done in terms of work, studying, you know, pursuing the goal, if not ok, them start blaming yourself first and then others, and do what you think is good for you. (WP14Sweden)*

Literature acknowledge that around the world women continue to be an underrepresented group in academic career in higher ranked positions and as knowledge producers. However, literature also as emphasised that within the academic context some women have been remarkable successful and have managed to break the barriers and reach the top rank and positions in the universities. However, on the empirical level, we still lack clear portrait of successful women perspective about the factors that influence them to succeed and remain in academic career, especially in the contexts of cross-cultural comparative studies between the

Western and the underresearched African countries. This study was therefore premised on the overarching need to explore successful women's perspectives about the factors that contribute to women's academic career success in two different contexts, South Africa and Sweden.

In summary the results presented in this section emphasise that women full professors decisions to pursue and remain in academia are associated to the characteristics of academic work, for exemplo, creative, stimulating and flexible work that allow women professors to simultaneously build a career and have family. Results revealed how women full professors from the present research, throughout their career trajectories, have presented themselves as agents in control of their own careers instead of passive actors whose academic career has happened to them. Specifically, the results of this research have highlighted the notion that successful academic careers are forged mainly through the agency of the individuals. Working hard, putting into the hours, taking risks, being resilient, managing time better, are all aspects that helped women full professors succeed in their academic careers. The results also emphasise the importance of intrinsic driven forces that women full professors had that helped them to endure challenging situations and thrive in their career. Similarly, the advice to early women academics stems from women full professors' own experience in the field. They have faced barriers and managed to overcome those barriers and reach high-ranking positions. Specifically, successful women full professors from the present study perceived their working contexts as unfriendly for women, recognised the challenges of the academic systems and challenges that they have faced through their careers in academia, however these did not stop them from pursuing an academic career and striving for success. Those types of advice fall under the individual's responsibility, emphasising therefore the importance of individual agency and individual characteristics for women's career success in academia.

These results will be discussed in relation to grounded theory. The results also raise important questions that can inform policy interventions aimed to increase the number of women in higher rank positions and as knowledge producers in academic career.

We now move to the discussion of the results.

CHAPTER SIX
INTERPRETATION AND DISCUSSION OF FINDINGS

6.1. Introduction

The present cross-cultural comparative study explores successful South African and Swedish women's perspectives about the factors that have contributed to their success. The study emerged in a context were literature on career success highlights that cross-cultural differences have been underestimated in describing and explaining career phenomena and asks for the need to understand the commonalities and differences of career success in distinct cultural contexts. Therefore, the study highlights a more specific and contextualised understanding of how success in a career is perceived and achieved by women in diverse academic environments. The comparative analysis and discussion of the results are presented in this chapter. The findings are discussed under each theme, as established through the research questions of the study. Specifically, the chapter highlights distinguished similarities and differences that emerged from the data results. The chapter explores four sets of themes. First, it analyses and compares how women from Sweden and South Africa define and understand their own success in academic career, and consequently explores the dominant discourse/narratives of success in academia in both countries among women full professors. Second, the chapter examines and compares the coping strategies adopted by women full professors from both settings of the study to navigate academia and its demands. In doing so, it first explores the challenges faced by women professors throughout their careers and the challenges of the academic system as perceived by women professors. Third, the chapter explores and compares the factors that influenced women professors' (from both countries) decision to pursue and remain in an academic career. Finally, the chapter investigates and compare the factors that contributed to women full professors from both countries succeeding in academia.

The study addresses these four main themes to display a possible profile of successful women in academia in both settings of the study. This is done using a grounded theory approach to bring a more contextualised theoretical framework that best fits the understanding of the predictors of career success in the two contexts of the study. We use a grounded theory approach because research (e.g. Spurk et al., 2019) acknowledged that although the literature has identified diverse theoretical frameworks used to understand career success, the

theoretical framework that best fits the understanding of the predictors of career success was not yet identified and we still lack studies that understand career success from a contextual perspective. In this regard, the theoretical frameworks that emerged from the data in both countries and provided the results are motivational theory and self-management theory.

6.2. Women Full Professors' Perceptions of Success in Academic Career

The first research question addressed in this study is how women professors define and understand success in their career. The results of the present research reveled that success is perceived by women full professors in objective and subjective way. Specifically, the study reinforce key themes mentioned in the literature regarding the definition of objective career success in terms of promotion, status, position (Judge et al., 1995; Heslin, 2005; Ng et al., 2005) and more recently, in the academic context, in terms of research productivity (Bostock, 2014; Ceci et al., 2014; Sutherland, 2017). The study also adds two new themes specific to the contexts under research, namely, developing the field (of study)/or moving the field forward (emerged only in the Swedish context) and another theme that emerged exclusively from the data of the South African contexts, National Research Foundation (NRF) Ratings. The study similarly confirms previous studies on subjective career success themes in terms of job and life satisfaction, recognition, freedom and contribution to society (Judge et al., 1995; Heslin, 2005; Ng & Feldman, 2014; Sutherland, 2017), and adds three new themes, namely, define and achieve individual goals, do excellent science (specific to the Swedish context) and change the demographics in the departments (specific to the South African context).

Participants of this study in both countries, identified research productivity as the primary objective standard measure according to which they are promoted in academia. This finding is also supported in the literature on higher education studies (Ceci et al., 2014; Sutherland, 2017; Williamson & Cable 2003; Enders & Kaulisch 2006; Jepsen et al., 2012). In fact, research productivity is described in the literature as the paramount requirement to assess institutional and individual performance in academia for promotion and distribution of resources (Barrett & Barrett, 2011; Craig et al., 2021; Mayer & Rathmann, 2018), and both scholars and institutions must demonstrate proficiency in research to move up the professional ladder (Parker, 2008).

Furthermore, the present research shows that women full professors from both countries comply and successfully internalise the imposed measures of objective success in academic careers regarding research productivity in order to climb the career ladder. When asked how

they define success in a career, 23 out of 44 interviewees answered that they understand success in an objective way. In both countries, objective success is the most mentioned construct of career success in academic career. Therefore, the dominant discourse/narrative of success in academia is objective, based on external and measurable indicators (Ng, et al., 2005; Bostock, 2014; Sutherland, 2017). Those who emphasise competition, individual success, striving for constant progress and taking responsibility for one's own success, dominate academic discourses.

However, although women professors from both countries acknowledged the objective discourse of success as dominant in academic settings, they also recognise that success is also perceived as being more than metrics and having an extensive list of publications. A considerable number of respondents (21 out of 44 interviewees) interpret success in a subjective way, which is not aligned with the imposed institutional measures of success. Specifically, the data of the present research has shown that what some women professors personally perceive as success is misaligned with what academia in both countries considered being objective career success. For example, in both countries objective success is perceived as complying with academic requirements, the possibility of sustaining a group, transferring knowledge to students and having status, while subjective success was perceived by the women professors as defining and reaching individual aspirations, being happy with your work, making any impact on other people, having control of your own life, having work-life balance and freedom to choose research direction.

This result confirms previous research that maintains that women assess career success using different criteria and in a more subjective way (Afiouni & Karam, 2014; Baker, 1999; Dyke & Murphy, 2006; Kalet et al., 2006; Powell & Mainiero, 1992; Sturges, 1999). This, in turn, emphasises the need to take other aspects of women's lives into consideration when assessing women's career success (Powell & Mainiero, 1992).

While an external observer may describe those women full professors as highly successful and objectively oriented, internally they define success subjectively. These results may be surprising, especially if we consider the characteristics of the participants of the present study – successful women full professor, highly recognised in their fields of work for their scientific contribution and achievements in their careers.

Two main explanations can be inferred from the literature to sustain these results. First, using Puwar's (2004a) metaphor of women as space invaders in academia, the author maintains that those who are invaders in the space of others as a strategy to survive in their field adopt the

norms and practices of the field and focus on the work to try to blend with the traditional workers to succeed in their careers. Central to Puwar's (2004a, 2004b) approach is the idea that women and non-white minorities who want to succeed in their careers, comply with the norms of their work environment.

Looking at Puwar's (2004a) perspective of space invaders, successful women in the present study comply with the norms of academia to get ahead as they are occupying spaces that have traditionally belonged to men. However, as the literature sustains (Hobfoll, 2002; Ten Brummelhuis & Bakker, 2012; Spurk et al., 2019), objective career success outcomes can be viewed as resources that are valuable in aiding the achievement of other internal or external further goals. Therefore, women professors from this research may comply with the requirements of an academic career to climb the career ladder to be able to follow their individual goals and follow their inner drives when enjoying the outcomes of their position. Those individual goals may be seen as, for example, freedom to do the research one wants, freedom to decide on one's own research directions and the possibility to influence other people's lives.

Second, women professors from the present study may be working with a calling orientation. Participants described their passion for academic work and how they are research driven and perceived their work as more than a job. They aim to contribute to society or to a better world with their work, mentor younger generations and help them grow and develop. Specifically, women full professors perceive academic work as a work that matches their internal desires to contribute. These women professors endure setbacks and challenging situations motivated by their love and passion for academia. This result is supported in the literature by authors such as Hall and Chandler (2005) and Duffy and Dik (2013) who state that for individuals who perceive their career as a calling, their internal motivations drive them to move ahead in their career. According to those authors, those individuals can pursue their careers in a constrained environment because they are not motivated by external objective outcomes such as position, salary, and status. They are driven by inner purposes that allow them to be adaptive and self-confident. This result also allowed for the observation of motivational theory that emerged from the data, highlighting the individual motivations that made women professors remain and succeed in academia. According to London's (1983) motivational theory, individuals' motivation can influence three aspects of action, choice, effort and persistence. Motivated individuals can choose to take action driven by their purposes towards their interests. In this intentional quest they are persistent and determined. In this regard, Wingfield (2014)

maintains that working hard in academia is a choice, a choice that only some academics are willing to make. Those academics, according to Wingfield (2014), see benefits of the academic career lying beyond the monetary reward. They enjoy being connected with a global community of scientists; the research inquiries and contributing globally to the development of their fields.

Furthermore, the data allowed the observation of career success constructions that resulted from the unique characteristics and specificities of each context. This reinforces the argument stated by some scholars (see Dries et al., 2008; Sutherland, 2017) according to which success is a social construction, understood and perceived within the individual social and cultural values, therefore, emphasising also previous research that acknowledged that the meaning of career success can differ between cultural and global regions (Mayrhofer et al., 2016). For example, NRF ratings are perceived as measures of objective career success exclusively in the South African context while developing the field/moving the field forward is perceived as objective career success only in Sweden. Another example is in themes that emerged in both countries of the study that are similar. The interpretation or understanding given to those themes can vary according to country. Specifically, even with a similar theme, the sub-themes generated differed by country. For instance, position appears in both countries as a measure of objective career success. However, in Sweden position is understood as the ability to secure a permanent position in academia in a context of extremely competitiveness for permanent jobs. In South Africa on the other hand, position is more understood as having a management position that gives professionals status, and power. Furthermore, subjective career success also has themes that emerged exclusively in one country and not in another, emphasising, therefore the contextualisation and social aspect of the definition of success.

Another inference that can be made from the results regarding the fact that women define success taking into consideration other spheres of their lives, is that this result might be important to explain the underrepresentation of women in science (although this is not the focus of the present study). This is because based on data, we may assume that those professionals who stay in academia and strive for success are those who really want to be there to satisfy their individual purposes, for instance, regarding their passion for academic work, the freedom in research, and the contribution they want to make with their work in society and other people's lives. Research (Dries, 2011) argues that the way individuals conceive their career success can influence the decision of professionals to meet (or not) the institutional external measures of success, and affect the decisions individuals make in the

personal professional realm (Dyke & Murphy, 2006). In fact, research (Hardesty & Jacobs, 1986) has shown that successful female professionals experienced feelings of emptiness, dissatisfaction, tiredness, disillusionment and individual failure when they realised the personal and interpersonal costs of professional success. Power, status, success, and money were not enough for these women. They desired better treatment, more pay, and a more balanced life. In the absence thereof, they changed careers, reassessed their career and life priorities and, in many cases, turned to self-employment. In an academic context Sutherland's (2017) study on the constructions of success in academia by early career scholars conclude that even if a professional fulfills the requirements in terms of external or objective measures of success if they feel like an impostor, over-worked, underpaid, unhappy or imbalanced, they may not continue to achieve such standards of success on a regular or consistent basis and may also decide to leave the workplace or abandon that particular career.

