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Early career development of candidate quantity surveyors: A focus on soft skills development

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Submitted in fulfilment of the requirements for the degree Doctor of Philosophy in Quantity Surveying

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July 2024

Declaration

I, the undersigned, hereby confirmed that the attached treatise is my own work and that any sources are adequately acknowledged in the text and listed in the bibliography.

I accept the rules of the University of Pretoria and the consequences of transgressing them.

This treatise is submitted in fulfilment of the requirements for the degree of PhD in Quantity Surveying at the University of Pretoria. It has not been submitted before for any other degree or examination at any other University.

Signature of acceptance and confirmation
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Date: 5 July 2024

Abstract

Academic and professional knowledge, together with sound technical skills will always remain the foundation of quantity surveying, but this alone is not sufficient to cultivate the required professional skillset to help early career candidate quantity surveyors succeed in this profession. Soft skills development in the construction industry has not yet received the attention it deserves. Stakeholders such as the SACQSP, ASAQS, higher education institutions and quantity surveying employers, play a key role in terms of supporting the soft skills development of candidate quantity surveyors. This study aimed at determining how stakeholders can better support the development of soft skills among early career candidate quantity surveyors in South Africa. It utilised a soft skills gap analysis to determine possible gaps among this cohort. A quantitative research approach was adopted making use of a structured questionnaire as data collection tool. The questionnaire was administered to quantity surveyors registered with the South African Council for the Quantity Surveying Profession (SACQSP) as well as members of the Association of South African Quantity Surveyors (ASAQS). Responses received were analysed by using descriptive- and inferential statistics and an exploratory factor analysis. Findings from the empirical part of the study revealed that 95 per cent of respondents agree that it is important to cultivate soft skills and 75 per cent agree that a soft skills shortage exists. Four soft skills clusters that early career candidate quantity surveyors need to develop to succeed in their profession were identified. These clusters are “self-management”, “analytical”, “interaction” and “professionalism and ethics”. This study further identified several soft skills gaps at both pre-professional- and professional development levels. This includes among other a gap in perception and gaps related to teaching-, training- and assessing soft skills. This study contributed to the field of inquiry by proposing a soft skills development framework for the quantity surveying profession in South Africa. This study will be of significance to key stakeholders in the quantity surveying profession such as the SACQSP, ASAQS, higher education institutions and quantity surveying employers. Suggestions for further research include a longitudinal study to investigate the impact of implementing the proposed framework in practice.

Keywords: Early career development, quantity surveying, soft skills, soft skills development framework

Acknowledgements

I would like to acknowledge my heavenly father who guided me through my PhD journey. He equipped me with strength and endurance to keep on going. Without Him, I would not have been able to do this.

I would like to thank my husband and kids for supporting me throughout this journey. Thank you for stepping in and taking over so many of the responsibilities in our household so that I could have extra time to work on my research. You have always been a pillar of strength to me.

Thank you to my research supervisor, Prof Hoffie Cruywagen, for providing me with clear direction and advice regarding my study. Your experience and feedback have guided me well.

Thank you to my research co-supervisor, Dr Ezekiel Chinyio, for your guidance and valuable input to improve my research. Your support is much valued.

Thank you to the SACQSP and ASAQS for their willingness to assist with the distribution of my questionnaire.

Thank you to the University of Pretoria's Department of Statistics Internal Consultation Service (ISCS), specifically Gopika Ramkilawon, who assisted with the statistical analysis of this study. Thank you for always being willing to help.

Thank you to the HOD, Prof Benita Zulch, for her support throughout this journey. Thank you to my colleagues who encouraged me along the way. It makes a big difference to have such level of support.

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List of Acronyms/Definitions/Abbreviations

AIQS: Australian Institute of Quantity Surveyors

APC: Assessment of professional competence

ASAQS: Association of South African Quantity Surveyors

CIQS: Canadian Institute of Quantity Surveyors

CPD: Continued professional development

HE: Higher education

HEI: Higher education institution

HKIS: Hong Kong Institute of Surveyors

PrQS: Professional quantity surveyor

QS: Quantity surveying

QSE: Quantity surveying employer

RICS: Royal Institution of Chartered Surveyors

SACQPS: South African Council for the Quantity Surveying Profession

SISV: Singapore Institute of Surveyors and Valuers

1 CHAPTER 1: INTRODUCTION AND BACKGROUND

1.1 BACKGROUND INFORMATION

There is nothing 'soft' about soft skills. For many years the importance of such skills in the workplace has taken a secondary position to technical skills (or 'hard' skills). Chou (2013) explains the difference in function between hard and soft skills as follows: "Hard skills helps a person to qualify for a job but soft skills dictate career growth". Studies conducted among Fortune 500 CEOs revealed that 75 per cent of long-term success in the workplace can be attributed to soft skills and only 25 per cent to technical skills (Vasanthakumari, 2019). Historically technical skills might have been sufficient for employment but today's workplace requires more of employees and business leaders are emphasising the development of 'soft' or non-technical skills (Robles, 2012). Soft skills include a wide range of skills including among others communication, problem solving, critical thinking, time management, teamwork, professionalism and ethics.

An increased demand for a broader skillset from technical professionals and the fast paced global marketplace requires of employees to have well developed soft skills (Bancino & Zevalkink, 2007). The World Economic Forum (2018) future of jobs report highlights the importance of soft skills and explains that it enables people to leverage their unique human capabilities. Soft skills are thus considered crucial for workplace success, yet it remains untaught and underdeveloped for many employees (Adamsky, 2016). Heckman (2000) postulates that there seems to be a tendency for employers to primarily focus on- and evaluate technical skills and academic- or professional knowledge whilst excluding soft skills that contribute to workplace success.

A successful career in the construction industry does not depend on hard skills and technical qualifications only. It has been highlighted that, soft skills have become equally important and those wanting to enter the construction industry need to realise that they can no longer afford to neglect the development of soft skills (Jobsite, 2018; Randstad, 2019). In recent years the construction industry experienced rapid change whilst many new challenges and the innovative use of technology contributed to its progression. Likewise, the role and functions of a quantity surveyor, as construction professional in this dynamic industry, continue to broaden and expand. It seems clear that quantity surveyors will increasingly require much more than good technical skills to contribute to both business and individual success (Tulgan, 2015).

Quantity surveyors have numerous responsibilities, and technical skills alone are often insufficient to advance one's personal career and make an impact in an organisation (RICS SBE, 2017). The traditional role of the quantity surveyor is changing fast, and quantity surveying graduates need to become competitive in terms of soft skills (Shafie, Khuzzan & Mohyin, 2014). Quantity surveyors who only rely on technical skills and neglect the development of soft skills might find themselves less prepared for the future of their work and profession.

Tulgan (2015) explains that the soft skills gap is continuing to widen and employers have an obligation to provide training and opportunities to practice those soft skills that their organisation values most. Organisational leaders and managers thus have a responsibility to model soft skills to young employees and to make the teaching and learning of such skills an explicit part of the company's mission and goals. Relevant literature indicates that a soft skills gap exists in the construction industry (Mahasneh & Thabet, 2015), including those gaps in terms of what employers require and what newly qualified graduates bring or fail to bring to the workplace (Murti, 2014; Oni & Aina, 2020; Schulz, 2008). Higher education institutions therefore also have a responsibility to produce graduates who have mastered those soft skills that employers require from entry level employees (Jaiswani, 2021; Murti, 2014).

Quantity surveying bodies / institutions globally have a responsibility to uphold professional standards and ensure the professional competency of its members. The Royal Institution of Chartered Surveyors (RICS) refers to a registered professional quantity surveyor as "chartered quantity surveyor", the Australian Institute of Quantity Surveyors (AIQS) refers to a "certified quantity surveyor" while the Singapore Institute of Surveyors and Valuers (SISV) as well as Canadian Institute of Quantity Surveyors (CIQS) refer to "professional quantity surveyor (PQS)". Individuals wanting to attain the designation of chartered- / certified- / professional quantity surveyor will have to go through a process of professional competency assessment prior to registering as a professional quantity surveyor (AIQS, 2021; CIQS, 2021; HKIS, 2012; RICS, 2022; SACQSP (a), 2020; SISV, 2019).

In South Africa, graduates who enter the quantity surveying profession are encouraged to register as candidate quantity surveyors with the South African Council for the Quantity Surveying Profession (SACQSP) as soon as possible to start the process of

assessment of professional competence (APC). The SACQSP is the only juristic person allowed to register professional quantity surveyors (PrQSs) in South Africa. The APC plays a key role in the early career development of a young quantity surveyor. Professional competency development and assessment usually takes place during the early career development years of young quantity surveyors and is structured around a candidate's academic qualification coupled with workplace experience.

The stakeholders involved in a candidate quantity surveyor's process of assessment of professional competence in South Africa are higher education institutions (HEIs) in terms of academic qualifications, QS employers providing workplace experience, the Association of South African Quantity Surveyors (ASAQS) providing continued professional development (CPD) training and support to the QS profession, and the SACQSP who is ultimately responsible to register PrQSs who have successfully passed the APC. Stakeholders in the quantity surveying profession can thus be seen as those with a vested interest in the development of future quantity surveying professionals such as HEIs, QS employers, the ASAQS and SACQSP.

Stakeholder engagement simply refers to the involvement, active support and commitment towards the development of soft skills in early career candidate quantity surveyors. A collaborative effort from key stakeholders is thus required to develop and promote essential soft skills with candidate quantity surveyors prior to becoming a PrQS. Development of soft skills in the construction industry has, unfortunately, not yet received the attention it deserves and a rebalancing of technical and softs skills is required (RICS (a), 2019). To remain relevant the quantity surveying profession must continue to evolve in the way they train and develop future QS professionals.

Against this background it therefore seemed important to investigate how and to what extent stakeholders in the QS profession are supporting the soft skills development of early career candidate quantity surveyors. The purpose of this research thus was to determine the potential gap in soft skills development of early career quantity surveyors in South Africa via a soft skills gap analysis. An important outcome of the study was to propose a soft skills development framework to help shape and foster capability relating to soft skills development of candidate quantity surveyors.

1.2 RESEARCH PROBLEM

The construction industry is evolving rapidly in several respects and the traditional way of preparing young quantity surveyors to meet industry demands is no longer sufficient. Academic and professional knowledge, together with sound technical skills will always remain the foundation of quantity surveying, but this alone is not sufficient to cultivate the required professional behaviour and skillset to help graduates succeed in their careers. It is suggested that soft skills are essential for career success in the quantity surveying profession.

The RICS is a global professional body that promotes and enforce the highest professional standards for the quantity surveying profession (RICS (a), 2023). The RICS's APC includes specific soft skills as part of their mandatory competencies for quantity surveyors who seek to register as chartered surveyors. Such soft skills include among other ethics, professionalism, client care, communication and negotiation, conflict avoidance, management and dispute resolution procedures, etc.

Other international QS professional institutions are also addressing soft skills development to a certain extent but the RICS is taking the lead in this regard. In South Africa the SACQSP's APC does not include any soft skills specific requirements that candidate quantity surveyors need to develop and attain. There are also no clear strategy and methods to teach, promote and assess the development of soft skills as part of professional competencies (SACQSP (a), 2020).

The responsibility for soft skills development of candidate quantity surveyors lies with various stakeholders such as the SACQSP, ASAQS, higher education and QS employers. Graduates enter the QS profession with the required technical skills but lack the soft skills needed for workplace success (Oni & Aina, 2020). It is therefore important for higher education institutions to design their curricula and transform educational environments with a particular focus on enhancing graduates' soft skills and employability (Succi & Canovi, 2020). In addition, QS employers are responsible to create a workplace environment constructive towards soft skills development and mentor candidates in ways that promote the development of soft skills. All stakeholders in the quantity surveying profession thus play a key role towards soft skills development of candidate quantity surveyors. It is vital that each party clearly understands their roles and responsibilities in this regard.

As for most professions, the quantity surveying profession must continually progress in the way they train and develop future professionals to become and remain relevant and productive. It is therefore essential for the new generation of quantity surveyors to be able to lead in a world undergoing continual technological, economic and political disruption and advances. Acquiring particular sets of soft skills will assist early career candidate quantity surveyors to better navigate the complexities and challenges of the construction industry. Industry stakeholders must thus be willing to invest in developing the soft skills of young talent. But without proper direction from the SACQSP and support from various stakeholders it will be difficult to promote and assess soft skills competency and ensure the acquisition thereof in candidate quantity surveyors prior to professional registration.

1.3 RESEARCH QUESTIONS

This research study aimed at addressing the following main research question:

To what extent, if at all, are soft skills developed in candidate quantity surveyors prior to professional registration?

The main research question was broken down into the following four sub-questions which allowed for drawing overall conclusions and answering the main research question.

Sub-question 1:
What soft skills do candidate quantity surveyors need to succeed in the construction industry?

Sub-question 2:
What is the extent of the soft skills gap, if such a gap exists, among quantity surveyors with five years or less work experience?

Sub-question 3:
What is the current level of stakeholder engagement in terms of soft skills development of candidate quantity surveyors?

Sub-question 4:

What can be done to help bridge the soft skills gap, if such a gap is determined, among candidate quantity surveyors?

Research sub-question 1 will be answered through the literature review, including documentation such as guidelines and policies governing the quantity surveying profession, as well as the empirical part of the study related to sub-question 1. Research sub-questions 2, 3 and 4 will be answered through evidence from the empirical part of the study.

1.4 RESEARCH OBJECTIVES

The objectives of the research are as follow:

- To identify the essential soft skills needed in the quantity surveying profession.
- If a soft skills gap exists, to identify the gap among early career candidate quantity surveyors.
- To determine the primary responsibilities of key stakeholders as well as the adequacy of their current efforts towards soft skills development of early career candidate quantity surveyors.
- To investigate potential solutions to improve the soft skills development of candidate quantity surveyors.
- To propose a soft skills development framework to help shape and foster capability relating to soft skills of early career candidate quantity surveyors

1.5 LIMITATIONS, DELIMITATIONS AND ASSUMPTIONS

1.5.1 Limitations

This research study was limited to a duration of 3 years. The time constraints limited the scope of the study and only relevant secondary data available during this time were considered and included in this thesis. Due to the time constraint primary data were generated during a particular period of the research study and limited to the number of responses received during this time.

1.5.2 Delimitations

The research only focused on the quantity surveying profession in South Africa and did not take into consideration other construction professionals working within the construction industry locally or abroad. The study specifically focused on soft skills development of candidate quantity surveyors in South Africa and therefore did not investigate the soft skills development of other employee categories (e.g., senior quantity surveyors and quantity surveyors at managerial levels). However, primary data were collected from quantity surveyors at various employee levels. This means that all quantity surveyors, irrespective of their level of employment, could participate as research respondents and could have shared their views regarding the need for and nature of soft skills development of candidate quantity surveyors.

In the context of this study, early career development implies the development of softs skills in entry level employees typically registered as candidate quantity surveyors with five years or less experience. Soft skills development of candidate quantity surveyors was thus considered from a professional development point of view, with the starting point stemming from higher education, and did not investigate soft skills development during childhood or basic education curricula.

The key stakeholders directly involved in the professional development process of candidate quantity surveyors have been identified as the SACQSP and ASAQS, higher education institutions and QS employers. The role and influence of other potential stakeholders were not considered as part of this study.

1.5.3 Assumptions

This study worked with the assumption that quantity surveying students entering a higher education environment have attained soft skills to a certain extent through the basic education system and that further development of such skills relevant to the QS profession are required at higher education level and in the workplace. It also assumed that quantity surveyors who participated in this research are educated professionals with a basic understanding of soft skills.

1.6 SIGNIFICANCE OF THE STUDY

Relevant literature and research clearly indicate the importance of soft skills and soft skill competency development for the global workforce. It also indicates which soft skills are perceived to be important across various industries, including the construction industry. Various authors also address the soft skills required by construction professionals, the lack of soft skills among graduates, what employers require in terms of soft skills as well as real or potential soft skills gaps in the workplace. However, research regarding soft skills development and assessment within the quantity surveying profession in South Africa is very limited. This research therefore aims to contribute to that knowledge gap by focusing on existing soft skills related research pertaining to construction professionals.

The originality of this research lies in enquiring into the soft skills issue as related to candidate quantity surveyors in South Africa as well as stakeholder engagement towards the soft skills development of this cohort. A pertinent contribution of this study was thus to propose a soft skills development framework for the quantity surveying profession in South Africa.

1.7 BRIEF RESEARCH DESIGN AND METHODOLOGY

This study involved a thorough literature review followed by empirical research. Secondary sources used in the literature review were obtained from books, journal articles, conference papers, academic theses, relevant websites and QS specific documentation. The empirical research was quantitative in nature. A survey-based research strategy was selected, making use of a structured questionnaire as data collection tool.

The questionnaire was administered online utilising Survey Monkey as survey platform. The target population for this study was all persons registered with the South African Council for the Quantity Surveying Profession (SACQSP) as well as members of the Association of South African Quantity Surveyors (excluding student members). Non-probability sampling techniques were applied making use of self-selection sampling as well as snowball sampling. The SACQSP and ASAQS assisted the researcher by distributing the link to the online questionnaire via email to the members on their databases. The researcher also sent the questionnaire link via email to quantity

surveyors known through industry relationships and requested them to invite their quantity surveyor acquaintances to participate. The data analysis undertaken for this research was descriptive- and inferential statistics.

Ethical clearance for the study was obtained from the EBIT Faculty at the University of Pretoria and complied with the ethical guidelines and procedures as stipulated by the EBIT ethics committee. Participation was voluntary and participants' personal information was treated with confidentiality.

1.8 BRIEF CHAPTER OVERVIEWS

This thesis commences with a review of relevant literature to address the key concepts related to the research question and sub-questions. The literature review comprises three separate chapters followed by the "Research Design and Methodology" chapter. Based on the theoretical and empirical exploration sections, the "Data Analysis & Findings" chapter follows. Thereafter the "Discussion of Findings and Further Analysis" chapter will present the findings and where applicable further analysis related to each of the four research sub-questions. The sub-conclusions presented in this chapter will feature in the "Conclusions and Recommendations" chapter to demonstrate how the main research question was answered. The final chapter also includes suggestions for further research.

A brief overview of the chapters included in this research study follows below:

- Chapter One: Introduction and background
  Chapter one provides an overview of the research study and presents the main- and sub-research questions under investigation.

- Chapter Two: Literature Review: Soft skills in the workplace
  Chapter two constitutes the first part of the literature review. It provides definitions of the concept of soft skills and discusses the importance of soft skills in the workplace in general. It points to the soft skills gap and elaborates on factors impacting the soft skills gap. This chapter lastly investigates how best to approach the development of soft skills through soft skills programmes, models and frameworks.

- Chapter Three: Literature Review: Soft skills for the quantity surveying profession

  Chapter three involved the second part of the literature review. It provides an overview of the history of quantity surveying in South Africa and how this profession is being governed in this country. It further discusses the functions of a quantity surveyor and continues to highlight the essential soft skills that a quantity surveyor requires. This chapter also briefly discusses Generation Z as the future leaders of the quantity surveying profession to better understand their developmental needs.

- Chapter Four: Literature Review: Competency assessment of candidate quantity surveyors

  The final part of the literature review is contained in chapter four with a focus on the early career development of candidate quantity surveyors through the process of professional competence assessment. It investigates what quantity surveying institutions globally are doing to develop soft skills in candidate quantity surveyors prior to registration as PrQSs. This chapter also addresses the South African Council for the Quantity Surveying Professions' assessment of professional competence.

- Chapter Five: Research Design and Methodology

  This chapter explains and discusses the overall research design applicable to this study. It addresses various aspects relating to the research method including the selected research instrument, pilot study, data collection, population and sample size and ethical considerations.

- Chapter Six: Data Analysis and Findings

  This chapter presents the data analysis and findings based on the responses from research participants for each question in the questionnaire. The discussion, interpretation and further exploration of the findings are addressed in the following chapter.

- Chapter Seven: Discussion of Findings and Further Analysis

  This chapter discusses, interprets and further explores the findings in relation to each of the research sub-questions. Research sub-question one focuses on the soft skills that quantity surveyors require and this chapter points out which soft skills South African quantity surveyors regard as important and how this compares with existing relevant literature. Sub-question two deals with the extent of the soft skills

gap among early career candidate quantity surveyors and discusses the current soft skills profile of respondents. Sub-question three reports on stakeholder engagement in terms of soft skills development of candidate quantity surveyors. It discusses the perceptions regarding QS stakeholder responsibility in South Africa and addresses the current efforts of key stakeholder towards the soft skills development of candidates. Sub-question four investigates potential solutions to bridge the soft skills gap among candidate quantity surveyors and presents suggestions that, according to South African quantity surveyors, may work effectively to help bridge the soft skills gap.

- Chapter Eight: Soft skills development framework
  This chapter proposes a soft skills development framework as a recommendation towards the future development of early career candidate quantity surveyors in South Africa.

- Chapter Nine: Conclusions and Recommendations
  The final chapter draws from the conclusions in answering sub-questions one to four and demonstrates how the main research question was answered by presenting the overall conclusions for this study. Lastly this chapter recommends relevant topics aimed at further research.

Figure 1.1 illustrates the research process applicable to this study.

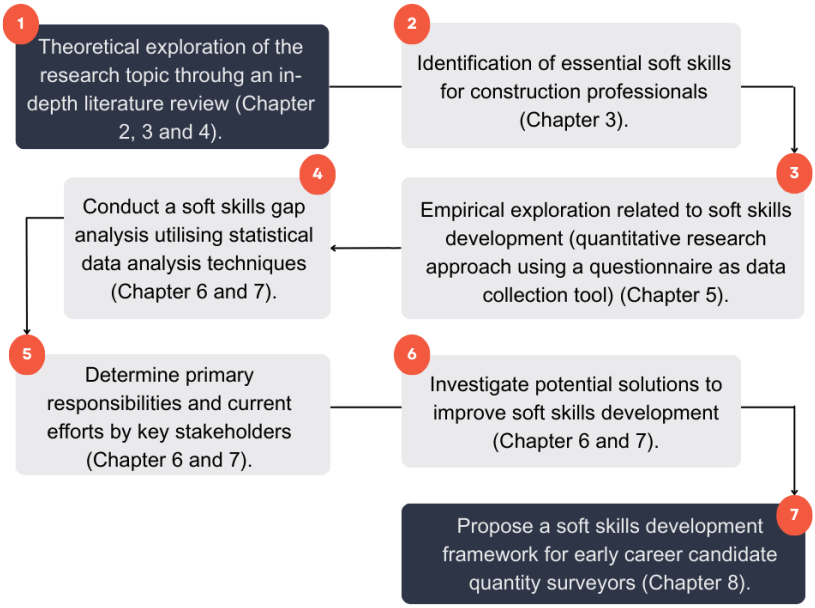


Figure 1.1: Research process flowchart

2 CHAPTER 2: LITERATURE REVIEW - SOFT SKILLS IN THE WORKPLACE

2.1 INTRODUCTION

This chapter provides an overview of soft skills in the workplace. The terminology "soft skills" is generally used, understood and accepted by most people around the globe as the "softer" skills needed to succeed in the workplace. Various literature sources were reviewed such as books, journal articles, conference papers, reports and relevant web pages. This chapter defines what is meant by the terminology "soft skills", explains why soft skills are perceived as important in the workplace, addresses key aspects regarding the soft skills gap and also investigates soft skills development practices.

2.2 SOFT SKILLS DEFINED

The first use of the term "soft skills" dates back to the early 1970s and was not widely used until the early 1990's (Remedios, 2012). Literature defines soft skills in various ways. Soft skills are interchangeably referred to as people skills, interpersonal skills, transferrable skills, life skills, 21st century skills, generic skills, non-technical skills and future work skills among others (Aliu & Aigbavboa, 2023; Cimatti, 2016; Vasanthakumari, 2019).

The dictionary defines soft skills as personal attributes that allow someone to work well and effectively interact with others (Cambridge Dictionary (a), 2023; Macmillan Dictionary, 2022). Remedios (2012) describes soft skills as skills, abilities and traits that pertain to personality, attitudes and behaviour rather than to formal- or technical knowledge. A definition presented by Kamin (2013) depicts soft skills as interpersonal skills that stem from effective communication as well as building relationships with individuals and in teams. Soft skills represent a combination of interpersonal, intellectual and practical skills that will allow a person to adapt positively to circumstances in order to effectively deal with challenges in their professional- as well as everyday life (Succi & Canovi, 2020). Soft skills can be split into "self-orientated" (intrapersonal skills) and "other-orientated" (interpersonal skills) skills. This distinction speaks to skills that a person can develop by themselves (relating to self-awareness and self-management) in comparison to skills developed through relationships with others (relating to social-awareness and relationship management) (Cimatti, 2016).

For many years the importance of soft skills in the workplace has taken a secondary position to technical skills. However, in recent years organisations have brought soft skills back to the foreground by highlighting it as critical to business success. Historically technical skills might have been enough for career employment but today's workplace requires more of employees and business leaders are emphasising the development of soft skills. The application of soft skills is not limited to an individuals' workplace or profession and can be developed through practical application in everyday life (Robles, 2012).

According to Potter (2019), it is not easy to identify soft skills and managing such skills can be daunting. The term "soft skills" often stands in contrast to "hard skills" and covers a wide range of non-technical skills (Tulgan, 2015). Hard skills, also referred to as technical skills, are job related skills needed to perform certain duties. Soft skills on the other hand are non-technical skills and involve interpersonal abilities to facilitate performance in a particular context. Soft skills are viewed as character traits that enhance one's interactions, job performance, and career prospects (Doyle, 2021; Laker & Powell, 2011; Oni & Aina, 2020).

Hard skills are mainly cognitive and are influenced by a person's intelligence quotient (IQ) (Hendarman & Cantner, 2018) and in context of the workplace soft skills often compliment hard skills. Soft skills are sometimes associated with the idea of emotional intelligence quotient (EQ) as opposed to intelligence quotient (IQ). Soft skills relate more to whom a person is rather than the knowledge they have obtained (Kenton, 2022). Chou (2013) explains the difference between hard and soft skills in simple terms: "Hard skills help a person to qualify for a job but soft skills dictate career growth". Employment experts agree that technical skills may secure an interview but soft skills play a key role in landing and keeping a job (Pieterse & van Eekelen, 2016).

The World Economic Forum (2018) future of jobs report highlights the importance of soft skills and explains that it enables people to leverage their uniquely human capabilities.

2.2.1 Soft skills identified

Soft skills include, among others, skills such as self-awareness, problem solving, teamwork, communication, leadership, listening, time management, empathy,

creativity, ability to manage ambiguity, conflict resolution, ethics, negotiation and critical thinking (Doyle, 2022; Karimi & Pina, 2021; Potter, 2019; Tulgan, 2015). According to Doyle (2022), a career and job search expert in New York with over 20 years of experience, the most important soft skills employers take interest in are: communication, critical thinking, leadership, positive attitude, teamwork and work ethic.

Taylor (2016) compiled a list of 25 soft skills derived from various literature sources. From this list the 10 most frequently cited soft skills were communication (verbal and written), teamwork, professionalism, flexibility, interpersonal relations, leadership, problem solving, responsibility/reliability, work ethic / integrity and conflict management. Robles (2012) identified similar soft skills perceived to be the most important by business executives. The top soft skills identified as necessary for STEM (Science, Technology, Engineering, Mathematics) graduates in the healthcare industry, specifically for the period 2020 – 2025, include leadership, human connection, communication, creativity, collaboration, critical thinking, empathy, problem solving and emotional intelligence (Karimi & Pina, 2021).

Table 2.1: Soft skills identified through literature

Soft Skills				
No.	Top skills that interest employers (Doyle, 2022)	Top 10 soft skills (Taylor, 2016)	Key soft skills for new employees according to business executives (Robles, 2012)	Key soft skills for STEM graduates (Karimi & Pina, 2021)
1	Communication	Communication	Communication	Communication
2	Teamwork	Teamwork	Teamwork	Collaboration
3	Leadership	Leadership	Integrity	Leadership
4	Work ethic	Work ethic / integrity	Work ethic	Creativity
5	Critical thinking	Professionalism	Professionalism	Critical thinking
6	Positive attitude	Problem-solving	Positive attitude	Problem-solving
7	-	Flexibility	Flexibility	Empathy
8	-	Responsibility / reliability	Responsibility	Human connection
9	-	Interpersonal relations	Interpersonal skills	Emotional intelligence
10	-	Conflict management	Courtesy	-

From the literature there seems to be consensus among researchers that communication is considered to be the most valuable soft skill. The development and acquisition of soft skills is a lifelong journey that requires intentional effort for employees to succeed in their professional careers but also in their personal lives.

2.3 IMPORTANCE OF SOFT SKILLS IN THE WORKPLACE

In the book “Bridging the soft skills gap”, Tulgan (2015) explains that soft skills remain critical to the success or failure of any individual in the workplace. Soft skills matter a great deal in the context of not only business- but also individual success. Murti (2014) similarly states that the idea of soft skills as a prerequisite for business success is not a new one and that soft skills play an important part of any business, but it is hard to teach and evaluate soft skills.

Studies among Fortune 500 CEOs brought to light that 75 per cent of long-term success in the workplace is attributed to soft skills and only 25 per cent to technical skills. Harvard University reported similar findings whereby 85 per cent of workplace success was attributed to soft skills (Vasanthakumari, 2019). Historically the workplace required of people to labour with their bodies far more than with their minds. In the modern-day workplace employees labour much more with their minds as work requirements include continuous interaction, creativity, teamwork, problem solving and greater intellectual capacity. There is a prevailing emotional atmosphere which cannot and should not be ignored when considering the emotional wellbeing of employees (The School of Life, 2018).

Organisations in most sectors operate not only within a technical or scientific sphere, but also in environments where relationships with colleagues, clients and team members are just as important. Employees who only excel in technical skills might find themselves less prepared to meet the expectations of their organisations compared to employees with good technical- and people skills. The natural career path for employees with good technical skills is to progress and advance into some sort of management or leadership role. Managing and working with people will often take precedence over technical skills when appointed in such positions. It is naïve and somewhat unreasonable to expect of employees to automatically excel at managing people without any intentional effort to develop such skills (Douglas, 2002).

Technical professions sometimes struggle to train and develop future leaders for their professions and corporate leadership positions. Too often leadership, managerial or supervisory positions are filled by someone with good technical competencies and experience but who lacks the soft skills needed for such a position (Bancino & Zevalkink, 2007). The term soft skills might also create the perception that such skills are easier to attain and of less importance than technical skills. Douglas (2002) concludes that soft skills, in particular people management, are much more difficult to master. There is, however, abundant evidence that people management skills can be learned although not in the same logical and systematic way as technical skills.

Bancino and Zevalkink (2007) state that there is an increased demand for a broader skillset from technical professionals. They continue to explain that the driving forces behind this are often the pressure placed on companies to produce an increased bottom line and remain competitive. Project success is often directly linked to an increased bottom line. A survey conducted among more than 250 technical leaders revealed that one of the biggest reasons for project failure is the lack of soft skills. When soft skills are developed in employees, in addition to technical skills, it has a positive effect on productivity, collaboration and synergy which in turn translates into project success and increased profitability. The fast-paced global marketplace requires of employees to have well developed soft skills (Bancino & Zevalkink, 2007).

2.3.1 Soft skills vs hard skills

Technology is changing rapidly and business complexity is increasing. Technical proficiency might have been enough in the past but will certainly not be enough for the complex market place of the future (De Villiers, 2010). Organisations cannot afford to predominantly focus on developing the technical skills of employees and must also focus on developing the soft skills as both are needed to succeed in today's workplace. To achieve success in a competitive and tough job market, job seekers have to bring a competitive edge that will distinguish them from a candidate with similar technical qualifications. Good soft skills enhance employability and can provide the competitive edge that employers are looking for (Remedios, 2012; Schulz, 2008).

According to Heckman (2000), education and job training policies globally are based on misconceptions about the formation of useful non-technical skills that are known to

determine success in life. There seems to be a tendency for employers to primarily focus on and evaluate technical skills and academic knowledge whilst excluding from the equation the required soft skills that contribute to workplace success.

Pieterse and van Eekelen (2016) state that there is consensus among employment experts that technical skills might help to secure a job but that soft skills will help to land and keep a job. No one can guarantee a lifetime of employment, but by training people and making them adaptable and mobile to go to other places and do other things it is possible to equip them for a lifetime of employability (Remedios, 2012). Employees who are able to develop a skills profile containing both technical- and soft skills will be more versatile and able to face the challenges and demands of today's workplace.

2.3.2 Early development of soft skills

Heckman (2000) also addresses a critical aspect regarding skills formation namely the role of family and early childhood interventions. Learning skills, including soft skills, should commence at an early age and continue throughout to adulthood as well as professional development in context of the workplace. Investing in children cannot be postponed until they reach adulthood. It is important for families to realise the importance of their role towards the soft skills development of children. Government interventions, especially school systems, are equally important since this can help to bridge the skills development gap caused by dysfunctional families (Heckman, 2000).

The formation of soft skills at an early age will create a platform that children can build upon as students at HEIs or young working adults in the workplace. Although this research study does not focus on the attainment of soft skills prior to students entering the higher education learning space, it is important to acknowledge the impact that family as well as the school system (primary and secondary education) have on the formation of soft skills.

2.4 SOFT SKILLS GAP

A skills gap, whether technical- or non-technical (soft skills), can be defined as the difference or gap between the skills that employers require from employees and the actual skills that employees possess. According to Tulgan (2016) the softs skills gap

runs across the entire workforce from employees with strong technical skills to employees without technical skills. The soft skills gap in the workforce has been widening over many decades but has grown worse in recent years.

Research conducted among young employees and their managers tracked emerging soft skills trends. Based on two decades of research it was reported that a steady decline in soft skills among young people in the workplace were noticeable from generation X (born 1965 - 1980, 44 to 59 years) to generation Y (born 1981 - 1996, 28 to 43 years) to generation Z (born 1997 - 2012, age 12 to 27 years) (Tulgan, 2015). Many researchers view the soft skills gap as the gap that exists between employer expectations and the actual soft skills that graduates possess (Jaiswani, 2021; Murti, 2014; Mwita, Kinunda, Obwolo & Mwilongo, 2023; Oni & Aina, 2020; Schulz, 2008; Stewart, Marciniec, Lawrence & Joyner-McGraw, 2020).

According to Mahasneh and Thabet (2015) it is evident from construction literature that a soft skills gap exists in the construction industry. There is a gap between what the construction industry requires and the soft skills ability of construction graduates. The soft skills gap will continue to widen and there is a need to find innovative ways to address this issue. Research done by Lim and Ling (2011) on the relationship between human resource practices and soft skills development of construction firms in Singapore indicated a significant correlation among certain human resource practices and soft skills development of employees. Human resource strategies relating to competency development was positively associated with soft skills development of employees and employees who possessed superior soft skills seemed to be much less resistant towards change.