These findings may be important to understand the gender imbalance of women in science, and in high-ranking positions. If professionals from academia have aspirations and needs misaligned with what is understood as success in the academic environment by the institutional standards of success, they may decide to not climb the career ladder or to not fight to fill high ranks in academia and stay in the levels where they feel that their aspirations are filled in their career. The data revealed that some professionals are happy to do a Ph.D. and not fight for more or remain content with being only senior lectures. Others are happy to be able to make an impact in people's life and according to an interviewee, "*you do not need a lot of papers to do that*", or "*you do not have to climb the career ladder to do that*" *(WP25Sweden)*. This discourse may emphasise what the literature reports that in academia, professionals who succeed are those who are willing to be in academic career, are driven by intrinsic motivations and are devoted to their work (Baker, 1999; Teichler, et al., 2013).

The study does not state that this is the only explanation of the underrepresentation of women in science and in high-ranking positions, although it argues that more perspectives connected to the individual view of success in a career need to be taken into consideration when analysing this phenomenon in academic careers.

6.3 Coping Strategies Adopted by Women Full Professors in Academia

The second research question of this study is related to the coping strategies adopted by women professors as they navigate academia and its demands. The study answers that question first by investigating the challenges that women professors perceive to be in the

academic system and second, by looking at the challenges they have faced throughout their career.

6.3.1. Perceived Challenges of the Academic System

In general the experiences of successful women full professors in this study illustrate that academic systems and women in particular, continue to face structural and cultural barriers while navigating academia. However, it is important to highlight that results indicate that in both scenarios of the study, it was mainly individual characteristics and individual career decisions and behaviors that were crucial in helping women cope with those challenges. Those characteristics and behaviors are, for instance, never giving up, working hard, having life outside academia, ignoring bad things, not taking things personally, developing skills, understanding the system, time management, learning to appreciate small things and acting like a boy.

Concerning the challenges of the academic system, results from both countries under research, reinforce the challenges that most of the academic systems face around the world and are extensively described in the literature (Bozzon et al., 2019; Courtois & O'Keefe, 2015; Dirnagl, 2022; Huisman et al., 2002). Those challenges are portrayed in the literature as mainly the result of the transformation of academia to a more managerialist system and reliance on neoliberal ideologies that defend that higher education institutions should operate like corporations (Slaughter & Rhoades, 2000), based on competitiveness, performance and profitability (Clarke, 2012) and education is seen as a commodity that individuals should acquire for their own gain (Davies et al., 2006; Saunders, 2010).

The challenges can be experienced in a higher proportion in one country than another, as can be seen in the data, which can be justified by the specificities of each academic system (Finkelstein, 2015; Teichler et al., 2013) and by the changes that each system has undergone in terms of economics, purpose, structure and priorities to be aligned with neoliberal ideology.

Results indicate that dependence on external funding, rigidity of the system, affirmative action, a paucity of permanent positions available in the system and mobility emerged as challenges in both countries, revealing, therefore, some similarities between the academic systems. However, the manifestation of these challenges differs in the two contexts. Differences are evident in the challenges that emerged only in each specific context of the study, which are, misalignment between the Swedish social security system and the Swedish academic system, reconciling the short-term contracts, role models (emerged only in the

Swedish context) and National Research Foundation Ratings (emerged only in South Africa data).

6.3.1.1. Similarities

Problems with funding are described in both contexts as a challenge of the system. However in Sweden, participants speak more in terms of dependence on external funding, while in South Africa interviewees use the term 'lack of funding' more. This reveals a difference in terms of the manifestation of funding challenges in the two contexts. In fact, interviewees in Sweden mentioned that funding is used to conduct research, build research groups but also to finance academics salaries. In the Swedish system, according to respondents, some academics do not receive their entire salary from the university. They are required to apply for funding to sustain their positions even when they are already full professors with a permanent position. These results are in line with previous research (Hallonsten & Silander, 2012; Swedish Higher Education Authority, 2022; Öquist & Benner, 2012, 2014) that maintains that the academic system is dependent in external funding. Öquist and Benner (2012) reported that the higher education system acknowledged its inability to provide positions and adequate working conditions for early career researchers at higher education institutions. The authors also contend that, even if they have a permanent employment, Swedish academics are overly reliant on external research funding to cover their own salaries throughout their careers. Similarly, the Swedish Higher Education Authority (2022) reported that the main part of higher education research funding came from external stakeholders. This situation increases the universities' dependence on fixed and temporary positions (Henningsson & Geschwind, 2022) and also restricts the universities' autonomy (Bladh, 2007; Swedish Higher Education Authority, 2015) at institutional and individual level. Funding agencies define the fields to which they allocate funding and the research direction of higher education institutions and the institutional leadership has a limited amount of control over recruitment, which is primarily in the hands of the grants holders (Öquist & Benner, 2014). This finding may lead us to conclude that under the current conditions, only academics motivated by intrinsic motivations remain in academia and strive for success. In fact Dirnagl (2022) stated that the condition in which academic work is doing evinces that academics are driven by intrinsic motives. Specifically, according to Dirnagl (2022) the degree of self-exploitation with which research is presently carried out, regardless of the type or length of contract after a very long apprenticeship and at any time of the day or night, as well as on moderate salaries, proves that motives other than convenience or profit drive academic researchers.

In South Africa interviewees mentioned the lack of opportunities for funding to support students and to conduct research in the country, which requires academics to rely on funding from overseas if they need to conduct research on a big scale. This result is supported by previous research. Prozesky and Mouton's (2019) work about a gender perspective on career challenges experienced by African scientists report that funding is highlighted as a challenge in the African higher education systems. However, results emphasise the need for funding for research and research equipment. This result highlights therefore, differences in terms of manifestation of funding challenges between Swedish and African systems and, mainly, the specificities of the structure of the academic career in each national context of the study (Finkelstein, 2015). Interviewees from South Africa also mentioned the challenges of acquiring research funding depending on the field. This is also reinforced in the literature by early and recent studies. For instance, Slaughter and Rhoades (2000) report that universities allocate resources according to the field, and fields from physical science, engineering, and mathematics received more funding. Saunders (2010) stated that funding focusses on applied research with a final goal for commercialisation of research products.

A rigid system is perceived in South Africa as an inflexible promotion system and a hierarchical system, while in Sweden rigidity of the system is perceived as unconscious gender bias and the traditional conservative system. Those challenges are in line with literature and are also well-documented as challenges faced by many academic systems in early and more recent research (Pyke, 2013; Bedeian, 2004; McGrail et al., 2006; Braun et al., 2013; Seibert et al., 2017; Zacher et al., 2019). In the two countries, rigidity of the system is also perceived as being the absence of transformation in the departments regarding gender and race (exclusive to the South African context) and higher expectations on academics who enter the system. In South Africa the data evidenced that higher expectations are connected to the requirements to be able to maintain early academics in the system, for example being able to build research in large scale, while teaching and pursuing other academic activities. In Sweden, the higher expectations are related to the requirements to move up the career ladder from one level to the other and to the time speculated to get any assistant position after getting a Ph.D., which is considered narrow. These findings reinforce results found in early studies (Pyke, 2013; Zacher et al., 2019) that report that in academia few scholars reach a tenured professorship because of highly demanding requirements made at junior stages.

Affirmative action is another challenge that emerged in both countries of the study. The measures that both systems implement to promote gender equality in academia are perceived

as detrimental to women's careers. However, there are differences of perceptions in terms of how detrimental these measures can be.

Swedish professors stated that affirmative action can be detrimental because it creates a burden on women academics, while South African professors highlighted the fact that affirmative action creates a sense of doubt in women concerning their achievements. These findings are reported in the literature (Baker, 1999; Diezmann & Grieshaber, 2019; Kimura, 1997; Mandel & Semyonov, 2006; Martinsson et al., 2016; Soliman, 1998; Van den Brink & Benschop, 2012).

Researchers (Baker, 1999; Diezmann & Grieshaber, 2019) acknowledged that due to the necessity for gender representation, women in male-dominated fields are asked to serve on committees for extended periods of time, which reduces their time available for other academic activities. An early study by Soliman (1998) also reported that women's workloads in representational roles should be managed with caution because they might be subjected to overwork if they serve as the token woman on committees. Regarding the fact that affirmative action creates a sense of doubt in women's achievements, this result is also supported in the literature. Diezmann and Grieshaber (2019) report that affirmative action can raise doubt as to whether a woman's nomination was based on merit or gender, and the doubt may be expressed by the woman herself or interpreted as a result of the negative actions of others. Diezmann and Grieshaber (2019) also state that if a woman is appointed to a committee because of her gender, other committee members may show a lack of regard for her, which may be detrimental to women rather than beneficial. Kimura (1997) states that hiring women over better-qualified men may result in women being devalued in academia and collegial relations deteriorating. Van den Brink and Benschop (2012) also state that women are sceptical of affirmative action's initiatives because their merit is not evaluated in an open competition. In this regard, Van den Brink and Benschop (2012) add that affirmative action procedures raise concerns regarding the merit of female appointees when they are not tested in competition with male colleagues or measured against male competitors. As a result, some female academics refuse to accept posts designated for women for fear of being labelled an 'affirmative action' case.

The study results also present two new sub-themes related to affirmative action that emerged in Swedish data only, highlighting therefore, the differences between both contexts in terms of the interpretation that is given to the challenges that occur in the academic system.

First, affirmative action implemented in the Swedish context created an impression for outsiders that in the country everything is easier for women. Women professors declared that because Sweden is advanced in terms of gender equality policies and its social security system, it is perceived as easier from an outside perspective for women to build a career and rise in the academic rankings. This result emerged in the Swedish data and more interestingly, it was highlighted by professors that are not naturally from Sweden. This result can be justified by the fact that Sweden has a well-documented self-image as one of the world's most modern and ostensibly gender-equal countries, although women and men remain intrinsically unequal (Martinsson et al., 2016).

Second, affirmative action creates a comfortable position for women that can lead to them quitting academia or not progressing on the career ladder. Specifically, according to women professors the affirmative action in place in Sweden creates a comfortable position for women that allows them to safely quit academia, stay in half-time jobs, or not thrive in their careers. Women have support from the system to reenter academia through half-time jobs and enjoy good maternity leave and childcare that, according to the Swedish data, creates an opposite result. Instead of helping women to thrive in their career it creates a comfortable situation for women that makes it difficult for them to fill the requirements to climb the career ladder and succeed in academia. These results are reinforced in the literature.

Mandel and Semyonov's (2006) study about the role played by welfare states, such as in Sweden, in affecting women's labour force participation and occupational achievement highlight the paradox of welfare states women-friendly policies. They maintain that nations with progressive and developed women-friendly policies, as well as a large public service sector, tend to have higher levels of female labour force participation, as well as a high concentration of women in female-typed occupations and low female representation in managerial occupations. For Mandel and Semyonov (2006), the increase in family-oriented services, the accessibility of public child-care facilities and a big public service sector give women opportunities to become economically active. However, after becoming economically active, advantages for working moms and a high demand for female labour in public services limit their career opportunities. Family-friendly policies and practices prioritise women's familial duties. They are designed to give women time off to care for small children through extended maternity breaks and encourage part-time work. Consequently, these policies prevent companies from employing women for high and influential positions, while encouraging women's commitment to female-typed occupations and jobs with convenient

working conditions (Mandel & Semyonov, 2006). Another aspect is highlighted by Lane and Jordansson's (2020) study. Lane and Jordansson (2020) state that Sweden provided conditions to facilitate the access of women to the job market through access to employment and economic independence for men and women. Those conditions are described as access to health, sickness and unemployment insurance, parental leave and access to childcare and elderly care. However, in spite of the equality policy discourse about shared responsibility for paid and unpaid work, tensions between paid and unpaid labour remained unresolved. The authors explain that the emphasis on creating condition for a dual-provider system – where women and men are engaged in the labour market – did not problematise the division of unpaid work in the household in the country. Therefore, according to Lane and Jordansson (2020) women entered the labour force but the time spent on unpaid home duties created concerns about who would handle the care work. The reality of women working two shifts, one paid and one unpaid, increased. Women entered the employment force with men but males did not join women in unpaid domestic chores.

Few permanent positions available is perceived as one of the challenges mentioned in both contexts of the study as a challenge in the academic systems. This result is reinforced in the literature. Research acknowledges that higher education systems around the world are relying on ad hoc, short-term, or 'flexible' work (Bozzon et al., 2019; Gill, 2014) as measures to increase higher education flexibility and reduce the financial burdens (Ates & Brechelmacher, 2013) resulting from the massification of higher education that occurred in several nations during a period of significant drop in government funding and changes in resource distribution methods (Huisman et al, 2002). Funding has not kept pace with expanding student enrollment, which has resulted in large layoffs, privatisation, fee conflicts, a drop in academic incomes relative to average earnings in other employment sectors and increased uncertainty among academics. A university response to these shifts was altering the balances of tenured, permanent, and fixed-term positions (Huisman et al, 2002). Courtois and O'Keefe (2015) also declared that although the massification of higher education has resulted in an increase in student numbers, public funding for the sector has collapsed, increasing the sector's reliance on private sources of finance and creating uncertainty about future cash flows. As a result, there is a demand for flexible and inexpensive labour (Hill, 2005; Ryan et al., 2013). Permanent academic posts were replaced by low-wage, temporary and fixed-term contracts (Courtois & O'Keefe, 2015). Therefore, academics in early stages of their careers are confronted with precarious employment conditions (Dirnagl, 2022; Huisman et al., 2002;

Waaijer, et al., 2017). Permanent positions are a rare phenomenon in many university systems (Dirnagl, 2022; Huisman et al., 2002). Only a limited percentage of early career scholars are given permanent positions (Dirnagl, 2022) and younger and non-tenured academics frequently find it difficult to obtain a permanent position in academia and in their own country, being forced to consequently contemplate migrating to another nation or leaving academia entirely to work in another sector (Castellacci & Viñas-Bardolet, 2021).