The literature reviewed presented evidence that the soft skills gap in the workplace can be attributed to the following reasons:

- The lack of soft skills in graduates affecting graduate employability (Murti, 2014; Oni & Aina, 2020; Schulz, 2008)
- Limited efforts from higher education (De Villiers, 2010; Karimi & Pina, 2021)
- Lack of soft skills training in the workplace (De Villiers, 2010; Tulgan, 2016; Weedon & Tett, 2013);
- Diluted soft skills culture within organisations (Tulgan, 2016).
- Ambiguity regarding stakeholder responsibility (Hurrell, 2016; Taylor, 2016)

- Misaligned perceptions about soft skills (Ayodele, Adegoke, Kajimo-Shakantu & Olaoye, 2021; Tsirkas, Chytiri & Bouranta, 2020)
- Lack of soft skills evaluation/assessment (Caeiro-Rodriguez, Manso-Vazquez, Mikic-Fonte, Llamas-Nistal, Fernandez-Iglesias, Tsalapatas, Heidmann, De Carvalho, Jesmin, Terasmaa & Sorensen, 2021; Mahasneh & Thabet, 2015);
- Lack of self-willingness to acquire soft skills (Mwita *et al.*, 2023)

Each of the above listed reasons will be elaborated on below.

2.4.1 Soft skills and graduate employability

Many scholars are in agreement that a soft skills gap exists in terms of what employers require and what newly qualified graduates bring to the table. According to Oni and Aina (2020) the gap is growing between employer expectations and graduate competencies. Graduates have the required technical skills but lack the soft skills needed for workplace success. Murti (2014) argues that there is a mismatch between employee demand and supply from academia (graduates). Soft skills are deemed important by employers who hire graduates but in most cases these graduates do not possess the required soft skills. The lack of soft skills among graduates is something that employers have complained about for decades (Schulz, 2008). Soft skills are considered crucial when it comes to graduate employability. Prospective employees can no longer rely on technical skills alone as sufficient basis for employment. The value-adding potential of prospective employees are evaluated on both technical- and soft skills (Ayodele *et al.*, 2021).

Recent research conducted by Mwita *et al.* (2023) among undergraduate students at Mzumbe University in Tanzania revealed that students in higher learning perceived themselves to have sufficient soft skills and consider themselves employable. These perceptions, however, stand in contrast to the perception of employers. Stewart, Wall and Marciniec (2016) concluded the same based on their research done among students at Southern Connecticut State University in America. Ritter, Small, Mortimer and Doll (2018) conducted a survey among graduates in Portugal and found that the efforts by universities regarding soft skills development do not match the demands of employers and highlights the need to restructure academic curriculums.

In an article on Linked-In, Jaiswani (2021) writes that the soft skills gap is more severe than expected and states that 75 per cent of employers struggle to find new graduates with the soft skills required for the workplace. A greater focus must be placed on the development of soft skills and the current workforce is unprepared for this shift. Higher educational institutions play an integral role in preparing students for the workplace by cultivating soft skills that are in line with industry requirements.

2.4.1.1 Soft skills lacking among graduates

The soft skills that seem to be lacking among graduates are communication, critical- and structured thinking and creativity (Schulz, 2008). Stewart *et al.* (2020) adds to this list of soft skills such as problem solving, teamwork and professionalism. Creativity, in the context of business, is useful when applied as "thinking out of the box", brainstorming or mind mapping to find innovative approaches to solve problems. Communication encompasses language proficiency as well as verbal and non-verbal communication whereas critical and structured thinking both go hand in hand with problem-solving abilities (Schulz, 2008).

2.4.2 Soft skills and the role of higher education

There is a general consensus among scholars that institutions of higher education play a key role in equipping students with the required skills, knowledge and abilities to succeed in the workplace. It is important for such institutions to design their curriculums and transform educational environments with a particular focus on enhancing graduates' soft skills and employability (Succi & Canovi, 2020). According to Karimi and Pina (2021) many academics will argue that they are producing work-ready graduates, but employers seem to disagree with this. The soft skills gap can be attributed to an imbalance that prioritises technical skills over soft skills.

Higher education institutions have a responsibility to produce graduates that possess the soft skills that employers require from entry level employees (Jaiswani, 2021; Murti, 2014). Mahasneh and Thabet (2015) state that there seems to be ambiguity among construction educators and employers regarding the soft skills needs and requirements in the construction industry. Such soft skills information gap can make it difficult for academics to design appropriate curriculum content. Other barriers to curriculum changes are limited financial, human and physical resources. Due to these

restraints, curriculum changes will most likely be met with resistance by academics (De Villiers, 2010). However, without buy-in and commitment from higher education, the soft skills gap among graduate employees will prevail.

Higher education can help students to establish a strong foundation upon which they can build their future professional competencies. A certain level of buy-in by students needs to be achieved first. Students must understand that softs skills play an integral part of their career success. Scenario-based real-world examples that students are likely to encounter in their respective disciplines are a good starting point to demonstrate the importance of soft skills. Such examples should highlight how soft skills enhances teamwork to produce better and more effective technical solutions to clients (Bancino & Zevalkink, 2007).

A study was done in five European countries among higher educational institutions on teaching soft skills in engineering education specifically. The results revealed that it is possible to effectively teach soft skills in higher education but that intentional effort is needed. A variety of methods are being used to teach soft skills but the most successful methods seem to be problem-solving and project-based approaches as well as game-based learning. Problem-solving and project-based approaches usually involve the development of soft skills competencies and exposing students to challenges where the mastery of such soft skills will contribute to the outcome of the task. Game-based and simulation approaches can also work well when wanting to develop a specific soft skill but can often be costly when considering the technical requirements (Caeiro-Rodriguez *et al.*, 2021).

2.4.2.1 Development techniques / tactics

Almeida and Buzady (2022) proposed the adoption of serious games in higher education institutions to develop soft skills competencies in students. A serious game is a game designed with a specific purpose other than entertainment. Serious games are often used for educational or training purposes. The research study done by Almeida and Buzady (2022) considered three serious games that would specifically aid the development of soft skills namely GoVenture, SimCEO and FLIGBY. For the purposes of their research conducted among students in Portugal, FLIGBY was chosen.

This game allows students to experience being the CEO of a family-owned business. Students have to make approximately 150 decisions throughout 23 game scenarios relating to human resource management, marketing, sales and innovation. Mr. FLIGBY is a special character in the game that provides the player with feedback regarding their decisions and actions. This allows the player to learn from their actions in order to improve in the next scenario of the game. The findings of their research indicated that FLIGBY allowed students to develop both technical and soft skills. FLIGBY was able to assess 10 soft skills dimensions considered to be key soft skills in the 21st century workplace. Game-based learning can thus be an effective tool to develop soft skills in higher education students.

Research conducted by Musa, Mufti, Latiff and Amin (2012) among students at Universiti Kebangsaan in Malaysia found that project-based learning contributes to the development of soft skills needed in the 21st century workplace. Students had to work in teams and identify a workplace problem, gather information about the problem and propose solutions to the problem. Upon completion of the project after 14 weeks, students had to answer a questionnaire by providing their perspective on the utilization of soft skills such as teamwork, communication, problem solving and interpersonal skills among other.

Higher educational institutions should adopt a holistic and integrated approach to enhance graduate employability through stand-alone soft skills modules, extra-curricular activities, guidance through career services and student involvement in work related projects and work-based-learning (Malhi, 2009; Murti, 2014). Dogara, Saud and Kamin (2020) conclude that work-based-learning contributes positively to the soft skills development of students and that planning, supervision and assessment have a positive impact on soft skills development through work-based-learning. Team activities combined with peer reviews will allow students the opportunity to self-reflect and identify personal skills gaps. Peer reviews will also allow lecturers the opportunity to gauge the skill level of students. Teamwork will enhance both technical- as well as social skills in students (Pieterse & van Eekelen, 2016).

Engineering students in their final year of study at Universiti Malaysia Pahang (UMP) in Malaysia attended a soft skills workshop organised by the university and found it to be beneficial towards improvement of employability skills as well as personal growth

(Rashidi Abbas & Azmie, 2013). Higher educational institutions can thus consider and apply various methods to develop soft skills among students.

Jackson (2016) wrote an article on graduate employability describing the construction of pre-professional identity through the notion of higher education as a "landscape of practice". When students undertake their learning trajectory across this landscape they will acquire technical knowledge, develop non-technical skills (soft skills), have an opportunity to practice what they have learned in different settings, reflect and visualised themselves as graduate professionals and develop an overall understanding of themselves.

Jackson (2016) continues to explain that well rounded graduates who are confident and equipped with technical knowledge and as well as a wide range of soft skills will be better prepared to face recruitment processes and seamlessly transition into post-graduation employment. Graduates must be prepared for global job mobility and diverse work environments. Higher education has a responsibility to develop well-rounded graduates equipped for entry-level professional roles. The formation of professional identity will be ongoing from a pre-professional role to an entry-level professional role and eventually a professional role, or PrQS in the context of the quantity surveying profession in South Africa.

2.4.3 Organisational culture and training of high priority soft skills

Managers and leaders in organisations who recognise the added-value that soft skills bring will be pro-active in cultivating such skills in their employees. Company culture and efforts from management towards soft skills development will either help to bridge the soft skills gap or can be the very reason why such skills will remain under developed in employees.

Organisational leadership has a responsibility to identify the high priority soft skills in their organisations, highlight the importance thereof to employees and incorporate it as part of the company culture to essentially drive the required behaviours within employees. Companies should also invest enough time and resources to train the high priority soft skills and provide sufficient opportunities where employees can practice soft skills. It is important for company management to lead by example when it comes to bridging the soft skills gap. Young employees will take soft skills

development more seriously if this is what is being modeled to them by organisational leadership. Coaching and mentoring plays an integral part in soft skills development of young employees (Tulgan, 2016).

Weedon and Tett (2013) examined a European soft skills course aimed at developing soft skills in low-skilled employees and interviewed course attendees to gain their insights and opinions. They found that the course did offer valuable learning to participants but that the translation of the gained benefit into the work practices of employees largely depended on the learning culture present within organisations. De Villiers (2010) cautions that once-off soft skills development interventions are not enough to develop and assess soft skills because behavioural changes take time.

A non-responsive learning culture within an organisation will hinder the development of soft skills in employees. Soft skills learning opportunities, such as once-off courses or workshops, can easily become a "tick box" or compliance exercise with employees or employers gaining little benefit. Organisations need to create a responsive and supporting culture towards learning and developing soft skills. This will require of employers to rethink certain practices and policies in order to establish a learning culture where "learning to work" and "working to learn" can both apply (Weedon & Tett, 2013).

One of the key findings in The Future of Jobs Report published by the World Economic Forum (2020) indicated that the top soft skills and skills groups rising in prominence in the lead up to 2025 include critical thinking and analysis, problem solving and skills in self-management such as active learning, resilience, stress tolerance and flexibility. To bridge the soft skills gap, re-skilling and upskilling of employees will become a necessity for the future of work.

2.4.4 Ambiguity regarding stakeholders' responsibility

Taylor (2016) conducted research regarding stakeholder perceptions on soft skills development of IT students in South Africa. Questionnaires were distributed to companies, lecturers and students to obtain various perspective and opinions on the matter. The study found that there was a degree of uncertainty among stakeholders regarding the responsibility towards soft skills development and also that soft skills development was seen as a difficult task. It is important for stakeholders to

understand their role and responsibility and to take ownership thereof. Stakeholders too often exempt themselves of such responsibility or think that the responsibility lies with other stakeholders.

Hurrell (2016) refers to this as a skills deficit "blame game" and explains that when considering the development of soft skills, the onus is often placed on the individual and not the employer. Employers also blame the higher education system for not producing graduates with the soft skills needed in the workplace. Stakeholders who foster a perception of "it's not my responsibility" will most likely direct little to no effort towards cultivating soft skills students and/or employees. Soft skills education is currently not getting the attention it deserves and an ongoing synergy between employers and higher education institutions is needed to develop soft skills in graduates (Karimi & Pina, 2021).

2.4.5 Misaligned perceptions

A misalignment between the perceptions of employers and employees regarding soft skills and the acquisition of such skills contributes to the soft skills gap. Tulgan (2016) explains that the generation gap needs to be considered when evaluating perceptions about soft skills between young employees and their employers. Generation Z, the youngest generation currently in the workplace, might not necessarily possess the traditional or basic soft skills that employees expect. These young employees might understand the value of soft skills but most often don't know where to begin and are not familiar with the soft skills basics. They might also have a different idea about communication, professionalism, work ethics, and so forth that can be completely misaligned with the expectations of their employers.

Previous research has shown a gap in how employees view their own soft skills compared to their employers' view of their soft skills. A study conducted among employers and employees of small- and medium sized firms in Greece revealed gaps in perceptions between these two groups. Employees completed a self-assessment of their soft skills and subsequently employers had to assess the extent to which their employees actually possessed each of the soft skills. The soft skills level of employees did not meet the expectations of their employers. Employees rated their own soft skills higher when compared to the ratings of their employers, indicating an

optimistic and positive view of themselves. Employees often tend to overestimate their own soft skills (Tsirkas *et al.*, 2020).

Similar research was done by Ayodele *et al.* (2021) in the form of a soft skills gap analysis among real estate graduates and employers in Nigeria. The findings highlighted a soft skills gap in terms of employers' perception and the perception of graduate employees in terms of expected soft skills. Employers need to provide clear expectations to employees in terms of soft skills and to which extent employees are required to possess/acquire such skills. Clear expectations from employers will aid employees in the process of soft skills development and possibly align perceptions.

2.4.6 Soft skills assessment / evaluation

Mahasneh and Thabet (2015) address a key aspect concerning soft skills in the construction industry by explaining that there is no consensus regarding the standard required for soft skills. There are currently no good tools available to asses/evaluate soft skills development in students or newly qualified graduates in the workplace. Stewart *et al.* (2020) similarly conclude that soft skills terminology and means of measurement varies across organisations and academia so that there is a need for standardised definitions and methods to evaluate/assess soft skills. Bridging the soft skills gap will remain a challenge without a soft skills benchmark and standardised measurement tools that stakeholders can utilise.

In an article relating to teaching and assessing soft skills, Sparrow (2017) highlights that the assessment of soft skills will signal the importance thereof to students and even employees in the workplace. Ayodele *et al.* (2021) supports this idea by explaining that tertiary institutions need to evaluate soft skills as part of their curriculum to create a consciousness among students regarding the need to acquire the requisite soft skills prior to entering the workplace. Higher education can help students to develop the necessary soft skills by informing students of key soft skills required for the workplace, by modelling such skills to students as far as possible, by creating opportunities for students to practice such skills and by assessing and providing feedback to students (Sparrow, 2017).

2.4.6.1 Assessment techniques

According to Kechagias (2011), the assessment of soft skills is an underdeveloped domain impacted by several factors while Caeiro-Rodriguez *et al.* (2021) argue that the assessment of soft skills is a complex problem and that there does not seem to be a general approach towards assessing soft skills in higher education in European countries. There is also a need for soft skills assessment instruments that are easy to implement and reproducible.

Lecturers can assess the soft skills of students through multiple ways including among others class observations, out-of-class performance via email or learning management systems, self- and peer assessment surveys based on a competency or mastery scale. Key aspects of any assessment, including soft skills assessment, are to identify clear assessment criteria, obtaining information about student performance in relation to such criteria, providing students with formative- and summative assessment feedback (Sparrow, 2017).

Hale (2018) suggests that soft skills can be measured and assessed by making use of performance checklists and rubrics. For each soft skill there needs to be a well-defined performance criterion. This can then be assessed by making use of a rubric to measure the level of mastery in relation to the performance criterion. A rubric usually has a sliding scale that can vary for example from poor to excellent. Many academics are acquainted with the use of rubrics as an assessment tool. In some instances, HEI assess soft skills such as communication and teamwork for example as part of presentation-based- or group assignments.

Assessment of soft skills should, however, not end with higher education and should continue in the workplace. Employers can assess soft skills of entry level employees in a similar manner and provide feedback as part of performance management or staff appraisals. Early intervention strategies can also be implemented in the workplace based on soft skills assessments of young employees.

2.4.7 Lack of self-willingness / self-effort

When students as well as entry level employees are submerged in an environment that supports soft skills development, they will have various opportunities to learn, practice and acquire soft skills. Higher education institutions and employers can support the development of soft skills in students and entry level employees through

various means such as teaching, learning, modelling, guiding, mentoring, assessing/evaluating and providing opportunities to practice soft skills. However, no level of support can replace the self-willingness to acquire soft skills. Self-willingness and self-effort remain the responsibility of each individual. According to Mwita *et al.* (2023) the success or failure of soft skills development largely depends on the willingness and self-effort of the individual. Self-initiatives from students can help to bridge the soft skills gap in terms of graduate employability (Mwita *et al.*, 2023). Self-willingness and self-effort are necessary in order to capitalise on opportunities that will promote the development of soft skills.

2.5 SOFT SKILLS DEVELOPMENT AND ASSESSMENT

There is no single approach to develop soft skills. Developing soft skills should be viewed as a journey of lifelong learning that includes intentional- as well as unintentional soft skills formation. The “soil” (environment) that an individual needs to “grow” (develop) in will influence the soft skills that are developed from childhood to adulthood. Unintentional soft skills formation take place from within the context of a persons’ cultural background, economic circumstances, family life, work environment, and so forth and there is often little control over these factors. Intentional soft skills formation takes place when an individual intentionally seeks out opportunities to develop their soft skills. Intentional soft skills formation often follows a more structured approach and can be supported through various means such as soft skills projects, programmes, frameworks, mentoring and so forth.

The focus of this research study is soft skills development from a professional development point of view, especially early career development of young quantity surveyors, and will not investigate soft skills development during childhood or through the basic education system or other such means. From a professional development context, with the starting point stemming from tertiary education, existing literature was reviewed to determine how soft skills development can be approached. Understanding soft skills practices and the possibilities that exist will make the development of soft skills less intimidating and more attainable for both lecturer and student, trainer and trainee or employer and employee.

2.5.1 MASS-project

The Measuring and Assessing Soft Skills project (MASS) was a result of work done by teaching professionals at Angus College in Scotland. These teaching professionals have dedicated their time and expertise to develop a method to measure and assess soft skills that could improve the employability of underprivileged, disaffected young people of which most leave school early. The aim of the MASS project was to determine if this module could also be adopted by other institutions and target groups. The MASS-project partners were Angus College in Scotland, Second Chance School in Greece (adult education), Adult Learning and Employment in Sweden, The Teacher Training Centre in Romania, ROC Ventures in the Netherlands (vocational training and adult education), Bureau Zuidema in the Netherlands (consultancy and training for organisations / individuals) (Kechagias, 2011).

The basis of the MASS-project comes from Angus College's "SkillZone" which is a programme for learners who drop out of school, who achieve low grades at school or those with additional educational or behavioural needs. The Skill Zone programme consists of 17 learning bytes based on soft skills such as manners, ownership, attendance, motivation, professionalism, work output, workplace conduct, time keeping, verbal communication, planning, teamwork / respect, helping others, conscientiousness, ability to ask for help and adaptability / flexibility (Kechagias, 2011).

The MASS-project provided the selected participating institutions with the soft skills material (learning bytes) which they had to work through before teaching it to their students. Each institution could also adapt the material to better fit into the cultural context of the country. There was also no standardised assessment approach and lecturers could utilise various methods to assess the development of their students' soft skills. The overall experience of the participating institutions was positive and they considered participation in the MASS-project as valuable (Kechagias, 2011).

Soft skills practices are often based or derived from a skills framework. Kechagias (2011) explains that there are many skills frameworks and approaches to soft skills development internationally. However, there seem to be six elements that are commonly present with various skills frameworks. These six elements address basic

or fundamental skills (mostly these are skills such as literacy, numeric skills, technology skills, and so forth), people skills, thinking skills, personal skills, business skills and community skills (Kechagias, 2011).

2.5.2 The 4E model of soft skills development

The 4E model of soft skills development developed by Kraaijenbrink (2023) centres around Explanation, Example, Experience and Exercise. The starting point of soft skills development is explanation. An educator/trainer/employer needs to equip a student/trainee/employee with knowledge by explaining soft skills concepts. From there a student/trainee/employee needs to be provided with an appropriate example to merge the conceptual knowledge with an example of practical application to enhance their understanding. The third step in the 4E model is to allow a student/trainee/employee to experience soft skills from the receiving end thereof. The last step in the model is an exercise which allows students/trainees/employees to apply what they have learned until they have mastered the soft skill at hand.

2.5.3 SPOCC soft skills framework

The SPOCC framework stems from surveys conducted in European countries with the aim to understand and recognise the need for soft skills among individuals looking for employment as well as employers. The surveys were part of the “SoftSkills4EU” project and 350 respondents across five European countries participated. The main aim of this project was to identify essential soft skills and develop a standardised soft skills framework. The results of the project brought to light the soft skills that were considered as most important. These soft skills included social skills, personal skills, organisational skills, cooperation skills and creativity skills. From this the abbreviation SPOCC was derived. The SPOCC soft skills framework includes five soft skill clusters each comprising of 5 related “sub-skills” as well as the learning outcomes at each level of attainment. The three levels of attainment range between sufficient, good and excellent. The levels of attainment are based on knowledge as well as skills (Softskills4EU, 2020).

The following soft skills have been included in the SPOCC framework:

Table 2.2: Summary of the SPOCC soft skills framework (Softskills4EU, 2020)

Social skills:	Conflict management, communication skills, accountability, inter-cultural skills, public presentation
Personal skills:	Handling stress, self-awareness, personal development, self-management, emotional intelligence
Organisational skills:	Customer service orientation, time management, critical thinking, strategic planning, leadership
Cooperation skills:	Teamwork management, team building, flexibility and adaptability, working styles, collaboration and networking
Creativity skills:	Innovativeness, constant improvement, analytical thinking, implementing changes, fostering creativity

Based on the five main areas of the SPOCC framework, the partnering countries created soft skills modules. For each module, participants must complete a questionnaire containing 50 questions in order to earn a soft skills badge based on the level of attainment (sufficient, good or excellent) for the particular module. The SPOCC soft skills framework provides insight into what European countries consider important in terms of soft skills development. The five soft skills areas included in the framework cover a broad range of soft skills that employees need for the future of work. The five soft skills areas of the SPOCC framework are in line with the elements commonly present in soft skills frameworks as described by Kechagias (2011).

2.5.4 Project Management Competency Development Framework

The Project Management Institute's (PMI) competency framework provides guidance to employers and employees on the assessment of professional competence of a project manager. The professional competence of a project manager encompasses related knowledge, skills, personality, behaviours, attitudes and abilities. A competent project manager must be able to demonstrate competency that meets expected and recognised standards as stipulated by the PMI.

The project management competency framework (PMCD) describes three dimensions of competency namely (1) knowledge competence, (2) performance competence and (3) personal competency. A project manager would need to be evaluated against each of these dimensions to be recognised as being fully

competent. Competency thus requires a combination of knowledge, performance and personal competence.

The “knowledge” dimension will assess the knowledge that a project manager has obtained to ensure that it is sufficient and meet the required competency standards. The “performance” dimension will assess the practical application of such knowledge by completing a specific task or activity to the required standard. The “personal” dimension will assess the behaviour of a project manager while managing the project or performing activities to determine if their attitude and personal characteristics are reflecting that of a competent project manager. The personal competencies in the PMCDF include soft skills such as communication, leadership, management, cognitive ability (critical thinking skills), effectiveness and professionalism (Cartwright, 2008). For each of these dimensions the PMCDF identifies units of competence with each unit consisting of a number of elements. Each element has a performance criteria describing the desired outcome to be achieved and requires specific types of evidence associated with each performance criterion (Cartwright & Yinger, 2007).

The process to develop a competent project manager starts with the assessment of competence using the PMCDF as baseline. The second step is to prepare a competence development plan and the third step in the process is to conduct the activities stipulated in the competence development plan. The thoroughness of assessment can range from self-assessment to a full scale assessment of professional competence (Cartwright & Yinger, 2007).

The PMCDF can be used for competency assessment at various levels such as an individual level, organisation level or consultancy level. Different levels of rigour need to apply to the different levels of assessment. Self-assessment at an individual level is mostly casual with the aim to determine personal-development needs. Organisations as a whole can also undergo assessment which most often requires a formal assessment process. Assessment by consultants requires the highest level of rigour and must be formally documented. A basic and straight forward assessment method is to score an individual against a performance criterion. There are various factors impacting the successful completion of a project. The intent of the PMCDF is to focus primarily on the competencies that a project manager requires to succeed in their role. That in itself will contribute to the success of a project but is not the only project success factor to consider.

The professional competency assessment of quantity surveyors including competency frameworks and assessment methods were not included in this general review of soft skills development. It will, however, be discussed in detail as a chapter on its own.

2.6 CONCLUSION

This chapter provided an overview of soft skills in the workplace in general. It is evident that soft skills are considered valuable and that in the modern workplace its importance is increasing. Employers are looking for employees with both technical and soft skills. Despite the necessity of soft skills in the workplace, the development thereof in employees has been neglected and the soft skills gap continues to widen. There are various factors contributing to the soft skills gap and collaboration between- and commitment from various stakeholders are necessary to prevent the widening of the soft skills gap. It is possible to bridge the soft skills gap but it will require intentional effort from stakeholders. Various soft skills programmes, -models and -frameworks exist which employers can draw from to help employees develop the soft skills needed to succeed in their careers.

The construction industry is by no means exempt from the soft skills gap. At the heart of this industry lie the relationships between construction professionals, clients, colleagues and industry partners. Building projects are managed by professional teams mostly consisting of architects, engineers, quantity surveyors, building contractors, project managers, and so forth.

These teams are required to work together to successfully complete the project at hand and soft skills play a crucial role in the day-to-day activities of construction professionals. The next chapter will specifically focus on soft skills pertaining to the quantity surveying profession and aims to determine the essential soft skills that quantity surveyors need to succeed in this industry. This will create a basis for this study to progress from in order to determine the extent of the soft skills gap in the quantity surveying profession as well as possible solutions to bridge such a gap.

3 CHAPTER 3: LITERATURE REVIEW - SOFT SKILLS FOR THE QUANTITY SURVEYING PROFESSION

3.1 INTRODUCTION

Soft skills have become a necessity in the workplace across various industries and organisations but the development thereof has unfortunately not received the attention it deserves. This is especially true for the quantity surveying profession in South Africa. The purpose of this chapter is to firstly provide context regarding the quantity surveying profession in South Africa, how it is currently being governed and what the role and responsibilities of a quantity surveyor in this country entail. Understanding the context and functions of a quantity surveyor in South Africa will provide the necessary perspective regarding the need for soft skills development.

Secondly this chapter aims to determine the essential soft skills that quantity surveyors need to succeed in their careers. Various literature sources regarding soft skills in the quantity surveying profession as well as the construction industry at large were reviewed in order to determine these essential soft skills. Lastly this chapter will provide an overview of the next generation (Generation Z) of quantity surveyors as future leaders of this profession. It is important for stakeholders to understand the attributes and preferences of the next generation of quantity surveyors in order to effectively engage with- and equip this generation with the necessary soft skills prior to professional registration.

3.2 QUANTITY SURVEYING IN SOUTH AFRICA

3.2.1 History and background of quantity surveying in SA

The history of quantity surveying is said to date back as early as 1785 when the firm of Henry Cooper and Sons of Reading was established. The first use of the term “quantity surveyor” was, however, only recorded in 1859. Prior to that, terminology such as “measurer” or “custom surveyor” were used. In the early 19th century, the quantity surveyor emerged from England and were subsequently established in countries under British influence, South Africa being one of these countries (ASAQS (c), 2023; Maritz & Siglé, 2016).

In the early days the expertise of a quantity surveyor was used by the building contractor only upon completion of a building project. After completing a building project, the quantity surveyor was tasked to calculate the final quantities and determine the final account for submission to the building owner. Building owners, however, increasingly wanted to execute work under contract and call for tenders prior to undertaking any construction work. Building contractors were responsible to measure their own quantities in order to determine the cost of the project for tender purposes and soon realised that it would be to their benefit to employ one surveyor who could quantify the building project for them (i.e. bills of quantities). All building contractors would then be able to tender for the project on the same basis. The building contractors would share the cost of the surveyor and incorporate it in their tender price. The building owners were thus indirectly paying for the service of the surveyor and realized that it will be for their own benefit and advantage to appoint and directly pay for the services of a surveyor prior to the construction of a building project. It is from this process that the independent quantity surveyor gained consultant status (ASAQS (c), 2023; Maritz & Siglé, 2016).

The discovery of diamonds in South Africa in 1870 not only had an impact on the economy but also on the early development of the quantity surveying profession in this country. The mining industry was flourishing in South Africa and this attracted other professions from Britain such as architects. Architects had experience with surveying functions and systems and were at first fulfilling the functions of a quantity surveyor. Over time the building quantification system that architects had adopted was not suited to meet the requirements of the construction industry.

In 1896 fully qualified quantity surveyors arrived in South Africa and started to establish themselves as construction professionals able to take over the quantification functions previously performed by architects. Unfortunately, the Anglo-Boer war, that started in 1899 and ended in 1902, had an extremely negative impact on the construction industry and many other sectors of the South African economy. The timeline below highlights key dates and events that shaped the development of the quantity surveying profession in South Africa. (ASAQS, Cruywagen, Le Roux, Pearl, Sigle, Verster & Wortmann, 2009; Maritz & Siglé, 2016).

1870: Discovery of diamonds in South Africa. Positive impact on SA's economy including the building sector.

1896: Fully qualified quantity surveyors from abroad arrived in South Africa.

1899 – 1902: Anglo-Boer War. Economic downturn including the building sector.

1905: Transvaal Society of Quantity Surveyors was formed.

1908: The above became the South African Institute of Quantity Surveyors. This was the first recorded national representative QS body in South Africa.

1910: Union of South Africa was formed and established a Department of Public Works, including quantity surveying as one of its departments.

1927: The Architects' and Quantity Surveyors' Private Act (No.18 of 1927) was passed which protected the title of architects and quantity surveyors.

1939 - 1945: World War II. South African economy took a downturn but construction gained momentum again after the war.

1961: South Africa was proclaimed the Republic of South Africa free from British dominion.

1967: Start of the process to get a new quantity surveyors Act approved.

1970: Approval of the Quantity Surveyor's Act (Act No.36 of 1970). Essentially also the start of the South African Council for the Quantity Surveying Profession (SACQSP). Act required any quantity surveyor seeking professional registration via the SACQSP to be a member of an approved association (Association of South African Quantity Surveyors). This Act recognised two professional bodies namely the SACQSP and ASAQS, each fulfilling a different role.

2000: Approval of the new Quantity Surveying Professions Act (Act No. 49 of 2000). SACQSP and ASAQS still recognised as professional bodies. Establishment of the Council for the Built Environment (CBE) as statutory body who as over-arching council provides guidance and governance to the built environment professions (including the quantity surveying profession).

The quantity surveying profession in South African has been shaped and formed throughout history and today this profession is well established and governed in South Africa.

3.2.2 Governing of the QS profession in SA

The CBE is a statutory body established by the South African parliament. It is a public entity that reports to the National Department of Public Works. The CBE is a regulatory body established under the CBE Act No.43 of 2000. The CBE can be seen as the communication channel between the Government and the various built environment professions in South Africa. The purpose of the CBE is to instil good conduct- and mobilise transformation in the built environment professions, to protect the public interest and advise the South African Government on built environment matters. The built environment professions include architects, engineers, property valuers, project- and construction managers, quantity surveyors, environmental assessment practitioners, planners and geomatic surveying. The CBE acts as over-arching council providing guidance and governance to all built environment professions who in turn have to report back to the CBE (CBE, 2023).

The quantity surveying profession is one of the built environment professions regulated by the CBE. The SACQSP are the juristic person established by the Quantity Surveying Profession Act No. 49 of 2000. The act also makes provision for the SACQSP to recognise any voluntary association and issue a certificate of recognition to such association (South Africa, 2000). The ASAQS is currently the only voluntary association recognised by the SACQSP. The SACQSP and ASAQS fulfils different roles and functions in governing and supporting the quantity surveying profession as detailed below.

3.2.2.1 SACQSP

The approval of the Quantity Surveyor's Act (No.36 of 1970) in 1970 was the initial establishment of the SACQSP. Since then, the act has been renewed with the latest being the Quantity Surveying Profession Act No. 49 of 2000. The main function of the SACQSP is to administer the Quantity Surveying Professions Act. This act clearly stipulates that the members of the council must consist of professional quantity surveyors (of which three are actively practicing in the QS profession), two

professionals who are professors or lecturers in quantity surveying, three professionals in service of the State and three members of the public (South Africa, 2000).

The powers of council include powers regarding administration, registration, fees and charges, education in quantity surveying and general powers. The administration powers of the SACQSP include among other to determine the remuneration of members, payment of pension and other benefits, determine where the head office must be situated, determine how meetings must be convened and deal with circulating and selling any QS related publications.

The SACQSP is the only juristic person allowed to register quantity surveyors in South Africa. Quantity surveying graduates can register with the SACQSP as a candidate quantity surveyor and upon successful completion of their assessment of professional competence may continue to register as a professional quantity surveyor (PrQS). It is compulsory for quantity surveyors who wish to become/remain a professional quantity surveyor to register with the SACQSP. Only a PrQS is legally allowed to open a quantity surveying practice and provide professional quantity surveying services to the public.

The powers of council allow the SACQSP to consider registration applications and decide on the period of validity for all registrations and keep a register of all registered quantity surveyors. Powers regarding fees and charges allow the SACQP to determine application and registration fees, annual membership fees, payment dates, and so forth (South Africa, 2000).

The SACQSP may also conduct accreditation visits at higher education institutions offering quantity surveying qualifications and may grant, refuse or withdraw such accreditation. They may also consult with the Council for Higher Education (CHE) on relevant educational matters as well as the South African Qualifications Authority (SAQA) to determine competency standards for the purposes of registration. The SACQSP are also allowed to conduct examinations (e.g., professional skills module examinations) for the purposes of professional registration of quantity surveyors. Some of the general powers of the SACQSP include matters relating to property, entering into contracts, performing of services, encouraging and undertaking QS-

related research and reporting to the CBE or government Ministers (South Africa, 2000).

The governance and guidance of the SACQSP led to the compilation of policies such as the Code of Professional Conduct, Registration Policy, Continuing Professional Development Policy (CPD) and Professional Skills Modules Policy among others (SACQSP (b), 2023).

3.2.2.2 ASAQS

In early 1908 the South African Institute of Quantity Surveyors was established as the first nationally-based professional representative body within the built environment and was the predecessor of the ASAQS (ASAQS (d), 2023). The ASAQS is a voluntary association recognised by the SACQSP in terms of clause 25 of the Quantity Surveying Profession Act No.49 of 2000. The purpose of the ASAQS is to provide an environment where professionals can learn, work and grow together to advance the quantity surveying profession (ASAQS (a), 2023). The ASAQS is managed and controlled by a board elected from among its members as prescribed by the by-laws of the ASAQS (ASAQS, 2016).

It is not compulsory for registered quantity surveyors to become members of the ASAQS. The ASAQS have five membership categories namely professional member (PMAQS), member (MAQS), associate member (AAQS), student associate (SAAQS) and firm/practice member. Only a PrQS can become a PMAQS, persons with a QS qualification and full membership of any other professional institution and active in the QS profession may become a MAQS, persons registered as candidate quantity surveyors with the SACQSP may become an AAQS, any student in quantity surveying may become a SAAQS and firms/practices are any company registered by a PrQS (ASAQS (e), 2023).

Edutech is a very important division of the ASAQS that provides support to members in terms of education, documentation as well as technical support. Edutech plays a crucial role by offering CPD programmes for quantity surveyors. The SACQSP requires of every PrQS to obtain a minimum of 25 CPD hours annually. Even candidate quantity surveyors are required to obtain a certain minimum amount of CPD hours prior to professional registration. ASAQS Edutech supports quantity

surveyors in terms of CPD by offering regular webinars on relevant topics to ensure that all quantity surveyors are keeping abreast with the latest trends and changes pertaining to the QS profession (ASAQS (f), 2023).

ASAQS Edutech also provides QS-specific documentation and resources (including any updates/revision) to the QS profession of which the Standard System of Measuring Building Works is one of the most important documents. ASAQS Edutech also provides accreditation of industry CPD events to ensure that they are presented on the required standard. The ASAQS Edutech division supports the SACQSP who are responsible for candidates' route to registration through the assessment of professional competence (APC) process. The ASAQS' support includes onboarding for candidates, Professional Skills Modules pre-exam preparation as well as APC pre-interview events to help prepare candidates for professional registration.(ASAQS (f), 2023)

3.3 FUNCTIONS OF A QUANTITY SURVEYOR

The modern quantity surveyor can be seen as the construction cost consultant with a broad knowledge of construction economics (Maritz & Siglé, 2016). The SACQSP's registration policy defines a professional quantity surveyor as a person registered as such in terms of the Quantity Surveying Profession Act No.49 of 2000. Professional quantity surveyors are procurement-, contract- and financial experts with comprehensive knowledge that enables them to provide professional services and advice in context of the construction industry and built environment (SACQSP (a), 2020). Most quantity surveyors seek employment at consulting quantity surveying firms who deliver professional quantity surveying services to clients. Quantity surveying services are, however, also required by other firms and sectors in the construction industry such as contracting-, engineering-, property/real estate organisations or government institutions such as Department of Public Works, Transnet, and so forth. Quantity surveyors employed by building contractors are referred to as a contractor's quantity surveyor.

The functions of a quantity surveyor cover a wide range of activities including among other cost planning, value engineering, feasibility studies, life cycle costing, tendering, claims management, dispute resolution and cost estimation. One of the core functions of a quantity surveyor is to have a sound understanding of the quantification of building

quantities from architectural and engineering drawings and specifications, including related technical skills, in order to produce comprehensive bills of quantities according to the Standard System of Measuring of Building Works (SSM). The QS is also responsible for the cost management of construction projects (SACQSP (a), 2020). It is important for a quantity surveyor to have strong technical skills relating to cost- and contractual management as well as the ability to learn, understand and work with construction technologies.

A quantity surveyor is an independent expert who operates in a specialised area of the construction industry and is required to collaborate with other construction- and built environment professionals (ASAQS (b), 2023). The construction industry might be technical in nature, but at the core are the relationships between various members of this industry. Therefore employees in this industry need to be equipped with the required soft skills that will enable them to form and manage good relationships (Ball, 2017).

A quantity surveyor is typically involved in the following project stages, also known in the QS profession as the six fee stages namely (1) Inception, (2) Concept and Viability, (3) Design Development, (4) Documentation and Procurement, (5) Construction and (6) Close-out (SACQSP (b), 2015). The required deliverables as well as responsibilities of the QS in each stage are explained blow.

3.3.1 Inception

The inception stage of a building project will require of the quantity surveyor to deliver an agreed scope of work and services as well as the signed client/QS professional service agreement. In order to produce these deliverables, the QS will be required to provide assistance in developing a clear project brief, attend project initiation meetings, advise on procurement-, economic- and financial aspects pertaining to the project as well as the appointment of other consultants. The QS will also need to define the scope of work and services that will be required of the quantity surveyor (SACQSP (b), 2015).

3.3.2 Concept and viability

The concept and viability stage of a building project will require of the quantity surveyor to deliver a preliminary estimate of the construction cost as well as an elemental cost estimate and conduct a space allocation audit for the project. In order to produce these deliverables the QS will be required to agree a documentation programme with the principal agent and other consultants, attend design and consultants' meetings, review in conjunction with other consultants the design concepts and viability thereof, prepare a preliminary and elementary construction cost, assist clients with the financial viability report and liaise and provide necessary information to the client, principal agent and other professional consultants (SACQSP (b), 2015).

3.3.3 Design development

The design development stage of a building project will require the QS to deliver a detailed estimate of the construction cost as well as an area schedule. In order to produce these deliverables the QS will be required to review the documentation programme with the principal agent and other consultants, attend consultants' meetings, review and evaluate designs, exercise cost control, receive data and cost estimates from other consultants, prepare construction cost estimates, review the financial viability report, prepare an area schedule and liaise, co-operate and provide information to the client and other consultants when necessary (SACQSP (b), 2015).

3.3.4 Documentation and procurement

The documentation and procurement stage of a building project will require the QS to deliver a budget of construction cost, tender documentation, report on the financial evaluation of tenders and produce priced contract documentation. In order to produce these deliverables the QS will be required to attend design and consultants' meetings, assist in formulating the procurement strategy, review designs for compliance with the construction budget, prepare procurement documentation, assist with the tendering process, conduct the financial evaluation of tenders and assist with preparing the contract documentation (SACQSP (b), 2015).

3.3.5 Construction

The construction stage of a building project will require the QS to deliver a schedule of cash flow, estimates for proposed variations, cost reports, valuations for payment certificates and progressive and draft final account(s). In order to produce these deliverables the QS will be required to attend the site handover meeting, prepare cash flow predictions, cost all proposed variations for client decision making, attend site-, technical- and progress meetings, adjudicate and resolve financial- and contractual claims from the building contractor, manage a cost control system, prepare valuations for payment certificate purposes and prepare the final account including re-measurement of work as necessary (SACQSP (b), 2015).

3.3.6 Close-out

The close-out stage of a building project will require the QS to deliver valuations for payment certificates as well as the final account. In order to produce these deliverables the QS will be required to prepare any valuations for payment certificates that might still be required and to conclude the final account of the project between the building contractor and the client (SACQSP (b), 2015).

When considering all the above functions of the quantity surveyor it is evident that sound knowledge of quantity surveying principles as well as technical competencies are required to provide the professional services in each of the above fee stages. Despite strong technical skills the QS will also need to demonstrate and apply a variety of soft skills such as communication (speaking, listening, writing, presenting, and so forth), leadership, teamwork, decision-making, professionalism, critical thinking, problem solving, self-confidence, conflict resolution and time management among other. Soft skills, although essential, are often neglected when preparing candidate quantity surveyors for professional registration.

The quantity surveying profession has a responsibility to equip candidate quantity surveyors with both hard- and soft skills in order to register well rounded professional quantity surveyors. It is thus necessary for quantity surveyors to understand which soft skills are most important for their profession and to intentionally focus on the development of these soft skills prior to professional registration. The development of soft skills is a lifelong journey that will continue even after becoming a PrQS.

3.4 ESSENTIAL SOFT SKILLS FOR QUANTITY SURVEYORS LOCALLY AND ABROAD

Soft skills have become more important than ever in a complex environment such as the construction industry and are growing in importance to business success (Potter, 2019). According to Randstad (2019), a global leader in the HR services industry, success in the construction industry does not only depend on hard skills and technical qualifications. Employers are realising that soft skills have become equally important and those looking to enter the construction industry cannot afford to neglect the development of soft skills.

The RICS School for Built Environment at the Amity University in India (RICS SBE, 2017) notes that a quantity surveyor has numerous responsibilities spanning the project life-cycle and that technical skills alone are often not enough. Soft skills are required by those who would like to make a greater impact in their organisation as well as in their personal career. Once there is knowledge of basic competencies such as accounting principles and procedures and business planning, it is time to develop skills in the areas of client care, communication and negotiation, and conflict management, while always keeping in mind the code of conduct and ethics required of a professional quantity surveyor.

Current and future competencies (hard- and soft skills) of quantity surveyors in Malaysia were assessed by Yap, Skitmore, Lim, Loo and Gray (2022). The five most important evolving skills that their study identified were communication and negotiation, ethics and professional conduct, value management, project management and lifecycle costing.

Oni and Aina (2020) conducted research regarding soft skills required by quantity surveyors in South Western Nigeria and found that a soft skills gap exists among quantity surveyors. The top five critical soft skills that quantity surveying employers in this country desire in prospective employees are leadership, decision making, self-confidence, the ability to work well under pressure and critical thinking. A study conducted among built environment professionals in the United States found that basic soft skills such as communication, decision-making / problem solving and self-management were ranked as most important and were prioritised over advanced soft skills such as professionalism and leadership. Built environment respondents placed

the least emphasis on leadership and ranked communication as the most important (Crawford & Dalton, 2016).

Graduates are equipped with sufficient technical skills but lack the soft skills needed for workplace success. The gap is growing between what QS employers expect and what QS graduates bring to the profession (Oni & Aina, 2020). The findings from a pilot study regarding the soft skills development of quantity surveying students at the University of the Free State in South Africa revealed that both lecturers and students were of the opinion that quantity surveying students were not being equipped with the soft skills required in the workplace. More practical experience and exposure to the workplace were suggested as possible solutions (Liebenberg & Els, 2022). Entry-level employees in the built environment should focus on firstly mastering basic soft skills such as communication, decision-making, problem solving and self-management as this would permit them to progress and acquire the more advance soft skills such as professionalism and leadership. Graduates are usually not hired for their leadership skills as it can be developed over time within their organisation (Crawford & Dalton, 2016).

A study done by van Heerden, Babaeian Jelodar and Chawynski (2023) investigated the current soft skills profile of construction professionals and compared them to the soft skills that the industry requires. The study was conducted among members and industry partners of the RICS. A total of 741 respondents participated in the study and 87 per cent of the participants believed softs skills play an important role in construction practices. This indicated the sectors' recognition of the problem and willingness to address it. Alignments and deviations were found between the actual skills possessed by construction professionals and the skills that these professionals require as shown in Table 3.1.

Table 3.1: Ratings of current soft skills profile vs perfect soft skills profile (van Heerden *et al.*, 2023)

Soft skills required for the construction sector (van Heerden *et al.*, 2023)		
Item	Respondents' rating of their current soft skills profile	Respondents' rating of the perfect soft skills requirements
1	Integrity	Integrity
2	Work ethic	Work ethic

3	Teamwork	Responsibility
4	Responsibility	Communication
5	Problem solving	Teamwork
6	Client management	Problem solving
7	Communication	Decision making
8	Self-management / time management	Client management
9	Decision making	Workplace professionalism
10	Workplace professionalism	Leadership
11	Critical thinking / multi-disciplinary thinking	Critical thinking / multi-disciplinary thinking
12	Handling pressure / stress management	Self-management / time management
13	Leadership	Handling pressure / stress management
14	Enthusiasm / positive attitude	Enthusiasm / positive attitude
15	Negotiation	Conflict management
16	Conflict management	Negotiation
17	Self-confidence	Self-confidence
18	Courtesy	Flexibility / adaptability
19	Flexibility / adaptability	Courtesy
20	Networking	Networking
21	Emotional intelligence	Emotional intelligence
22	Cross-cultural relationships	Creativity and curiosity
23	Creativity and curiosity	Cross-cultural relationships

The biggest differences in rankings between the two soft skills profiles were communication, teamwork, self-management / time management and leadership. Professional development, training and planning will be required to align the soft skills possessed by construction professionals with the soft skills required by industry.

Many scholars have noted the importance and necessity of soft skills for construction professionals, yet soft skills related research in the quantity surveying profession specifically remains limited. Due to the limited availability of soft skills literature pertaining to the quantity surveying profession specifically, this study expanded the literature review to investigate soft skills required by construction professionals in general. Construction professionals all have to work and operate within the same

industry and collaborate and interact with each other and will thus require similar soft skills to succeed in their work environments.

Various literature sources pertaining to soft skills in the construction industry and built environment were reviewed in order to identify the essential soft skills that construction professionals, including quantity surveyors, will need to succeed in the workplace. A list of 38 soft skills were derived from literature and presented in Table 3.2. These soft skills are not listed in order of importance but rather indicate the frequency in which authors mentioned the necessity of such soft skills for construction professionals.

Table 3.2: Essential soft skills for construction professionals

		Literature Sources																						
Soft Skills		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	***n***
1	Communication (speak, listen, write, present, etc.)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	21
2	Teamwork	✓	✓	✓		✓	✓	✓	✓		✓		✓		✓	✓	✓	✓	✓	✓	✓		✓	17
3	Leadership	✓				✓	✓	✓	✓		✓					✓	✓		✓	✓	✓		✓	12
4	Problem solving			✓			✓	✓			✓				✓		✓		✓	✓	✓	✓	✓	11
5	Critical thinking			✓				✓	✓		✓					✓	✓		✓	✓	✓		✓	10
6	Decision-making				✓		✓	✓	✓						✓				✓	✓			✓	8
7	Professionalism						✓	✓			✓			✓	✓		✓		✓	✓				8
8	Ethics							✓						✓	✓		✓		✓	✓	✓			7
9	Dispute and conflict resolution	✓			✓				✓							✓			✓	✓	✓			7
10	Time management		✓			✓		✓			✓								✓		✓			6
11	Lifelong Learning / Willingness to learn				✓			✓		✓	✓				✓								✓	6
12	Negotiation				✓					✓				✓					✓	✓	✓			6
13	Adaptability								✓		✓								✓		✓		✓	5
14	Self-confidence							✓	✓		✓								✓				✓	5
15	Ability to work well under pressure						✓	✓	✓										✓	✓				5
16	Flexibility								✓										✓	✓	✓			4
17	Emotional intelligence												✓						✓		✓			3
18	Creativity												✓						✓				✓	3
19	Self-management						✓											✓						2
20	Client care/management									✓									✓					2
21	Capability to work independently							✓			✓													2
22	Networking																		✓				✓	2
23	Integrity																		✓	✓				2
24	Responsibility																		✓		✓			2
25	Planning and organisation				✓																		✓	2
26	Enthusiam & possitive attitude																		✓	✓				2
27	Interpersonal skills										✓												✓	2
28	Relationship building			✓															✓					2
29	Motivation															✓				✓				2
30	Trust			✓																				1
31	A strong memory				✓																			1
32	Persistence				✓																			1
33	Dimplomacy				✓																			1
34	Empathy												✓											1
35	Ability to manage ambiguity												✓											1
36	Courtsey																		✓					1
37	Stress management																			✓				1
38	Entrepreneurship																						✓	1

NOTE: 1. (Ball, 2017) 2. (Coleman & Bourne, 2019) 3. (Colman & Willmot, 2016) 4. (Jobsite, 2018) 5. (Randstad, 2019) 6. (Crawford & Dalton, 2016) 7. (Shafie *et al*., 2014) 8. (Oni & Aina, 2020) 9. RICS SBE (2017) 10. (Aliu & Aigbavboa, 2020) 11. (Doran, 2019) 12. (Potter, 2019) 13. (Yap *et al*., 2022) 14. (Zaharim, Ahmad, Yusoff, Omar & Basri, 2012) 15. (Zuo, Zhao, Nguyen, Ma & Gao, 2018) 16. (Adnan, Daud, Alias & Razali, 2012) 17. (Karunasena *et al*., 2015) 18. (van Heerden *et al*., 2023) 19. (van Heerden, 2018); 20. (Ayodele, Oladokun & Kajimo-Shakantu, 2020); 21. (Liebenberg & Els, 2022); 22. (Aliu & Aigbavboa, 2023)

Most of the literature sources in Table 3.2 mentioned communication as an essential soft skill and many authors argue that this is the most important soft skill for construction professionals (Aliu & Aigbavboa, 2023; Crawford & Dalton, 2016; Karunasena *et al.*, 2015; Zaharim *et al.*, 2012). There does not seem to be consensus among researchers regarding the ranking of soft skills for construction professionals. Studies across various countries have ranked the importance of soft skills differently. The literature reviewed, however, suggests that communication, teamwork, decision making, problem solving, critical thinking and professionalism all rank among the top five soft skills that construction professionals need.

As shown in Table 3.2, the sixteen most frequently mentioned soft skills that construction professionals require are communication, teamwork, leadership, critical thinking, problem solving, decision making, professionalism, ethics, dispute and conflict resolution, time management, lifelong-learning, negotiation, adaptability, self-confidence, ability to work under pressure and flexibility (Adnan *et al.*, 2012; Aliu & Aigbavboa, 2020; Ball, 2017; Coleman & Bourne, 2019; Colman & Willmot, 2016; Crawford & Dalton, 2016; Doran, 2019; Jobsite, 2018; Karunasena *et al.*, 2015; Oni & Aina, 2020; Potter, 2019; Randstad, 2019; RICS SBE, 2017; Shafie *et al.*, 2014; van Heerden *et al.*, 2023; Yap *et al.*, 2022; Zaharim *et al.*, 2012; Zuo *et al.*, 2018).

There is no doubt that all 38 soft skills will be used by quantity surveyors during their careers. However, it is impractical for this study to discuss all 38 soft skills and therefore only the first 16 soft skills listed in Table 3.2 will be briefly elaborate on to highlight their applicability to the quantity surveying profession.

3.4.1 Communication

Communication can be defined as the transmission/exchange of information, knowledge or ideas through speaking, writing or electronic media (Oxford English Dictionary (b), 2023). Communication is important from the onset of any building project to ensure that the QS, client and other consultants all share the same understanding of the project requirements. Listening- and writing skills form part of communication as well as presentation skills. The quantity surveyor must have a deep understanding of the project requirements but without the ability to present ideas and insights to a project team or client the knowledge of the QS can potentially go to waste. Quantity surveyors must also have a clear and efficient documentation

system in place to manage written communication in the form of correspondence, minutes of meetings, reports and other documentation (RICS SBE, 2017).

Throughout the different project stages the quantity surveyor is required to liaise, collaborate and co-operate with the client, principal agent as well as other professional consultants regarding the project (SACQSP (b), 2015). Quantity surveyors have to attend regular meetings with other consultants as well as the client where face-to-face communication is required. It is important that the quantity surveyor can verbally express his/her opinion in a professional manner during these in-person meetings (Ramdav & Harinarain, 2020).

Indeed, written communication between consultants as well as between the QS and client and / or principal agent are equally important. Nowadays professional teams mainly communicate through email correspondence and quantity surveyors must have the ability to write in a professional and clear manner in order to avoid any ambiguity or misunderstandings. Listening forms an important form of communication and will apply to in-person and virtual meetings as well as telecommunication between the professional team and client. Good communication skills are also necessary when it comes to leadership, negotiation, decision making, dispute- and conflict resolution, teamwork, and professionalism.

3.4.2 Teamwork

QS employers require of their employees to function as a team in order to meet the goals and targets of the company. Within an organisational context teamwork is important and will form part of the day-to-day activities of a QS. Teamwork, however, extends beyond the office walls and is just as important when managing a construction project. Construction projects are managed by professional teams that consist of construction professionals such as architects, engineers, quantity surveyors, building contractors and project managers among others. A quantity surveyor as an independent expert is required to collaborate with other construction- and built environment professionals (ASAQS (b), 2023). The successful completion of a construction project depends largely on how well the scope, time and budget of such a project is managed among the construction professionals responsible for the project.

The quantity surveyor is an integral part of the professional team and is mainly responsible for the cost management aspects of the project (Maritz & Siglé, 2016). The quantity surveyor is thus required to work as part of a team and attend regular design- and consultant's meetings as well as site and technical meetings (SACQSP (b), 2015). When each member of the professional team fulfils their role and duties it enables the other team members to perform more effectively. Regular liaison between team members is required to ensure that a project remains on track in terms of time, scope and budget but also to pro-actively deal with project challenges. Good and effective teamwork is essential and plays a key role when considering the successful completion of a construction project

3.4.3 Leadership

Professional quantity surveyors are procurement-, contract- and financial experts with comprehensive knowledge that enables them to provide professional services and advice in the context of the construction industry and built environment (SACQSP (a), 2020). The expert knowledge and specialised skills of a quantity surveyor automatically place a responsibility of leadership on them. Clients and other consultants will look to the QS to advise on project cost, procurement strategies and contractual matters (SACQSP (b), 2015). The QS will be responsible to lead and guide the client and professional team regarding these aspects of the building project and are thus leaders in their field.

Most quantity surveying practices have a company hierarchy in place ranging from junior- and senior quantity surveyors to quantity surveyors appointed at managerial level as associates, directors, executives and a CEO. The organisational leadership in a QS practice are mostly occupied by professional quantity surveyors with the required skills and experience. Entry-level employees are not initially appointed for their leadership skills, however, candidate quantity surveyors are required to demonstrate a certain level of leadership early on in their careers. Candidate quantity surveyors will start at a junior level until they are ready to be given full responsibility to act as the lead QS on a project. With time they will progress to oversee other junior quantity surveyors and eventually move towards a managerial role in the office.

According to Potter (2019) leaders in the built environment must be courageous and carefully consider where to invest their time, money and energy. Leaders also need

to realise that experience alone might not suffice for the future. Bringing together- and drawing on the strengths of a diverse mix of employees with different skills might be more beneficial to organisations.

Another aspect of leadership in the quantity surveying profession is the mentorship / supervision of candidate quantity surveyors. The SACQSP stipulates that a candidate quantity surveyors must obtain work experience under the guidance and supervision of a mentor / supervisor, who is a professionally registered quantity surveyor, in order to comply with the APC requirements (SACQSP (a), 2020). The mentor / supervisor thus carries the responsibility to lead and guide the candidate quantity surveyor to obtain the necessary experience and training prior to professional registration.

3.4.4 Critical thinking, problem solving and decision making

The construction industry is a dynamic and complex industry and each construction project brings its own unique challenges. Critical thinking, problem solving and decision-making are skills that a quantity surveyor will need to apply throughout the various stages of a project. Critical thinking is defined as the “objective, systematic, and rational analysis and evaluation of factual evidence in order to form a judgement on a subject or issue” (Oxford English Dictionary (a), 2023).

The quantity surveyor as cost consultant of the project will need to advise the client and professional team on procurement-, economic- and financial- and contractual aspects. Throughout the various stages of a construction project, the QS will need to critically appraise and analyse various types of information (SACQSP (b), 2015). The quantity surveyor will also be expected to apply their expertise to solve difficult or complex problems, especially those problems that will have a financial impact on the project, for example contractual claims. The decisions that a quantity surveyor makes must always be in the best interest of the client. Critical thinking, problem solving and decision-making forms an integral part of the role of a quantity surveyor.

3.4.5 Professionalism and ethics

Quantity surveyors as construction cost advisors are considered professionals in their field due to their specialist training, experience and comprehensive knowledge of

construction economics (Maritz & Siglé, 2016). There are professional quantity surveying institutions globally that govern and regulate the quantity surveying profession in their respective countries with the aim to uphold professional standards. Professionalism and ethics are highly appraised by these institutions and most of them have a code of professional conduct/ethics in place to guide quantity surveyors in terms of professional and ethical behaviour. Quantity surveyors are thus expected to act professionally and uphold a high ethical standard (AIQS (b), 2022; HKIS (b), 2023; SACQSP (c), 2020; SISV (b), 2023). The role and functions of a quantity surveyor also require professional behaviour towards clients, other consultants in the built environment as well as colleagues. Professionalism also needs to be evident when producing documents such as cost estimates, tender documents, cost reports, payment valuations, final accounts and so forth. This portrays not only the professional image of the company but also of the quantity surveyor.

3.4.6 Dispute and conflict resolution

Construction projects seldom run smoothly with no conflict or disputes among the professional team. Causes for conflict and dispute mostly result from time, cost, quality and documentation (Charehzehi, Chai, Md Yusof, Chong & Loo, 2017). Conflict and disputes often have a financial implication for either one of the contractual parties and requires expert knowledge regarding financial and contractual matters. Since quantity surveyors are skilled in both these areas, they are often part of the dispute resolution procedures. Given that conflict and disputes are unavoidable, the art of effective dealing with it is thus essential for quantity surveyors to acquire. Some matters can be easily resolved among the professional team but unfortunately some matters will end up following a legal process in order to resolve it. According to Maritz and Siglé (2016) quantity surveyors are competent to act as expert witnesses in litigation procedures as well as other forms of dispute resolution such as arbitration, mediation, adjudication, evaluation or conciliation.

3.4.7 Time management

The quantity surveying profession is fast paced and deadline driven and can be stressful to manage. Effective time management is much easier in theory than it is in practice. According to Ashworth, Hogg and Higgs (2013) the QS fee and tender market is becoming more and more competitive, thus increasing the importance of

effective time and cost management. As candidate quantity surveyors mature in their role they are often tasked with more responsibility and are utilised on more than one project at a time. Ashworth *et al.* (2013) explains that each staff member must take responsibility to manage their time as efficiently as possible, especially when involved in a number of projects. A quantity surveyor will need to prioritise task/activities in such a way that the most urgent tasks/activities are addressed first in order to meet critical deadlines.

Every construction project has a contractual start and completion date and professional consultants need to adhere to the project timeline in order to produce the required deliverables in time. Deliverables that quantity surveyors need to produce are thus time bound and therefore it is essential for quantity surveyors to have the ability to manage time well.

3.4.8 Lifelong learning / willingness to learn

According to the RICS's school for the built environment at Amit University (RICS SBE, 2017), continually developing soft skills and the willingness to keep on learning are essential to professional success in the construction industry. The SACQSP stipulates a minimum amount of CPD hours that professionally registered quantity surveyors need to obtain annually to upkeep their professional registration. Similarly candidate quantity surveyors also need to obtain a certain minimum amount of CPD prior to professional registration (SACQSP (a), 2020). The process of continued learning lies core to remaining relevant and up to date in the quantity surveying profession.

3.4.9 Negotiation

Negotiation forms an integral part of a quantity surveyor's role and responsibility on any construction project. When considering negotiation as a soft skill, the RICS expects of candidate quantity surveyors to demonstrate both knowledge and application of this skill prior to professional registration (RICS, 2018). The SACQSP similarly expects of candidates to be able to negotiate prices during the documentation and procurement phase of a project. Candidates must also demonstrate the ability to adjudicate and resolve financial claims by contractor and sub-contractors during the construction phase (SACQSP (a), 2020). It is thus

necessary for candidate quantity surveyors to learn this soft skill early on and to keep developing this skill throughout their career.

3.4.10 Adaptability and flexibility

De Villiers (2010) explains that technical proficiency alone might to suffice for the complex market place of the future. Research conducted by ……Oni…highlights both flexibility and adaptability as important soft skills for quantity surveyors to obtain in order to thrive in the construction industry. Quantity surveyors must be flexible and willing to adapt in order to remain relevant in an industry that continuously undergoes economic, political and technological disruptions and advances. Likewise, the role and functions of a quantity surveyor continue to broaden thus prompting the development of soft skills, in addition to technical skills, as contributor to success in this profession.

3.4.11 Self-confidence

The dictionary defines self-confidence as having confidence in one's abilities (Oxford English Dictionary (b), 2024). Developing self-confidence will require of quantity surveyors to not only obtain knowledge related to procurement-, contract- and financial aspects among others, but also obtain practical experience in the construction industry and built environment (SACQSP (a), 2020). Research conducted by Shafie *et al.* (2014) and Oni and Aina (2020) found that "self-confidence" ranked among the top five soft skills that quantity surveying employers expect graduates to possess.

3.4.12 Ability to work under pressure

Quantity surveyors constantly have to work under pressure in order to complete project deliverables in time. This applies to each phase of a construction project, from inception to project close-out. Each phase has its various deliverables that the quantity surveyor needs to produce ranging from estimates, bills of quantities, tender documents, cost reports, payment certificates and final accounts (SACQSP (b), 2015). Efficient and effective working habits are especially important in the built environment. Decreased budgets and expanding project scopes demands top quality work from employees and places construction professionals under pressure to

perform well (Crawford & Dalton, 2016). It is therefore important for quantity surveyors to learn how to work under pressure whilst remaining efficient and effective.

3.5 NEXT GENERATION OF CONSTRUCTION PROFESSIONALS

3.5.1 Generation Z in the workplace?

Generation Z is the youngest generational cohort that has entered the workplace. Scholars place the birth years of generation Z roughly between 1995 – 2012 (Dimock, 2019; Ismail, Nugroho & Rohayati, 2023; Loria, Lee & York, 2023; Magano, Silva, Figueiredo, Vitória, Nogueira & Pimenta Dinis, 2020; Tulgan, 2015). Generational cut-off dates are not an exact science and aims to draw a meaningful boundary encompassing key political, economic and social factors that define generations (Dimock, 2019). Generation Z is also referred to as the iGeneration, digital natives, GenZers or post-millennials. Most of them have grown up in a world filled with technology and the internet. They are extremely comfortable with technology and interact on social media (Turner, 2018). This generation follows the millennials cohort and according to Lanier (2017) generation Z manifests a continuation and extension of millennial demands at work but with many key differences.

Turner (2018) further states that meaningful engagement needs to be a priority to unlock the potential of this techno-driven generation. According to Lanier (2017) generation Z represents the first true digital natives, they expect diversity in the workplace, they will have a more pragmatic approach to work, they are more entrepreneurial than millennials and generation Z value in-person feedback and meaningful conversations with their employers. In an article by the Harvard Business Review, Poswolsky (2022) writes that a survey among 48 000 young adults, between the age of 18-24, across 34 nations, indicated that mental health struggles among younger generations have accelerated and worsened throughout the Covid-19 pandemic. Poswolsky (2022) states that according to LinkedIN, 66 per cent of generation Z wants a company culture built on mental health and wellness. The majority of generation Z prefers flexible work policies, but they also value face-to-face connection, mentorship and career development opportunities.

The RICS Modus (2021) interviewed three generation Z employees in the built environment and asked what their expectations from their employers were. The answers given were as follow:

- Employers should listen and respect the opinions of generation Z; employees; to give them more responsibility in order to learn and grow;
- To involve them in the work;
- To provide them with the vision of the company so that they can move in the same direction;
- To provide them with new powerful technology that will enhance their performance at work.

It is important for key stakeholders in the Quantity Surveying profession to know and understand the characteristics and workplace expectation of generation Z in order to effectively guide their professional careers and equip them with the soft skills this profession demands.

3.5.2 Generation Z and soft skills

According to a literature review conducted by Ismail *et al.* (2023) on the soft skills needed by generation Z for the 4th Industrial Revolution (digital transformation in the 21st century) and Society 5 (human-centric society utilising technology to balance economic advancements and social problems), generation Z are lacking in the area of soft skills. Despite being a digital-savvy generation, this cohort fosters a deep concern about money and soft skills such as perseverance and professional work ethic will be helpful skills to develop in this regard. Separation between the digital world (online chat services, social media, and so forth) and the real world is not evident for this generation as they are in a sense addicted to their devices. This has had a negative impact on the social skills of generation Z as well as soft skills such as face-to-face communication, emotional intelligence as well as time management (especially managing time spent on electronic devices) will require special attention in order to function effectively in the workplace. Generation Z seem to have a more individualistic nature and intentional effort will be required towards the development of teamwork as a soft skill. Teamwork is an important aspect for the quantity surveying profession since quantity surveyors need to operate within a professional project team (Ismail *et al.*, 2023; Magano *et al.*, 2020).

The soft skills that generation Z needs to focus on is problem solving, critical thinking, creativity, people management, co-ordinating with others, emotional intelligence, judgement and decision making, service orientation, negotiation and cognitive flexibility (Ismail *et al.*, 2023).

3.6 CONCLUSION

This chapter provided insight regarding the history and background of quantity surveying in South Africa as well as the function of a quantity surveyor in this country. It further identified from literature the essential soft skills that a quantity surveyor needs and discussed the applicability thereof in relation to the function of a quantity surveyor. In the context of early career development of candidate quantity surveyors this chapter also discussed generation Z as the youngest employees currently working in the QS profession. A better understanding of generation Z will help organisational leaders and mentors in the QS profession to effectively train and equip these entry level employees with the essential soft skills required.

All QS stakeholders have a responsibility to empower candidate quantity surveyors with both hard- and soft skills prior to professional registration. This will not only deliver well-rounded professional quantity surveyors to the profession but also provide a strong foundation for young quantity surveyors to build on as future custodians and leaders of the QS profession. An assessment of professional competence (APC) is required in order for candidate quantity surveyors to register as professional quantity surveyors. The next chapter will discuss the requirements of the APC process and the professional standard that candidate quantity surveyors must adhere to prior to becoming a PrQS with a specific focus on soft skills development.

4 CHAPTER 4: LITERATURE REVIEW - COMPETENCY ASSESSMENT OF CANDIDATE QUANTITY SURVEYORS

4.1 INTRODUCTION

Becoming a registered professional quantity surveyor (PrQS) in South Africa is an achievement that is highly regarded and respected by the quantity surveying profession as well as the construction industry at large. This does not apply to South Africa only but also to international quantity surveying professions. The Royal Institution of Chartered Surveyors refers to a registered professional quantity surveyor as “chartered quantity surveyor”, the Australian Institute of Quantity Surveyors refers to a “certified quantity surveyor” while the Singapore Institute of Surveyors and Valuers as well as Canadian Institute of Quantity Surveyors refer to “professional quantity surveyor (PQS)”.

Individuals wanting to attain the designation of chartered- / certified- / professional quantity surveyor will have to follow a specific route to registration that includes an assessment of professional competence (APC). Quantity surveying regulatory bodies around the globe require candidates to obtain a certain level of academic qualification coupled with sufficient workplace experience and competencies in order to progress to professional registration.