Results also revealed that in South Africa the number of interviewees mentioning few permanent positions available in the system is low. The almost 'invisibility' of a lack of permanent positions available in the South African data seems a clear example of what Kerr (2021) considers as a silence regarding temporary academic work inside and outside of higher education's studies and debates in the country. In South Africa, as stated by Kerr (2021) although 65% of academic employees are in temporary contracts, fixed-term or temporary workers in the academic workforce rarely made a meaningful appearance in the academic discourses or policy agenda, different from the Global North countries.

Mobility is perceived in both scenarios of the study as a challenge of the academic system. However, the perception attached to mobility differs in both countries. In Sweden mobility is more associated with an international postdoc and positions outside of professionals' home city or country, while in South Africa, women professors that mentioned mobility as a constraint of the system linked it to short travels for conferences and collaborations. Women professors declared that being mobile for an international postdoc, to fill a position overseas or outside of the home city or for conferences becomes a challenges for women, especially for those with children and family responsibilities.

These results are supported in the literature by previous studies that recognise that while mobility is perceived as crucial for career development, the need to be mobile is also recognised as a potential barrier for female scholars especially for those with caring responsibilities (Acker & Armenti, 2004; Fritsch, 2015). For example, interviewees from Fritsch's (2015), study emphasise that mobility is preferable in early stages of one's career in order to minimise the challenges to reconcile family and career demands. In this regard, Kemkes-Grottenthaler's (2003) study about the characteristics of childlessness among academic women conclude that due to mobility requirements in an academic career, academics with family obligations are less mobile than others and, as a result, same academics postpone having children until their job prospects are secure. In the same vein,

Wolfinger et al., (2008) declare that women in academia have fewer children than other professional women, owing to the longer time it takes to acquire job security through tenure.

6.3.1.2. Differences

Misalignment between the Swedish social security system and the Swedish academic system emerged only in the Swedish context and emphasises the differences between the systems. This result is supported in the literature by early studies. Evertsson and Duvander's (2011) study, although recognising parental leave as positive to increase women employability and retention in the job market, also presented empirical evidence of the negative effects of extended parental leave rights on women's career development. Evertsson and Duvander's (2011) study results report that women who had 16-months or longer leave were less likely to experience an upward professional move once they returned to work. One of the justifications sustained by Evertsson and Duvander's (2011) study is that taking extended periods of maternity leave can be judged by the employers as a signal of employees lower career ambition, and may affect the acquisition of competences for a higher position in the institution.

This result reinforces what was reported by women from the present study. They expressed a fear of being perceived as not been committed to science and to their work if they were to take long periods of extended parental leave. As a result, successful women professors from the present study reported not taking long periods of maternity leave to be able to keep in touch with their work, and not lose momentum in their career. This result is also supported in the literature by Dex et al.'s (1998) study about women's employment transitions around child bearing which reported that educated women have higher employment continuity and take shorter breaks of maternity leave than less educated women take. Mandel and Semyonov (2006) report that welfare states, such as Sweden, facilitate women's labour-force participation in the job market but not in powerful and attractive positions. Stier et al. (2001) also affirm that welfare states and their family-friendly policies provide proper environment conditions for working mothers to return to the job market, such as legislation focussed on boosting mothers' employment enhances their attachment to the labour market by providing the necessary conditions for sustained full-time employment.

Reconcile the short-term contracts was evidenced only in the Swedish context, and is perceived as a challenge for academics because of the difficulties related to planning for the future and the uncertainty about economics. Results have also shown that respondents recognised that it is important to have short-term contracts and do an external postdoc because

it benefits the excellence of science. According to respondents, it allows the researcher to focus on research, gain experience and build networks in the process of mobility, which is important for career development. These findings are attested to in the literature of other studies.

Ackers and Oliver (2007) recognise that short-term contracts play an important role in a researcher's career trajectory and research portfolio development because they provide access to research groups, facilities or research time and opportunities to accelerate career development. Ackers and Gill (2005) also maintain that fixed-term posts, as well as the mobility, national and international, that comes with them, are recognised by researchers as providing access to significant research facilities, highly productive researchers and academic networks with prestigious supervisors and research groups important for boosting career development. Furthermore, Ackers and Oliver (2007) also acknowledge that temporary contracts represent an important opportunity for established researchers and groups to select the best talented researchers, which benefits the excellence of science. However, the researchers also recognise that perceiving short-term contracts as important is shaped by personal and family circumstances. Therefore, women, especially those with family responsibilities, associate short-term contracts with insecurity and uncertainty, especially if connected to the mobility and career paths characterised by a series of temporary contracts with little prospect of a permanent position (Ackers & Oliver, 2007).

Two major consequences are described in the literature as a result of short-term contracts, first contractual insecurity, leading to personal financial instability, limiting access to credit (particularly mortgage finance) and little to no entitlement to employment-related benefits such as pensions and leave entitlement (Ackers & Oliver, 2007). Second, academics in temporary contracts experience differential forms of treatments in different areas, which might have psychological effects and affect the ability to produce effective career outcomes and develop their academic profile, namely, accommodation and access to facilities; general inclusion, participation, and integration within the life of parent departments; access to training budgets, conference funding, and related occupational perks; representation on e-mail networks, websites, and publicity material; and opportunities for promotion and progression (and the pay linked to these) (Ackers & Oliver, 2007).

National Research Foundation Ratings are perceived as an obstacle in the South African academic system only. Respondents acknowledged that the rating system can marginalise academics who are not rated by the system, but on the other hand the rating system can help

to boost the careers of academics who have a good NRF rating. This result is supported in the literature. Research emphasises that the NRF ratings system is used throughout South African higher education institutions, for academics' applications for promotions and employment hiring in universities (Breetzke & Hedding, 2020; Callaghan, 2018). Wingfield (2014) contends that having good NRF ratings makes consideration for promotions and other prizes considerably easier. In the same vein, Breetzke and Hedding (2020) state that the NRF gives individuals recognition from peers as being a leading international scholar in a respective discipline based on the quality and impact of their research, and NRF status is used by universities and research-performing organisations in the country as one of the criteria for personal promotion, resource allocation, 'performance' awards and employment retention. However, researchers are also critical of NRF ratings. Wingfield (2014) in an open criticism of the system, maintains that the system is tough and offers a distorted view of accomplishment by presenting hierarchical ratings which are detrimental, in a way that some brilliant researchers never make it into the B-rated researcher ranks. Callaghan (2018) also argues that the NRF ratings allocate career advantages and disadvantages for academics, for those who manage to get the high ratings and for those in the bottom of the scale respectively.

Role models as a challenge of the system appears only in the Swedish context. Professors mentioned that the successful women in the system are not pleasant and have a mindset that to succeed in academia they have to be tough. This finding is supported in the literature by early studies. In Baker's (1999) study, women professors declared that as role models, they were unsure if they were portraying an image that would inspire other women who want to enter the academic system. According to them, working hard, long hours, teaching effectively and being successful scientists/engineers was the most beneficial role they could play in positively impacting young women scientists; nevertheless, women professors also indicated that they were viewed as aggressive or intimidating by colleagues when doing so. Success in science normally necessitates long hours and hard work and the demands on academics might be exceptionally high. Women professors from Baker's (1999) study stated that if their female students continued in science, they would go into industry because they did not want the life that their female professors had (Baker, 1999). According to Baker (1999), this discourse emphasises how academia attracts a specific type of professional, those who will be successful there. Bagilhole (1993) claims that for women as a minority and marginalised group to survive in academia they have to behave like a man, they have to become harder and detached themselves from their femininity to be taken seriously as academic professionals.

They work hard to be recognised as good as their male counterparts. In addition, women participants from Bagilhole (1993) study reported that they had to work hard, be strong and not show any signs of weakness and be better than their male colleagues to succeed in their careers. These women fail in being role models for other early career women who want to enter the academic system. They behave like men, embrace the male characteristics of the ideal academic to thrive in academia, and ignore the existence of discriminatory practices in academia and do not support other women

6.3.2. Perceived Individual Challenges Faced Throughout Academic Career

The challenges faced by women professors throughout their careers are linked to the challenges that they perceived in the academic system. For example, the dependence of the system on external funding made women professors experience challenges regarding to the need for applying for external funds. Another example is the absence of female role models in the system, which is reported by same women professors also as a challenge that they faced in their careers, although in this case in the family environment. The data again identified similarities and differences between the contexts regarding the challenges faced by women academics. The need for external funding, gender bias, lack of mentorship, lack of role models, and difficulties in balancing family and career emerged in both countries of the study and are therefore perceived as similarities. In terms of differences in the challenges faced by women professors, coming to Sweden as an outsider (emerged only in the Swedish contexts) and apartheid (emerged only in the South African contexts) were specific differences.

6.3.2.1. Similarities

Gender bias is reported as a challenge faced by women from both contexts. In both scenarios of the study women professors complained of being judged according to their gender. They reported being perceived as less skilled and less capable in meetings or being required to perform specific gender-typed tasks by their male counterparts and superiors, that is activities that were perceived to be women's roles. These results were reported extensively in the literature in previous and more recent studies (Casad et al., 2021; Cardador, 2017; Ecklund et al., 2012; Heilman, 2001; Lühe, 2014). For example, in Cardador's (2017) study women are assumed to be more capable and suited to feminine roles as management, while being seen as less technically skilled. Women are allocated positions and tasks based on stereotyping and not on evidence. Ecklund et al.'s (2012) study also identified bias towards women in their study. Language was identified in their study to communicate stereotypes. Women physicists,

for instance, perceived gendered rhetoric such as, "women are not excellent at math" (p. 705) as intrinsically masculine when speaking with their male colleagues. This situation perpetuates the discrimination of women in academia. Although a line of research states that academic progress is based in merit, and that universities and professionals are judged based in a fair and open opportunities for all (Jungbauer-Gans & Gross, 2013; Gupta & Sharma, 2002; Lipton, 2017), researchers such as Thornton (2013) expressed scepticism that a merit-based procedure can be free of gender bias in a male-dominated environment, where those in power are associated with the ideal academic. According to Thornton (2013) the merit-based evaluation can exacerbate the status quo in academia instead of change it.

Need for external funding is associated with the need to constantly bring in funding and is also associated with feelings of anxiety and uncertainty about the future. Due to competition for funds, academics reported the need to work hard to prove to others and to themselves that they always have funds to keep themselves in the system. Results also emphasise how women professors from the present study made it through the years and maintained themselves in the system by working hard and by being passionate about their work, which contributed to them being willing to put in the hours, develop skills and find opportunities for funding. Wingfield (2014) states that achieving in an academic career necessitates focussed and persistent research engagement, which requires professional commitment and entails significantly more than the 40-hour week. For Wingfield (2014), academics who succeed in doing that are those who have fun, who enjoy their work in a way that the time spent in it is not considered hard work, but fun. These results evidenced the motivational theory that emerged in both contexts of the study and also the self-management theory. This is characterised by the idea that individuals are motivated by inner drives to pursue their careers and therefore that inner drive gives them the motivation to take a proactive role and ownership of their careers, evidenced by being willing to work long hours, develop skills, and find funding opportunists.