The APC plays a key role in the early career development of a young quantity surveyor. This chapter investigated the quantity surveying profession’s road / pathway to professional registration locally as well as abroad to determine if and where the development of soft skills fits into the APC process. The main focus will be on the QS route to registration in South Africa while also providing an overview of international practices in this regard.

4.2 COMPETENCY ASSESSMENT OF QUANTITY SURVEYORS IN SOUTH AFRICA

4.2.1 SACQSP routes to registration

The South African Council for the Quantity Surveying Profession (SACQSP) is a regulatory body constituted by the Quantity Surveying Profession Act of the South

African Parliament (Act 49 of 2000). Part of the mandate of the SACQSP is to register suitably qualified persons into the quantity surveying profession. The SACQSP's assessment of professional competence considers academic qualifications in combination with practical training and experience as criteria for professional registration (SACQSP (a), 2020). Competence can be defined as the ability to do something well (Cambridge Dictionary (b), 2023).

Persons entering the APC must register with the SACQSP as a candidate quantity surveyor. Upon successful completion of the APC a candidate will be issued with a certificate of PrQS registration and only then may use the title Professional Quantity Surveyor (SACQSP (a), 2020). There are essentially three primary routes to registration namely the (1) academic route, the (2) international reciprocal / mutual recognition of professional competence and the (3) recognised prior learning (RPL) route.

The people involved in the APC process, other than the candidate, are the employer of the candidate, the candidate's mentor or supervisor and the SACQSP's assessor. The employer is responsible to ensure that the candidate obtains the necessary experience, professional training and supervision in order to comply with the APC requirements. The employer must appoint a mentor or supervisor for each candidate and such mentor/supervisor must be a PrQS (SACQSP (a), 2020).

The mentor/supervisor must ensure that the candidate acquires the experience, training and supervision as promised by the employer and oversee the day-to-day work of the candidate. They will co-sign with the employer the candidate's logbook of experience (interim and final), daily diaries and project specific report. The mentor/supervisor must also ensure that during the training period a candidate quantity surveyor will acquire at least 20 hours of continuing professional development. The final step of the APC process is the APC interview that each candidate has to attend. The SACQSP assessor is responsible to ensure that the candidate meets the criteria as stipulated by the SACQSP's registration committee and will guide the candidate accordingly based on their interim- and final logbook submissions (SACQSP (a), 2020). The SACQSP's registration policy provides various academic routes for professional registration.

The various academic routes to PrQS registration are based on SACQSP accredited quantity surveying degrees versus non-accredited quantity surveying degrees as well as international agreements. The international agreement registration route will only apply to candidates who obtained a quantity surveying qualification outside South Africa. Such candidates will be required to complete certain skills modules, submit an interim- and final project specific report, attend the APC interview and have a minimum of one year's work experience in South Africa.

A candidate's degree is considered in terms of South Africa's National Qualifications Framework (NQF) exit levels. NQF exit level seven means a student has qualified with a bachelor's degree or advanced diploma worth 360 credits and NQF exit level eight means a student has qualified with a bachelor honours degree, postgraduate diploma or bachelor's degree worth 480 credits as recognised and registered by the South African Qualifications Authority (SAQA, 2023). An international degree equivalent to NQF exit level eight worth 480 credits is required from those who wish to register through the SACQSP's international recognition route. The relevant qualification of each candidate will determine the applicable route to registration.

Some routes to registration require of candidates to undertake professional skills modules in order to bridge the academic gap between NQF exit level seven and eight. These skills modules have been specifically written for the SACQSP based on unit standards developed by the standards generating body (SGB) for quantity surveying. The skills modules are presented and assessed by the SACQSP as part of the APC process and for each module passed the candidate will receive a certificate of competency (SACQSP (a), 2023). Prior to 2021 there were 18 professional skills modules that candidates, who did not qualify for route A1, had to enrol for. The number of professional skills modules were since reduced by the SACQSP and from 2021 only 12 professional skills modules are applicable (SACQSP (a), 2020).

The fastest route to register as a professional quantity surveyor in South Africa requires students to exit at level eight of the national qualifications framework (NQF) which means that a student must have graduated with an SACQSP

accredited honours degree of 480 NQF credits as recognised and registered by the South African Qualifications Authority (SAQA, 2023).

Upon graduation, such students can continue to register as candidate quantity surveyors with the SACQSP and must work for a minimum duration of three years under the supervision of a professional quantity surveyor. During this period the candidate will be required submit an interim logbook detailing their work experience after eighteen months and a final logbook upon completion of the three years of practical work experience. Candidates are also required to keep a daily diary of their work experience, submit a project specific report and finally attend the oral APC interview. Upon approval of all submissions and a successful APC interview the candidate will become a professional quantity surveyor (PrQS) registered with the SACQSP (SACQSP (a), 2020).

4.2.2 Workplace experience

Candidate quantity surveyors are required to obtain practical work experience under the supervision of a PrQS and the minimum duration will depend on the route of registration (minimum of three, four or five years). There are three principles relating to workplace experience that employers of candidate quantity surveyors must keep in mind. Firstly, candidates must be exposed to a variety of activities to broaden the experience and develop all aspects of competency. Secondly, candidates must be given an increased responsibility and accountability until the candidate is capable of accepting full professional responsibility. Lastly the work activities that candidate quantity surveyors engage in must focus on developing the competencies necessary for professional registration. (SACQSP (a), 2020).

During a candidate's training period the candidate needs to progress through levels of capability and increased responsibility until they are ready for professional registration. Initially the focus will be on training of candidates where they will learn from valuable input of other quantity surveyors. However, learning needs to progress to experience whereby candidates will learn through doing and reflecting. The levels of responsibility given to candidates must range from exposure to performing. The "exposure level" will not place any responsibility on a

candidate and they will learn by observing work processes of competent practitioners (SACQSP (a), 2020).

From there a candidate is expected to progress to assisting with activities under close supervision but with limited responsibility. The next level of responsibility will require candidates to participate in activities with limited supervision while taking full responsibility for work activities. The next level will expect candidates to contribute to work activities with detailed approval thereof while taking full responsibility. The last level of responsibility will require of candidates to perform in a team without supervision while taking on full responsibility for the activities and outputs. This process needs to continue until a candidate has achieved the level of competence required for registration as a professional quantity surveyor (SACQSP (a), 2020).

A structured training plan is a key element for learning in the workplace. As part of the APC process all candidates are required to keep a logbook of work experience as well as daily dairies of the activities they performed. The logbook and daily diaries are assessed by a SACQSP assessor (interim and final submissions) to ensure that candidates were exposed to a variety of activities as well and gained sufficient experience. The SACQSP's structured training plan stipulates the workplace experience requirements for candidates. There are seven main areas of experience, each with several activities that a candidate is required to be exposed to and obtain experience in, namely (SACQSP (a), 2020):

- **Inception** (5%): Activities such as developing project briefs, attending initiation meetings, advising on procurement, defining QS scope of work, etc.
- **Concept & viability** (10%): Activities such as agreeing project documentation programme, evaluating design concepts, preparing preliminary construction cost estimates, feasibility studies, etc.
- **Design development** (15%): Activities such as reviewing the documentation programme and design specifications, preparing detailed construction cost estimates, reviewing financial viability report, etc.
- **Documentation and procurement** (20%): Activities such as preparing contract documentation, reviewing working drawings for compliance with

budget, preparing procurement documentation, taking off quantities and preparing price determination documents, tender selections, etc.

- **Construction** (35%): Activities such as attending site meetings, preparing cash flows, cost control, reporting on cost variations, resolving of financial claims, preparing payment certificates, etc.
- **Close-out** (10%): Activities such as preparing final accounts, preparing final payment certificate, etc.
- **Specialisation** (5%): Activities such as project planning and project management, taxation allowances, insurance, litigation and arbitration, insolvency, etc.

The seven main areas of workplace experience correspond with the six QS professional fee stages (inception, concept & viability, design development, documentation and procurement, construction and close-out) plus an area for specialisation. The activities are the same activities stipulated for each professional fee stage. The percentages indicated next to the main areas of experience are an indication of the distribution of the logbook hours for each candidate (SACQSP (a), 2020).

The areas of “documentation and procurement” and “construction” carries the highest percentages and indicates that approximately 20 per cent and 35 per cent of a candidate’s total hours of work experience should be spent on activities within these areas respectively. Candidate quantity surveyors are required to demonstrate that they have gained appropriate supervised professional experience and their logbook should reflect a balanced distribution of practical experience (SACQSP (a), 2020).

4.2.2.1 Soft skills required in the workplace

The activities of workplace experience are technical in nature, however, do indirectly encompass soft skills. A candidate quantity surveyor will need to apply a variety of soft skills in order to perform well at workplace activities. As discussed in the previous chapters, technical skills alone are not enough for today’s workplace and candidate quantity surveyors must also be able to demonstrate competency in terms of soft skills. A candidate will need to make use of soft skills such as verbal

communication when attending client- and consultant meetings, writing skills when compiling documents and reports as well as presentation skills.

Time management and working under pressure is essential to get activities and deliverables completed on time. Teamwork is required when working together with other quantity surveyors in the offices as well as in project teams with other construction professionals. Professionalism and a strong work ethic will be expected by the client as well as other consultants. Critical thinking, problem-solving and decision-making will be required in order to successfully execute most workplace activities. There are many more soft skills that a candidate quantity surveyor will need to utilise while obtaining workplace experience during the APC process.

It can be argued that the current APC process is indirectly developing soft skills in candidates since candidates need to utilise a variety of soft skills to execute workplace activities. This viewpoint, however, assumes that the attainment of soft skills will happen automatically through workplace exposure and experience. Without an evaluation of a candidates' soft skills, it will be impossible to determine to what extent essential soft skills have been developed and whether or not it is deemed adequate for professional registration.

The problem thus remains that there is currently no tool/system in place that specifically evaluates the attainment of soft skills in candidate quantity surveyors. The oral APC interview report from the panel chairman includes the assessment of the candidate's oral communication, presentation skills, eye contact, body language, voice projection and problem-solving abilities whilst presenting their project specific report as part of the interview (SACQSP (a), 2020). However, this only measures certain soft skills with a "snapshot" view of the candidate during the interview and might not be a true reflection.

4.2.2.2 SACQSP and ASAQS support

The Association of South African Quantity Surveyors is a voluntary body that provides an environment in which professionals may learn, grow and work together to advance the techniques and science of quantity surveying (ASAQS (a), 2023). The ASAQS presents webinars throughout the year to support the continuing professional development of all quantity surveyors. The aim of the webinars is to

upskill quantity surveyors to ensure they remain at the forefront of the latest trends and industry requirements. The ASAQS CPD programme is divided into different tracks and quantity surveyors can choose to attend webinars from different tracts as needed throughout the year. One of these CPD tracks is called the "QS Lifestyle" track and includes webinars relating to leadership, mentoring and coaching. This track is the only one that offers webinars on soft skills related matters. The QS lifestyle track is fairly new and is still being formed and shaped to address the softer needs of quantity surveyors in this regard (ASAQS (g), 2023).

The SACQSP's assessment of professional competence is a well-established process but primarily centres around evaluating academic knowledge and technical skills. The SACQSP's current APC process does not specifically support, measure or evaluate the development of soft skills throughout the APC process. Looking to international APC processes will shed light on how the development of soft skills are dealt with by the quantity surveying profession around the globe in order to find innovative ways to approach the development of soft skills among candidate quantity surveyors.

4.3 COMPETENCY ASSESSMENT OF QUANTITY SURVEYORS INTERNATIONALLY

Candidate quantity surveyors globally have to go through a process of professional assessment prior to registering as a professional quantity surveyor (AIQS, 2021; CIQS, 2021; HKIS, 2012; RICS, 2022; SACQSP (a), 2020; SISV, 2019). International professional bodies have approached the professional assessment process differently to accommodate the needs and requirements of the quantity surveying profession in their respective countries. Professional quantity surveying institutions have a responsibility to uphold professional standards and ensure the professional competency of its members. A professionally registered quantity surveyor cannot rely on technical skills alone and must be able to also demonstrate competency relating to soft skills.

This study thus reviewed the professional assessment process of six international quantity surveying institutions in order to establish how these institutions are supporting the development of soft skills prior to professional registration.

The quantity surveying professional institutions are the:

- South African Council for the Quantity Surveying Profession (SACQSP)
- Royal Institution of Chartered surveyors (RICS)
- Australian Institute of Quantity Surveyors (AIQS)
- Canadian Institute of Quantity Surveyors (CIQS)
- Hong Kong Institute of Surveyors (HKIS)
- Singapore Institute of Surveyors and Valuers (SISV)

The above quantity surveying professional institutions were selected based on their global prominence in the quantity surveying profession as well as their geographical locations. This study wanted to obtain perspectives on professional assessment processes from different continents around the world. The continents represented are Africa, Europe, Australia, North-America, and Asia.

Each of the professional institutions has various routes (or pathways) to professional registration. The academic qualification of a candidate as well as previous experience and agreements with other professional institutions will determine a candidate's route to registration. Some candidates might be required to undergo further academic training or additional work experience depending on their respective route to registration. The various routes to registration are all based on the same underlying principle. This principle is that development of professional competency takes place through an academic qualification plus practical work experience. Since all routes to professional registration are based on the same underlying principle, a high-level comparison of only the fastest route to professional registration for each professional institution is presented in Table 4.1.

Table 4.1: High level summary of fastest route to professional registration internationally

REQUIREMENTS	South Africa (SACQSP)	RICS (Global)	Australia (AIQS)	Canada (CIQS)	Hong Kong (HKIS)	Singapore (SISV)
PROFESSIONAL ASSESSMENT						
Assessment of Professional Competence (APC)	✓	✓	✓	-	✓	✓
Test of Professional Experience (TPE)	-	-	-	✓	-	-
ACADEMIC						
Accredited degree	✓	✓	✓	✓	-	✓
Cognate graduate degree	-	-	-	-	✓	-
ADDITIONAL ACADEMIC REQUIREMENTS						
Institution's academic subjects	-	-	-	✓	-	-
PRACTICAL WORK EXPERIENCE						
Minimum 2 years (under approved supervision)	-	✓	✓	✓	✓	✓
Minimum 3 years (under approved supervision)	✓	-	-	-	-	-
Minimum 3 years (under non-approved supervision)	-	-	✓	-	-	-
CPD						
15 hours for every 6 months after entering the APC	-	-	-	-	✓	-
20 hours	✓	-	-	-	-	✓
96 hours	-	✓	-	-	-	-
CODE OF CONDUCT / ETHICS						
Undertake Code of Conduct training / course / topic	-	✓	✓	✓	-	✓
COMPETENCIES						
Mandatory	-	✓	-	-	-	✓
Core	✓	✓	✓	✓	✓	✓
Specialist	✓	-	✓	-	-	-
Optional	-	✓	-	✓	✓	✓
EXAMINATION						
Written examination I and II	-	-	-	-	✓	-
SUBMISSIONS / SUPPORTING DOCUMENTS						
Diary	✓	✓	-	✓	✓	✓
Log book	✓	-	-	-	✓	✓
Evidence of experience	-	-	✓	✓	-	-
Summary / Report of experience	-	✓	-	-	-	✓
Project report	✓	-	-	-	-	-
Project case study	-	✓	-	-	-	-
Practice problem	-	-	-	✓	-	-
Competencies checklist	-	-	-	-	-	✓
APC INTERVIEW RECUIRED	✓	✓	✓	✓	✓	✓
PROFESSIONAL DESIGNATION						
Registered professional quantity surveyor (PrQS)	✓	-	-	-	-	-
Professional quantity surveyor (PQS)	-	-	-	✓	✓	✓
Certified Quantity Surveyor (CQS)	-	-	✓	-	-	-
Chartered Quantity Surveyor (MRICS)	-	✓	-	-	-	-

From Table 4.1 it is evident that although the underlying principle for professional registration is the same for each institution, the way it is "packaged" differs. The fastest route to professional registration is through obtaining an accredited degree in quantity

surveying. Candidates are then required to obtain supervised practical work experience (between two and three years) and provide evidence thereof making use of diaries, logbooks, project reports, case studies, and so forth.

Some institutions also require of candidates to obtain CPD to supplement their practical work experience. Each institution prescribes certain competencies (mandatory, core, specialist, optional) that a candidate is required to demonstrate prior to professional registration. Each institute's professional assessment procedure will now be discussed in more detail with the intent to determine if / how soft skills competencies are addressed as part of the early career development of candidate quantity surveyors.

4.3.1 Royal Institution of Chartered Surveyors

The Royal Institution of Chartered Surveyors is a global professional body that promotes and enforces the highest professional standards in the development and management of land, real estate, construction and infrastructure (RICS (a), 2023). To become a RICS chartered quantity surveyor requires certain academic- and professional qualifications as well as relevant experience in order to achieve the level of competency required. The APC entry requirements are an RICS accredited degree, a bachelor's degree or higher or membership of an RICS approved professional body with a minimum of five years' relevant work experience. A candidate's academic qualifications and experience prior to the APC will determine how much practical work experience and CPD is required prior to professional registration (RICS, 2022). The fastest route to professional registration is when a candidate enters the APC with an RICS accredited degree and less than five years' work experience.

The RICS has 22 pathways, of which "quantity surveying and construction" is one, to professional registration for those working in the built environment, construction, land, property and real estate globally. Each pathway requires of a candidate to achieve a set of competencies and these competencies are a mix of technical and professional practice, business skills, interpersonal skills and management skills (RICS, 2018).

The required competencies for each pathway are based on three categories namely (1) mandatory competencies, (2) technical core competencies and (3) technical

optional competencies. The mandatory competencies apply to all 22 pathways and include personal-, interpersonal-, professional practice- and business skills. The core and optional competencies are different for each pathway and are based on the main skills and competencies required for such pathway. There are three levels of attainment for each competency that candidates are required to reach in a logical progression. Level one requires candidates to demonstrate knowledge and understanding, level two requires candidates to demonstrate their application of knowledge and level three requires candidates to demonstrate reasoned advice, depth and synthesis of technical knowledge and the implementation thereof (RICS, 2018).

Quantity surveying APC candidates with an RICS accredited degree and less than five years work experience are required to undergo a minimum of two years' structured training to ensure they obtain practical experience in the prescribed mandatory-, core- and optional competencies. During this period a candidate must also obtain 96 hours of CPD (48 hours per annum). The CPD must complement a candidate's mandatory- as well as core competencies (RICS, 2022).

The mandatory competencies category for the RICS's QS and construction pathway include among other soft skills such as ethics, professionalism, client care, communication and negotiation, conflict avoidance, management and dispute resolution procedures, diversity, inclusion and teamwork and inclusive environments. The RICS provides a clear description of each of these competencies as well as examples of likely knowledge, skills and experience for each level of attainment. There are three levels of attainment but candidate quantity surveyors are not necessarily required to acquire all soft skills up to exit level 3. The expected exit level for each of the mandatory soft skills are indicated below (RICS, 2018):

- Level one (knowledge and understanding): Conflict avoidance, management and dispute resolution procedures; diversity, inclusion and teamworking, inclusive environments
- Level two (application of knowledge): Client care; communication and negotiation
- Level three (reasoned advice, depth and synthesis of knowledge and implementation thereof): Ethics, rules of conduct and professionalism

Candidates are required to keep a diary of their day-to-day experience and use the information from their diary to compile a summary report upon completion of the

structured training. However, it is not necessary for candidates to record the mandatory competencies in their diary but the attainment thereof must be recorded in the summary of experience for final assessment (RICS, 2022). In an effort to help candidates better understand the soft skills that form part of the mandatory competencies, the RICS offers a two-part CPD webinar series on “Business / Soft Skills Competency Demonstration” with part one covering mandatory business skills and part two covering mandatory soft skills. The soft skills part of the webinar series included among other client care, communication and negotiation, conflict avoidance, management and dispute resolution and team work (RICS (c), 2023).

The core competencies for quantity surveyors include design economics and cost planning, construction technology and environmental services, contract practice, procurement and tendering, project finance and quantification and costing. A candidate will not be able to apply for the final APC interview until their counsellor (member of the RICS) is satisfied that the candidate has reached the required level of competence (RICS, 2018).

The purpose of the APC is to ensure that candidates are competent and meet the required professional standards that will enable them to become a chartered surveyor. Candidates are also encouraged to make use of the RICS’s self-assessment form designed to help candidates evaluate and measure their skill level against the pathway requirements. This will help candidates to identify the competencies that require development. Successful completion of the APC as well as the final interview with the RICS assessors will lead to professional registration (RICS, 2022). The RICS’s formal assessment process requires the following (RICS (b), 2023):

- Written summary of experience for each competency (mandatory, core and optional competencies)
- Case study based on a recent project demonstrating the technical abilities of the candidate
- Records of required CPD (96 hours CPD for structured training over 24 months to supplement mandatory- and core competencies)
- RICS online ethics course (compulsory before attending the APC interview)
- APC interview

From the discussion above, it is evident that the RICS's APC does not only address the development of technical skills but also the development of certain soft skills as part of their mandatory competencies. The RICS offers a webinar on soft skills included as part of the mandatory competencies and also encourage candidates to obtain CPD to supplement both mandatory- and core competencies. Clear definitions of soft skills are provided by the RICS as well as examples for each level of attainment. This acts as a guideline for not only candidates but also RICS counsellors to measure the level of attainment of such soft skills prior to professional registration of candidates.

4.3.2 Australian Institute of Quantity Surveyors

The Australian Institute of Quantity Surveyors (AIQS) is the highest professional body for built environment cost professionals in Australia. The AIQS supports quantity surveyors, establish and maintain professional standards, upholds uniformity, supports industry education and fosters faith in the QS profession (AIQS, 2023). High professional standards are required of anyone who wishes to become a member of the AIQS.

There are various membership grades and pathways available with the AIQS. The "member grade" is the category available to those wanting to become a certified quantity surveyor (CQS). This "member grade" offers three pathways to professional registration depending on the academic qualification and experience level of applicants. The first pathway requires accredited or recognised academic qualifications, the second pathway considers non-accredited or non-recognised academic qualifications and the third pathway considers a high level of experience with a broad range or core skills and a nomination by three Members or Fellow grade members (AIQS, 2021).

Applicants on pathways 1 and 2 are required to obtain a minimum of two years' experience under approved supervision or three years under non-approved supervision. Applicants on pathway 3 must obtain a minimum of eight years' experience under approved supervision or 10 years' experience under non-approved supervision. There are also additional academic requirements to adhere to depending on the applicable pathway to registration. The applicants on pathway 1 with less than five years' experience are required to complete 15 academic topics of

which the AIQS code of conduct is included as one of the topics. Applicants on pathway 2 are required to complete an "up-skilling course" by completing certain top-up topics on the AIQS Academy. Applicants on pathway 3 are not required to complete any additional academic topics. However, all applicants are required to complete the AIQS Code of Conduct topic which is an online course and need to submit their proof of completion when applying for membership. All three pathways require of candidates to complete an APC interview. Upon successful completion of the APC process the applicants will receive a "member-grade" certificate and will be allowed to use the designation of certified quantity surveyor (CQS) (AIQS, 2021).

Competency standards for quantity surveyors include

- basic skills
- project cost management competencies (core and specialist units)
- support competencies (core and specialist units)
- asset financial management competencies (specialist units)
- specialised management competencies (specialist units)

Basic skills are the skills acquired during tertiary education and some of these skills will also form part of the core competencies. Core competencies are the skills required of a competent quantity surveyor and specialised competencies are the skills acquired in areas akin to quantity surveying (AIQS, 2012).

The AIQS expects basic skills to be developed at tertiary level or by personal development and considers the acquisition of basic skills as the platform from which a competent quantity surveyor can develop. Basic skills can almost be seen as the entry level requirement that QS graduates should have attained upon graduation. This will allow a QS graduate to progress to the "probationer" or "entry graduate" level of the APC. Soft skills to be developed as part of the "basic skills" category include communication, personal- and interpersonal skills and professional practice which includes ethics and professionalism (AIQS, 2012).

Communication includes the ability to communicate orally, in writing and by presenting information. Personal- and interpersonal skills include self-confidence, time management, self-motivation, enthusiasm, teamwork, problem solving, goal setting, marketing and negotiation skills. Business management skills include the cost-effective use of appropriate resources, quality control and assurance,

recognising client needs, accounting principles, professional fee scales and charges and general economic principles. The AIQS's APC builds on the basic skills obtained by "probationers / entry graduates" and primarily focus on the development of core- and specialist competencies through on-the-job training under approved supervision. The AIQS's APC will thus only evaluate competency in terms of the core- and specialist competencies required (AIQS, 2012).

The AIQS's core project cost management competencies include both core- and specialist units which are technical in nature. These core units focus on design cost advice, cost planning and cost engineering, contract documentation and procurement, contract administration competencies. The specialist units focus on claims and dispute resolution, financial audit and resource analysis. Support competencies also include both core- and specialist units but the asset financial management and specialised management include only specialised units. The support competencies core units include computer services, construction technology and government regulations while the specialist units include competencies such as arbitration, expert witness, research and development and business management (AIQS, 2012).

The "business management" specialist unit seems to be the only competency standard unit that specifically covers soft skills. The business management unit covers soft skills such as communication, ethics and standards, office management and public relations. Communication includes elements such as oral communication with colleagues, suppliers and clients, organising information for reporting purposes, written communication, presenting, report writing, taking part in meetings and negotiating. Ethics and standards include elements such as professional ethics and principles and taking professional responsibility for one's own actions. Office management includes elements such as self-management, planning and organising personal work and developing and maintaining personal competence. Public relations include elements such as developing trust and confidence with others, portraying a professional image, building and maintaining networks and relationships and resolving conflict and rectifying difficulties. For each listed element the AIQS has provided a performance criteria that specifies an outcome for acceptable performance (AIQS, 2012).

The AIQS recognises the development of soft skills as part of basic skills development which highlights the collaboration between stakeholders such as higher education and the AIQS. Soft skills are addressed to a certain extend under business management which falls under the support competencies as a specialist unit. There are performance criteria provided for each of the soft skills listed under the business management competency area but the AIQS does not seem to measure or evaluate the level of attainment against the set performance criteria. Applicants are required to complete a schedule of recognised practical experience for core- and specialist areas and indicate the duration of the project and provide a brief description of the project as well as the duties performed (AIQS (a), 2022).

4.3.3 Canada

The Canadian Institute of Quantity Surveyors (CIQS) is the national professional- and governing body for the quantity surveying profession in Canada. The aim of the CIQS is to promote the professional status of quantity surveyors and maintain a high standard of professional competency and integrity. The highest membership with the CIQS is that of professional quantity surveyor (PQS). Before the CIQS grants the designation of PQS an individual has to complete the requisite Test of Professional Experience (TPE) (CIQS, 2021).

Other international QS institutions/professional bodies refer to the TPE as the assessment of professional competence. The TPE requires certain academic qualifications as well as practical work experience. The CIQS's TPE programme requires of individuals to obtain the requisite academic qualification (fully accredited programmes or approved accredited programmes), obtain work experience (structured training), complete a practice problem and attend a professional interview (CIQS, 2021).

National and international higher education programmes that meet the CIQS's full requirements are classified as "fully accredited" and programmes that do not meet the full requirements are classified as "approved" programmes. Graduates from fully accredited programmes do not have to complete any additional academic requirements prescribed by the CIQS and can commence with the structured training period. A minimum prescribed period of two years' approved industry experience is required (CIQS, 2021).

The areas of approved experience are categorised into “core requirements” and “optional requirements”. The core requirements have seven sub-areas listed and experience must be obtained in at least five of these areas. The optional requirements have 17 sub-areas and work experience must be obtained in at least five of the optional sub-areas. The core requirements include budgeting, quantity take-off, contract documents and bid packages, site visits, estimating and negotiating change orders, pricing analysis and preparing claims. The optional requirements include among other feasibility, reserve fund studies, life cycle costing, tender analysis, preparing bills of quantities/schedule of quantities and material schedules, monitoring construction cost, preparing construction claims, and so forth. The sub-areas listed under the CIQS’s core- and optional requirements all focus on technical aspects of quantity surveying and there does not seem to be any sub-area that specifically focus on soft skills development (CIQS, 2021).

If a candidate has obtained the required academic qualification and completed the practical work experience, they will be permitted to complete the “practice problem”. The practice problem consists of two sections, the CIQS by-laws, rules and regulations and professional ethics and a project. Candidates will undertake and complete the problem in their working environment and make use of resources available to them to complete the practice problem. The practice problem primarily tests the technical competencies of a candidate but one can argue that the professional ethics part of the practice problem focuses on soft skills development. Upon successful completion of the practice problem the candidate may be invited to attend a professional interview to discuss their professional experience and assess their knowledge of quantity surveying and suitability as a professional quantity surveyor (CIQS, 2021).

The CIQS’s TPE focuses on the assessment of a candidate’s technical competencies prior to registration as a professional quantity surveyor. The CIQS’s areas of approved experience do not include any soft skills specific areas and there is also no tool/system in place that measures or evaluates the attainment of soft skills in candidates. The only soft skills area specifically addressed as part of the CIQS’s TPE is the area of ethics and professionalism.

4.3.4 Hong Kong Institute of Surveyors

The Hong Kong Institute of Surveyors (HKIS) is the only professional body incorporated by order in Hong Kong for surveyors in the building-, land and property environments. The purpose of HKIS includes but is not limited to setting professional standards, determining requirements for professional registration and upskilling surveyors through continuing professional development. Quantity surveying is one of the six divisions of the HKIS (HKIS (a), 2023).

Prior to registering as a professional qualified quantity surveyor, a candidate will need to go through an APC process. The HKIS's APC will require of a candidate to have obtained either a cognate graduate degree or a non-cognate graduate degree which will determine the applicable route to professional registration. A candidate will also be required to complete a prescribed minimum training period of approved professional training and experience (HKIS, 2012).

During this training period a candidate will have to undertake 15 hours of pre-qualification structured learning (PQSL) (similar to what other institutes refer to as CPD) for every six months of training. Upon successful completion of the practical training period and PQSL a candidate must pass Written Assessment I and II. After passing both assessments a candidate will be admitted to the final interview to assess their competence as a professional qualified quantity surveyor and admission to corporate membership with the HKIS (HKIS, 2012).

The approved professional training that a candidate has to obtain is divided into core- and optional competencies. The HKIS has seven core competencies covering primary quantity surveying skills and 10 optional competencies covering skills depending on a candidate's type of employment or specialist skills. Candidates are required to obtain experience in all the core competencies, but not necessarily all the listed sub-areas, and are allowed to choose from the optional competencies. The HKIS prescribes a certain minimum number of working days in terms of experience that a candidate needs to obtain for each of the seven core competency areas prior to undertaking Assessment I and II. Candidates are also required to keep daily diaries of their work experience and transfer this to a log book as summary of their experience (HKIS, 2012).

The core- and optional competencies are technical in nature. The core competencies focus on measuring and billing, pre-contract cost data, pricing, pre-contract cost planning, estimating and control, procurement, tender and cost control and contract administration. The optional competencies focus among others on dispute resolution, project management, facilities management, risk management, insurances and warranties and green building. None of the areas specifically deals with soft skills development (HKIS, 2012).

The HKIS Rules and Guide to Professional Competence for the QS division only mentions the development of soft skills as something that needs to be developed as part of the PQSL. It states that candidates should undergo 15 hours of PQSL every six months during their training period and that the PQSL should either focus on core- and optional competencies or the development of personal and professional practice skills such as communication, teamwork, client care, code of conduct and dispute resolution. One of the optional competencies focuses on dispute resolution which can be seen as a soft skill. The development of soft skills through PQSL does not follow a structured approach and the HKIS does not have a tool/system to evaluate the attainment of soft skills in candidates prior to professional registration.

4.3.5 Singapore

The Singapore Institute of Surveyors and Valuers (SISV) is a professional body comprised of three divisions namely Land Surveying, Quantity Surveying and Valuation and General Practice. The aim of the SISV is to advance and facilitate the acquisition of knowledge for these professions as well as to promote the interest of the profession and usefulness thereof to the public and to regulate and improve the professional- standards, conduct and practice of its members (SISV (a), 2023).

In order to qualify as a professional quantity surveyor with the SISV's quantity surveying division, a candidate must go through an assessment of professional competence. A candidate must demonstrate professional competence through the attainment of knowledge from academic qualification/s as well as a broad range of professional experience. There are various pathways to professional registration depending on a candidate's academic qualification/s (SISV, 2019).

Candidates are admitted to the APC based on their academic qualifications ranging from graduates with accredited degrees, non-accredited degrees or recognised diplomas/qualifications. There are also pathways to professional registration for candidates with professional membership (reciprocity agreements) or who qualify as mature candidates (recognised qualifications + 10 years' experience + 35 years old) (SISV, 2019).

Candidates are required to undertake supervised professional experience based on their professional pathway. Graduates with accredited degrees are required to obtain a minimum of two year's supervised professional experience as well as 20 hours of CPD training. Each candidate will work under the guidance of a supervisor during the APC process. During this time a candidate must demonstrate an appropriate level of competence in the mandatory competency of Conduct Rules, Ethics and Professional Practice, core competencies (at least three) and optional competencies (at least one) (SISV, 2019).

There are three levels of attainment for each competency. At level 1 a candidate must demonstrate their knowledge and understanding, at level 2 they must demonstrate application of knowledge and understanding and at level 3 they must demonstrate the ability to provide reasoned and rational advice which demonstrates an in-depth understanding and professional knowledge. Candidates must acquire each competency up to level 3 prior to professional registration. A log book / diary of experience must be kept by each candidate and submitted for approval together with the "competencies checklist" as well as a report/summary of professional experience. Upon approval of these supporting documents by the SISV, a candidate will be invited to attend the APC interview. The purpose of the interview is to examine a candidate's professional knowledge and experience and competencies gained over the minimum prescribed period of time (SISV, 2019).

The mandatory competency requires of a candidate to demonstrate knowledge and understanding as well as the application of 12 professional and ethical standards as stipulated by the SISV. These professional and ethical standards include among other integrity, transparency, accountability, objectivity, setting a good example, complying with laws and regulations, and so forth. The six core competencies include competencies such as measuring quantities, and tender and procurement, cost planning and control, post contract administration, tendering and estimation and

construction management and resource procurement. A candidate is required to demonstrate competency in at least three of the six core competencies. The 10 optional competencies include among other feasibility studies, dispute resolution, risk management, value management, insolvency, insurance, building information modelling, and so forth. A candidate is required to demonstrate competency in at least one of the 10 competencies (SISV, 2019).

The SISV's core- and optional competencies are all technical in nature with the exception of dispute resolution which can also be seen as a soft skill. The mandatory competency relating to ethics and professionalism addresses soft skills in this regard but other than that, the SISV's APC process does not seem to specifically support or evaluate the development of other soft skills required by candidate quantity surveyors.

4.3.6 Soft skills competency assessment

Reviewing the QS professional assessment procedures of six international professional institutions revealed that most professional institutions do not place a strong emphasis on soft skills competency assessment of candidate quantity surveyors prior to professional registration. Table 4.2 is a high-level summary of how professional QS bodies / institutions have approached the development of soft skills as part of the APC.

Table 4.2: High-level summary: Soft skills development during the APC globally

Item	Soft skills competency assessment	SACQSP	RICS	AIQS	CIQS	HKIS	SISV
a)	No specific competencies / requirements included in the APC	✓					
b)	Soft skills development expected to form part of basic skills acquired during tertiary education.			✓			
c)	Development of ethics / professionalism as part of a Code of Conduct / Code of Ethics / By-laws / skills development module / competencies (via online course, training, practice problem, etc.).	✓	✓	✓	✓		✓
d)	Soft skills, other than ethics / professionalism, included in the APC as mandatory competencies.		✓				
e)	Soft skills, other than ethics / professionalism, included in the APC as part of support / specialist / optional competencies.			✓			
f)	Soft skills CPD / PQSL expected as part of professional competency development prior to professional registration.		✓			✓	
g)	Assess soft skills development according to well defined levels of attainment.		✓				

Workplace experience and exposure to professional situations are crucial for candidates to develop and attain both technical- and soft skills prior to professional registration. It is equally important that professional QS institutions assess competency in both technical skills as well as soft skills prior to professional registration. Professional QS institutions have mainly approached the competency development and assessment of soft skills during the APC process as follow:

SACQSP

- No soft skills competencies / requirements included in the APC
- Ethics addressed at HE level or as professional skills module depending on a candidate's route to registration

RICS

- Candidates are required to complete RICS online ethics course.
- RICS mandatory competencies include personal- and interpersonal skills, professional practice and business skills. Mandatory soft skills included are ethics, professionalism, client care, communication and negotiation, conflict avoidance, management and dispute resolution procedures, diversity, inclusion and teamwork and inclusive environments.
- Mandatory soft skills assessed based on level of attainment (level 1, 2 or 3).
- RICS provides CPD training on mandatory soft skills.

AIQS

- Candidates are required to complete AIQS Code of Conduct topic.
- QS Graduates to acquire soft skills as part of "basic skills" during HE.
- AIQS support competencies include a specialist unit "Business Management" that covers soft skills such as communication, professional ethics and responsibility, self-management, planning and organising personal work, developing and maintaining personal competence, trust, professionalism, networking and relationships and conflict resolution.

CIQS

- Practice problem part 1: Undertake CIQS by-laws, rules and regulations and professional ethics.
- No other soft skills competencies / requirements included in TPE.

HKIS

- Candidates should undergo 15 hours of PQSL every six months during their APC. The PQSL should focus on core- and optional competencies or the development of personal and professional practice skills such as communication, teamwork, client care, code of conduct and dispute resolution.
- No other soft skills specific competencies / requirements included in APC.

SISV

- Mandatory competency requires of a candidate to demonstrate knowledge and understanding as well as application of 12 professional and ethical standard as stipulated by the SISV.
- No other soft skills specific competencies / requirements included in APC.

Most professional institutions place a high value on soft skills related to ethics and professionalism and have made this evident by incorporating it as part of their assessment of professional competence as an online course, additional academic topic or similar requirements. The assessment of other essential soft skills has not yet been adopted by all international professional institutions. Currently only the RICS and AIQS have developed detailed soft skills competency requirements. The AIQS's soft skills requirements are included as a specialist unit forming part of the support competencies and are therefore considered as optional only.

Currently the RICS is the only professional institution that has included soft skills as a mandatory requirement applicable to all professional registration pathways. The RICS follows a structured approach in terms of soft skills development of candidate quantity surveyors. A candidate's soft skills are assessed based on the level of attainment as stipulated by the RICS. There are clear definitions provided for each soft skill as well as examples of likely knowledge, skills and experience required at each level. This indicates that the RICS as a global professional institution recognises the importance of acquiring soft skills prior to professional registration not only for quantity surveyors but for all built environment professionals.

4.4 STAKEHOLDER RESPONSIBILITY TOWARDS SOFT SKILLS DEVELOPMENT

APC processes globally are structured around a candidate's academic qualification/s coupled with workplace experiences. The key stakeholders involved in a candidate

quantity surveyor's process of assessment of professional competence in South Africa are HEIs in terms of academic qualifications, QS employers providing workplace experience, the ASAQS providing CPD training and support to candidates and the SACQSP who is ultimately responsible to register professional quantity surveyors (PrQS) who have successfully passed the APC. A collaborative effort between stakeholders will thus be required to ensure that candidate quantity surveyors are equipped with the required skills which should include technical- as well as soft skills. Higher education plays a critical role to prepare students for the workplace and should take up their responsibility to help students develop the required soft skills prior to graduation.

QS employers will need to build on this foundation by supporting the soft skills development of candidate QS's in order to achieve professional competence in this regard. The ASAQS in turn can support both QS students and candidates by offering CPD training opportunities that focus on the development of soft skills. The SACQSP will have to conduct the final assessment of professional competence to ensure that a candidate has attained the desired level of soft skills expected of a PrQS.

A high-level review of the curriculums of the five universities in South Africa offering degrees in quantity surveying was conducted to determine if these higher education institutions include any modules or requirements in their curriculums that specifically focus on soft skills development. The university yearbooks outlining the curriculum modules were reviewed and the following noted:

4.4.1 University of Pretoria (UP)

There are no specific soft skills modules included in the curriculum at undergraduate or honors level. The BSc QS (hons) students are however required to accumulate a minimum of 240 hours of practical work experience via the credit-bearing module Practical Work Experience (code CWE 700). Students are allowed to start accumulating these hours from their third year of study (University of Pretoria (a), 2023; University of Pretoria (b), 2023). This module will provide students with practical experience and exposure to industry that will support the development of their soft skills prior to entering the QS profession. The undergraduate programme does however include a module "community-based project 201" (JCP 201) presented in the second year of study. This module requires students to work together in teams

on any type of community project (e.g., improving facilities at local schools or pre-schools, community centres, parks, and so forth).

Upon completion of the project students are required to present the outcome of their project in class. Although this module is not specifically aimed at developing students' soft skills, the nature of the module does positively contribute towards the development of soft skills such as teamwork, communication, problem solving, decision making, time management, leadership, and so forth.

4.4.2 University of the Witwatersrand (WITS):

The credit bearing module included in the 1st year curriculum is Communication Skills (code BUQS1007A) which can be seen as a module specifically dedicated to communication as a soft skill. There are no other soft skills specific modules included in any of the other years of study. The zero credit modules Practical Experience I, II and III are included in the curriculum from first year up to third year. The honours degree requires of students to enroll for the module Practical Training whereby students need to source experiential training for a minimum consecutive period of two weeks (WITS (a), 2023; WITS (b), 2023). Such modules will provide students with practical experience and exposure to industry that will support the development of their soft skills prior to entering the QS profession

4.4.3 Nelson Mandela University (NMU)

There are no specific soft skills modules included in the curriculum at undergraduate or honours level. There are also no specific requirements or modules dedicated to practical work experience (Nelson Mandela University (a), 2023; Nelson Mandela University (b), 2023).

4.4.4 University of the Free State (UFS)

There are no specific soft skills modules included in the curriculum at undergraduate or honours level. The modules Integrated Practical Exposure 1, 2 and 3 (code BWIL-1501, -2601, -3702) are credit bearing modules included in the curriculum from first year to third year (University of the Free State (a), 2023; University of the Free State (b), 2023). These modules will provide students with practical experience and exposure to industry that will support the development of their soft skills prior to entering the QS profession

4.4.5 University of Cape Town (UCT)

One of the credit bearing modules in the second year is Professionalism in the Built Environment (code CON2034S) which can be seen as a module specifically dedicated to professionalism as a soft skill. There are no other soft skills specific modules in the undergraduate or honours programmes. There are also no specific requirements or modules dedicated to practical work experience (University of Cape Town (a), 2023; University of Cape Town (b), 2023).

The purpose of the above exercise was to determine if there are any specific modules or requirements stipulated in the curriculums of various universities in South Africa. Based on the above, only three out of the five universities have included practical work experience as modules in their curriculums which contribute positively towards soft skills development of students. Only two universities have included other soft skills specific modules. The current curriculums are limited when considering the development of soft skills among students and universities need to rethink and restructure their academic curriculums.

Despite the lack of evidence towards soft skills development in the existing higher education curriculums, it is important to note that soft skills can also be incorporated into other modules. Soft skills such as teamwork, communication, time management, ethics, professionalism, and so forth, can be developed through activities such as group assignments (teamwork), students presenting their work in class (communication), managing workload and meeting deadlines for assignments (time management and working under pressure), producing neat and professional work (professionalism), and so forth. Students do, however, need to be equipped with knowledge regarding the soft skills that industry requires and be given the opportunity to apply such knowledge. There is a definite need for further in-depth investigation into HEI curriculums to determine the exact level of transformation required.

4.4.6 Controllable vs less controllable soft skills

Quantity surveying employers, institutions and regulatory bodies as well as higher education need to take cognisance of the fact that not all soft skills can be tangibly measured or assessed. Certain soft skills will be easier to assess and measure in comparison to others. Research conducted by van Heerden *et al.* (2023) identified

two soft skills clusters namely a more controllable training-based cluster and a less controllable trait-based cluster as shown in Table 4.3.

Table 4.3: Training-based soft skills cluster vs Trait-based soft skills cluster (van Heerden *et al.*, 2023)

Soft skills	Less controllable: Trait based cluster	More controllable: Training based cluster
Cross cultural relationships	✓	
Emotional intelligence	✓	
Flexibility / adaptability	✓	
Courtesy	✓	
Creativity and Curiosity	✓	
Problem solving		✓
Responsibility		✓
Decision-making		✓
Integrity		✓
Communication		✓
Work ethic		✓
Critical thinking / multi disciplinary thinking		✓
Self-management / time management		✓
Enthusiasim / positive attitude		✓
Teamwork		✓
Leadership		✓
Workplace professionalism		✓

The soft skills within the training-based cluster were considered skills that are relatively easy to obtain through appropriate training and within a reasonable period of time. Such skills include for example, problem solving, decision making, communication, critical thinking, time management, teamwork, leadership, workplace professionalism and work ethic. Thus, industry bodies and regulatory organisations would be able to develop guidelines and regulations to monitor and assess the acquisition of such skills as they are more tangible and controllable.

On the other hand, van Heerden *et al.* (2023) explains that non-controllable trait-based soft skills are not tangible and industry bodies and regulatory organisations might struggle to develop assessment guidelines/policies to enhance and promote the development of such soft skills. Non-controllable trait-based soft skills are for example cross-cultural relationships, emotional intelligence, flexibility, adaptability,

courtesy, creativity and curiosity. These skills are often based on individual circumstances, culturally influenced or personal characteristics (van Heerden *et al.*, 2023). Understanding the principle of controllable and non-controllable soft skills will aid stakeholders in developing effective strategies to help bridge the soft skills gap.

4.4.7 Recommendations and strategies to improve soft skills development

Shafie *et al.* (2014) conducted research regarding the soft skills competencies of quantity surveying graduates in Malaysia. Results from their study include recommendations from QS employers to higher education on how to increase the level of essential soft skills among QS graduates. Improving the soft skills of QS graduates will provide a stronger foundation for employers to build on. Improving on students' critical thinking, problem solving and decision-making, higher education should consider including real life case studies, more presentation-based learning and encourage students to interact more during lectures. Communication and language skills can be improved if students undertake assignments where they have to deal with industry to expose them to real-world communication in the context of their profession. In addition to this, students should also do more oral presentation and be encouraged to defend their work (Shafie *et al.*, 2014).

Aliu and Aigbavboa (2020) also suggested various ways how higher education can improve the employability skills of students. Their suggestions included among other revisiting the curricula to develop non-technical skills, encouraging extracurricular activities, networking with students from other universities, collaborations with industry, obtaining work experience, and so forth. The success of QS graduates does not solely depend on qualifying with a degree but rather obtaining the relevant skills and knowledge that industry requires (Aliu & Aigbavboa, 2020).

Employers in the QS profession in Nigeria put forward strategies that could help stakeholders bridge the soft skills gap (Oni & Aina, 2020). These strategies also support the idea that collaboration between various QS stakeholders is required to ensure effective development of soft skills among QS graduates and candidate quantity surveyors. The suggested strategies are:

- QS workshops and seminars on soft skills (presented by QS professional bodies)
- Academia-industry interaction in the training of quantity surveyors

- Personal development/capacity building through study and short-term programmes on soft skills
- Incorporate critical QS soft skills as part of higher education QS curriculums
- Statutory QS professional bodies to integrate soft skills as requirement for professional registration
- Encourage student involvement in social activities at their institutions to boost self confidence

An online article by the RICS highlights the importance of identifying what employees are good at and to build on that (RICS (a), 2019). How leaders think about the pace of change affects how they go about acquiring the necessary skills within their organisation (RICS, 2020). Employers need to determine what skills their employees want or need to acquire and how the business can support them. Employers can also conduct a skills audit of employees and train them according to how the business develops. Development of soft skills in the construction industry has not yet received the attention it deserves and a rebalancing of technical and softs skills is required (RICS (a), 2019).

4.5 CONCLUSION

The APC of candidate quantity surveyors globally focuses primarily on the competency assessment of technical skills. Professional quantity surveying institutions do not provide a clear tool or methodology to implement and assess soft skills as part of professional competency development.

The RICS is currently taking the lead when considering soft skills assessment of candidate quantity surveyors as part of the APC. The RICS includes and assesses soft skills as part of their mandatory competencies. The SACQSP has not included any specific requirements / competencies related to the assessment of soft skills. However, that does not mean that soft skills development is not taking place and that candidate quantity surveyors in South Africa are missing these skills.

The problem, however, remains that without an assessment of soft skills, it is impossible to know if a candidate quantity surveyor has acquired the necessary soft skills prior to professional registration. It will also be naive to assume that candidates will just automatically acquire sufficient soft skills through workplace experience and

that stakeholders are exempt from any responsibility in this regard. Intentionality is required from quantity surveying stakeholders who should work collaboratively towards supporting the development and evaluation of soft skills in candidate quantity surveyors.

The literature review for this research study was structured across three chapters that respectively focused on (1) the importance of soft skills in the workplace, reasons for the soft skills gap and the development of soft skills in general, (2) soft skills in the quantity surveying profession, the essential soft skills that a QS needs and generation Z as future leaders of the QS profession and (3) the competency assessment of candidate quantity surveyors and how soft skills are developed and assessed throughout this process.

Soft skills research in the quantity surveying profession remains limited, but researchers are in agreement that technical skills alone will not suffice and that soft skills are essential for quantity surveyors who want to succeed in the built environment. It is evident from literature that a soft skills gap exists across many industries including the quantity surveying profession. Innovation and collaboration between stakeholders are required to help bridge the soft skills gap among candidate quantity surveyors prior to professional registration.

In order to answer the research questions of this study, it was necessary to conduct empirical research that would allow the researcher to determine the overall viewpoint and opinion of the QS profession in South Africa. This will allow the researcher to draw more accurate conclusions regarding the development of soft skills among candidate quantity surveyors. The next chapter will explain in detail the research design and methodology deemed most appropriate for this study.

5 CHAPTER 5: RESEARCH METHODOLOGY

5.1 INTRODUCTION

Research according to Collis and Hussey (2021) is a process of inquiry and investigation which is systematic and methodical with the aim to increase knowledge. Habib, Maryam and Pathik (2014) provide a similar description and add that research involves a detailed and thorough study of a problem with a view to gain information to reach a solution. The purpose of academic research is to investigate a research question and apply appropriate methods to collect and analyse data in order to generate knowledge (Collis & Hussey, 2021). This research study investigated the problem: "Is the current development of soft skills in candidate quantity surveyors sufficient to ensure such individuals are equipped for the quantity surveying profession?".

This chapter will discuss the research design and methodology applicable to this research study. It will discuss the selected research instrument, data collection and -analysis procedures, limitations to the selected method as well as ethical considerations.

5.2 RESEARCH DESIGN

The "Research Onion" metaphor (Saunders, Lewis & Thornhill, 2019) is used to explain the overall research design for this study. The research onion was developed in 2007 by Mark Saunders, Philip Lewis and Adrian Thornhill and provides a broad view in terms of research design. Each layer of the research onion depicts elements crucial to the development of an appropriate and coherent research design. Decisions relating to the outer layers of the research onion provides the context and boundaries regarding the selection of the inner layer, which is the data collection and analysis procedures (Saunders & Tosey, 2013). Selections made regarding the research onion's layers (philosophy, approach to theory development, methodological choice, strategy, and time horizon) for this study in particular were as follow:

- Philosophy: Positivism
- Approach to theory development: Deduction
- Methodological choice: Mono method quantitative
- Strategy: Survey
- Time horizon: cross sectional
- Techniques and procedures: questionnaire as quantitative data collection instrument

5.2.1 Philosophy

Ragab and Arisha (2018) state that a research project must first determine its philosophical stance using a paradigm. They continue to explain that ontology is the philosophical study of the nature of reality and the crux of its existence or simply put the science of what is. Epistemology is the philosophical study of the nature of knowledge and how it is obtained or in simple terms the theory of knowledge. This research study followed an epistemological approach to research and adopted positivism as research philosophy.

According to Collis and Hussey (2021) positivism is knowledge gained through "positive information" because it can be scientifically verified. It is thus possible to provide logical or mathematical proof for every rationally justifiable claim. According to Saunders and Tosey (2013) positivism is when a researcher adopts a scientific method to propose and test theories with structured and measurable data which often involves large samples of quantitative data. Welman, Kruger, Mitchell and Huysamen (2005) describe positivist researchers as those who study observable human behaviour in contrast to "anti-positivist" researchers who focus on experiencing human behaviour. The former usually leads to quantitative research methods and the latter to qualitative research methods.

An alternative philosophical stance that this study could have considered is that of interpretivism. This philosophy focuses on conducting research amongst people to try and generate a more in-depth understanding of their point of view. This usually leads to qualitative research stemming from in-depth investigations with smaller samples (Saunders & Tosey, 2013). The aim of this study was to conduct research from a broader perspective rather than from a context-specific perspective and interpretivism would thus not suffice as philosophical stance.

5.2.2 Approach

A deductive approach to theory development was followed that according to Saunders *et al.* (2019) starts with theory developed from existing academic literature that can be tested through an appropriate research strategy. The deductive approach is also referred to as the "top down" approach and is a structured approach that often investigates casual relationships between variables in order to produce generalisable findings (Trochim and Donnelly (2007) as cited by Ragab and Arisha (2018)). The deductive approach usually leads to the use of quantitative methods (Sahay, 2016).

An inductive approach is concerned with context specific research and will often related to qualitative research utilising a small sample. An abductive approach can be seen as a combination between deduction and induction and includes the development of plausible theories. Neither induction nor abduction would suffice for the purposes of this study.

5.2.3 Methodological choice

Quantitative research involves collecting data that can be converted to a numerical format which through statistical analysis enables the researcher to draw conclusions about the problem (Habib *et al.*, 2014). Quantitative research methods are objective and seek to capture the reality of the matter under investigation. On the other hand, qualitative research can be explained as research methods that seek to answer questions that quantification cannot answer (Ahmed, Opoku & Aziz, 2016). Qualitative methods thus are more focused on words than numbers. It aims to provide an in-depth understanding and description of peoples' personal experiences delivering findings which may not be generalised (Ragab & Arisha, 2018).

This study was not concerned with experiencing human behaviour in order to provide an in-depth understanding of personal experiences. The focus of this study was to independently investigate the general state of soft skills development of candidate quantity surveyors in South Africa. Therefore, the methodological choice best suited to investigate this study's research problem was a quantitative mono research method.

5.2.4 Strategy

A survey-based research strategy was selected for this study. This particular strategy is normally associated with a positivism research philosophy (Saunders & Tosey, 2013). Since the aim of this study was to conduct research from a broader perspective rather than from a context-specific perspective, a larger sample size would be required. Survey-based research is the best suited strategy in this regard.

5.2.5 Time horizon

The research was done at a particular point in time and not over an extended period of time, thus conducted in a cross-sectional time horizon. According to Saunders and Tosey (2013), questionnaire surveys are often used in cross-sectional time horizons.

5.2.6 Techniques and procedures

At the core of the research onion stands the data collection and data analysis techniques and procedures. The primary data collection for this research study was done utilising a questionnaire as quantitative data collection instrument. Data will be statistically analysed by means of descriptive and inferential analysis.

5.3 RESEARCH METHOD

Details regarding the selected research method will be discussed in the following three sub-sections namely (a) research instrument, (b) data collection and (c) data analysis.

5.3.1 Research Instrument

5.3.1.1 Questionnaire as research instrument

To adequately answer the research questions under investigation data had to be collected from the quantity surveying profession in South Africa from a broader perspective rather than from a context-specific perspective. Research methods such as case studies, focus groups or interviews are qualitative in nature and would typically investigate the research questions from a particular context and/or based on personal experiences. Many stakeholders, such as employers, higher education,

SACQSP and ASAQS, are involved with- and have a responsibility towards the development of soft skills of candidate quantity surveyors.

The soft skills development of each candidate quantity surveyor in South Africa is unique as well as the work environment they will find themselves developing in. No one individual/company or elect few will be able to provide answers regarding the general state of soft skills development of candidate quantity surveyors in South Africa. It was therefore necessary to investigate the research questions from a broader perspective in order to obtain the opinions and viewpoints of various stakeholders in this profession. Therefore, the method deemed most appropriate for this research study was a quantitative survey among professional stakeholders utilising as a structured questionnaire as data collection tool.

The selected research method allowed the researcher to use a large sample size and generated quantifiable data that could be statistically analysed in order to answer the research questions and meet the objectives of this study in particular. Questionnaires have been used as quantitative data collection tool by many researchers who have conducted soft skills related research in the built environment, with particular reference to recent research conducted by Aliu and Aigbavboa (2023), Oni and Aina (2020), Shafie *et al.* (2014), van Heerden *et al.* (2023), Yap *et al.* (2022).

Questionnaires can be defined as a form of data collection where all participants are asked the same questions in a predetermined order. It is one of the most widely used data collection techniques in the survey strategy and is an efficient way, in comparison to other instruments, to collect responses from a large sample (Ahmed *et al.*, 2016; Rowley, 2014; Saunders *et al.*, 2019; Taherdoost, 2016). Questionnaires are mostly used in quantitative research with the aim to profile the sample or count the frequency of occurrence of opinions, attitudes, behaviours, etc. and usually contain questions relating to facts, opinions/attitudes/beliefs or behaviour (Rowley, 2014).

Questionnaires, especially online questionnaires, are time- and cost effective when having to reach geographically dispersed respondents. Candidate quantity surveyors in South Africa are employed by various companies across the country while working under the supervision of professional registered quantity surveyors. A questionnaire

as data collection tool was best suited when considering the geographical-, time- and cost constraints of this study.

The questionnaire type applicable to this study was a self-administered online questionnaire making use of Survey Monkey as online platform to design the questionnaire and collect responses (see https://www.surveymonkey.com/r/3MDC2QR). Survey Monkey is often used as web survey tool and is user-friendly (Rowley, 2014). Online questionnaires have the benefit of using software packages that allow the researcher to design the questionnaire, collect responses and download data for statistical analysis (Saunders, Lewis & Thornhill, 2009).

According to Ahmed *et al.* (2016) if a questionnaire is administered correctly it can potentially yield very high response rates. Quantity surveyors as construction professionals work with technology on a daily base and have access to computers/laptops as well as smartphones and other electronic devices to execute their daily tasks. All quantity surveying companies communicate with clients and colleagues via email and therefore an online questionnaire distributed via email was considered the most effective method to administer the questionnaire.

Research participants were able to complete the online questionnaire anonymously. According to Welman *et al.* (2005) anonymous questionnaires deliver more honest responses because participants are not required to provide information that can lead to identification. It is considered a normal practice to offer anonymity and confidentiality to participants when including humans as research participants (Collis & Hussey, 2021).

The use of questionnaires as data collection tool also has limitations. Questionnaires provide only a snapshot and cannot deliver rich in-depth information regarding the research problem. Questionnaires can potentially elicit socially desirable responses from participants. Anonymity is a good countermeasure but some responses may still be subject to social desirability (Patten, 2016).

5.3.1.2 Purpose of the questionnaire

The purpose of the questionnaire was to obtain quantifiable data that could be used to formulate answers to the research question and sub-questions. This research

study wanted to elicit information regarding soft skills development of candidate quantity surveyors from the broader quantity surveying profession and not just the candidate quantity surveyor cohort. The reason behind this is simply because all stakeholders described below are involved with and have a responsibility towards the soft skills development of candidate quantity surveyors:

- Higher Education institutions have a responsibility to prepare and equip QS students for the world of work.
- QS employers are closely involved with the skills development of candidate quantity surveyors (both technical- and soft skills) in the workplace.
- Professional bodies such as the SACQSP and ASAQS govern and oversee the QS profession and thus play a key role in supporting the professional development of candidate quantity surveyors.

This questionnaire obtained information relating to the soft skills gap among candidate quantity surveyors, the current level of stakeholder engagement and possible improvement strategies. Collectively this will allow the research study to progress towards the creation of a competency framework that could help shape and foster capability relating to soft skills development of candidate quantity surveyors.

5.3.1.3 Questionnaire design

The questionnaire was designed as a structured questionnaire containing five parts and 32 questions in total (see Annexure B). It contained 31 closed-ended questions and the last question in the questionnaire was an open-ended question. The questionnaire was structured as follow:

- Part 1 (one question) obtained informed consent and voluntary participation from research participants.
- Part 2 (six questions) classified and categorised research participants.
- Part 3 (seven questions) obtained information about participants' soft skills development.
- Part 4 (10 questions) obtained information about stakeholder engagement.
- Part 5 (eight questions) obtained information about improvement suggestions.

The questionnaire started with a covering letter which provided a high-level overview of the research project and questionnaire design and also stipulated the approximate time in which to complete the questionnaire (+/- 12 minutes). Part 1 of the

questionnaire addressed the consent and voluntary participation and also provided more background to the study. Saunders *et al.* (2009) note that to achieve as high a response rate as possible it is necessary to clearly explain to respondents why you want them to complete the survey.

Part of UP's ethical requirements for this study was to obtain consent and voluntary participation from research participants prior to taking part in the questionnaire. Collis and Hussey (2021) state that voluntary participation is one of the most important ethical aspects and that people as participants should never be forced or induced to take part in a questionnaire as this could deliver biased results. Part 1 of this questionnaire was thus created in accordance with the informed consent form as approved by UP's EBIT ethics committee. Participants were not able to continue with the questionnaire without first providing informed consent and agreeing to voluntary participation.

Part 2 of the questionnaire contained questions that would allow the researcher to classify the research participants. The questions were category type questions that allowed participants to select only one answer from a list of options. Some questions had the answer choice of "other" that allowed participants to provide an answer other than those listed by the researcher. The questions were focused on registration status with the SACQSP, employment status, years of experience, and so forth. These questions were included early on in the questionnaire to ensure that the researcher would be able to compare responses based on the classification of participants.

Part 3 of the questionnaire contained questions that specifically focused on soft skills development in the quantity surveying profession. The question types used were rating questions using a 5-point Likert scale, category questions, matrix questions and list question. There were three matrix or grid questions that presented participants with 16 softs skills linked to a 5-point Likert scale. The same 16 soft skills were used in all three questions although the questions were different. A 5-point Likert scale is widely used in research and often suitable for larger questionnaires with multiple items as it is easier for respondents to complete without getting overwhelmed. Utilising higher point scales can potentially take more time and effort to complete and negatively impact the response rate.

The 16 essential soft skills were derived from literature sources relating to soft skills required in the construction industry & built environment. The literature review yielded a list of 38 softs skills in total. For the purposes of this research study, it would not have been viable and practical to include all 38 softs skills in the questionnaire. This would have resulted in part 3 of the questionnaire becoming long and cumbersome with the risk of participants losing interest and dropping out of the questionnaire. This would have had a negative impact on the response rate.

In an effort to minimise such risk the list of 38 soft skills was thus reduced to 16 soft skills. Similar soft skills related research, specifically research conducted by Aliu and Aigbavboa (2023), Oni and Aina (2020) and Shafie *et al.* (2014) guided this study in determining a reasonable number of soft skills to include in the field research. The number of soft skills that the above-mentioned studies focused on ranged between 10 to 14 soft skills. In context of the preliminary content analysis, only the soft skills with four and more mentions in literature were shortlisted for the fieldwork, resulting in a list of 16 soft skills. This number was deemed reasonable by the researcher but was also tested as part of the pilot study. There was only one participant from the pilot study that queried the selected number of soft skills but this participant also noted that adding more soft skills could negatively impact the response rate. The researcher acknowledged this and concluded that the 16 soft skills would suffice for the purposes of this research.

Part 4 of the questionnaire was designed to determine the level of stakeholder engagement towards the soft skills development of student and candidate quantity surveyors. The questionnaire only focused on the following stakeholders: Higher Education Institutions, QS employers, ASAQS and SACQSP. The question types used in this part of the questionnaire were all rating questions using a 5-point Likert scale ranging from “strongly disagree to “strongly agree” as well as one matrix question.

Part 5 of the questionnaire was designed to obtain information about improvement suggestions to bridge the soft skills gap among candidate quantity surveyors. The question types used in this part of the questionnaire were all rating questions using a 5-point Likert scale ranging from “not effective at all” to “extremely effective”. The last question in the questionnaire was designed as an open-ended question. This was the only open-ended question in the questionnaire and allowed participants to offer

further suggestions to improve the soft skills development of candidate quantity surveyors.

The researcher purposefully placed parts 3 and 4 of the questionnaire before part 5 in order to create a logical flow for the research participants. Part 3 allowed the researcher to think about the "what" followed by part 4 that focused on the "who", and part 5 that essentially focused on the "how". The "what" directed participants to think about the importance and development aspects of soft skills, the "who" directed participants to think about the involvement of various QS stakeholders towards soft skills development and the "how" directed participants to think about ways to improve the development of soft skills and bridge the soft skills gap. The improvement suggestions in Part 5 were therefore introduced after participants had a chance to think through and answer questions about the current involvement of stakeholders regarding soft skills development of candidate quantity surveyors.

5.3.1.4 Pilot Study

According to Welman *et al.* (2005) the purpose of a pilot study is to detect possible flaws in the measurement procedures and identify unclear or ambiguous items. Conducting a pilot study contributed to the validity of a study and according to Ragab and Arisha (2018) it is highly recommended that questionnaires are pilot tested before being administered.

Prior to conducting the pilot study, the draft pilot questionnaire was sent for review internally in the Department of Construction Economics to the researcher's study leader as well as two senior lecturers in quantity surveying. The research supervisor is an associate professor with a PhD degree in quantity surveying and over 20 years' experience in postgraduate research supervision. At the time of this research, the two senior lecturers who provided feedback on the draft pilot questionnaire were both in the process of completing their own PhD degrees in quantity surveying and both these individuals had over 15 years' experience in postgraduate research supervision. These experienced academics were able to provide constructive input regarding the utilisation of a questionnaire as data collection instrument. The comments and feedback received from them were incorporated prior to finalising the pilot questionnaire.

The pilot questionnaire was administered as an online questionnaire utilising Survey Monkey as online platform. This was the same method of administration that was used to collect the primary data. The invitation to participate in the pilot study as well as the link to the online questionnaire was emailed to 20 participants within the quantity surveying profession. The 20 participants were purposively selected and profiled to represent professional QS, candidate QS and academics. Participants were employed in consulting QS firms as well as Higher Education Institutions.

To ensure that the questionnaire met the required academic rigor, seven of the 20 participants from four different universities in South Africa (University of Pretoria, Nelson Mandela University, University of Cape Town and University of the Free State) were included in the pilot questionnaire. The selected academics were all involved with postgraduate research supervision and academic publication in the built environment and thus had the knowledge and experience to provide valuable feedback from an academic perspective. A total of 19 participants responded to the pilot questionnaire. Table 5.1 profiles the 19 individuals who participated in the pilot questionnaire.

Table 5.1: Pilot study participants

Pilot study participants		Years of Experience		Current Organisation		Employment Position	
PrQS	15	0 - 5 Years	1	Consulting QS firm	11	Junior QS	2
Candidate QS	2	6 - 10 Years	3	Higher Education	6	Senior QS	4
QS (not registered with SACQSP)	1	11 - 15 Years	7	Consulting QS firm & Higher Education	1	Senior QS & Lecturer	1
Not a QS	1	16 - 20 Years	1	Semi-retired consultant	1	Director	2
		21 - 25 Years	4			Executive	2
		26 - 30 Years	1			CEO	1
		35+ years	2			Lecturer	2
						Senior Lecturer	2
						Head of Department	1
						Professor	1
						Sole proprietor	1
TOTAL	19	19		19		19	

The pilot study participants were requested to scrutinise the pilot questionnaire and provide feedback based on the following guidelines:

- Questions must be clearly stated and easy to understand
- Questions should effectively capture the information they intend to measure
- The structure of the questionnaire should flow logically and make sense to respondents
- Questions should be relevant in relation to the research topic
- Time it took to complete the questionnaire (ideally between 10-15 minutes)
- Was it easy to access and complete the questionnaire via the online platform?

5.3.1.4.1 Feedback from the pilot study

The general feedback from the pilot group revealed that the questionnaire was easy to understand, unambiguous, flowed logically and was relevant to the topic. Further feedback indicated that the participants did not find the questionnaire to be time consuming and on average it took the pilot group approximately 17 minutes to complete the pilot questionnaire. It was anticipated that the pilot group would take longer to complete the questionnaire because they were in essence reviewing the questionnaire in order to provide feedback to the researcher.

None of the participants had any trouble accessing and completing the questionnaire via Survey Monkey as online platform and noted that it was user friendly. The feedback received from the pilot study was incorporated into the final questionnaire. Only minor changes were required and the questionnaire was finalised and ready for distribution.

5.3.2 Data Collection

This section of the chapter explains details regarding the population, sampling, distribution of the questionnaire, response rate as well as validity and reliability.

5.3.2.1 Population

A population is seen as a properly defined body of people under consideration for statistical purposes (Collis & Hussey, 2021). Ahmed *et al.* (2016) describes a population as the complete group of individuals that a researcher wishes to study and it is often not practical to study the entire population due to time-, cost- and resource restrictions. The targeted population for this study was all persons registered with the South African Council for the Quantity Surveying Profession (SACQSP) as well as members of the Association of South African Quantity Surveyors (ASAQS), but excluding ASAQS student members.