A lack of mentorship emerged as a challenge faced by women professors in both contexts of the study. Results of the present study show that the successful women professors mentioned not having mentorship, someone to guide them, to show them how the system works, to clear their path and advocate for them. This result is supported in the literature by other studies. In Thomas and Hollenshead's (2001) study women reported a lack of mentoring throughout their career. Women who have reported experienced mentorship claim that the mentors were from outside of their departments, which suggested, according to Thomas and Hollenshead (2001), that successful women had to look for professional support outside their departments, the

same support provided for other peers and academic professionals. The justification behind the women's lack of mentorship may be explained by the fact that research has identified that mentoring and gender interact. Thornton (2013) affirms that men professors who are the gatekeepers of academia and responsible for decision-making processes, are considered to mentor more their male similars. Specifically, a greater proportion of men are exposed to male mentors' significant influences. Another study by Diezmann and Grieshaber (2019) states that men are perceived of as having a considerable proportion of male mentors (90%) compared to women (53%). Although women faced challenges related to the absence of a mentor, research has highlighted the importance of the role of a mentor in women's career development. Baker (1999) states that a mentor, male or female, who can give guidance, clear paths, and in general be in a position of power to remove unneeded impediments, was common to the success of women. Research (Gardiner et al., 2007; Schmidt & Faber, 2016; Ward, 2003) also affirm that mentoring supports women's career progress by providing strategic guidance, professional relationships and access to networks. Although respondents from the present study agreed that having someone to advise and champion you is vital for career advancement, they reported being able to survive and thrive in the system without mentoring. According to respondents, their passion and drive for their work became the deciding factor for their success in career. Specifically, according to women professors, if one lacks passion and drive one easily falls off by the wayside or becomes complacent and does only the basic things such as teaching and consequently does not rise on the career ladder because to progress in a career, research output is essential. This finding highlights the motivational theory that emerged from the data and supports the present research regarding the factors that made women professors remain and succeed in an academic career in both contexts of the study.

A lack of role models in the social environment/family, was found in both scenarios of women professors who complained they did not have role models to inspire their career in the social environment. They mentioned how challenging it was to come from a nonacademic background where they were the first generation in the family in academia, and in some cases where the mother was a stay-at-home mom. They reported how successful women figures are important to give an assurance that it is possible to make it, even being a woman. This finding is also supported in the literature. In this regard Gasser and Shaffer (2014) affirm that women's interactions with role models influence how they aspire to specific positions and value career success. According to Gasser and Shaffer (2014) women's decisions about work

and family are impacted in part by their perceptions of their moms' work behavior, both within and outside the home, their developing gender role attitudes and sociocultural signals about the gendered nature of occupations and possibilities.

Balancing family and career, was something women professors from both countries claimed to have in challenges reconciling the demands of an academic career and family. These findings are also well described in the literature by previous studies. In this regard, career researchers acknowledged the existence of tensions for women who combine work and family (Acker & Armenti, 2004; Makarem & Wang, 2020). The tensions are related to challenges regarding sharing housework or childcare responsibilities with partners; having children or childcare responsibilities in academic systems where structured professional trajectories give little consideration to family issues (Acker & Armenti, 2004) and being present in the family while still wanting to rise on the career ladder (Kameny et al., 2014). For instance, Orser et al.'s (2012) study reported that women in the IT industry face career impediments related to caring for children and the elderly while juggling the rigorous demands of the position. Fritsch (2015) states that being an academic professional is demanding and has diverse impacts on women's other aspects of life.

Research has shown that in order to reconcile family and work responsibilities or reduce the conflict between family and work-related difficulties and enhance career advancement, some women choose childlessness, postpone pregnancy or integrate family matters into daily work routines (Airini et al., 2011; Doherty & Manfredi, 2010; Diezmann & Grieshaber, 2019; Fritsch, 2015). In the present study, 37 out of 44 successful women full professors have children, specifically, 27 women from Sweden and 10 from South Africa. The organisation of family life around occupational obligations was reported in the present study as a strategy to reduce work and family conflict, when women professors stated that they organise vacations, and family trips for the same time as conferences, or mobility programmes to be able to take advantage of both realms of their lives.

The number of successful women professors with children in the present study may reflect a changing pattern of thinking described in the literature regarding family obligations as a hindrance to women's career development (Diezmann & Grieshaber, 2019).

First, motherhood can be a positive state for women academics because it gives them a break and boosts their self-esteem. In this regard, life partners and workplace departments play an important role in assisting women in balancing family and career, with male partners doing more at home than previously (Asmar, 1999). Furthermore, there are a variety of parental

leave arrangements available to women and, some shared with men or given to men following the birth or adoption of a child. Ray, Gornick, and Schmitt (2010) conducted a study of 21 high-income countries about differences in terms of how generous their parental leave policies are, as well as how gender egalitarian their policy designs are. Finland, Norway, Sweden and Greece stand out as having policies that are both generous and gender egalitarian to help women balance work and family responsibilities (Ray et al., 2010).

The second shift in knowledge is generational and refers to the increased career aspirations of new generations of academic women. Ledwith and Manfredi (2000), in their study of senior women in UK universities, discovered that older women's careers took a back seat to family responsibilities in their study. Younger women's careers, on the other hand, were oriented more toward vertical advancement because they were able to balance work and family responsibilities. Because of better childcare provisions and Equal Employment Opportunity policies, younger women appeared to have more opportunities than their older counterparts.

6.3.2.2. Differences

Being an outsider, was a challenge that reflected what academics faced when coming to a new academic environment where they do not know the system, how it works, and also do not have networks and mentors to help them navigate the system and work strategically to rise in the career ladder. One of the consequences of this challenge reported by the respondents is the delay of women rising through the ranks. Women professors in Sweden highlighted that not being Swedish affected their careers. According to them, for women who want to stay in academia and are willing to work hard and rise in the ranks it is less difficult if they already have their mentors and networks in reach to help them navigate the system, as opposed to those who come from other academic systems or outside of the country. These results are supported in the literature by previous studies. Van den Brink and Benschop's (2012) study reports that a subtle form of discrimination for women is embedded in practices that position women as outsiders in academia. Such practices include a lack of access to social networks as well as a lack of knowledge about academic vacancies and job requirements and also about the rules of academia. According to Van den Brink and Benschop (2012), in academia there are invisible connections and unspoken rules and criteria that make it hard for newcomers and outsiders to join the inner circle. Women respondents from Van den Brink and Benschop (2012) argued that they often lacked access to these patriarchal support networks and were unaware of the unspoken rules that are necessary to operate in a particular environment.

Apartheid, was mentioned by women professors in South Africa, such that the apartheid regime was tough for academics. The philosophy of apartheid was propagated throughout society, including academia, where one class of individuals, especially White males, had the control and power of all resources in the system. In this regard Eggins (2016) claims that the condition of women in higher education cannot be isolated from race relationships. According to Eggins (2016) the higher education system in South Africa was developed from a legacy of apartheid where gender inequalities and racial differences were the norm. In South African higher education institutions, few Black people are associate professors or full professors. Price (2014) states that in the country only 34 African women were among the 193 African professors. A similar figure is observed concerning Coloured professors. Out of 94 Coloured professors, women constituted only 29 of the country's full professors. Price (2014) states that institutions such as the University of Cape Town argue that the lack of Black academics in the country and in the institution in particular is due to absence of Black candidates for professoriates. In this regard Breetzke and Hedding, (2020) expressed the urgent need for transformation of the South African academic system in terms of gender and racial transformation.

6.3.3. *Coping Strategies Adopted by Women Full Professors*

How do the successful women professors respond to the challenges they face in academia? Results from this question yielded diverse coping strategies used by women from both contexts that are similar to those presented in previous studies in the literature. Never give up, work hard, have a supportive network, ignore bad things and don't take things personally were the most mentioned coping strategies. Never give up and work hard were the most mentioned coping strategies by Swedish women professors. This result was found in earlier studies. In this regard Bagilhole's (1994) and Acker and Armenti's (2004) studies' respondents reported working harder long hours and sleeping less as a strategy to cope with and navigate academia. The allusions to getting up early and going to bed late were reported by women academics in both studies. According to Acker and Armenti (2004), women who have children wake up early to work and many times have to wait until the children are in bed before they work again. In similar vein, Beigi et al.'s (2017) study about distinguished professors reported that they dedicated extensive hours to their work on a daily basis, particularly their research. Distinguished professors had to make up time by starting their workdays earlier, extending their workdays or working on weekends. Puwar (2004a) also asserts that women and non-white minorities are not expected to perform the appropriate

competences to excel in their careers as it is expected that they are not as competent, or capable as the traditional workers. Therefore, in order to succeed in their careers they work harder to be accepted. As Puwar (2004a, p. 145) states, "they almost have to display exaggerated forms of competencies to be seen as capable."

In the present study working hard even on weekends, being better them anyone else and being competitive is reported by women professors as one of the strategies to reach the top. Hatmaker (2013) also stated that women in engineering concentrated on being technically proficient, establishing a professional reputation through successful project completion and working harder than their male counterparts. However, although respondents recognised that they worked harder to reach where they are in their careers, they also emphasised that the time that is expended in work is not seen as hard work because they perceive their work in academia as a hobby. This finding emphasised the characteristics of the respondents of the present study and their approach to their work and career. Professionals were passionate about their work and wanted a career in academia and in some cases prioritised that over getting married or having children. In this regard, Teichler et al. (2013) state that an academic career is composed of professionals driven by intrinsic motivations who are devoted to their work. They are considered to be willing to dedicate a significant amount of time to their job and to forsake the luxuries of life outside academia in order to pursue their interesting careers. This result also emphasises the components of motivational theory that emerged in the data from both countries, concerning individual characteristics manifested through interest and personality variables that allowed women professors to thrive in their academic careers.

Another inference that can be drown from the data is that by working hard women professors from the present study recognised the requirements for getting ahead in an academic career and complied with the existing traditional organisational structures and practices. This result is also acknowledge in the literature by authors such as Miller (2004) who states that women engineers have convinced themselves through early acculturation in the field that to succeed in career they have to comply and conform to traditional masculine behaviors and norms. On the other hand, complying with academic rules requires that academics develop skills and understand the academic system, knowing the rules of the academic system that they are in to be able to plan and be strategic in the steps they have to take to reach to the top or meet the expectations of the roles. Participants were willing to inform themselves about the rules of academia, they looked for information and tried to understand the "rules of the game" (Miller, 2004, p. 65). These results were found in the present research and evidenced how successful

women full professors from the present study were proactive in the pursuit and development of their academic careers, how they intentionally took charge of their career and progressed up the career ladder. These results are emphasised in one of the domains of self-management theory, career adaptability. Career adaptability is defined by Savickas (2005) as the attitudes, actions and abilities that individuals employ to fit themselves to work that suits them. Similarly, Alfred's (2001) study about Black women in the White academy found that knowledge is important for women's career development. Results of his study indicate that knowing the academic culture and the role expectations of one's career and meeting them was a strategy adopted by women to succeed in academia. Specifically, participants from Alfred's (2001) study stated that they place importance on understanding and meeting academic cultural rules and expectations. The study also reported that the women participants were well aware of the cultural expectations involved in the tenure procedure. They were cognisant of the academy's cultural rules as well as the political workings of the process. Although they thought some of the norms to be improper, they choose to abide by them in order to succeed in their academic careers.

In the South African context, the most mentioned coping strategies by successful women professors was not taking things personally and having a supportive personal network, where the figure of a supportive husband is more mentioned by the women professors. Having a supportive husband who shares house chores and domestic responsibilities such as childcare is regarded as paramount by women professors, someone you can rely on and you can turn to in moments of difficult, anxiety and doubt. Career researchers have outlined the importance of a supportive network or a social and professional network for career development (Makarem & Wang, 2020).

Results also emphasise not taking things personally as one coping strategy. The approach used by women professors was to avoid taking criticism personally, remaining emotionally detached and maintaining composure even when things get challenging. This strategy is consistent with what participants from Fritsch's (2015) study adopted to overcome the barriers they faced to reach leading academic positions. Participants from Fritsch's (2015) study mentioned that they cope through distancing themselves from one's social environment and not taking comments too personally. The approach is to keep a cool head and avoid becoming over-involved emotionally, even when things become difficult. Acker and Armenti's (2004) study affirm that distancing and emotionally protecting oneself from upsetting circumstances is a tactic that can be used in academic contexts. The strategy is to

remain emotionally detached and maintain your composure even when things get challenging. In similar vein, Salazar (2009) finds comparable strategies and mechanisms for survival in academia in her study of Coloured faculty members. One strategy consists of distancing oneself: "Some participants distanced themselves as a means of self-protection, to physically and/or emotionally insulate themselves from painful surroundings" (Salazar, 2009, p. 188). This approach towards the challenges of women professors also made them consider criticism in a constructive way and look only on the positive side which allowed them to focus and go further. Women professors developed a positive outlook on the circumstances and were able to empower themselves as a result. By using this strategy, female academics changed the situations and possibly even benefitted from a precarious situation.

It is important to highlight that the coping strategies adopted by women professors throughout their careers varies according to time. According to successful women professors when they were younger, in earlier stages of their careers, they worked hard, complied with academic requirements to reach higher rank positions, put in hours to prove that they were the best and good at what they do. With time, when they reached higher levels of academic rank some women felt that they did not have to prove anything to anyone else and they proceeded to give back to academia by embracing mentoring of young generations and being outspoken on gender bias in the system. These findings were also supported in the literature by previous studies. For instance, Beigi et al. (2017) stated that the distinguished professors spend a significant amount of effort in the early phases of their careers anchoring their research work, publishing papers and achieving tenure. Later on, they spend time on a variety of research, teaching, and service tasks, such as training future researchers, contributing to publications in their disciplines in various roles and submitting grants to fund their research staff.

In sum, the data presents strategies adopted by women professors to overcome the challenges that they faced throughout their career that reveal that women full professors from this study present specific individual characteristics and made individual decisions that allowed them to succeed in academia. Some of those characteristics are, passion for their work, resilience, inner drive, developing skills and finding opportunities. They were adaptive to their careers and employed actions to fit in their careers. Although acknowledging the existence of obstacles in the system, when asked about the challenges they have faced, one of those academic women responded in this way, "I have never reflected on the obstacles so much ... there is never an obstacle that is more like a hinder, some things just take a bit longer but it depends on how much you want them" (WP12Sweden). This answer emphasises the

willingness and effort that women full professors employ to succeed in academia because academia was a career their wanted to pursue. The result also emphasises how success is perceived of as an individual responsibility.

6.4. Decision to Pursue an Academic Career and to Remain in Academia

Results of this section are divided in two: women professors' decisions to pursue an academic career, and women professors' decisions to remain in academia.

6.4.1. Women Professors' Decision to Pursue an Academic Career

Regarding the decision to pursue an academic career, results of the present research reveal that the most mentioned reasons that led women professors to pursue a career in academia were being driven by research; having freedom to research what one wants, to influence others, freedom of creativity, freedom with time and wanting to make an impact. In both scenarios of the study being driven by research was the most mentioned reason that made women professors decide to pursue a career in academia. Having a passion for the rational scientific way of solving problems, a passion for scientific fields, for discovering new things and being motivated by curiosity to do meaningful things.

These results are in line with literature (Astin, 1984; Bieri Buschor et al., 2014; Lindholm, 2004; Teichler et al., 2013). In this regard Teichler et al. (2013) states that the academic career is regarded as very appealing in terms of challenging tasks and the ability to shape one's own work. Results of the present study revealed that even in cases were women professors stated that a career in academia was not planned, it just happened, they declared that they remained in academia because they loved science and enjoyed the academic work. Similarly, Bieri Buschor et al.'s (2014) study reported that women who choose a career in STEM fields exhibited stronger mathematical competencies and a preference for investigative activities since they were young.

Astin's (1984) model of career choice and work behavior states that human nature has basic needs that are satisfied by work. Those needs are survival needs, pleasure or passion for their work and contribution needs. According to Astin (1984), instead of routine and repetitive work, professionals can enjoy solving problems, especially if the problems are challenging and demand effort to overcome a certain level of difficulty. Astin's (1984) model also claims that all human beings have a need to contribute to the good and well-being of others. Specifically, the model states that the individual's sense of self-worth and self-esteem derives

from the satisfaction of the knowledge that their work benefits others. Lindholm (2004) also identified one basic need from his respondents that influenced human career choice, the need for creativity and self-expression. This need emphasises the desire for independence and autonomy in shaping professionals' career choice. Lindholm's (2004) participants expressed a desire for freedom in engaging as members of their departments and institutions.

Women full professors from the present study also mentioned freedom (Swedish professors) and a desire to make an impact (South African professors) with one's work and in some people's life as the main reasons that led them to pursue a career in academia. It is important to highlight that some of the respondents who emphasised the need for freedom and the need to make an impact had previously worked in industry. They then left industry for a career in academia because according to them, they felt that they were not making an impact, they were working with operational problems which limited them, instead they wanted to make a difference, do something interesting and fun and have freedom of creativity to formulate their own work, decide what to do, the direction to follow, and also have freedom with time.

Specifically, women professors mentioned feelings of frustration because in industry there were interesting questions arising but it was not interesting to the company so they could not pursue those directions, they had to pursue the goal of the company. Academia, conversely, gives freedom to professionals. If professionals want to change, if they realise that have found something interesting, they can apply for funding to follow a new avenue if they want to. Women professors perceive an academic career as a better choice because it allows for free thinking, as opposed to working in industry towards objectives predefined by the company.

These results revealed that in both countries participants expressed similar motivations to pursue a career in academia. Their intrinsic motivations influenced their desire to pursue an academic career. Specifically, women full professors perceived that their needs were aligned with the inherent characteristics of academic work. These results are in line with literature (Astin, 1984; Lindholm, 2004) and emphasise that women professors are guided by individual basic needs that determine their career choices. Those needs are, a need for pleasure in or passion for their work, passion for the stimulating and creative environment that characterises academic work, the desire to contribute to other people with one's own work (Astin, 1984) and also a need for creative independence, self-expression or freedom (Lindholm, 2004). These results also highlight the characteristics of professionals who strive for success in academic settings and, most importantly, also emphasise the motivational theory that emerges in the present study as one of the frameworks to explain women full professors' career

success in South Africa and Sweden. Specifically, women full professors from this study present individual characteristic and associated career decisions and behaviours that helped them to pursue a career in academia, endure challenging situations and strive for success. London (1983) states that individual characteristics are needs, interests and personality variables potentially relevant to a person's career. In this research women full professors reported having individual needs, pleasure or passion for the work and contribution needs. Those needs are expressed in terms of a need for freedom to pursue individual research directions, flexibility with work in terms of time and a desire to make an impact with one's work and in people's life. The results also reported that successful women full professors have personality traits that are considered important for one's career, such as resilience, determination and persistence in the pursuit of one's goals.

Another widespread motivation for pursuing a career in academia that is not directly addressed by Astin (1984) and Lindholm's (2004) basic needs but emerged in the data of this research is the need for *flexibility with family*. Flexibility is perceived as a similar factor in both countries, and interviewees who mentioned this factor came from industry, perceiving the flexibility that academics have with time as important because it allowed them to simultaneously have a career and raise their children. According to women professors, academia is flexible in terms of time because academics with children could put in extra hours or work in weekends or during evenings when their children or family are sleeping.

6.4.2. Women Professors' Decision to Remain in an Academic Career

This section reflects on the factors that drove women professors to remain in academia and strive for success in a career, regardless of the challenges they faced throughout their career and the challenges they perceived from the system. Results indicated that the reasons why women professors remain in academia are also linked to Astin (1984) and Lindholm's (2004) basic needs for pleasure or passion for their work, contribution needs and independence of creativity, self-expression or freedom. These needs present small similarities and variations in terms of the importance that is given in each context of the study. For instance, in the Swedish context the main mentioned factors that influenced women professors' decision to remain in academia are freedom, passion for the field, being driven by research and a perception of academia as a work that involves less routine, while in South Africa the main factors mentioned that influenced the women's decision to remain in an academic career are passion for the field, wanting to make an impact, being driven by research and flexibility.

Similarities in both contexts fall under factors such as passion for the field, being driven by research, and flexibility. Freedom and a work that involves less routine appears only in the Swedish context, while wanting to make an impact is a factor raised only in the South African context. Passion for the field in the other hand was the most mentioned factor in South Africa, while freedom was the most mentioned in Swedish contexts.

In the present study, passion for the field was a driving force for women professors in both countries and it emerged in the South African context as the first most mentioned factor.

Women professors were highly motivated and passionate about their academic work and in some cases they were willing to pay a personal cost in order to pursue their needs and interest in their career. This result emphasises the willingness and desire that successful women full professors from this study had to pursue an academic career despite the challenges they faced. This finding contrasts with some studies in the literature, such as Göktürk and Tülübaş' (2021) research, which found that for academic women, success in one sphere of life, whether professional or personal, was possible to achieve by giving up in another sphere. As acknowledged by researchers such as Pocock and Charlesworth (2017), academic work is considered flexible because it allows flexible working schedules that favour working from home and therefore, the possibility of balancing work and family. Women professors from the present study reported having taken advantage of this flexibility of academic work, which allowed the majority of participants of this study to simultaneously be highly successful and recognised in their fields of work and build a family. What may distinguish successful women full professors from the present study from those for instance from Göktürk and Tülübaş' (2021) research is their individual intrinsic motivation to pursue a career in academia, and their passion for academic work. Women professors were driven by intrinsic motivations rather than external and objective motives to pursue a career in academia. Therefore, some women from this study reported even being willing to sacrifice their personal life and perceive academic career as a hobby, as fun and a career that they have always wanted to pursue. Although few successful women from this study had no children and are not married the majority of such women stated that the choice of not being married or having children is not related to their academic work but due to personal reasons. Another interesting result is that feelings of a guilty conscience or self-blame for choosing an academic career were non-existent among women full professors from both countries, which also emphasises the intrinsic motivations that drove women who have succeeded in their academic careers.

Results of the present study also reveal that academia is perceived by Swedish professors as a work that involves less routine. Less routine was another factor that caused women to remain in an academic career. Women professors perceive academic work as fascinating because it is a work that involves less routine. There are always new projects and the production of knowledge is developing all the time, therefore allowing professionals to learn new things all the time. Each grant academics apply for is a new chapter in the direction of new research questions that involve to some degrees new collaboration and mobility, nationally or internationally. All these results are supported in literature by previous studies (Astin, 1984; Bieri Buschor et al., 2014; Lindholm, 2004; Teichler et al., 2013)

Another factor that emerged in the data is the need to make an impact. This is a factor that caused women professors to remain in academia that emerged only in South African data and is related to wanting to change the system with one's research and work, a desire to develop young generations, pass on skills and knowledge to young people, make a difference to their careers and see them develop. This need comes with a sense of reward for women professors, and also emphasises the intrinsic motivation as a driving force in academics from this study.

6.5. Predictors of Career Success

The main purpose of this study was to understand which factors allowed women professors from Sweden and South Africa to succeed in academia. As a key result, similarities in both countries were found related to the factors that allow women to thrive in an academic career. Specifically, independent of the context and the challenges of each academic system, and also the challenges that women have faced along their careers, data revealed that similar factors influence women full professors' career success in the countries of the study. The study revealed that South African and Swedish women who have succeeded in academic careers have a similar profile as professionals – academics who love academic work and are moved by intrinsic motivations or individual needs that are fulfilled by the characteristics of academic work. Those intrinsic motivations aided them in enduring difficult situations and striving for success. Slight differences emerged and are related to the specificities of each academic system, for example the Swedish academic and social security system with long periods of maternity leave and the unemployment policies, that emerged only in Swedish data as predictors of career success.

In both scenarios data revealed that different individual attributes were reported by women professors from both countries as the first main factors that allowed them to succeed in their

academic careers. Specifically, in both countries agentic characteristics associated with male gender stereotypical attributes of the ideal academic were mentioned as crucial to help women thrive in academia. Having the ability to create and find opportunities, the ability to take initiative, the ability to take risks, to not be afraid of failure, the ability to work long and extra hours, the ability to recognise and understand the rules of the system, being able to 'play like a boy', be strategic, look to things internationally, build your own skills, the ability to collaborate, time management and being able to build a long-term project. These attributes were also mentioned: be a hard worker, competitive, persistent, determined, resilient, having the ability to cope in difficult situations, not being overly sensitive, not taking things personally, being open to criticism, being driven, being passionate about work, being willing to stay in academia, or personal will.

These results are in line with career research literature (Beigi et al., 2017; Diezmann & Grieshaber, 2019; Judge et al., 1995; Kwiek, 2019; Makarem & Wang, 2020; Rehbock et al., 2021). Kwiek (2019), in his work about European highly productive academics used the term "universal academic species" (p. 67) to emphasise that top performers are driven by similar factors, whatever the country is. They are driven by mostly individual rather than institutional factors. Specifically, in Kwiek's (2019) study, institutional-level predictors emerged as statistically insignificant to become a highly productive researcher and succeed in a career, while hard work, being research-oriented and being international in research were more important. This result is similar with what was found in the present study where individual factors emerged in both scenarios as the first most mentioned reason that influenced women full professors' career success. Although women full professors in both countries, mentioned a network of support as the second factor that predicted their career success, they also emphasised that having the support of mentors or supervisors was not significant because it was up to them to do the work, and they did it because of their will and drive to pursue a career in academia. Specifically, women full professor stated that what a mentor or supervisor does is to provide their mentees with a smooth path and it depends on the mentees to seize the opportunities. In line with this finding, Gladwin et al. (2014) argue that despite the lack of support in some institutional or faculty climates, women academics who have made it up the career ladder have particular characteristics that have enabled them to navigate the challenges of an academic career, succeed and influence these cultures. Gladwin et al. (2014) affirm that those characteristics are resilience, persistence, the ability to form relationships, to be self-motivating and to manage the emotional self, which imply a high level of emotional

intelligence, that, in turn, enhanced their capacity to learn, adapt, and influence their academic environment. In similar vein, Rehbock et al.'s (2021) study identified three main agentic qualities categorised as agentic stereotypically male attributes reported by participants from their study as essential to reach high-ranking positions in academia: excellence in research, being competitive and willing to work hard, having the ability to work independently, to manage one's time and resources effectively, taking responsibility for one's own work, demonstrating that you overcame hurdles, sought alternate answers and found ways to overcome problems.