In terms of the Quantity Surveying Profession Act 49 of 2000, the SACQSP is the juristic person allowed to register quantity surveyors. The ASAQS is a voluntary association recognised by the SACQSP in terms of clause 25 of the Quantity

Surveying Profession Act No.49 of 2000 (South Africa, 2000). It is compulsory for quantity surveyors who wish to become/remain professional registered quantity surveyors to register with the SACQSP, but optional for such registered persons to become members of the ASAQS. There are also persons in South Africa who qualified with a degree or diploma in quantity surveying but who did not continue to register with the SACQSP. Such individuals are, however, allowed to become members of the ASAQS.

According to the Quantity Surveying Profession Act No. 49 of 2000 (South Africa, 2000), a person may register with the SACQSP as either a professional quantity surveyor or candidate quantity surveyor. The ASAQS on the other had has four membership categories namely professional member (PMAQS), member (MAQS), associate member (AAQS) and student associate (SAAQS). Only professional quantity surveyors are allowed to become PMAQS members and only candidate quantity surveyors are allowed to become AAQS members. SAAQS members were not eligible to participate in the research and thus excluded from the targeted population.

The majority of quantity surveyors in South Africa are registered with either the SACQSP or ASAQS or both. Quantity surveyors who are not registered with the SACQSP or ASAQS did not form part of the targeted population for this study because it was not possible for this research study to identify such persons.

The SACQSP and ASAQS confirmed their membership numbers to the researcher via personal communication (Daniso, 2023; Mankoe, 2023). At the time of the empirical part of the research the SACQSP had 5094 registered members and the ASAQS had 1945 members (excluding student members) as shown in table 5.2.

Table 5.2: Summary of population

ASAQS		SACQSP		Sub-Total	Database Overlap	TOTAL
Professional member:	1155	PrQS:	2600	3755	-1155	2600
Associate member:	117	Candidate QS:	2494	2611	-117	2494
Member:	673			673	0	673
Student member:	n/a					
TOTAL	1945		5094	7039	-1272	5767

The database overlaps were deducted (PMAQS and AAQS members already registered with the SACQSP as previously explained) to determine the total population. The population for this study, based on the information received from the SACQSP and ASAQS, amounted to a total of 5767.

When considering the population size of 5767 members as shown in table 5.2, Professional quantity surveyors account for approximately 45% of the population (2600 / 5767 = 0.450841 = 45%), candidate quantity surveyors account for approximately 43% of the population (2494 / 5767 = 0.432461 = 43%) and the remainder of the population accounted for approximately 12% (673 / 528 = 0.116698 = 12%). The expected sample should ideally be in line with these statistics.

5.3.2.2 Sampling

Sampling is a technique used to select a smaller number of individuals from a pre-defined population when it is impossible to test every individual in a population (Saunders *et al.*, 2009; Sharma, 2017). Collis and Hussey (2021) define a sample as a sub-set of a population. The smaller the total population, the larger the sample should be to ensure satisfactory results but a sample larger than 500 will have little effect in decreasing the standard error and margin of error. Due to non-response or incomplete surveys among others, it is good practice to draw a larger sample in comparison to the completed data desired (Welman *et al.*, 2005).

South Africa's Protection of Personal Information Act (POPI Act) (South Africa, 2020) gives effect to the constitutional right to privacy by safeguarding personal information when processed by a responsible party. Due to the POPI Act regulations the researcher was not able to obtain access to the databases of the SACQSP and ASAQS which contained the contact details of the targeted population. It was thus not practically possible for this study to create a sampling frame and apply probability sampling.

Saunders *et al.* (2009) state that non-probability sampling techniques are used when it is not possible to construct a sampling frame. According to Salvatore (2023) it is becoming increasingly common for researchers to integrate data and make inferences based on non-probability samples. Literature reviewed on soft skills related research in the built environment revealed that non-probability sampling

techniques are often used in quantitative research utilising questionnaires as data collection tool (Adnan *et al.*, 2012; Aliu & Aigbavboa, 2023; Karunasena *et al.*, 2015; Oni & Aina, 2020; Shafie *et al.*, 2014; Yap *et al.*, 2022; Zaharim *et al.*, 2012; Zuo *et al.*, 2018).

With non-probability sampling each individual of the population does not have a known probability of being included in the sample and this may compromise the representativeness of the sample. The reality of the matter is that many research studies rely greatly upon non-probability sampling due to the difficulties associated with creating sufficiently comprehensive sampling frames (Rowley, 2014). It is still possible to generalise about a population using non-probability samples but not on statistical grounds (Saunders *et al.*, 2009). The non-probability sampling techniques applied for this research study were self-selection sampling as well as snowball sampling.

Self-selection sampling allows individuals to choose whether to participate in a research study. Such individuals often self-select because of their interest in the topic and wanting to share their viewpoints and opinions (Saunders *et al.*, 2009). If the research topic is chosen well it may result in the researcher and respondents having a shared interest which can potentially yield higher response rates (Rowley, 2014).

With self-selection sampling there is likely to be a degree of self-selection bias. Although this research study could not gain direct access to the SACQSP and ASAQS databases, these two professional bodies agreed to assist by inviting the members on their databases via email to participate in the research study and self-selection thus took place in a controlled environment. The individuals who self-selected by clicking on the link in the email were automatically directed to the online questionnaire.

With snowball sampling the researcher sent emails containing the questionnaire link to 209 quantity surveyors known through industry relationships and requested such individuals to forward the questionnaire link to their QS acquaintances. With snowball sampling there is also a degree of sampling bias as individuals are likely to invite others similar to them. Individuals are more prone to respond to a questionnaire if there is a level of personal contact and will more easily disregard a questionnaire that

they regard as impersonal. There is great value in using contact networks to distribute a questionnaire as such individuals might be more willing to respond (Patten, 2016; Rowley, 2014). Therefore, snowball sampling was used in conjunction with self-selection sampling in an effort to obtain a higher response rate.

The selected sampling techniques were both time- and cost effective and yielded a sample size of 748 participants in total. A larger sample size often has a lower likelihood of error in generalising to the population. Selecting a perfect research sample is near to impossible and sampling error is bound to occur. Sampling error can be seen as the difference in characteristics between the sample and the population (Welman *et al.*, 2005).

5.3.2.3 Distribution of the Questionnaire

The SACQSP and ASAQS assisted the researcher by distributing the link to the online questionnaire via email to the members on their databases. The researcher also sent the questionnaire link to quantity surveyors known through industry relationships via email and requested such quantity surveyors to invite their quantity surveyor acquaintances to participate. Data was collected over a period of approximately eight weeks. Follow up emails were also sent in an effort to increase the response rate. Participants completed the questionnaire online via the Survey Monkey platform and the researcher was able to monitor responses in real time. The questionnaire settings did not allow for multiple responses, thus avoiding any potential duplication in responses.

5.3.2.4 Response Rate

A response rate is seen as the number of people who completed the survey divided by the number of eligible members from the sample group (Kviz, 1977; Saunders *et al.*, 2009; Survey Monkey, 2023; Welman *et al.*, 2005). According to Welman *et al.* (2005) non-response is likely to occur in most survey research and is mainly due to respondents refusing to be part of the research without any reason. It is important for any research study to collect a sufficient number of responses.

According to Rowley (2014) collecting more than 100 questionnaires is likely to provide stronger research and the opportunity to produce a wider range of insights

(Rowley, 2014). Despite the occurrence of non-response, a sufficient number of responses were still received. From the sample of 748 a total of 528 satisfactory completed responses were received. Unsatisfactory responses included questionnaires that were not completed in full as well as responses from respondents who did not meet the eligibility criteria.

The response rate formula shown below is supported by Kviz (1977), Saunders *et al.* (2009) and Welman *et al.* (2005):

- Response Rate = C/E
  (C represents the number of completed questionnaires and E represents the number of eligible sample members)

The response rate for this study was as follows:
Response Rate = 528 / 748 = 0.7059 x 100 = 70.59%

In the case of a low response rate or insufficient number of responses received, this study was willing to also conduct interviews as supplementary data collection method in order to increase the reliability of the findings. This study did, however, manage to obtain a high response rate and therefore it was not deemed necessary to collect additional data via interviews. The number of responses received was sufficient for the purposes of this study and was also considered to be representative in terms of the population as explained below.

The responses received were compared to the membership numbers of the SACQSP annual report (SACQSP, 2021; SACQSP (b), 2020) to test the representativeness thereof in terms of the spread between candidate quantity surveyors and professional quantity surveyors. The last annual report was produced by the SACQSP in 2021. In addition to this, the SACQSP also confirmed their 2023 membership numbers via email (SACQSP (f), 2023) as detailed in Table 5.3:

Table 5.3: SACQSP membership statistics

	SACQSP Annual Report: 2019 – 2020	SACQSP Annual Report: 2020 – 2021	SACQSP membership: 2023	Average
Candidate QS	44%	46%	49%	46%
PrQS	56%	54%	51%	54%

Between 2019 and 2023 there were on average 46 per cent candidate quantity surveyors and 54 per cent professional quantity surveyors in South Africa. When calculating this ratio based on the responses received from participants the spread between responses from candidate- and PrQS were 42 per cent candidate QS and 58 per cent PrQS. The responses received were considered to be in line with the statistics published by the SACQSP.

Representativeness between candidate- and PrQS contributes positively to the validity and reliability of the results especially when comparing the viewpoints and opinions of candidates and professional quantity surveyors (most stakeholders will fall in the PrQS category).

5.3.2.5 Validity and Reliability

Validity

In relation to a questionnaire, internal validity refers to the ability of such data collection instrument to measure what the research study intended to measure (Ragab & Arisha, 2018; Saunders *et al.*, 2009). To address the internal validity of the questionnaire it was necessary to ensure that the questionnaire provided adequate coverage of the research questions under investigation which is referred to as content validity.

Content validity for this study was addressed by reviewing various sources of literature specifically related to soft skills in the construction industry although it was not limited to that industry alone. The literature reviewed focused among other on soft skills in general, essential soft skills for the construction industry, soft skills gap, soft skills development and assessment, employability skills, workplace competencies, work readiness, and so forth. The aim of the literature review was to obtain insights and understanding regarding various aspects relating to soft skills.

This guided the researcher to develop and include relevant questions in the questionnaire that adequately covered the research questions under investigation and measured what was intended.

To further improve the validity of the questionnaire this research study used easily understood words and terms familiar to the quantity surveying profession. According to Saunders *et al.* (2009), including clear and understandable questions in a questionnaire can help to improve the validity of a questionnaire. Feedback from the pilot study also confirmed that the questionnaire was easy to understand and unambiguous. This contributed to the validity by ensuring that respondents understood the questions and provided the intended answers to each question.

Threats to validity can also be history, testing, instrumentation, mortality, maturation and ambiguity about casual direction (Saunders *et al.*, 2009). This study did not encounter any such threats that could negatively impact the validity of the study.

Reliability

According to Welman *et al.* (2005) reliability is concerned with the findings of the research and the credibility thereof. This view is supported by Collis and Hussey (2021) who state that reliability is considered important for positivist studies and refers to the accuracy and precision of the measurement and the absence of differences in the result if the research were repeated. Reliability alone is not enough for a research study unless it is combined with validity (Taherdoost, 2016).

Reliability of responses can be affected if the person who responds to the questionnaire was not the person for whom the questionnaire was intended. This research study therefore administered the online questionnaire via email (with the assistance of the SACQSP and ASAQS) as according to Saunders *et al.* (2009) this offers greater control over responses since most individuals read and respond to their own emails.

Internal consistency is considered one of the key attributes of reliability. The Cronbach Alpha coefficient is one of the most frequently used methods to measure internal consistency (Ragab & Arisha, 2018; Saunders *et al.*, 2009). Cronbach's Alpha with a score of 0.9 and above is considered excellent reliability, a score of 0.7 - 0.9 is considered high reliability and a score of 0.5 and below is considered low

reliability (Taherdoost, 2016). The Cronbach Alpha method was applied to calculate the internal consistency for all applicable sections of the questionnaire. There were five applicable sections included in the calculations and the results are shown in Table 5.4.

Table 5.4: Cronbach Alpha metrics

		Cronbach Alpha
1	How important is each soft skill for the QS profession in general?	0.8816
2	How well has each soft skill been developed in the average candidate quantity surveyor with less than 5 years work experience?	0.8504
3	How well has each soft skill been developed in yourself?	0.8419
4	Stakeholder Engagement	0.6744
5	Improvement Suggestions	0.7852

The five sections in Table 5.4 all scored Cronbach Alpha measures above 0.5, thus demonstrating reliability. Section 1 included a matrix question with a Likert scale that can actually be considered as 16 individual questions, each question covering a different soft skill. The Cronbach Alpha measure for section 1 was 0.8816 which indicated a high level of reliability. Sections 2 and 3 were also matrix questions with Likert scales, similar to section 1.

The Cronbach Alpha measure for section 2 and 3 were 0.8504 and 0.8419 respectively, thus indicating a high level of reliability. Section 4 included nine individual questions with Likert scales. The Cronbach Alpha measure for section 4 was 0.6744 which is deemed an acceptable level of reliability (since it is above 0.5). Section 5 contained seven individual questions with a Likert scale. The Cronbach Alpha measure for section 5 was 0.7852 indicating a high level of reliability.

“Check-questions” were also included in the questionnaire and offered further reliability since responses could be compared to alternative forms of the same question. The responses that were found unreliable when comparing the check questions were considered as “unsatisfactorily completed” and were not included in the final data set.

Participant error and participant bias according to Saunders *et al.* (2009) are threats to reliability. Participant error relates to the timing of when a questionnaire is

distributed to ensure the responses received are more reliable. This was not a major threat to the reliability for this study in particular. It is, however, worth mentioning that this study distributed the questionnaire during a time of the year where consulting QS firms are usually under less pressure and quantity surveyors would potentially be more willing to set aside time to answer the questionnaire.

Respondents also had a few weeks at their disposal to complete the questionnaire at a time most convenient to them. Participation bias is when respondents are prone to provide socially-desirable answers. To address this threat the questionnaire was distributed as a self-administered online questionnaire which participants could answer anonymously. Such measures have proven to generate more truthful and fewer socially-desirable answers.

The measures discussed above were implemented in order to improve the level of validity and reliability for this research study.

5.3.3 Data Analysis

The University of Pretoria, Department of Statistics Internal Consultation Service (ISCS), assisted the researcher with the statistical analysis of the data as they have the necessary expertise and relevant software. The type of data collected for this study primarily consisted of categorical variables. The questionnaire mainly utilised Likert scales, thus resulting in the collection of ordinal data. The data analysis undertaken for this research was done using descriptive- and inferential statistics as well as an exploratory factor analysis

The descriptive statistics summarise the overall statistics for the groups and variables involved. Frequency and proportions were calculated across all categorical variables. When the variable consisted of numerical values the metrics calculated were the minimum numerical value of the variable, the maximum numerical value of the variable, the mean and standard deviation of the variable, the median and interquartile range of the variable as well as the mean and the 95 per cent confidence interval of the variable. Descriptive statistics were also used to determine the ranking of relative importance in terms of soft skills as well as a comparative analysis between the various groups in the data set.

A factor analysis was applied using the 16 soft skills as variables to determine if they cluster in some way including a series of tests to evaluate the appropriateness of a factor analysis (Kaiser-Meyer-Olkin and Bartlett tests). This study recognises that an exploratory factor analysis is a parametric test and thus not applicable for use on ordinal data. However, an article by Uz Zaman, Bibi, Ur Rehman Sheikh and Raziq (2020) highlighted the possibility to utilise factor analysis on Likert scale data. Recent soft skills related research conducted in the construction industry revealed the use of factor analysis on Likert scale data (Aliu & Aigbavboa, 2023; van Heerden *et al.*, 2023). Likert scale data is appropriate and adjusted for by using the oblique rotation and principal axis factoring. Spearman's rank correlation was used to get the underlying correlation structures.

Inferential statistics were used to determine whether any relationships of statistical significance existed using the Fisher's Exact Test. The Cronbach Alpha coefficient test was used to measure the internal consistency of the data. The findings of the data analysis will be discussed in detail in the next chapters.

5.4 LIMITATIONS

Limitations to a research method can be assessed according to whatever hinders the research from being conducted perfectly. All research methods have limitations and it is seldom possible to achieve perfection in research (Hofstee, 2015). The selected research method applicable to this study had one main limitation as explained below.

This research study was not able to gain direct access to the SACQSP and ASAQS database due to the POPI Act restrictions. It was thus not possible to draw a sample frame and apply probability sampling that would generate data which could be used to generalise to the population on statistical grounds. According to Saunders *et al.* (2009) it is still possible to generalise about a population using non-probability samples but not on statistical grounds (Saunders *et al.*, 2009). Unfortunately, the POPI act is a barrier that many researchers in South African will have to face and work around when conducting research in their respective industries or market sectors.

This limitation was, however, not considered a hinderance to this study as the data generated through non-probability sampling was sufficient to answer the research questions.

5.5 ETHICAL CLEARANCE

At the University of Pretoria (UP) all research has to take place within a particular academic value system. To ensure that research takes place within such value system, UP has laid down certain policy guidelines and procedures. Part of this academic value system requires that researchers should "be true to the ethical principles of justice and credibility" and should "have an increased research responsibility and duty when research is done involving humans, animals or the environment as subjects to the research". Researchers at UP are required to comply with the research ethical rules applicable within the University or Faculty (University of Pretoria, 2007).

Research, specifically data collection, may not commence without prior written approval by an ethics committee. Each faculty at UP has its own particular procedure in this regard that researchers need to adhere to in order to obtain the necessary ethics approval (University of Pretoria, 2007).

This research study was conducted in UP's Faculty of Engineering, Built Environment and Information Technology (EBIT) and ethical clearance had to be obtained from the EBIT ethics committee. The EBIT ethics committee in accordance with UP regulations, stipulates that all research that include humans or animals are subject to ethics approval before data gathering may commence (University of Pretoria (c), 2023). A human participant in research is defined by UP's Code of Ethics for Scholarly Activities as "a living individual on whom the researcher is conducting research by collecting data by intervention or interaction with the individual" (University of Pretoria, 2013). This research study made use of a questionnaire as research instrument and included human participants as research informants.

The EBIT ethics application process is an online process whereby researchers are required to complete the application form electronically via the online ethics system and also attach all the necessary supporting documents (e.g., questionnaire and informed consent forms). The ethics application requires researchers to furnish the following information among others: title of the study, a short literature review, the aims and objectives, the materials and methods, duration of the project, details of all researchers involved, involvement of research participants, how data will be recorded,

stored and archived, describing any risk and/or associated benefits, planned application of results and environmental impact if applicable (University of Pretoria (c), 2023).

For this research study the EBIT ethics committee required the following documents to be submitted as part of the application process: (a) application form; (b) questionnaire and (c) informed consent form (to be completed by research participants after ethical clearance was obtained and before data was collected). The UP EBIT ethics application process works as follows (University of Pretoria (c), 2023):

- The researcher submits the ethics application via the online ethics system (including all required supporting document).
- The submission is then routed for approval to the research supervisor.
- Upon approval by the research supervisor the submission is rooted for approval to the Head of Department (for this study it was the Department of Construction Economics in the EBIT faculty at UP).
- Upon approval by the Head of Department the submission is routed to the EBIT ethics committee for their review and approval.

There are set ethics application submission deadlines throughout the year that all researchers in the EBIT faculty need to adhere to. These deadlines are the dates on which the ethics application must reach the EBIT ethics committee. Researchers therefore need to plan accordingly and allow sufficient time for Departmental approval in order to meet the EBIT ethics submission deadline. The EBIT ethics committee typically provides feedback on ethics applications within four to five weeks (University of Pretoria (c), 2023).

This research study was granted conditional approval and had to adhere to the following condition: The researcher had to provide proof of permission from the SACQSP and ASAQS confirming their willingness to assist the researcher by distributing the online questionnaire. The researcher fulfilled this condition and obtained such permissions via email from the ASAQS and from the SACQSP prior to data collection.

5.6 CONCLUSION

This chapter provided a detailed overview of the research design and selected research method. The empirical research conducted was quantitative in nature making use of a structured questionnaire as data collection tool. The data was analysed using descriptive- and inferential statistics. The next chapter presents the research results and then continues to discuss the findings as it relates to the various research sub-questions.

6 CHAPTER 6: DATA ANALYSIS AND FINDINGS

6.1 INTRODUCTION

The previous chapter explained the research methodology that was applied to collect the research data for this study. This chapter will explain how the collected data was analysed and clearly present and illustrate the findings utilising graphs and Tables. The discussion, interpretation and where applicable, further exploration of the findings in relation to the research questions will be addressed in the next chapter.

The findings will be presented in accordance with the sections of the questionnaire. The first part of the findings will present the details of the research participants, the second part will present the findings related to soft skills development, the third part will present the findings related to stakeholder engagement and the last part will present the findings related to improvement suggestions.

6.2 DATA ANALYSIS

The data set for this research study contained a total of 528 satisfactorily completed responses. The University of Pretoria, Department of Statistics Internal Consultation Service (ISCS), assisted the researcher with the statistical analysis of the data. The data analysis undertaken for this research was done using descriptive- and inferential statistics as well as an exploratory factor analysis. Data were analysed using R software (version 4.2.1).

The descriptive statistics summarised the overall statistics for the groups and variables involved. Frequency and proportions were calculated across all categorical variables. When the variable consisted of numerical values the metrics calculated were the minimum numerical value of the variable, the maximum numerical value of the variable, the mean and standard deviation of the variable, the median and interquartile range of the variable as well as the mean and the 95 per cent confidence interval of the variable. Descriptive statistics were also used to determine rankings of relative importance in terms of soft skills as well as comparative analysis between the various groups in the data set.

Inferential statistics were used to determine whether any significant relationships existed using the Fisher's Exact Test. Further investigations were conducted in the form of an exploratory factor analysis, utilising the 16 soft skills included in the questionnaire (question 11) as variables to determine if they cluster in some way. A series of test were conducted to evaluate the appropriateness of a factor analysis which included the Kaiser-Meyer-Olkin and Bartlett tests.

The Cronbach Alpha coefficient test was used to measure the internal consistency of the data. A score higher than 0.5 indicates good internal consistency and reliability in terms of the data obtained.

This chapter will present the overall findings derived from the descriptive statistical analysis. Further exploration and investigation of the findings, such as comparative analysis, ranking of relative importance, test for significance and exploratory factor analysis will be included in the next chapter in relation to each research sub-question.

6.3 FINDINGS: DETAILS OF RESEARCH PARTICIPANTS

The first section of the questionnaire (questions 2 - 7) collected profile details of the research participants. The information was used by the researcher to compare opinions and views between various groups in order to arrive at justified conclusions and produce reliable and valid findings regarding the research questions under investigation. The profile details of research participants were summarised and the findings are presented in Table 6.1.

Table 6.1: Details of research participants

	n	%		*n*	%
Registration status			**Company / organisation / sector**		
PrQS	*265*	50%	Consulting firm	*301*	57%
Candidate QS	*192*	36%	Contractor	*74*	14%
Non-registered QS	*63*	12%	Government	*61*	11%
Not a QS	*8*	2%	Engineering	*27*	5%
Experience			Property / Real Estate	*20*	4%
0 - 5 Years	*127*	24%	Higher education	*16*	3%
6 - 10 Years	*131*	25%	Banking	*4*	1%
11 - 15 Years	*90*	17%	Other	*25*	5%
16 - 20 Years	*42*	8%	**Employment position**		
21 - 25 Years	*38*	7%	Management (manager, associate,		
26 - 30 Years	*24*	5%	director, executive, CEO, MD)	*182*	35%
31 - 35 Years	*27*	5%	Senior QS	*150*	28%
35+ years	*49*	9%	Junior QS	*138*	26%
Generational cohort			Academic (lecturer, senior lecturer,		
Boomers (born 1946 - 1964)	*68*	13%	associate professor, professor)	*13*	2%
Generation X (born 1965 - 1980)	*92*	17%	Other	*45*	9%
Generation Y (born 1981 - 1996)	*312*	59%			
Generation Z (born 1997 - 2012)	*56*	11%			
Mentor / Supervisor					
Not applicable because I am a candidate QS	*192*	36%			
Yes	*180*	34%			
No	*156*	30%			

These details will now be elaborated on according to the various sections included in Table 6.1.

6.3.1 Registration status as a Quantity Surveyor

Respondents were required to indicate their current registration status as a quantity surveyor (question 2). The findings are indicated in figure 6.1.

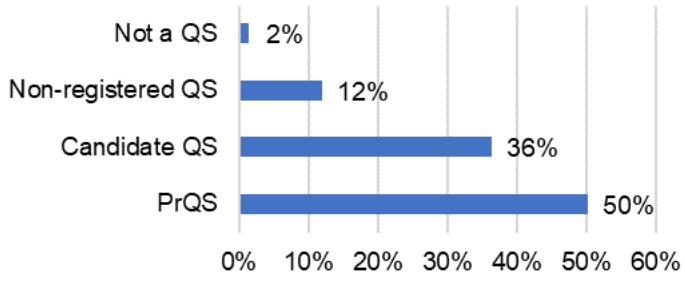


Figure 6.1: Respondents' QS registration status

The statistics from the SACQSP revealed that over the last three years there was on average 54 per cent professionally registered quantity surveyors and 46 per cent

registered candidate quantity surveyors in South Africa (refer to Table 5.3 in chapter 5). The responses received are considered to be in line with the SACQSP statistics and contribute positively towards the representativeness of the QS population.

In the context of this study, early career development implies the development of softs skills in entry level employees typically registered as candidate quantity surveyors with five years or less experience. The reality, however, is that quantity surveyors may register as candidates at any point in their career and some might take longer than the prescribed minimum time to complete their APC, resulting in some candidate quantity surveyors having more than five years' experience.

Quantity surveyors with more than five years' experience would have been exposed to more projects and professional situations and cannot be considered as entry level employees anymore. This study therefore deemed it necessary to compare the QS registration status of respondents with their years of experience to determine the spread of candidate quantity surveyors. These findings are tabulated below.

Table 6.2: Comparison of QS registration status with years of experience

	PrQS	Candidate QS	Non-registered QS	Not a QS
0 - 5 Years	*8*	*91*	*26*	*2*
6 - 10 Years	57	57	16	1
11 - 15 Years	56	25	8	1
16 - 20 Years	26	11	5	0
21 - 25 Years	34	2	2	0
26 - 30 Years	19	2	0	3
31 - 35 Years	20	1	5	1
35+ years	45	3	1	0
SUM	265	192	63	8
%	50%	36%	12%	2%

53%

The findings revealed that 53 per cent (n = 101) of all candidate quantity surveyors who responded to the questionnaire had more than five years' experience and should therefore not be considered as entry level employees. It is also evident that the other registration groups included respondents with five years or less experience (PrQS = 8, Non-registered QS = 26 and Not a QS = 2) who can be considered as entry level employees.

The expectation of this study was that most candidate quantity surveyor respondents would have five years or less experience, thus allowing this study to label this entire

group as entry level employees. The findings, however, brought to light that this was not the case. This study therefore used experience levels rather than QS registration status when comparing the views and opinions of entry level employees, who are less experienced, with the views and opinions of more experienced employees.

6.3.2 Company / organisation / sector of employment

Respondents were asked to indicate which company, organisation or sector they are currently employed in (question 3). These findings are indicated in Figure 6.2.

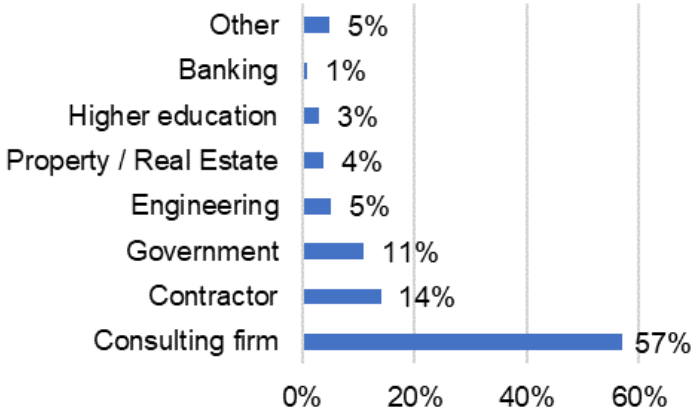


Figure 6.2: Respondents' company / organisation / sector of employment

The findings revealed that majority of QS graduates seek employment with QS consulting firms and it is considered a normal trend or pathway in terms of employment.

The workplace experience and competencies that candidate quantity surveyors require are often best developed at QS consulting firms because the primary focus of such firms is centred on quantity surveying services. Quantity surveying services are, however, also required by other firms and sectors in the construction industry, although their primary focus differs, such as contracting-, engineering-, property/real estate organisations or government institutions such as Department of Public Works, Transnet, and so forth. The findings indicated that the majority of responses were received from consulting firms which contributes to the reliability of the results because the primary focus and core functions of such firms are quantity surveying services.

6.3.3 Experience

Respondents were asked how many years of experience they had in the quantity surveyor profession to date (question 4). These findings are shown in Figure 6.3.

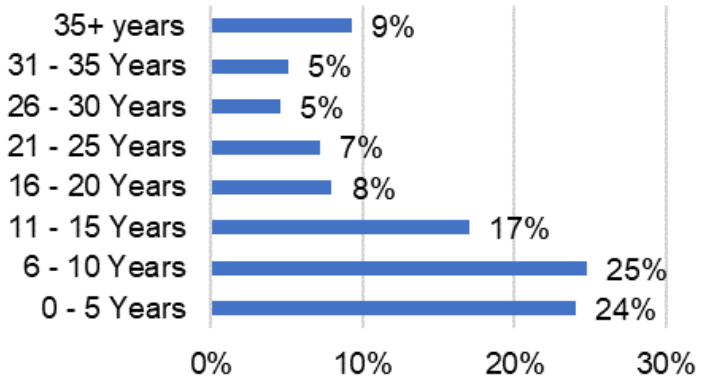


Figure 6.3: Respondents' level of experience

The SACQSP's 2021 annual report (SACQSP, 2021) provided statistics regarding the various age groups of quantity surveyors (both candidate- and professional quantity surveyors) in South Africa. Since the SACQSP has not yet issued an annual report since then, the age groups presented in the 2021 annual report were used to benchmark the experience brackets of quantity surveyors. The statistics presented in Table 6.3 are only an approximate benchmark since the age brackets stipulated by the SACQSP did not correspond precisely to the experience brackets stipulated by this research study.

Table 6.3: Experience level comparison

Experience bracket	SACQSP stats 2021	Research findings 2023
10 years or less experience	44%	49% (24% + 25%)
11 - 20 years' experience:	27%	25% (17% + 8%)
21 – 30 years' experience:	13%	12% (7% + 5%)
31+ years' experience:	16%	14% (5% + 9%)

Based on the findings presented in Table 6.3, the experience levels of respondents were in line with the statistics from the SACQSP. The balanced distribution of responses in terms of experience levels of quantity surveyors contributed positively towards the representativeness of the QS population. Respondents with more

experience have had exposure to more professional situations, projects, other professional consultants as well as clients and thus had more opportunities to grow in their role and responsibilities as quantity surveyors. Experience influences the views and opinions of respondents and this will be considered, where applicable, when further exploring and interpreting the findings in relation to the research questions.

6.3.4 Employment position

Respondents were asked to indicate their current position of employment within their company / organisation (question 5). These findings are presented in Figure 6.4.

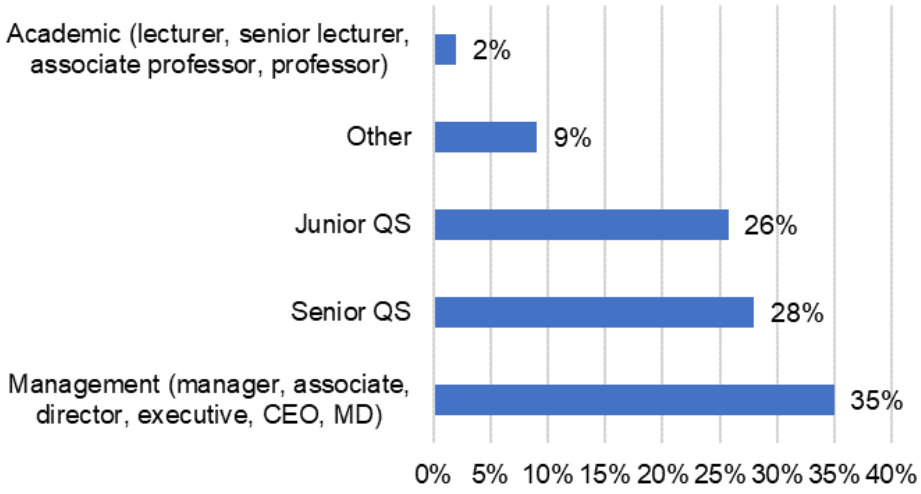


Figure 6.4: Respondents' employment positions

Employment position goes hand in hand with responsibility as well as experience. Experience brings about valuable learning opportunities that enable a quantity surveyor to grow in their role and take on more responsibility. As previously indicated 24 per cent of respondents had five years or less experience which is in line with the results shown in the Figure 6.4 indicating that 26 per cent of respondents were employed in junior QS positions. The views and opinions of different employee groups will especially be considered when discussing the findings relating to stakeholder engagement, specifically QS employers, towards soft skills development of candidate quantity surveyors.

6.3.5 Mentorship / supervision

Respondents were asked to indicate if they have ever acted as a mentor or supervisor for candidate quantity surveyors (question 6). These findings are indicated in Figure 6.5.

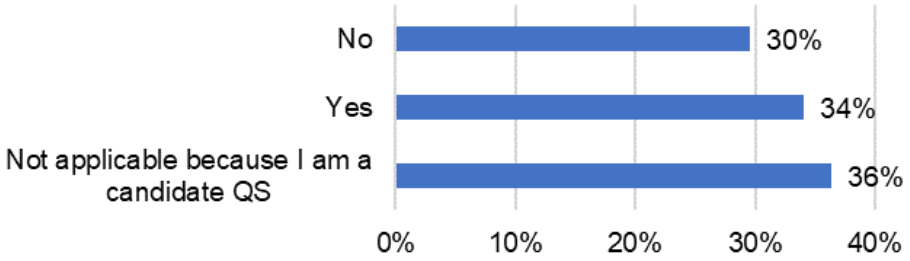


Figure 6.5: Respondents' involvement in mentorship / supervision

Mentors are professionally registered quantity surveyors with the SACQSP who play an integral role during the APC of candidate quantity surveyors. Mentors are usually employed in the same company as the candidate and oversee and guide a candidate QS during their APC to ensure they obtain the required experience and develop the necessary competencies. Since mentors are closely involved with candidate quantity surveyors, they should have more insight regarding the professional development of candidates. Such insight will be considered, especially when conducting the soft skills gap analysis among candidate quantity surveyors.