Similarly, Diezmann and Grieshaber (2019) in their study about women who reach the professoriate, report the existence of individuals' catalysts that advance women's career success. Those catalysts are enjoyment of academic work and satisfaction that comes from doing academic work. Women professors from Diezmann and Grieshaber's (2019) study are passionate about their work and this passion is driven by inherent characteristics of the academic work, such as the fact that academia as a field of work allows them to continually develop through embracing new tasks, knowledge production, creativity, and scientific inquiries that make a difference in the society as a whole.

The literature described above highlights the importance of intrinsic motivations and proactive behaviors for career progress, and are also displayed in the present research. Women full professors from both contexts expressed passion for their fields and the characteristics of academic work, for example, the continuous quest for knowledge production, the freedom with research topic and the flexible working schedules. Similarly, Beigi et al.'s (2017) study with distinguished professors stated that the most prominent theme reported as predictors of their success was intrinsic motivation for work. Their attitude towards their work, which is described in the study as passion for the work, making an impact, a sense of accomplishment, perceiving academic work as being fun, curiosity and not working for money. In White and Cooper's (1997) study, successful women attribute they success to hard work, tenacity and a willingness to take advantage of the opportunities which luck presented. Further, in Martínez et al.'s (2011) work about the strategies and attributes of highly productive scholars, respondents credited their success to individual traits such as persistence, discipline, and hard work. Martinez et al. (2011, p, 714) reported that highly productive scholars used self-descriptive traits to describe what makes them productive, such as, "perseverance," "persistent,", "open-minded", and "patient". Respondents emphasised that they "work at it constantly" and "never give up". Similarly, women professors from the

present study believe that without putting in a lot of time and effort, one does not become successful, because it comes with much effort. Specifically respondents from this study believe that "if we want, we can find time for everything. That is the main thing, if you want to you will find time and ways" (WP09South Africa). In this regard, success in academia in both contexts of the study is perceived as an individual responsibility. Women full professors emphasised that one has to be the driver of one's own achievements.

Based on the results of the present study, intrinsic motivations of women full professors from both countries contributed to their career success. Women professors' passion for academic work, the desire to make an impact, solve problems and produce discoveries kept them motivated in their careers and willing to work hard, put in the hours, be persistent and never give up. These results revealed the emergence of motivational and self-management theory in the two contexts of the study to explain women full professors' success in academia.

In both countries the passion of women professors for scientific fields is displayed in the literature as a result of the exposure that women professors had in their families. Specifically, as a result of their upbringing, in families that valued education or parents who were supportive and never limited their choices. This result is also in line with previous research. Gasser and Shaffer (2014) claim that exposure to environmental learning or socialisation can shape a person's career path. According to White and Cooper (1997), women's experiences and relationships with parents provide antecedents for career success. A stable and supportive relationship with parents who encourage women to pursue their goals and achievements, encouraging autonomy of decision making, promote women's achieving, striving and independence.

Another important aspect worthy of mention is that the majority of women full professors in the present sample are married and are also mothers. They emphasise the importance of family support through a figure of a supportive husband as an important factor for women's success. Due to other responsibilities that women professors have outside of the work realm, women reported that without the help of the husband it could have been more challenging to achieve success in academia. This result is also in line with previous research (Beigi et al., 2017; Fotaki, 2013; Pyke, 2013; White & Cooper, 1997).

Beigi et al.'s (2017) work with distinguished professor participants in academic careers reported that almost all of the distinguished professors (both male and female) believed that without the help of their spouses, achieving their current professional status would have been either impossible or more difficult. The support was described as encouragement to continue

their studies or invest in their careers, assuming a major role in childcare and domestic responsibilities, following the distinguished professor and changing career despite the fact that changes did not always benefit the spouses' careers, and contributing to the work. Fotaki's (2013) work also reported that women who succeed in reaching higher positions credited their success to support from a partner who had taken over domestic and family duties or to the lack of family obligations completely. Those women admit to working fifteen hours a day and having to sacrifice having a husband and children. Powell and Mainiero (1992) also declared that women's objective career success is likely to be achieved when their partners or husbands become more involved in their family roles and responsibilities.

In line with this White and Cooper (1997) stated that marriage does not impede women's achievement in their careers, as 58 per cent of the women in their research were married. Conversely, family appears to function as a social support system. The majority of the successful women from White and Cooper's (1997) study reported that their partners were supportive of their careers. They all agreed that having a supportive partner was a solid foundation on which they built their careers. Another important highlight from White and Cooper's (1997) study is related to maternity leave and children. Half of the women were mothers.

The present study provides additional support for White and Cooper's (1997) perspective regarding the role of marriage in women's career success, with the majority of women full professors being married and also being mothers. Specifically, the sample of the present study is composed of 36 out of 44 married women and 37 women full professors mothers with an average of two children.

Another important result of the present research is that the findings challenge the gender perspective of women in academia. Research (Acker, 1990) has acknowledged that organisational structure and culture are gendered. Specifically, organizations reflect the preferences and desires of powerful males, and the ideal worker is male, devoted to his work and without domestic responsibilities (Acker, 1990; Hart, 2016), which reinforces the primacy of masculinity and men and reproduces inequalities (Hart, 2016). Therefore, women to achieve success have to become like men, workers who exist solely to work and have no other commitments, such as childcare or housekeeping, except from their labour (Acker, 1990), or work double to achieve the same level of recognition as their male counterpart (Burkinshaw & White, 2017).

In academia, research (Burkinshaw & White, 2017; Peterson, 2018) has highlighted that university structure and culture need to change to contribute to gender equity in leadership and high-rank positions in academic careers. According to Bagilhole and White (2011), women academics are less likely than men to follow a traditional career path, beginning as a lecturer and moving to senior lecturer, associate professor, and full professor positions (Bagilhole and White, 2011), to receive mentorship crucial for their career advancement, and have access to networks (Hart, 2016).

However, Acker and Armenti (2004) acknowledge that the "old norms" cannot fully dictate how women behave because there will always be sources of resistance and change. One source of resistance describe in the literature is being competitive. Competitiveness is associated with masculinity stereotypes and is incompatible with the normative constraints of femininity (Diezmann & Grieshaber, 2019). Every time women professors compete, are driven and win large grants, they disrupt stereotypical representations of femininity in everyday life and the academy, and they challenge established power relations. Specifically, women who succeed in academic environments demonstrate how normative categories like traditional male norms and other rigid structures can be redefined and recreated in ways that destabilise established gender categories. Being driven and competitive are examples of resisting and challenging the traditional understandings of women and universities, and they provide opportunities to challenge stereotypes based on limited understandings of femininity (Diezmann & Grieshaber, 2019) and gender.

In the present study, results revealed the existence of different structural and cultural challenges experienced by women academics in the academic systems. However, according to the results is possible to assume that these challenges do not influence how these women professors experienced their careers. The present research therefore found that the precarious work environment and conditions of academia did not stop the women of this study from being pro-active in building their careers to high-ranking positions. Women professors were highly motivated and passionate about their academic work. According to the results of the present study women who succeed in academia are those who want to be in the academic career, are passionate about their work and are willing to take risks to move through high ranks of the academic career. Those women perceive an academic career as a hobby, a career that fits their needs of creativity, freedom, and flexible work arrangements that accommodate family life.

6.6. Interpretation of the Framework for Analysis of Women Full Professors' Career Success in Sweden and South Africa

This study is anchored on a grounded theory approach. A grounded theory suggests the use of a theory that is generated from the data, not deduced logical assumptions from existing theories. Generating a theory from the data entails that concepts and hypotheses come from the data and are systematically generated in relation to the data during the research process (Glaser & Strauss, 1967; Thornberg & Charmaz, 2014). In this regard, results of the data collection process emphasise the emergence of two main theories to explain the factors that influence women's career success in both contexts of the study, motivational theory and self-management theory, emphasising individual characteristic and the proactive role that individuals play in order to advance their careers. Specifically, the study provides empirical evidence from successful women full professors' perspective to support the notion that individual characteristics and proactive behaviors were crucial to women's career success in both settings of the study. The data revealed similarities regarding the theories in both contexts. This may be explained by the specificities of the target group of this study, highly successful academics with similar intrinsic motivations for academic career and specific individual characteristics in both scenarios of the study.

According to Locke and Latham (2004), motivational theory refers to both internal factors that drive action and external circumstances that can induce action. Further, Locke and Latham (2004) state that motivation can influence three aspects of action, choice, effort, and persistence. Specifically, the authors state that motivation can influence how people acquire skills and abilities and how they use those skills and talents, how they persist in the pursuit of their dreams and might endure even challenging situations. In the same vein, London (1983, p. 620) states that career motivational theory is "defined as the set of individual characteristics and associated career decisions and behaviors that reflect the person's career identity, insight into factors affecting his or her career, and resilience in the face of unfavorable career conditions". Specifically, according to London (1983), this theory has two components, individual characteristics and career decision and behaviors. The individual characteristics dimensions reflect needs, interests and personality traits that may be significant to a person's career.

Results of the present research revealed that women full professors had particular characteristics that made them interested in academic work. Specifically, they had individual needs to fulfill that made them pursue a career in academia and succeed. Those needs are,

passion for academic work, for the rational scientific way of solving problems and constantly discovering new things, the need to contribute to society or to peoples life, the need for freedom of research direction, creativity and the need for flexible working schedules. Results of this research also revealed that personality traits, resilience, determination, never giving up even in challenging situations and finding other sources of funding, were crucial for women to succeed in academia and to overcome the challenges they faced along their careers or in dealing with difficult working situations more effectively. Therefore, in the academic context in both settings of the study, the motivational theory of successful women full professors emerged with two main components, the individual characteristics and the career decision behaviors. The environment situation or condition of the environment that emerged as factors for career success, are not perceived as main components of the theory, however. Career decisions and behavior are defined according to London (1983, p. 624) as components that "include generating alternative courses of action, seeking information about them, evaluating the information, setting goals, making decisions to behave in various ways, and carrying out the decisions". In this regard, data of the present research revealed that women full professors had to create and find opportunities, take initiative, take risks, not be afraid of failure, work long and extra hours, learn and understand the rules of the system, play like a boy, be strategic, look to things internationally, build skills, collaborate with others, have time management and build a long term project.

The study results also evidenced the self-management theory composed of one domain evidenced by the data, career adaptability. This refers to the proactive role that successful women full professors from the present study had take to succeed in their careers, and the actions, attitudes, and abilities that women full professors had to employ to fit themselves to academic work. This proactive role is characterised as looking for information and opportunities and developing the necessary skills needed in each step of their career to progress on the career ladder, therefore being adaptive to fit one;s work. In this research results have shown that the motivation for pursuing an academic career or the passion for academic work allows women in both countries to become adaptive, even in challenging situations, and act proactively to excel and succeed in their work. Therefore, the motivation is perceived as one facilitator of action. Consequently, motivational theory and self-management theory together explain the predictors of career success in South Africa and Sweden.

Wilhelm and Hirschi (2019) state that self-management theory is crucial in working environments marked by volatility, uncertainty, complexity, and ambiguity, where career

management responsibility is shifting from organisations to individuals. Professionals are called to be adaptive or to display attitudes, actions and abilities to fit themselves to the work that their desire. That involves gathering information and solutions for the problems that they have faced along their careers.

With these theories the present research does not ignore the structural and organisational aspect of academic work in influencing women's career success, however, the study calls for more diverse perspectives to explore the condition of women in academic careers. This is perceived as important because literature has acknowledged that women define career success differently to men, using more intrinsic criteria than objective and external criteria (Powell & Mainiero, 1992; Sturges, 1999; O'Neil & Bilimoria, 2005). Locke and Latham (2004, p. 395) claim that is important to "not overlook the fact that people are not merely the passive victims of situations. For example, employees choose the jobs they apply for and quit those they dislike. They may restructure jobs to make a better fit with their own talents and proclivities. They may also work with others to change situations they dislike. They can choose what new skills to develop and what careers to pursue". This quote emphasises the importance of looking to the individual perspective, motivations and desires when exploring career success.

This research is consistence with previous studies (Hirschi et al., 2018; Spurk et al., 2019) that stated that there is a growing interest in career agency and in the proactive role that individuals have to take to develop their careers in the neoliberal economy.

In sum, the study contributes to the literature by presenting empirical evidence that revealed that African and European women who succeed in academic career have a similar profile as professionals. They are academics who love academic work and are moved by intrinsic motivation or individual needs that are fulfilled by the characteristics of academic work. Independent of the system (South African and Swedish) and the challenges of each system and the challenges that each woman faced along their career, their have a similar profile, intrinsic motivations move them to pursue a career in academia and those motivations allow them to endure difficult situations, become adaptive, and thrive to success. Women full professors from this study were able to forge their path to success because what moved them were intrinsic rather them extrinsic motivations, and those intrinsic motivations drove them to take a proactive role in their careers.

6.6 Conclusion

This chapter has outlined how women professors from both countries understand and define their success; some of the challenges of the academic systems where women full professors operate and the challenges that they have faced along their careers; the coping strategies adopted by women full professors to navigate academia and the factors that have contributed to their career success. The chapter began first by examining the women professors' understanding of success and the dominant discourse of success in both contexts. The objective measures of success dominate the discourse of academic professionals in both settings of the study, however, women professors also emphasised the existence of other measures of success that are not aligned with the institutional, external and general standards of success in a career. Secondly, the coping strategies adopted by women full professors to navigate their careers were analysed. In this regard the challenges of South African and Swedish academic systems and also the challenges faced by women full professors along their career path were analysed. Thirdly, the factors that influenced women full professors to pursue and remain in academic career were explored. In both scenarios of the study it was possible to perceive that what drove women professors to pursue a career in academia and succeed are intrinsic motivations that are aligned with the inherent characteristics of academic work and proactive behaviours toward their careers. Fourth, the predictors of women full professors' career success in South Africa and Sweden were explored. The study contributes to the literature by presenting empirical evidence that revealed that women who succeed in academia display similar characteristics independent of the contexts that allowed success in their careers. Lastly, the interpretation of the framework for analysis of women full professors career success in Sweden and South Africa was presented.

The next chapter addresses the conclusions and implications of the study.

CHAPTER SEVEN
CONCLUSIONS AND IMPLICATIONS

7.1 Introduction

This chapter concludes the study. This thesis has studied the factors that influenced successful women full professors' career success in South Africa and Sweden from the perspective of specific research questions. The chapter summarises the main research findings and draws the conclusions of the study. The main findings and conclusions are discussed in line with the theoretical framework developed in Chapter Three. The contribution of the study is also discussed in the concluding remarks. In doing so, the main purpose of the study is recapitulated. The study asked the question: What factors influence women in the research and innovation field to remain and succeed in an academic career?

The first research question was: *How women in research and innovation perceive and interpret their success in an academic context?* In this research question, the aim was to understand how women from two different contexts, South Africa and Sweden, understand and define their own success in academic settings. The second question was: *Which discourse of success is dominant within successful women in the field of research and innovation*? With this question, the intention was to understand the discourse of success that dominates academia in which successful women professors work in both countries of the study. The third research question was: *How do women from different contexts understand and cope with the social and professional demands and the decision to remain in research and innovation and strive for success*? In this research question the intention was to understand the coping strategies adopted by successful women full professors from both contexts to navigate academia and its demands, thereby remaining and striving for success in their academic fields. The last research question was: *How does the institutional discourse of success in research and innovation, and social and cultural values shape women's decisions to remain and succeed in the field of research and innovation?* This question sought to explore the factors that influenced women's career decision to remain in academia and strive for success in their academic fields in South Africa and Sweden. The main research assumptions and interpretation of these research questions were informed by the data through a grounded theory approach.

7.2 Summary of Findings of the Study

This research has revealed diverse findings. They range from the understanding that successful women full professors have about success in academia in the two settings of the study, to the factors that influence women professors' decision to remain in academia, as well as the predictors of successful women full professors' career success. The findings show both similarities and differences between the two contexts. The next section begins with the understanding of success in an academic career.

7.2.1. Women Full Professors' Constructions of Success in an Academic Career

The study established that in both countries research productivity is the primary objective standard measure according to which individuals are promoted in academia. This finding is supported in the literature on higher education studies (Sutherland, 2017; Williamson & Cable, 2003; Enders & Kaulisch, 2006; Jepsen et al., 2012).

Furthermore, the present research shows that women full professors from both countries comply and successfully internalize the imposed standard measures of objective success in academia to progress on the career ladder. Specifically, in both countries, objective success is the most mentioned construct of career success in an academic career. Therefore, the dominant discourse of success in academia among successful women professors is objective, based on external and measurable indicators (Ng et al., 2005; Bostock, 2014; Sutherland, 2017). Those who emphasise competition, individual success, striving for constant progress and taking responsibility for their own success, dominate academic discourses. However, although successful women full professors from both countries acknowledged the objective discourse of success as dominant in academic settings, they also recognise that success is also subjectively defined, it is more than metrics and having an extensive list of publications. This result confirms previous research that maintains that women assess career success using different metrics, more in a subjective way (Afiouni & Karam; 2014; Baker, 1999; Dyke & Murphy, 2006; Kalet et al., 2006; Powell & Mainiero, 1992; Sturges, 1999). This, in turn, emphasises the need to assess women's career success taking into consideration others aspect of women's lives (Powell & Mainiero, 1992).

The data allowed for the observation of career success constructions that resulted from the unique characteristics and specificities of each context, emphasising therefore, the contextualisation and social aspect of the definition of success. This reinforces the argument stated by some scholars (see Dries et al., 2008; Sutherland, 2017) according to which success

is a social construction, understood and perceived within the individual social and cultural values.

7.2.2. Coping Strategies Adopted by Women Full Professors in Academia

The study answers this question first by investigating the challenges that women professors perceive in the academic system and second, through the challenges they have faced throughout their careers.

Concerning the challenges of the academic system, the study established that in both countries under research, results reinforce challenges that most of the academic systems face around the world and are described in the literature (Bozzon et al, 2019; Courtois & O'Keefe, 2015; Dirnagl, 2022; Huisman et al., 2002). Those challenges are portrayed in the literature as mainly the result of the transformation of academia to a more managerialist system and reliance on neoliberal ideologies that defend that higher education institutions should operate like corporations (Slaughter & Rhoades, 2000) based on competitiveness, performance and profitability (Clarke, 2012) and education is seen as a commodity that individuals should acquire for their own gain (Davies et al., 2006; Saunders, 2010).

The challenges can be experienced more in one country than in the other, as perceived from the data, which can be justified by the specificities of each academic system and by the changes that each system has undergone in terms of economics, purpose, structure and priorities to be aligned with neoliberal ideology.

Regarding the challenges faced by women professors throughout their careers, the study established that they are linked with the challenges that women professors perceived in the academic system. Data revealed similarities and differences between the contexts concerning the challenges faced by women academics. The need for external funding, gender bias, lack of mentorship, lack of role models and difficulties balancing family and career emerged in both countries of the study and are therefore perceived as similarities. The differences in the challenges faced by women professors were coming to Sweden as an outsider (emerged only in the Swedish context) and apartheid (emerged only in the South African context).

Results emphasise how women professors from the present study made it through the years and maintain themselves in the system by working hard and by being passionate about their work, which allowed them to be willing to put in the hours, develop skills and find opportunities for funding. Wingfield (2014) states that achieving in an academic career necessitates focussed and persistent research engagement which requires professional

commitment and entails significantly more than the 40-hour week. For Wingfield (2014), working hard in academia is a choice, a choice that only some academics are willingly happy to make. According to the author, those academics see benefits of the academic career beyond the monetary reward, and to pass through the ranks they act strategically in terms of research and put in intensive effort. Academics who succeed in doing that are those who have fun and who enjoy their work in a way that the time spent in it is not considered hard work but fun (Wingfield, 2014).

However, although respondents recognise that they worked harder to reach where they are in their careers, they also emphasise that the time that is expended in work is not seen as hard work because they perceive their work in academia as a hobby. This finding emphasises the characteristics of the respondents of the present study and their approach to their academic work and career. Professionals were passionate about their work and wanted a career in academia and in some cases prioritised that over getting married or having children. In this regard, Teichler et al. (2013) also state that academic careers comprise professionals driven by intrinsic motivations and who are devoted to their work. They are considered to be willing to dedicate a significant amount of time to their jobs and to forsake the luxuries of life outside academia in order to pursue their interesting career.

7.2.3. Decision to Remain in Academia

The study established that in both countries, participants expressed similar motivations for pursuing a career in academia. Their intrinsic motivations influenced their desire to pursue an academic career. Specifically, women full professors revealed that their individual needs were aligned with inherent characteristics of academic work. These results are in line with literature (Astin, 1984; Lindholm, 2004) and emphasise that women professors are guided by individual basic needs to determine their career choices. Those needs are described as a need for pleasure or passion in their work and passion for the stimulating and creative environment that characterise academic work; contribution needs including the desire for their own work to contribute to others (Astin, 1984); need for creative independence, self-expression or freedom (Lindholm, 2004), and also a need for the flexibility that allowed them to simultaneously have a career and build a family.

7.2.4. Predictors of Career Success

The study contributes to the literature by establishing that independent of the context and the challenges of each system, and also the challenges that women face during their careers,

similar factors influenced successful women full professors' career success in academia, emphasising therefore the existence of a similar profile of successful women academics in South Africa and Sweden. In this regard, previous research from Kwiek (2019, p. 67) about European systems emphasised that successful academics are a "universal academic species" driven by similar factors, whatever the country is. They are driven by mostly individual rather than institutional factors.

Based on the results of the present study, intrinsic motivations of women full professors from both countries contributed to their career success. Women professors' passion for academic work, the desire to make an impact, solve problems and produce discoveries kept them motivated in their careers and willing to work hard, put in long hours, be persistent and never give up. Specifically, women full professors from the present research reported that their agentic and proactive actions and behaviors contributed to success in their careers. The way in which women full professors narrated their career trajectories points to a fundamental control of their own careers. In this regard, Dirnagl (2022) states that the condition in which academics work is conducted, evince that academics are driven by intrinsic motives. The level of self-exploitation with which research is carried out, regardless of the type or length of contract after a long apprenticeship and at any time of the day or night, as well as on moderate salaries, proves that intrinsic motives other than profit drive academic professionals. These results emphasise the emergence of two main theories to explain the factors that influence women's career success in both contexts of the study, motivational theory and self-management theory.

The study also established that marriage does not impede women's achievement in their careers, as 36 out of 44 women of the present sample are married and 37 out of 44 women full professors are mothers with an average of 2 children. Family is reported in the present study as a social support system for women's career development. This perspective is supported by studies such as that conducted byWhite and Cooper (1997).

7.2.5. Implications of the Study

The contributions of this study emanate from an empirical, methodological and theoretical stance, that is, the study contributes to the existing body of knowledge on higher education as a field of study by bringing a more contextualised and social definition of success, and perception of influencers of success resulting from the unique characteristics and specificities of each context of the study. Some studies have focussed on career success in an academic

context but few have directly acknowledged the importance of cultural differences in analysing success. Thus, this study bridged this gap by exploring career success from an African and European perspective. Specifically, the present study adds to the field of higher education studies by moving beyond European borders and bringing a comparative study that explores experiences of successful women full professors from South Africa and Sweden in academic careers. Findings showed that successful South African and Swedish women full professors share many similarities but also benefit from differences that exist in each specific higher-education environment. We hope that other higher education researchers will follow our lead and investigate successful women academics in other African contexts and compare them with other countries beyond African borders.

Methodologically, the combination of a bibliometric web scraping, manual investigation of curriculum vitae and a cross-national comparative qualitative method offers a nuanced understanding of the study phenomenon from the perspective of high-achieving women, hence providing confidence that the results reflect successful women's perspectives rather than women's perspectives based on rank position/stage of career, or other sampling selection.

Theoretically, this study proposed a more integrated theoretical approach to examine the data by using a constructivist grounded approach to allow the theory to emerge from the data, providing therefore the theoretical specificities of each context of the study. In this regard the study adds to the literature by proving through empirical evidence that motivational theory, intrinsic motivations and career decision behaviours and self-management theory, through proactive roles and career adaptability, are the theoretical frameworks that emerged from the data in South Africa and Sweden in today's higher education systems characterised by neoliberal rules that favor competitiveness and high performance (Göktürk & Tülübaş, 2021), and where success is perceived as individual responsibility in this regard (Beigi et al., 2018).

The study also revealed that African and European women who succeed in an academic career have a similar professional profile. They are academics who love academic work and are moved by intrinsic motivation or individual needs that are fulfilled by the characteristics of academic work. Independent of the system (South African and Swedish) and the challenges of each system and the challenges that each woman face during their careers, they have a similar profile, intrinsic motivations move them to pursue a career in academia and those motivations allow them to endure difficult situations and strive to achieve success. Specifically, the motivation is perceived as a facilitator of action for women full professors in both contexts. The motivation for pursuing an academic career or their passion for academic

work allows women to become adaptive, even in challenging situations, and to act proactively to excel and succeed in their work.