6.3.6 Generational cohort

Respondents were asked to indicate the generational cohort they belong to (question 7). These findings are indicated in Figure 6.6.

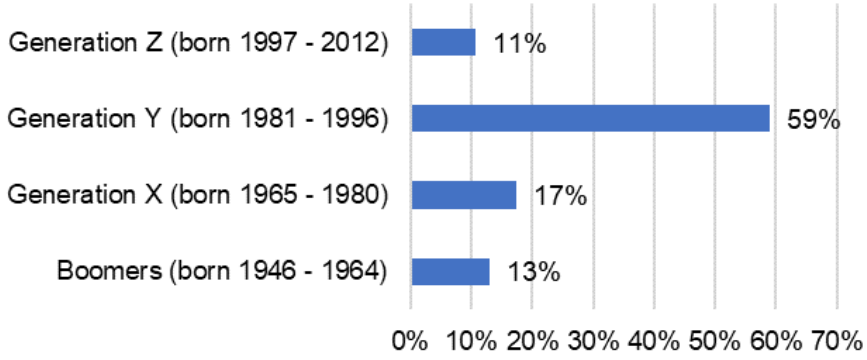


Figure 6.6: Respondents' generational cohort

According to Van Eck and Hoffman (2022), 72 per cent of all quantity surveyors in South Africa are younger than 45 years. This indicates that the majority of quantity surveyors in this country belongs to the millennial cohort. Millennials are currently between the ages of 43 and 27 years.

Generation Z has already joined the quantity surveying profession and are those quantity surveyors younger than 27 years. It was thus expected that the majority of respondents for this research study, if representative of the QS population, would belong to the millennial cohort and that generation Z will be the least respondents since they have only joined the QS profession in recent years. Generations have different viewpoints and expectations when it comes to professional development in the workplace and this study will take that into consideration, where applicable, when further exploring and interpreting the findings.

6.4 FINDINGS: SOFT SKILLS DEVELOPMENT

This section will present the findings relating to part 3 of the questionnaire (questions 8 to 14). The aim of part 3 of the questionnaire was to obtain respondents' general perceptions / views regarding soft skills in the quantity surveying profession. The questions also required of respondents to rate the overall importance of soft skills for this profession, to assess the development of soft skills in candidate quantity surveyors and to do a self-assessment of the development of their own soft skills.

6.4.1 Importance of cultivating soft skills

Research respondents were asked to indicate how important the cultivation of soft skills is for the quantity surveying profession (question 8). This question utilised a 5-point Likert scale ranging from "not important at all" to "extremely important". Figure 6.7 presents the responses recorded.

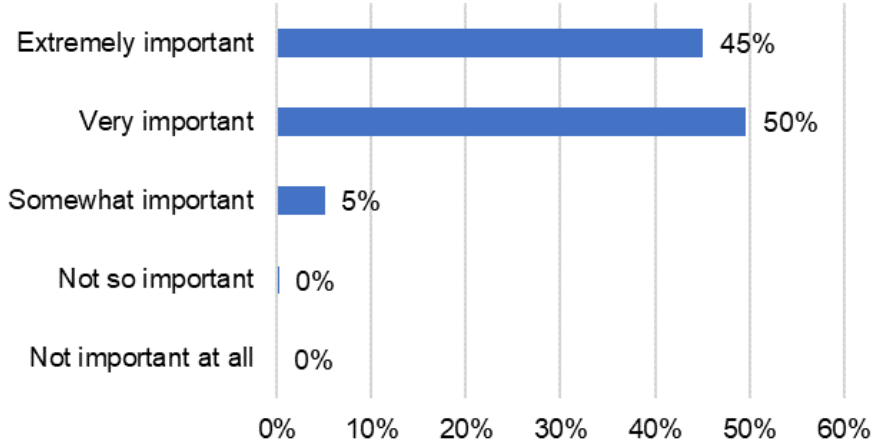


Figure 6.7: Importance of cultivating softs skills in the QS profession

The findings revealed that 5.11 per cent (n = 27) of respondents indicated that the cultivation of soft skills is "somewhat important" and 50 per cent (n = 262) of respondents indicated that the cultivation of soft skills is "very important" and 45 per cent (n = 238) indicated that it is "extremely important". Collectively 95 per cent of respondents indicated that the importance of cultivating soft skills in the quantity surveying profession ranged between "very important" and "extremely important".

6.4.2 Soft skills shortage

Research respondents were asked if they agree that a soft skills shortage exists in the quantity surveying profession (question 9). This question utilised a 5-point Likert scale ranging from "strongly disagree" to "strongly agree". Figure 6.8 indicates the responses recorded.

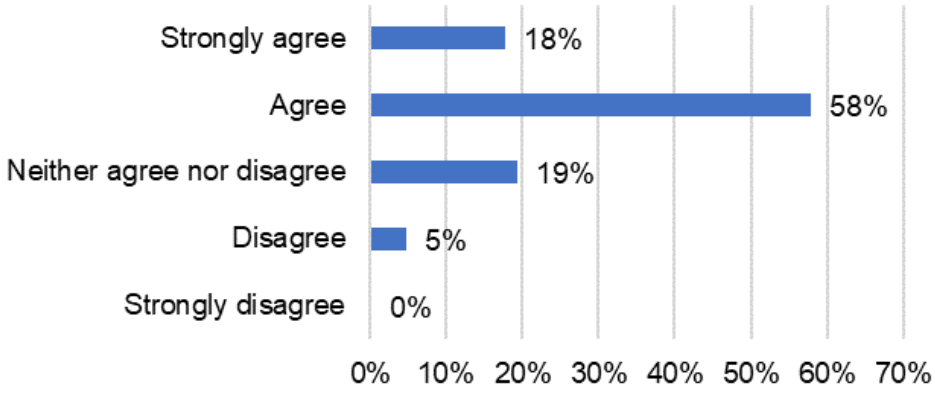


Figure 6.8: Soft skills shortage in the QS profession

Five per cent (n = 25) of respondents indicated that they disagreed with the question. Nineteen per cent (n = 102) of respondents were neutral on the matter by neither agreeing nor disagreeing with the question. Fifty-eight per cent (n = 306) of the respondents however agreed that a soft skills shortage exists and 18 per cent (n = 94) strongly agreed. Collectively 76 per cent (58 per cent + 18 per cent) of respondents were in agreement that a soft skills shortage indicating the quantity surveying profession's recognition of a soft skills gap.

6.4.3 Contribution ratio of soft skills towards workplace success

Research respondents were asked to select the contribution ratio of soft skills towards workplace success in comparison to the contribution of technical skills (question 10). Figure 6.9 presents the responses recorded.

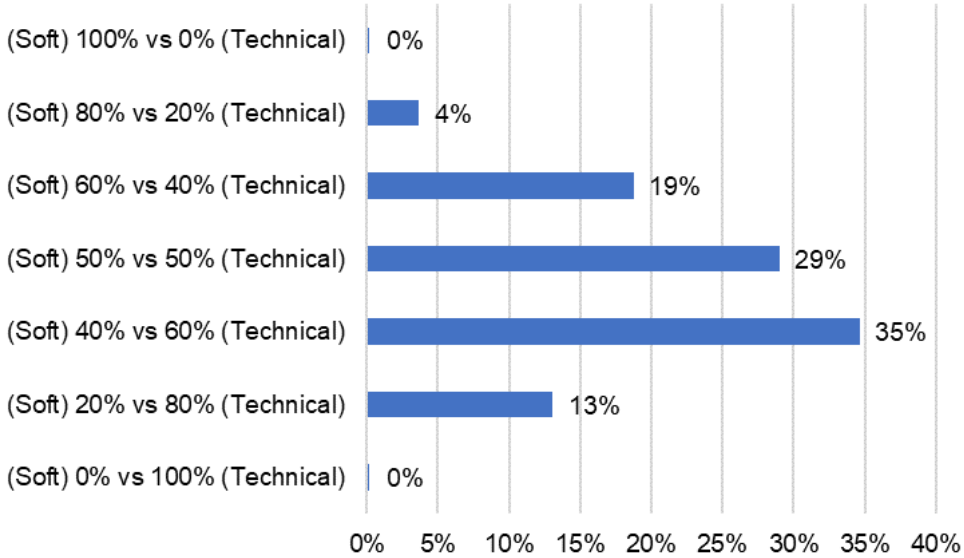


Figure 6.9: Contribution ratio of soft skills towards workplace success

Four per cent (n = 19) of all respondents indicated that the soft skills contribution towards workplace success was 80 per cent. Nineteen per cent (n = 99) of respondents indicated that it was 60 per cent. Twenty-nine per cent (n = 156) of respondents indicated that it was 50 per cent. Thirty-five per cent (n = 183) of respondents indicated that it was 40 per cent. Thirteen per cent (n = 70) of respondents indicated that it was 20 per cent. The findings revealed that the majority of the respondents (35 per cent + 29 per cent = 64 per cent) were of the opinion that soft skills contributes significantly towards success in the workplace, ranging between 40 per cent and 50 per cent. The development of soft skills can therefore not be disregarded by quantity surveyors.

6.4.4 Importance of soft skills for the quantity surveying profession

Respondents were asked to indicate how important each of the 16 soft skills (as derived from the literature review), were for the quantity surveying profession (question 11). The question utilised a 5-point Likert scale ranging from “not important at all” to “extremely important”. These findings are presented in Figure 6.10.

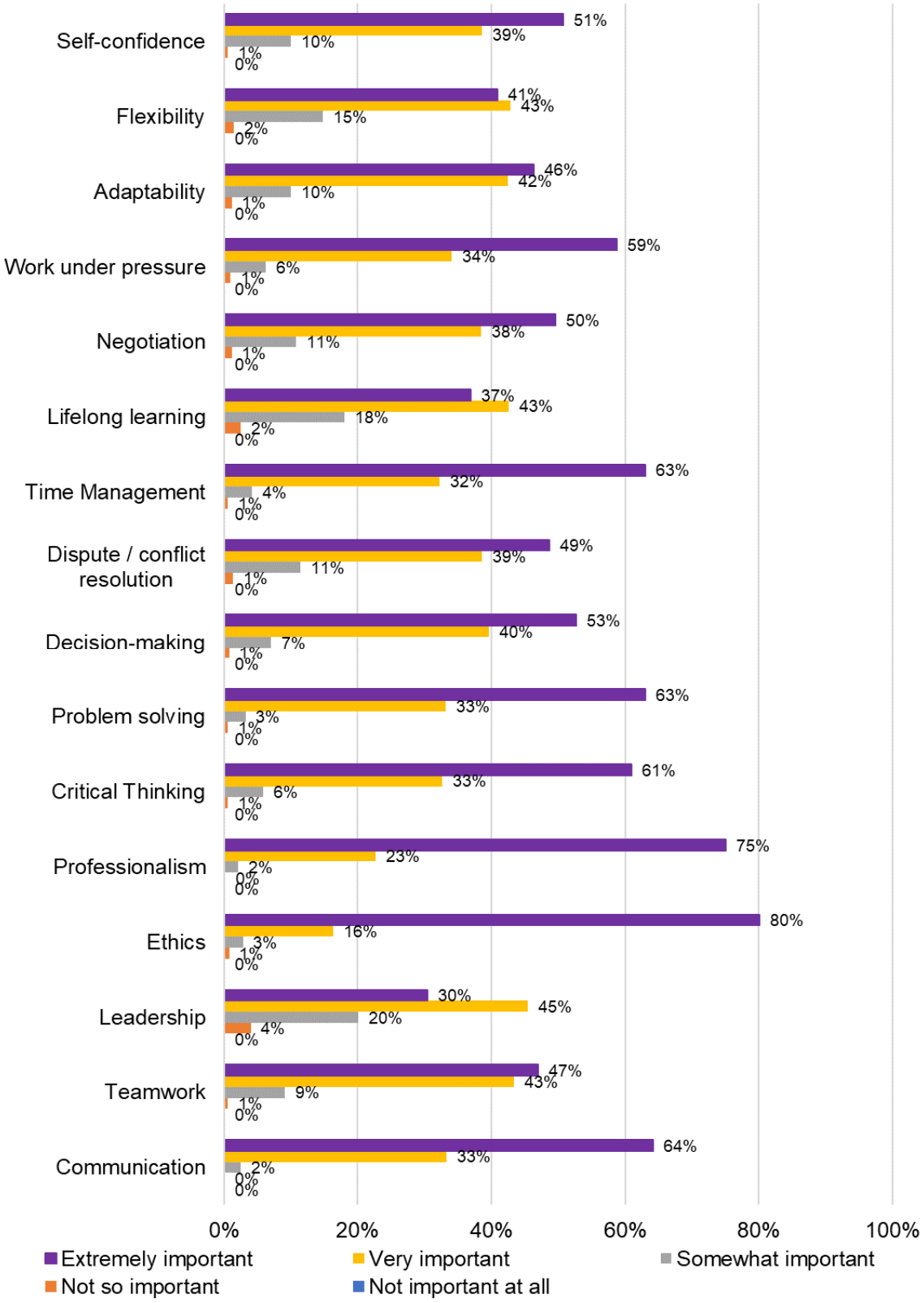


Figure 6.10: Importance of essential soft skills for the QS profession

The findings indicated that no respondents were of the opinion that the 16 soft skills were “not important at all”. On average, only 1 per cent of respondents indicated that the 16 soft skills were “not so important”, 9 per cent indicated that these soft skills were “somewhat important”, 36 per cent indicated that the 16 soft skills were “very important” and 54 per cent indicated that these soft skills are “extremely important” for the quantity surveying profession. The mean score for each of the 16 soft skills were calculated by assigning values from 1 to 5 to the scales, where 1 was “not at all important” and 5 was “extremely important”. The mean scores were used to determine a ranking of relative importance. These mean, standard deviation and rank are shown in Table 6.4.

Table 6.4: Means score and ranking of soft skills

	Mean	SD	Ranking
Ethics	4.76	0.53	1
Professionalism	4.73	0.67	2
Communication	4.62	0.82	3
Problem solving	4.59	0.54	4
Time Management	4.58	0.50	5
Critical Thinking	4.54	0.63	6
Ability to work well under pressure	4.51	0.58	7
Decision-making	4.44	0.66	8
Self-confidence	4.40	0.73	9
Teamwork	4.37	0.60	10
Negotiation	4.37	0.79	11
Dispute and conflict resolution	4.35	0.72	12
Adaptability	4.34	0.66	13
Flexibility	4.23	0.70	14
Lifelong learning	4.14	0.75	15
Leadership	4.02	0.69	16
Average	4.44	0.20	

Average values closer to 5 were considered to be more important, and values closer to 1 were less important. The mean value of each of the 16 soft skills was higher than 4 thus demonstrating that these soft skills carry a high level of importance for the quantity surveying profession. The average mean score for all 16 soft skills was 4.44 indicating that respondents were of the opinion that the importance of these soft skills ranged between “very”- and “extremely” important. It is therefore necessary for the quantity surveying profession to focus efforts and attention towards the development of these skills during the early career development years of young quantity surveyors. The discussion of the soft skills ranking based on the mean scores will be included in the next chapter.

6.4.5 Soft skills development of the average candidate QS with less than 5 years' experience

Respondents were asked to indicate how well each soft skill was developed in the average candidate quantity surveyors with less than five years' experience (question 12). This question utilised a 5-point Likert scale ranging from "poor" to "excellent". These findings are presented in Figure 6.11.

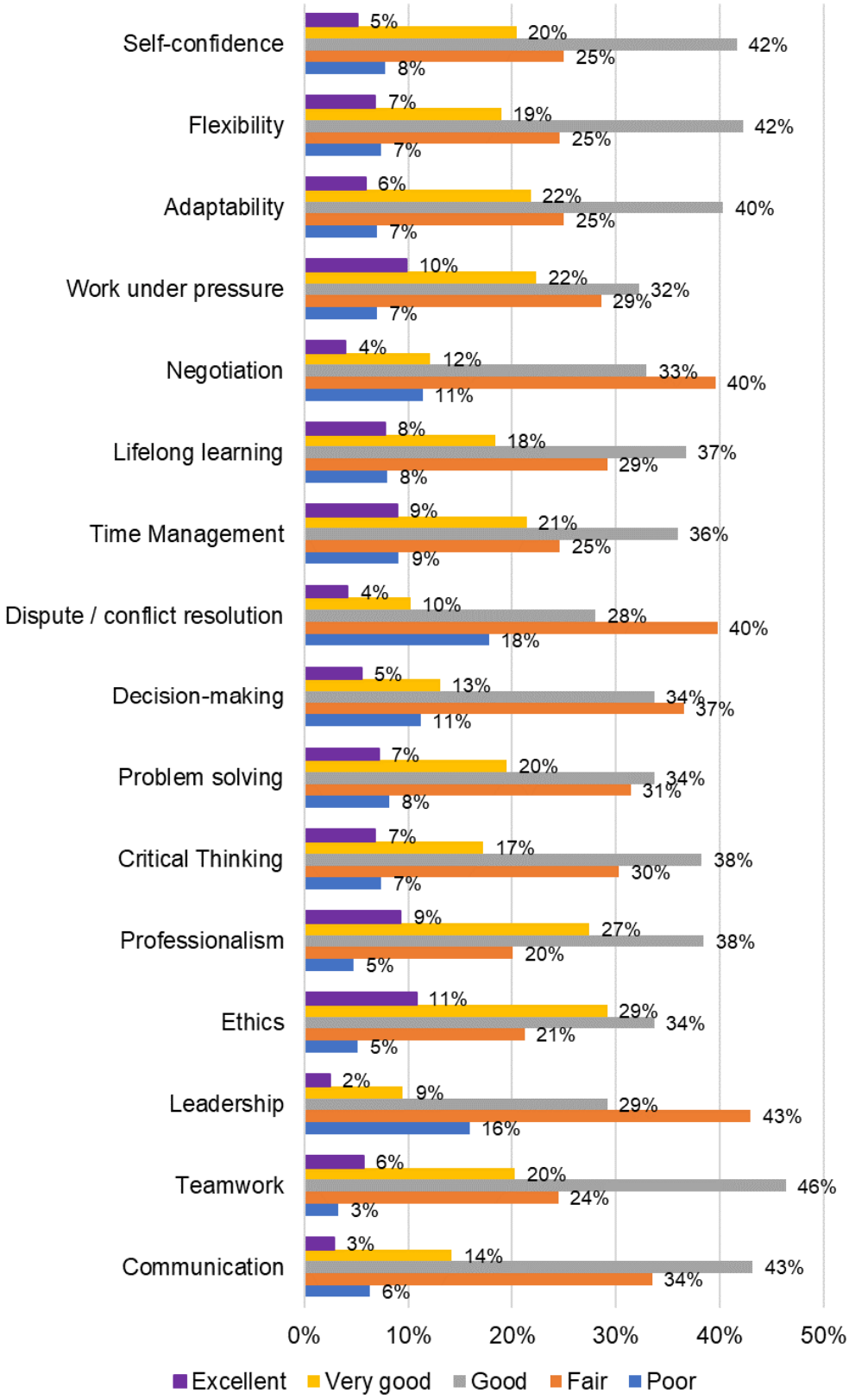


Figure 6.11: Development of soft skills in the average candidate QS

The findings showed that on average, 9 per cent of the respondents were of the opinion that the 16 listed soft skills were poorly developed in the average candidate quantity surveyor with less than five years' experience, 30 per cent indicated that these skills were fairly developed, 37 per cent indicated that the development of these soft skills were "good", 18 per cent indicated that the development thereof was "very good" and only 6 per cent indicated that the development of these skills were "excellent". The mean score for each of the 16 soft skills were calculated by assigning values from 0 to 5 to the scales, where 1 was "poor" and 5 was "excellent". These mean, standard deviation and rank are shown in Table 6.5.

Table 6.5: Soft skills development of the average candidate QS (<5 years' experience) - Mean score and rank

	Mean	SD	Rank
Ethics	3.19	1.05	1
Professionalism	3.16	1.01	2
Teamwork	3.01	0.90	3
Ability to work well under pressure	2.99	1.09	4
Time management	2.96	1.09	5
Adaptability	2.95	0.99	6
Flexibility	2.93	1.00	7
Self confidence	2.9	0.98	8
Lifelong learning	2.89	1.05	9
Critical thinking	2.86	1.01	10
Problem solving	2.86	1.05	11
Communication	2.74	0.88	12
Decision making	2.65	1.02	13
Negotiation	2.58	0.98	14
Dispute and conflict resolution	2.43	1.03	15
Leadership	2.4	0.95	16
AVERAGE	2.84	0.23	

Average values closer to 5 were considered to be more important, and values closer to 1 were less important. The average mean score for all 16 soft skills was 2.84 indicating that respondents were of the opinion that the soft skills development of the average candidate quantity surveyor with less than 5 years' experience ranged between "fair" and "good" but leaning more towards "good".

6.4.6 Soft skills development self-assessment

Respondents were asked to conduct a self-assessment of the development of their own soft skills (question 13). This question utilised a 5-point Likert scale ranging from “poor” to “excellent”. These findings are presented in figure 6.12.

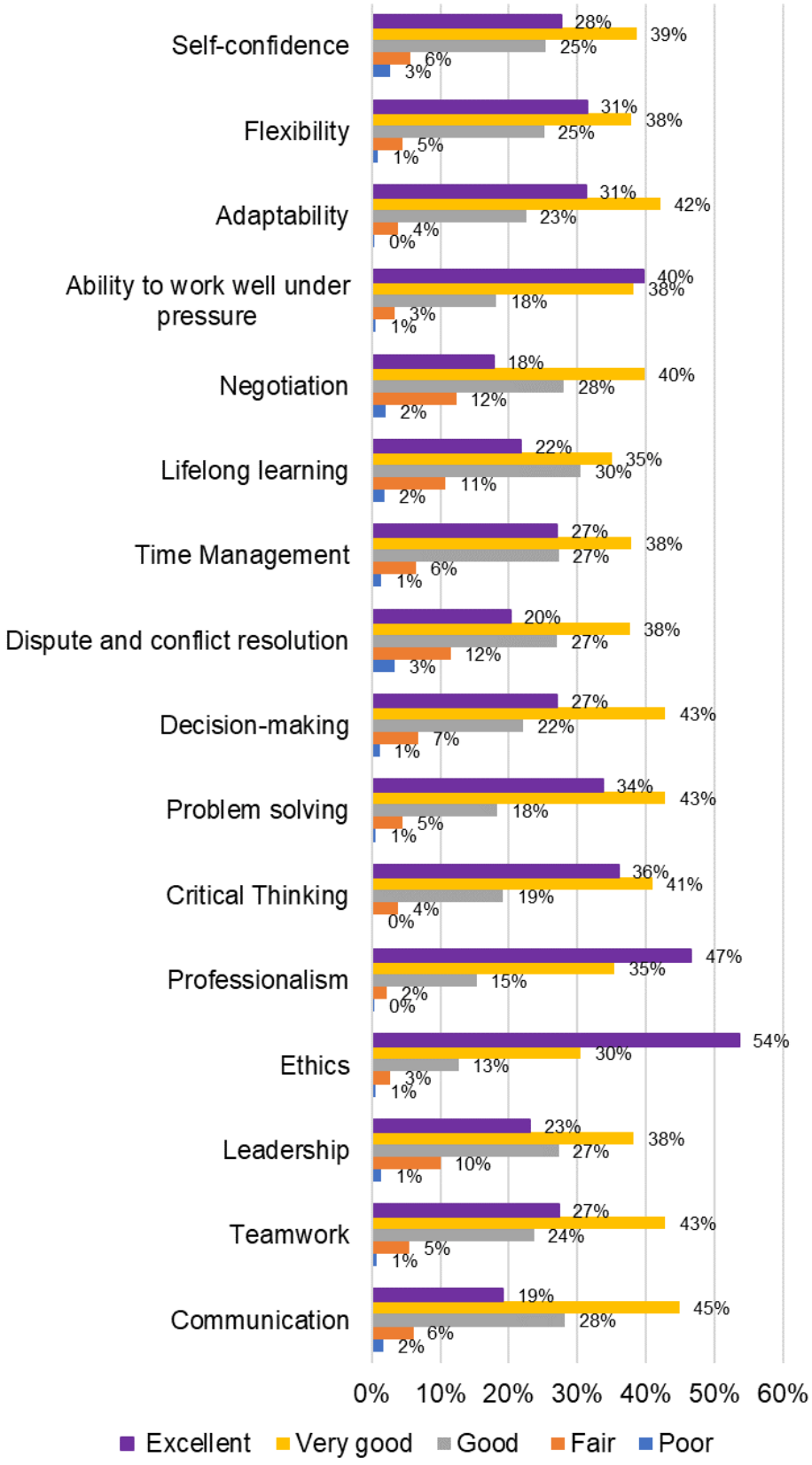


Figure 6.12: Respondents' self-assessment of soft skills

On average only 1 per cent of respondents indicated that the 16 listed soft skills were poorly developed in themselves, 7 per cent indicated that these soft skills were only fairly developed in themselves, 23 per cent indicated that the development of these soft skills in themselves was “good”, 39 per cent indicated that the development of these soft skills in themselves was “very good” and 30 per cent indicated that the development of these soft skills in themselves were “excellent”. The mean score for each of the 16 soft skills were calculated by assigning values from 0 to 5 to the scales, where 1 was “poor” and 5 was “excellent”. These mean, standard deviation and rank are shown in Table 6.6.

Table 6.6: Soft skills development self-assessment - Mean score and rank

	Mean	SD	Rank
Ethics	4.34	0.90	1
Professionalism	4.26	0.89	2
Ability to work well under pressure	4.13	0.97	3
Critical thinking	4.09	0.84	4
Problem solving	4.05	0.82	5
Adaptability	4.00	0.84	6
Flexibility	3.94	0.87	7
Teamwork	3.90	0.92	8
Decision making	3.88	1.04	9
Time management	3.83	0.95	10
Self confidence	3.83	1.00	11
Communication	3.74	0.99	12
Leadership	3.72	0.87	13
Lifelong learning	3.64	0.85	14
Dispute and conflict resolution	3.60	0.91	15
Negotiation	3.59	0.98	16
AVERAGE	3.91	0.23	

Average values closer to 5 were considered to be more important, and values closer to 1 were less important. The average mean score for all 16 soft skills was 3.91 indicating that respondents’ self-assessment of their own soft skills ranged between “good” and “very good” but leaning more towards “very good”.

6.4.7 How would you describe generation Z quantity surveyors (those currently 26 years and younger) in the workplace?

Respondents were asked to describe generation Z quantity surveyors by selecting only three characteristics from the nine listed characteristics in the questionnaire

(question 14). The findings were split between the various generational cohorts to determine how generation Z view themselves compared to how other cohorts view them. These findings are tabulated below.

Table 6.7: Comparative analysis of characteristics of generation Z vs generational cohorts

		Boomers (n=68)		Gen X (n=92)		Gen Y (n=312)		Gen Z (n=5)6	
		n	*% of cohort*	n	*% of cohort*	n	*% of cohort*	n	*% of cohort*
1	Hard working and motivated	6	*9%*	4	*4%*	41	*13%*	22	*39%*
2	Eager to learn, develop and grow	20	*29%*	26	*28%*	107	*34%*	30	*54%*
3	Advance their careers as quickly as possible	56	*82%*	76	*83%*	202	*65%*	31	*55%*
4	Flexibility and work-life balance is important	19	*28%*	35	*38%*	117	*38%*	18	*32%*
5	A good salary is what matters most	47	*69%*	61	*66%*	202	*65%*	21	*38%*
6	Require recognition and acknowledgement when a task has been completed successfully	20	*29%*	27	*29%*	127	*41%*	14	*25%*
7	Want constant feedback from managers/seniors in the office	19	*28%*	22	*24%*	87	*28%*	16	*29%*
8	Can manage themselves and their work well	5	*7%*	10	*11%*	16	*5%*	9	*16%*
9	Prefer to work individually rather than in a team	12	*18%*	15	*16%*	37	*12%*	7	*13%*

*Blue text: the two key characteristics describing Gen Z as selected by Boomers, Gen X and Gen Y.

*Orange text: the two key characteristics describing Gen Z as selected by Gen Z.

The nine listed characteristics are presented in Table 6.7. The number of responses that each listed characteristic received are indicated and also expressed as a percentage of the cohort. The majority of the answers of respondents were considered in order to determine the main views of each cohort towards Generation Z. The findings indicated that the majority (50 per cent +) of the Boomers, Generation X and Generation Y selected “advance their careers as quickly as possible” and “a good salary is what matters most” as the two key characteristics describing Generation Z quantity surveyors. Eighty-two per cent of Boomers, 83 per cent of Generation Z and 65 per cent of Generation Y selected “advance their careers as quickly as possible” as the main characteristic describing generation Z quantity surveyors. Sixty-nine per cent of Boomers, 66 per cent of Generation X and 65 per cent of Generation Y selected “a good salary is what matters most” as the second characteristic describing Generation Z.

The majority of the Generation Z respondents on the other hand were of the opinion that the characteristics “advance their careers as quickly as possible” and “hard working and motivated” described them best. Fifty-five per cent of Generation Z

selected “advance their careers as quick as possible” as the main characteristic describing this cohort followed closely by 54 per cent of Generation Z who selected “a good salary is what matters most” as a characteristic.

The majority of the respondents were thus of the opinion that generation Z quantity surveyors want to advance their careers as soon as possible. Older generations with a better understanding of the characteristics of Generation Z will be able to provide the required support and guidance in terms of career development. Soft skills play a key part in workplace success for the quantity surveying profession and young quantity surveyors wanting to advance their careers cannot afford to neglect the development of these skills. Mentors of candidate quantity surveyors can support the career advancement of generation Z by helping them to develop the essential soft skills that quantity surveyors require.

6.5 FINDINGS: STAKEHOLDER ENGAGEMENT

This section will present the findings relating to part 4 of the questionnaire (questions 15 – 24). The aim of part 4 of the questionnaire was to obtain respondents’ opinions and viewpoints regarding the current level of engagement of four key stakeholders namely higher educational institutions (HEIs), QS employers, the ASAQS and the SACQSP.

6.5.1 Stakeholder responsibility

Respondents were asked to indicate which stakeholder should be responsible for which activity (question 15). Four activities were listed in the questionnaire and respondents were able to select more than one stakeholder per activity if they felt that more than one stakeholder was responsible for that activity. The findings are presented in Figure 6.13 and each percentage is an expression of the opinion of all 528 respondents.

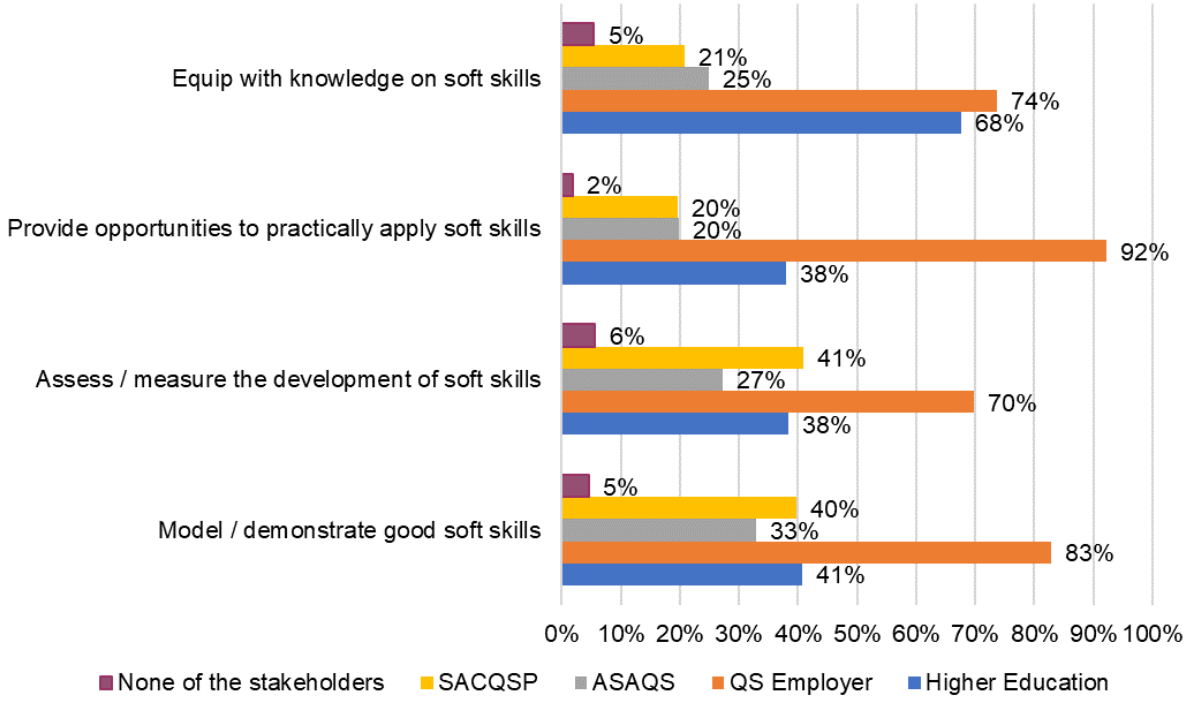


Figure 6.13: Stakeholder responsibility towards soft skills development

The findings revealed that respondents were of the opinion that all stakeholders carried some level of responsibility for each of the four listed activities. The level of responsibility assigned to some stakeholders was, however, far greater compared to other stakeholders. The responses received were thus considered in terms of the majority (50 per cent +) opinion of respondents in order to determine which stakeholders should primarily carry the responsibility for each activity.

The findings revealed that 74 per cent (n = 389) of all respondents indicated that the responsibility to equip candidate quantity surveyors with knowledge about soft skills resides with QS employers. Sixty-eight per cent (n = 357) of all respondents indicated that it is also the responsibility of HEIs. The evidence from the findings strongly points to QS employers and HEIs as the two main stakeholders primarily responsible to equip candidate quantity surveyors with knowledge about soft skills. The other two stakeholders, ASAQS and SACQSP, did not receive a majority vote from respondents in this regard.

An overwhelming 92 per cent (n = 487) of respondents were of the opinion that QS employers are responsible to provide candidate quantity surveyors with opportunities

to practically apply soft skills in a real-world context. This indicates that QS employers are primarily responsible for this activity. The other stakeholders, QS employer (ASAQS and SACQSP) did not receive a majority vote from respondents in this regard.