7.2.6. Study Limitations and Future Research Direction

The study has some methodological limitations. It was conducted in each country with only a sample of highly successful women full professors in research and innovation from the STEM fields and also only from research intensive universities. Therefore, this led to making generalisations of the study impossible to replicate in other fields of science. Nevertheless, the study provides results that may be useful for other researchers and further studies as it highlights considerable factors within the selected countries in general and among the target groups in particular, regarding the factors that influence career success, which may further understanding of the situations of women in academic careers, in science.

Another limitation of the present study is that the sample of the study is composed of only women academics. Therefore, results of the present study can be applicable only to women academics. Future research might also address the present limitation by using a sample of academic professionals composed of both genders and comparing their experiences and career trajectories in different contexts around the globe.

Due to Covid-19 and the characteristics of the target group of this study, successful women full professors who are highly recognised for their scientific contributions in their fields of work, the confirmation of the interviews was a challenging process, therefore, some interviews (see methodology section) were conducted via Zoom to accommodate participants' busy schedules.One could argue vitrual interiews may not have been as effective as an in-person scenario.

Empirical knowledge regarding the career experiences of higher education professionals will always be a worthy choice of focus for any study, especially about women who are identified as an underrepresented group in science. Thus, a replication of this study in other contexts would be a valuable research project. It would also be useful to probe comparatively the experience of women academics in other African and European countries. Specifically, the present study investigated a cohort of successful women full professors from South Africa and Sweden. It would be good to extend investigations of successful women trajectories in an academic career outside of the United States, United Kingdom and Australia, countries that are considered to produce the largest proportion of the career literature (Dries et al., 2008). Future studies should cross those borders to explore more of successful women full professors

careers in other different contexts. Additionally, future studies should continue to explore through comparative studies how academic women perceive career success, and how their perception of success influences the attainment of objective institutional measures of success in their career trajectories. For example, how do women from other African and European countries perceive success and experience it in their career trajectories.

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INTERVIEW GUIDE

Country of origin…………...…………………………………
Country of work……………………………………………….
Higher education institution …………………………………...
Disciplinary background……………………………………….
Field of work…………………………………………………..

Demographic indicators
Age……………………………………………………………..
Marital status…………………………………………………...
Spouse educational level……………………………………….
Spouse profession……………………………………………....
Outside or within academia……………………………………
Number of children…………………………………………….
With which age………………………………….......................
When had the children (before, after, or during Ph.D., or tenure track)
Took maternity leave…………………………………………..
For how long……………………………………………………
Dependents responsibilities……………………………………
Ethnic background ……………………………………………
Parent's education level and profession…………………………

Career
Age received a doctoral degree………………………………….
Age transition to a permanent job/position……………………..
Age appointed to full professor…………………………………
Years take from Ph.D. to full professor…………...……………
Academic experience

The meaning of success
Understand how women define and interpret their own success in an academic context
Understand which discourse of success is dominant among successful women in South Africa and Sweden

1. You were nominated for this project as a successful scholar. Why do you think you have been described that way? (**objective view of success)**
2. Do you consider yourself a successful woman? Why?
3. What does success in a career means to/for you? (**subjective view of success**)
4. What aspects do you consider define a woman as successful in your field?
5. Thinking about a successful woman that you admire: What comes to your mind? What kinds of characteristics do you associate with this woman?
6. What does a woman need to be successful in your field?

7. Are you satisfied with what you have accomplished in your career so far? Why?

Professional environment
Understand how the institutional environment shapes a woman's decision to remain and thrive in academia

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1. What do you perceive as the possibilities and the obstacles of the Swedish academic system?
2. You have reached the highest level of academic career in terms of ranks. From now to five years or up front where do you see yourself?
3. Do your interests lie in which academic activity?
   i)   Primarily in teaching
   ii) Primarily in research
   iii) Lying in both, teaching and research
4. Considering all your professional work, how many hours do you spend in a typical week on each of the following activities (weekly hours during the teaching periods of the academic year and the non-teaching periods):
   i)   Time invested in teaching
   ii)   Time invested in research
   iii) Time invested in service
   iv)   Time invested in administration
   v)   Time invested in other academic duties
   vi)   Number of nights worked
   vii) Hours of work desired (the desire to spend time at work)
   viii) Hours per week caring for dependents
5. At which stage of your life did you become interested in pursuing a career in academia?
6. What factors influenced your decision to pursue an academic career?
7. What factors drive you to remain in this career?
8. Do you think that you have support from your professional environment? What kind of support do you receive? (e. g. support from professional relationships, peer support, support from senior colleagues – mentoring, sponsorship, networks)
9. What aspects of the institutional environment (if any) were crucial to help you in your journey to success/reach where you are in your career? (e. g. faculty climate, promotion criteria, transparency of decision-making process, access to resources, institutional leadership, flexible and family-friendly system)
10. What about opportunities? Have you had any kind of opportunities from your professional environment that helped you on your journey towards where you are in your career?
11. Overall, to what or whom do you attribute your achievements in your career.
12. What would you point to as the achievements that have mattered most to you, and why? (These can be large orsmall, personal, or professional).
13. In general, what factors have helped you to accomplish what you have accomplished in your career? (**external**: e.g. social support, mentor, professional support, social capital, human capital; **internal** *Looking for the agency of successful women*)
14. Has there been any time you felt you did not belong in academia or felt excluded in your academic career? Why?

1. Have you faced any challenges in your career? What challenges? And how have you handled those challenges?
2. Which coping strategies do you adopt to navigate academia (or navigate the demands of your career) and be in the stage where you are in your career?
3. Which coping strategies do you adopt to balance your work demands and family demands? Please give specific examples.
4. How did you set your priorities regarding family and work? Which one comes first? Or which one is the essential part of your life?

The social and cultural environment
Understand the social and cultural environment of successful women in each country: attitudes concerning the role of women in the family, in the workplace, and in society in general

1. What does it mean to be a woman in your country? What society is expecting from you as a woman?
2. Do you think that your gender has affected or affects your work life? How? Why?
3. What are your responsibilities as a woman in your family?
4. **a)** How domestic chores activities are shared in your family?
   b) What about childcare responsibilities? How do they are shared?
5. **a)** What do you think about the gender roles and expectations that women need to take on outside of their work?
   b) Do they impact/affect women's careers? How?
6. What about your career specifically. What is the impact of family and other social responsibilities on your career?
7. Do you have support from your social environment? Which kind of support do you receive?
8. What aspects of the social environment were crucial to help you in your journey/career path?
9. Who are the important people (if any) and how do they contribute to where your are in your career?
10. Are there any other factors in your background that were influential in your career path?
11. What about opportunities? Have you had any kind of opportunities from your social environment that helped you on your journey towards the stage that you are in your career?
12. If you could give an advice to a women in an early stage of her academic career what would be?
13. Is there anything you would like to add in our conversation? Please feel free to do so.

PARTICIPANT INFORMATION SHEET

Title: Exploring Trajectories of Success in Research and Innovation: A Comparative Study of Women in Academic Careers in South Africa and Sweden.

Purpose of the study

The purpose of the study is to explore what factors influence women in the research and innovation field to remain and succeed in an academic career?

What will be asked of the participant?

Participation in this research is voluntary and a participant has the right to withdraw from this research at any time. To be part of this study, a consent form needs to be signed.

Duration of interaction

Semi-structured interview: Approximately 1 hour and will be audiotaped.

Possible benefits from the study, to the participants and/or the community

The study will serve as a platform for participants to share their views on what factors influence women in the research and innovation field to remain and succeed to add knowledge to the literature regarding the underrepresentation of women in science and possibly refine the definition of success in an academic context.

Assurance of confidentiality

The data collected from the research site will be handled in a way that protects the confidentiality and anonymity of the participants. Codes will be assigned to participants to prevent their identification in the research report or any other subsequent publications from this study. The records from the research project will be stored on the principal researcher's laptop with password protection. However, the data collected will be archived on compact disc and securely stored for five years as per the University of the Western Cape regulations.

Measures that will be taken in the event of an adverse event

If discomfort is experienced at any stage, please inform the researcher. The activity will be stopped immediately. If this request is made by a participant, all data collected up to that time will be deleted and disposed of permanently. After completion of an interview, a participant can contact the researcher by email and request for the removal of his/her data from the research. Upon receiving such request, data collected from the participant will be removed and disposed of. Participants will be assured that no adverse effect will result from such requests. Please refer to the independent complaints sheet attached.

Consent

Please sign the consent statement/form as proof that you agree to participate in this study.

If you have any questions afterwards about this research, feel free to contact me at 3957270@myuwc.ac.za or my supervisor at planga@uwc.ac.za If you have any questions, concerns or complaints regarding the ethical procedures of this study, you are welcome to contact the Humanities and Social Sciences Ethics Committee on the details listed below.

HSSREC

Research Development

Tel: 021 959 4111

Email: research-ethics@uwc.ac.za

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Humanities and Social Sciences Research Ethics Committee (HSSREC)

CONSENT FORM

1. I have read the attached Information Sheet and agreed to take part in the following research project: Yes ☐ No ☐

Title:	Exploring trajectories of success in academia: A Comparative Study of Women in Academic Careers in South Africa, and Sweden.
Ethics Approval Number:	HS20/3/25

2. The project has been fully explained to my satisfaction by the researcher. My consent is given freely. Yes ☐ No ☐

3. Although I understand the purpose of the research project, it has also been explained that involvement may not be of any benefit to me. Yes ☐ No ☐

4. I have been informed that, while information gained during the study may be published, I will not be identified and my personal results will not be divulged. Yes ☐ No ☐

5. I understand that I am free to withdraw from the project at any time. Yes ☐ No ☐

6. I agree with the interview being audiotaped. Yes ☐ No ☐

7. I am aware that I should keep a copy of this Consent Form when completed, and the attached Information Sheet. Yes ☐ No ☐

Participants (Successful women in academia from science, engineering, technology and mathematics disciplinary background) **to complete:**
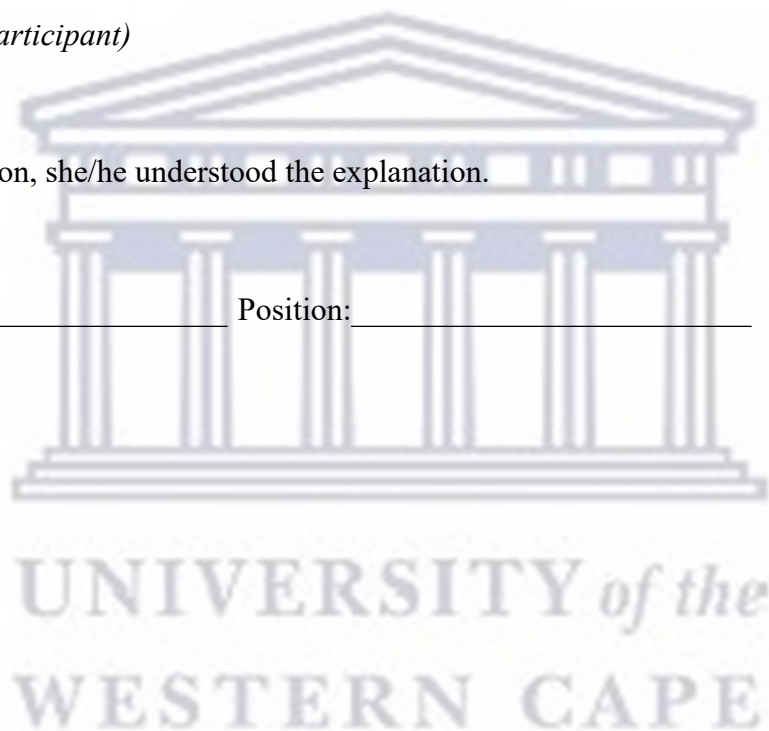
Name: _____ Signature:_____ Date:_____

Researcher to complete:

I have described the nature of the research to

_____

(Print name of participant)

And in my opinion, she/he understood the explanation.

Signature: _____ Position:_____ Date:_____

UNIVERSITY *of the* **WESTERN CAPE**

YEARS *of hope, action & knowledge*

18 June 2020

Ms IS Nhantumbo Tembe
Faculty of Education

Ethics Reference Number: HS20/3/25

Project Title: Exploring trajectories of success in research and innovation: A comparative study of women in academic careers in South Africa and Sweden.

Approval Period: 18 June 2020 – 18 June 2023

I hereby certify that the Humanities and Social Science Research Ethics Committee of the University of the Western Cape approved the methodology and ethics of the above mentioned research project.

Any amendments, extension or other modifications to the protocol must be submitted to the Ethics Committee for approval.

Please remember to submit a progress report by 30 November each year for the duration of the project.

The permission to conduct the study must be submitted to HSSREC for record keeping purposes.

The Committee must be informed of any serious adverse event and/or termination of the study.

Ms Patricia Josias
Research Ethics Committee Officer
University of the Western Cape

NHREC Registration Number: HSSREC-130416-049

FROM HOPE TO ACTION THROUGH KNOWLEDGE.