When it comes to assessing / measuring soft skills development in candidate quantity surveyors, the findings show that 70 per cent (n = 368) of all respondents were of the opinion that QS employers are mainly responsible for this activity. The other stakeholders (ASAQS, SACQSP and HEIs) did not receive a majority vote from respondents in this regard.

Eighty-three per cent (n = 437) of all respondents felt that modelling / demonstrating soft skills to candidate quantity surveyors should primarily be the responsibility of QS employers. The other stakeholders (ASAQS, SACQSP and HEIs) did not receive a majority vote from respondents.

6.5.2 Stakeholder engagement: Higher Education

The questionnaire contained three questions (questions 16, 17 & 18) relating to stakeholder engagement of Higher Educational Institutions (HEIs). Respondents were asked to indicate whether they think graduates enter the profession with sufficient entry-level soft skills, whether HEIs equip students with basic soft skills knowledge and whether HEIs provide students with enough opportunities to practically apply soft skills while studying. These questions made use of a 5-point Likert scale ranging from “strongly disagree” to “strongly agree”. The findings are presented in Figure 6.14.

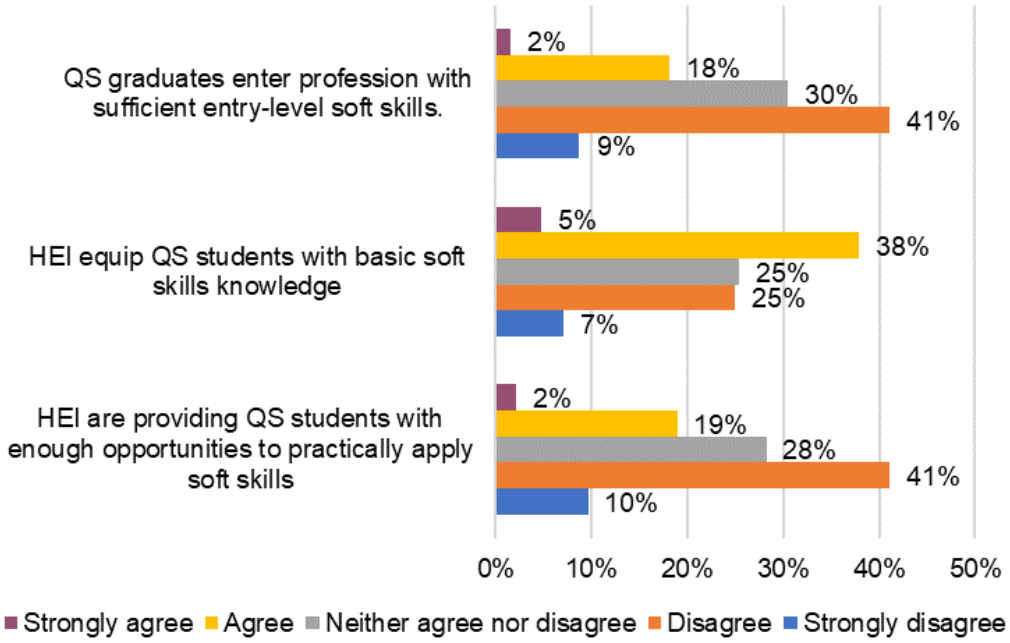


Figure 6.14: Stakeholder engagement of Higher Educational Institutions

When analysing the responses received regarding QS graduates entering the profession with sufficient entry-level soft skills, it was found that 20 per cent (2 per cent + 18 per cent, n = 104) of respondents were in agreement (either strongly agreed or agreed) with the question, 30 per cent (n = 161) of respondents were neutral on the matter by neither agreeing nor disagreeing and 50 per cent (41 per cent + 9 per cent; n = 263) of the respondents were in disagreement (either disagreed or strongly disagreed) with the question. The findings indicated that the majority of respondents leaned towards dissatisfaction when considering the entry-level soft skills of students. This indicates that there is room for improvement in this area.

When analysing the responses received regarding HEIs equipping students with basic soft skills knowledge, it was found that responses to this question were somewhat dispersed between the different rating scales. 43 per cent (5 per cent + 38 per cent; n = 225) expressed their agreement (either strongly agreed or agreed) in this regard, 25 per cent (n = 134) were neutral on the matter by neither agreeing or disagreeing and 32 per cent (25 per cent + 7 per cent; n = 169) of respondents expressed their disagreement (either disagreed or strongly disagreed) regarding HEIs equipping students with basic soft skills knowledge. There was no majority response obtained to strongly support either a positive or negative viewpoint in this regard. The

responses leaned more towards a positive viewpoint, but the findings indicated that there is room for HEIs to improve in this area.

When analysing the responses received regarding HEIs providing students with enough opportunities to practically apply soft skills, it was found that 21 per cent (2 per cent + 19 per cent; n = 111) of respondents expressed their agreement (either strongly agreed or agreed) with the question, 28 per cent (n = 149) were neutral on the matter by neither agreeing nor disagreeing and 51 per cent (41 per cent + 10 per cent; n = 268) expressed their disagreement (either disagreed or strongly disagreed) with the question. The findings indicated that the majority of respondents leaned towards dissatisfaction when considering the opportunities for students to practically apply soft skills while studying. This indicates that there is room for HEIs to improve in this area.

6.5.3 Stakeholder engagement: QS employers

The questionnaire contained four questions (questions 19 - 22) relating to stakeholder engagement of quantity surveying employers. Respondents were asked whether they think QS employers value and promote the development of soft skills in their organisations, whether QS employers are providing any training to equip candidate QS with knowledge about soft skills, whether QS employers have any tool or system in place to assess the development of soft skills and whether quantity surveyors in management roles model good soft skills to candidates. These questions made use of a 5-point Likert scale ranging from “strongly disagree” to “strongly agree”. The findings are presented in Figure 6.15:

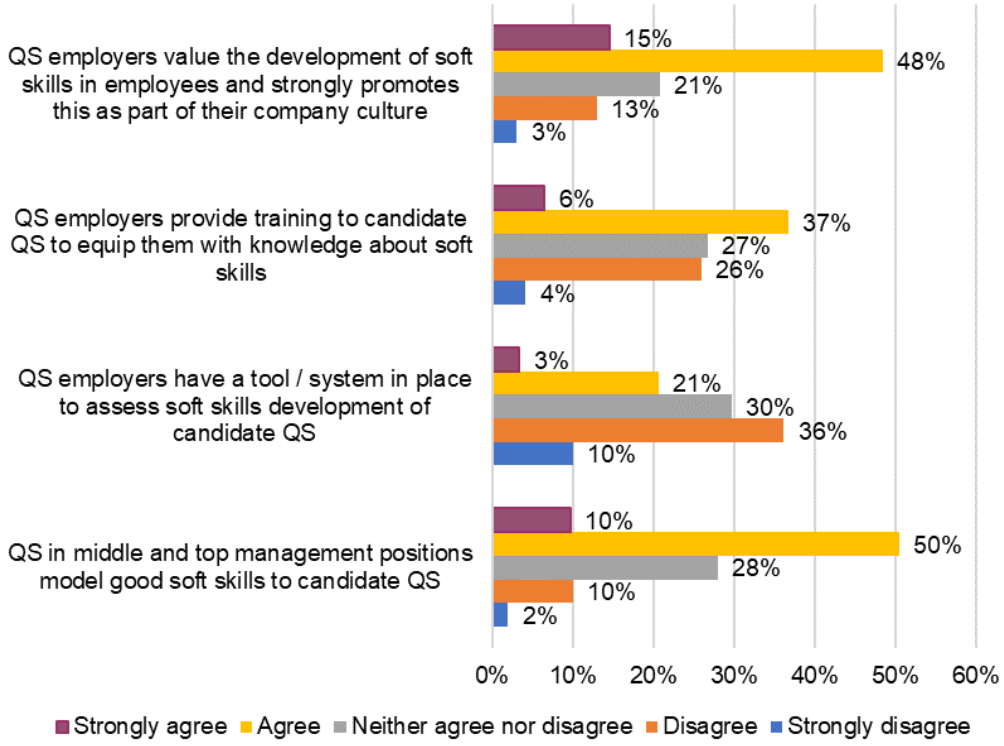


Figure 6.15: Stakeholder engagement of QS employers

The findings revealed that 63 per cent (15 per cent + 48 per cent; n = 333) of respondents were in agreement (either strongly agreed or agreed) that QS employers value the development of soft skills and strongly promote this as part of their company culture. Twenty-one per cent (n = 110) of respondents were neutral on the matter by neither agreeing nor disagreeing and 16 per cent (13 per cent + 3 per cent; n = 85) were in disagreement (either disagreed or strongly disagreed) with the question. Overall, the findings shed a positive light on the current attitude of QS employers towards the development of soft skills.

When investigating the question regarding QS employers providing soft skills training to candidate quantity surveyors to equip them with knowledge it was found that 43 per cent (6 per cent + 37 per cent; n = 228) of respondents were in agreement (either strongly agreed or agreed), 27 per cent (n = 141) of respondents were neutral on the matter by neither agreeing nor disagreeing and 30 per cent (26 per cent + 4 per cent; n = 159) were in disagreement (either disagreed or strongly disagreed) with the question. The responses received where dispersed between negative, neutral and positive viewpoints. The findings did not yield strong evidence in support of QS

employers providing soft skills training to candidate quantity surveyors. This indicates that there is a gap in terms of stakeholder involvement in this regard.

When investigating the question regarding QS employers having a tool or system in place to assess soft skills development it was found that only 24 per cent (3 per cent + 21 per cent; n = 127) were in agreement (either strongly agreed or agreed) with this question, 30 per cent (n = 157) were neutral on the matter by neither agreeing nor disagreeing and 46 per cent (36 per cent + 10 per cent; n = 244) were in disagreement (either disagreed or strongly disagreed) with the question. The responses were dispersed with no evidence to strongly support an overall positive, neutral or negative viewpoint from respondents. However, the findings lean more towards a negative point of view indicating that a tool or system to assess soft skills development is something that is lacking in QS companies.

When considering the modelling of soft skills from top- and middle management quantity surveyors it was found that 60 per cent (10 per cent + 50 per cent; n = 317) of respondents were in agreement (either strongly agreed or agreed) that such quantity surveyors are modelling good soft skills to candidates. Twenty-eight per cent (n = 148) were neutral on the matter by neither agreeing nor disagreeing and 12 per cent (10 per cent + 2 per cent; n = 63) were in disagreement (either disagreed or strongly disagreed) with the question. This indicates that top- and middle management QS are faring well in this regard and lead by example through modelling good soft skills to candidate quantity surveyors.

6.5.4 Stakeholder engagement: ASAQS & SACQSP

The questionnaire contained two questions (questions 23 and 24) relating to stakeholder engagement of the ASAQS and SACQSP. Respondents were asked whether they think the CPD training offered by the ASAQS is sufficient to equip quantity surveyors with knowledge on essential soft skills and whether they think the SACQSP's APC is sufficient to ensure the acquisition of both technical- and soft skills in candidate quantity surveyors. These questions made use of a 5-point Likert scale ranging from "strongly disagree" to "strongly agree". The findings are presented in Figure 6.16:

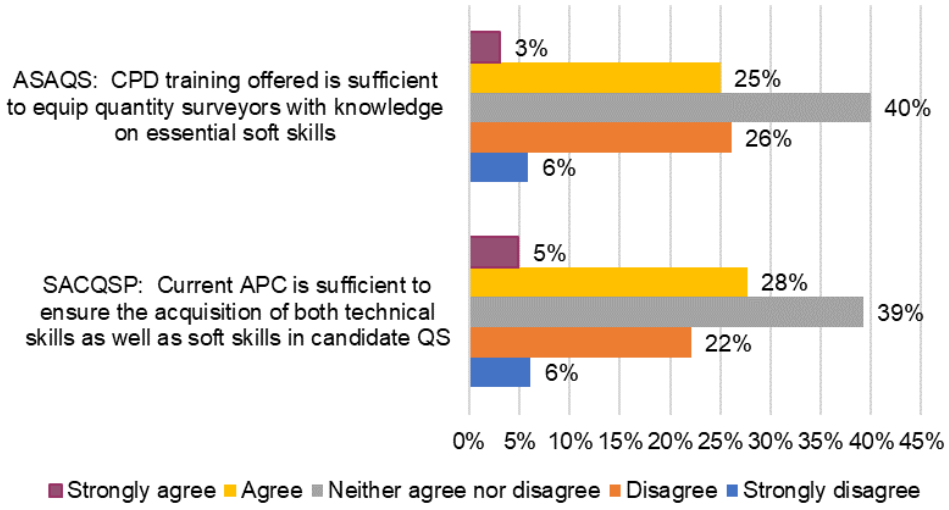


Figure 6.16: Stakeholder engagement of ASAQS & SACQSP

When considering the question regarding the CPD training offered by the ASAQS and the sufficiency thereof in terms of soft skills development, the findings revealed that 28 per cent (3 per cent + 25 per cent; n = 148) of respondents were in agreement with the question, 40 per cent (n = 211) were neutral on the matter by neither agreeing nor disagree and 32 per cent (26 per cent + 6 per cent; n = 169) were in disagreement with the question. Most of the respondents were neutral on the matter which indicates an element of uncertainty among respondents regarding CPD and soft skills development. This highlights a potential gap in the current CPD training offered by the ASAQS.

The findings regarding the SACQSP's APC process and the sufficiency thereof to develop both technical- and soft skills revealed that 33 per cent (5 per cent + 28 per cent; n = 172) of respondents were in agreement and of the opinion that the current APC process is sufficient in terms of developing soft skills in candidate quantity surveyors. 39 per cent (n = 207) of respondents were neutral on the matter by neither agreeing nor disagreeing and 28 per cent (22 per cent + 6 per cent; n = 149) disagreed with the question. Similar to the previous question, most responses were neutral on the matter which indicates an element of uncertainty among respondents regarding the current APC process and whether it is sufficient to support the development of soft skills in candidate quantity surveyors. This highlights a potential gap in terms of the SACQSP's APC process for candidate quantity surveyors.

6.6 FINDINGS: IMPROVEMENT SUGGESTIONS

This section will present the findings relating to part 5 of the questionnaire (questions 25 – 31). The aim of part 5 of the questionnaire was to obtain respondent's opinions and viewpoints regarding suggestions to improve the soft skills development among candidate quantity surveyors.

6.6.1 Suggestions to improve soft skills development in candidate QS

Respondents were presented with seven improvement suggestions (questions 25 – 31) and asked to indicate whether they think these suggestions would work effectively in terms of soft skills development of candidate quantity surveyors. These questions made use of a 5-point Likert scale ranging from "not effective at all" to "extremely effective". The findings are presented in Figure 6.17:

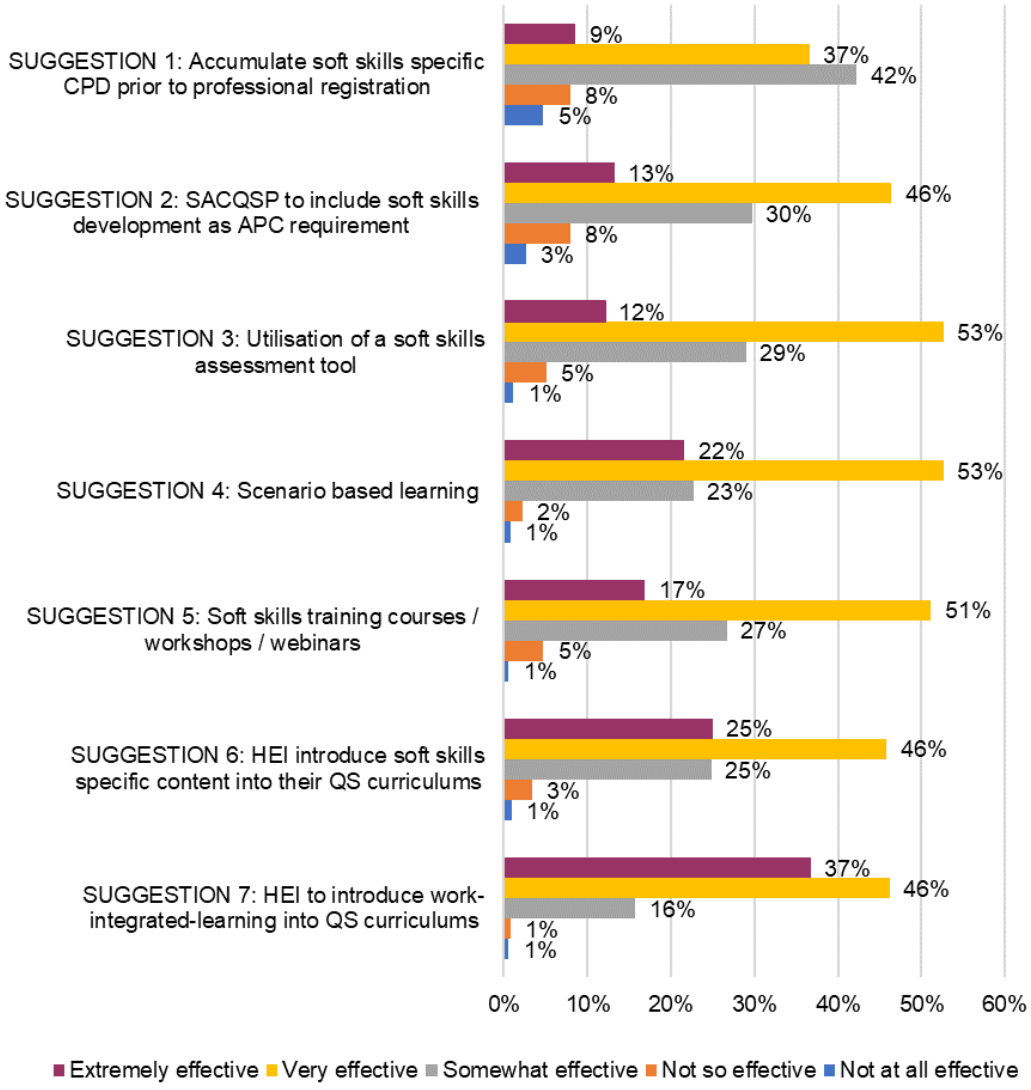


Figure 6.17: QS Soft skills development improvement suggestions

Improvement suggestion 1 proposed that candidate quantity surveyors accumulate soft skills specific CPD as part of their 20 hours compulsory CPD prior to professional registration. The findings revealed that 46 per cent (9 per cent + 37 per cent; n = 238) of respondents indicated that this suggestion would work very- to extremely effectively to support the development of soft skills in candidate quantity surveyors. 42 per cent (n = 223) of respondents indicated that it will be somewhat effective and 13 per cent (8 per cent + 5 per cent; n = 67) indicated that it will be not so- to not at all effective.

Improvement suggestion 2 propose that the SACQSP include soft skills development as requirement for APC. The findings revealed that 59 per cent (9 per cent + 37 per

cent; n = 315) of respondents indicated that this suggestion would work very- to extremely effectively to support the development of soft skills in candidate quantity surveyors. Thirty per cent (n = 157) of respondents indicated that it will be somewhat effective and 11 per cent (8 per cent + 3 per cent; n = 56) indicated that it will be not so effective to not at all effective.

Improvement suggestion 3 proposed the utilisation of a soft skills assessment tool by candidates and their mentors to assess the development of softs skills and provide feedback to help improve soft skills. The findings revealed that 65 per cent (12 per cent + 53 per cent; n = 342) of respondents indicated that this suggestion would work very- to extremely effectively to support the development of soft skills in candidate quantity surveyors. Twenty-nine per cent (n = 153) of respondents indicated that it will be somewhat effective and 6 per cent (5 per cent + 1 per cent; n = 33) indicated that it will be not so effective to not at all effective.

Improvement suggestion 4 propose scenario-based learning where candidate quantity surveyors can learn soft skills prior to real world application. The findings revealed that 75 per cent (22 per cent + 53 per cent; n = 392) of respondents indicated that this suggestion would work very- to extremely effectively to support the development of soft skills in candidate quantity surveyors. Twenty-three per cent (n = 120) of respondents indicated that it will be somewhat effective and 3 per cent (2 per cent + 1 per cent; n = 16) indicated that it will be not so effective to not at all effective.

Improvement suggestion 5 propose soft skills training courses / workshops / webinars that address essential soft skills in the quantity surveying profession. The findings revealed that 68 per cent (17 per cent + 51 per cent; n = 359) of respondents indicated that this suggestion would work very- to extremely effectively to support the development of soft skills in candidate quantity surveyors. Twenty-seven per cent (n = 141) of respondents indicated that it will be somewhat effective and 6 per cent (5 per cent + 1 per cent; n = 28) indicated that it will be not so effective to not at all effective.

Improvement suggestion 6 propose that HEIs introduce soft skills specific content into their quantity surveying curriculums. The findings revealed that 71 per cent (25 per cent + 46 per cent; n = 374) of respondents indicated that this suggestion would work very- to extremely effectively to support the development of soft skills in candidate quantity surveyors. Twenty-five per cent (n = 131) of respondents indicated that it will

be somewhat effective and 4 per cent (3 per cent + 1 per cent; n = 23) indicated that it will be not so effective to not at all effective.

Improvement suggestion 7 propose that HEIs introduce work-integrated-learning initiatives into the curriculum where students can get exposure to soft skills in a real-world context. The findings revealed that 83 per cent (37 per cent + 46 per cent; n = 438) of respondents indicated that this suggestion would work very- to extremely effectively to support the development of soft skills in candidate quantity surveyors. 16 per cent (n = 83) of respondents indicated that it will be somewhat effective and 2 per cent (1 per cent + 1 per cent; n = 7) indicated that it will be not so effective to not at all effective.

The findings revealed that on average 19 per cent of respondents were of the opinion that the seven suggestions included in the questionnaire will be extremely effective in terms of improving soft skills development in candidate quantity surveyors. On average, 47 per cent of respondents felt that these suggestions will be very effective, 27 per cent felt that it will be somewhat effective, 5 per cent indicated that it will not be so effective and only 2 per cent indicated that it will not be effective at all. Overall, the findings revealed that respondents perceived all 7 improvement suggestions will contribute positively towards the soft skills development of candidate quantity surveyors.

6.6.2 Additional improvement suggestions

Respondents were asked to offer further improvement suggestions (question 32), other than the seven suggestions that were already included in the questionnaire. This question was an open-ended question and it was optional for respondents to answer the question. Additional suggestions included among other awarding or recognising the attainment of soft skills in employees, introducing soft skills assessment / measurement metrics and feedback systems, self-understanding and self-development of soft skills, experience and exposure to professional situations and environments and the role of employers and mentors towards the soft skills development in candidates.

Suggestions as well as valuable comments that merged from the responses received are presented verbatim below. The suggestions presented below were selected by the researcher and do not necessarily represent the views of all respondents.

6.6.2.1 Award

An improvement suggestion that was put forward was to award employees in some way or other for attaining soft skills.

"To ensure that candidates and professionals alike take soft skills seriously, soft skills should count for something, i.e., to some extent provide an advantage for the attaining thereof."

6.6.2.2 Feedback

Improvement suggestions from respondents conveyed the importance of feedback as a key driving factor to improve soft skills development of candidate quantity surveyors. Improvement suggestions and comments in this regard are quoted verbatim below.

"One of the best ways to improve soft skills is to get feedback from others. Feedback can help candidates identify areas where they need improvement and develop strategies for improvement."

"If soft skills enhancement programmes are not measured and improved based on measurement feedback the process will not be optimised."

"To improve the soft skills development of candidate quantity surveyors, employers should consider providing continuous feedback to candidates as this will allow candidates to learn how to receive constructive criticism."

6.6.2.3 Measurement / Assessment of soft skills

Improvement suggestions from respondents highlighted the importance of having a measurement / assessment tool to aid the development and improvement of soft

skills. Improvement suggestions and comments in this regard are quoted verbatim below.

"Employers should take the time and make a concerted effort to improve the soft skills of the candidates working for them. Some employers do this in theory in conversation with candidates but there is no metric to measure whether the soft skills of candidates are actually improving."

"Professional quantity surveyors should report on the support provided to candidates to ensure the development of their soft skills."

"Monitoring tools are needed to gauge and assess if soft skills are effectively transferred."

"More practical modules must be introduced whereby willing QS firms undertake to grant soft skills exposure to students. The students' soft skills should then be assessed by that firm and the assessment should form part of the student's weighted average for a given module. This approach would motivate the student to gain the basic soft skills and in return, the PrQS (working for the QS firm) providing the training and conducting the soft skills assessment can claim Category 1 CPD hours."

6.6.2.4 Self- understating and self-development

Improvement suggestions from respondents indicated that self-understanding coupled with self-willingness to develop soft skills can be utilised as tools to help the development of soft skills in candidate quantity surveyors. Improvement suggestions and comments in this regard are quoted verbatim below.

"Help students understand their personality traits and how to recognize it in others. That may assist with understanding the behaviour of self and others."

"I believe that soft skills development is based on you as an individual and how focused you are on your career. If you do something you love, you can develop soft skills as you go along. Invest in yourself by watching podcasts, YouTube videos etc. It would however help if soft skills development is introduced by industry through other means as well."

6.6.2.5 Practical application / exposure

Respondents noted that practical application and exposure to industry is vital to soft skills development. Improvement suggestions and comments in this regard are quoted verbatim below.

"Most effective efforts will be real world experience. No amount of simulation will teach you what the industry will force you to master."

"The main developmental factor is exposure. Soft skills can be discussed as part of a subject or CPD topic, but at the end of the day the individual only develops competency in soft skills through exposure."

"Candidate quantity surveyors should be attending as many meetings as practically possible, even if they just observe the meetings and how their employers/seniors handle the meetings. In my experience this has helped my soft skills development more than anything else."

"I am happy with the higher educational training from the University of Technology as it was part of our curriculum to engage in in-service training where we had to work for a duration of six months. However, the workplace is really failing us with no focus on soft skills development during in-service training and even in our junior years of working. Measuring and more measuring is what we are expected to do for the majority of our careers. There is very little engagement in chairing meetings and taking an active role in the career development."

"I work in Ireland as a PQS, we have a constant rotation of quantity surveying students in the office as part of their degree requirements. I found that, depending on personality, these students are much more confident in their soft skills and development thereof than I was when I started working (and having worked with candidate QS's in SA, I can say the same for them). Even folding drawings and being an admin person for two weeks in a professional environment will expose candidates to much needed soft skills."

6.6.2.6 Mentors / employers

Most of the improvement suggestions were related to the role that mentors and employers play regarding the soft skills development of candidate quantity surveyors. Improvement suggestions and comments in this regard are quoted verbatim below.

“To develop soft skills, you have to actively participate. Learn from others and most importantly have a mentor and continuously consult with them.”

“More interaction with senior staff will benefit candidates and allow them to see how the soft skills are used in a workplace.”

“Managers should lead by example. They would assist in candidates noticing that soft skills need to be paired with technical skills.”

“Mentorship is the most important as the candidates’ mentor will illustrate his/her soft skill capability during on-the-job training. The lack of soft skills development in a mentor will directly impact the candidate.”

“It is my opinion that the SACQSP, ASAQS & QS Employers should develop a closer industry relationship. It will help improve the current "gap" between the Council and mentors. Mentors of candidate quantity surveyors will therefore have a better system in place to develop soft skills of candidate quantity surveyors in the workplace.”

“Mentors should be obligated to conduct training with candidates about soft skills.”

“Work experience with competent mentors is key.”

6.7 CONCLUSION

The empirical part of this study collected data by utilising a structured survey questionnaire as data collection tool. The data obtained included 528 satisfactorily completed responses. These responses were analysed and presented in this chapter using Tables and Figures. The findings revealed that respondents from the quantity surveying profession are of the opinion that it is important to cultivate soft skills as it contributes, in their view, approximately 40 per cent – 50 per cent of workplace

success. Respondents also indicated that there is a soft skills shortage in the QS profession, demonstrating their recognition of the problem.

The 16 essential soft skills, as derived from relevant literature, were explored and tested through empirical research and it was established that respondents considered the importance of these soft skills to range between “very”- and “extremely” important. The high level of importance of these soft skills will require an equally high level of competency development in quantity surveyors. Further to this, respondents rated the soft skills development of the average candidate quantity surveyor with less than five years’ experience between “fair” and “good”. When considering the high soft skills competency level required, it seems evident that a soft skills gap exists among candidate quantity surveyors.

Investigating the stakeholder engagement towards soft skills development of candidate quantity surveyors revealed that the majority of respondents leaned towards dissatisfaction regarding the entry-level soft skills of graduates. Respondents indicated that HEIs could provide more opportunities for students to practically apply soft skills prior to entering industry. QS employers on the other hand were identified as the stakeholders primarily responsible to support the development of soft skills in candidates. Overall, the findings shed a positive light on the current attitude of QS employers towards the development of soft skills in candidates.

The findings indicated that top and middle management were modelling good soft skills to candidates but QS employers could offer more soft skills specific training to candidates. The findings also indicated a tool or system to assess soft skills development as something that is clearly lacking in QS companies. When asking respondents about the current level of soft skills support offered by the ASAQS (CPD training) and SACQSP (APC process), responses were mostly neutral, indicating an element of uncertainty among respondents highlighted a potential gap regarding the support offered by the ASAQS and SACQSP as professional bodies.

Seven suggestions were offered to respondents on how to improve the development of soft skills among candidate quantity surveyors. Respondents indicated that all seven suggestions may contribute positively towards the soft skills development of candidate quantity surveyors. Additional suggestions included, among others, awarding or recognising the attainment of soft skills in employees, introducing soft skills

assessment / measurement metrics and feedback systems, self-understanding and self-development of soft skills, experience and exposure to professional situations and environments and the role of employers and mentors towards the soft skills development in candidates.

This chapter presented the overall findings based on the responses of all 528 respondents. The discussion, interpretation and where applicable, further exploration of the findings in relation to the research questions will be addressed in the next chapter. Information will be synthesised in order to provide a justified and realistic response to each of the study's research sub-questions.

7 CHAPTER 7: DISCUSSION OF FINDINGS AND FURTHER ANALYSIS

7.1 INTRODUCTION

This chapter discusses, interprets and where applicable further explores the findings presented in the previous chapter in relation to each research sub-question. Interpretation and exploration of the findings will include comparisons and further analysis such as tests for significance (found in sections 7.2.3, 7.3.5 and 7.4.5) and an exploratory factor analysis (found in sections 7.2.4 and 7.2.5). The findings will also be evaluated against existing literature where applicable.

7.2 DISCUSSION OF FINDINGS: SUB-QUESTION 1 (ESSENTIAL SOFT SKILLS)

The first sub-question that this research study investigated and addressed was:

"What soft skills do candidate quantity surveyors need to succeed in the construction industry?"

In order to answer this research question, it was first necessary to determine the quantity surveying profession's perception regarding soft skills. Understanding the views and opinions of the respondents will provide an indication of the quantity surveying profession's recognition and acceptance of soft skills as driver of workplace success. The data obtained from questions 8, 9 and 10 in the questionnaire allowed the researcher to determine the overall views of the quantity surveying profession regarding the importance to cultivate soft skills, whether a soft skills shortage exists as well as the contribution ratio of soft skills towards success in the workplace.

The findings indicated that 95 per cent of respondents in the quantity surveying profession in South Africa agree that it is important to cultivate soft skills and 75 per cent agree that a soft skills shortage exists. The findings further indicated that soft skills contribute between 40 per cent – 50 per cent of workplace success. The culmination of these findings supports the notion that soft skills development is an important driver for workplace success but has not yet received the attention it deserves in the quantity surveying profession in South Africa.

In order for the quantity surveying profession to focus attention and efforts toward soft skills development, it is necessary to know which soft skills are considered essential for quantity surveyors. This study therefore conducted an in-depth literature review with the aim of identifying these essential soft skills, as previously explained in chapter three. An explanation of how these soft skills were identified is presented below for ease of reference.

7.2.1 Identification of essential soft skills

There are numerous soft skills that employees in the construction industry and built environment require to succeed in the workplace. This study therefore conducted an in-depth literature review to determine which soft skills construction professionals, including quantity surveyors, will require. Various literature sources pertaining to soft skills in the construction industry and built environment were reviewed in order to identify the essential soft skills that construction professionals, including quantity surveyors, will need to succeed in the workplace. A list of 38 soft skills were identified which was further reduced to a list of 16 based on the soft skills most frequently mentioned in literature.

The 16 soft skills identified as essential for construction professionals were communication, teamwork, leadership, critical thinking, problem solving, decision making, professionalism, ethics, dispute and conflict resolution, time management, lifelong learning, negotiation, adaptability, self-confidence, ability to work under pressure and flexibility. These soft skills are not listed in any order of importance.

This study wanted to generate the views and opinions of the quantity surveying profession in South Arica regarding these 16 soft skills and included them in the questionnaire (questions 11, 12 and 13). Research participants were asked to indicate the importance of these soft skills for the quantity surveying profession. The findings presented in the previous chapter revealed that 90 per cent of respondents indicated that the importance of these 16 soft skills were regarded between “very” to “extremely” important, thus confirming that the list of 16 soft skills as derived from literature are viewed as essential soft skills for the quantity surveying profession.

7.2.2 Ranking of essential soft skills

The findings from the empirical research were analysed to determine a ranking of relative importance among the 16 essential soft skills. Question 11 in the questionnaire presented this list of 16 soft skills to the respondents in order to obtain their view on the importance of these soft skills for the quantity surveying profession in South Africa. Using descriptive statistics, the mean score for each of the 16 soft skills were calculated as presented in the previous chapter. These mean scores were used to determine a ranking of relative importance (refer to Chapter Six, Table 6.4).

The soft skills ranking indicated the importance of these soft skills as perceived by respondents from the quantity surveying profession with an average mean score of 4.44 out of 5. The 16 soft skills can thus be viewed as key drivers for workplace success in the quantity surveying profession. The top ranked soft skills were ethics followed by professionalism, communication, problem solving and time management collectively forming the top five ranked soft skills. The high level of importance of the 16 soft skills will require an equally high level of competency development in quantity surveyors. These skills should ideally be developed, attained and maintained at a level ranging between “very good” and “excellent”.

There is, however, no consensus in existing relevant literature regarding the ranking of soft skills for construction professionals. Studies across various countries have ranked the importance of soft skills differently (Succi & Canovi, 2020). Many authors argue that communication is considered to be the most important soft skill for construction professionals.

However, this study found that ethics was ranked as the most important soft skill for the quantity surveying profession in South Africa followed by professionalism with communication ranked third most important. Existing literature suggested that communication, teamwork, decision making, problem solving, critical thinking and professionalism rank among the top five soft skills that construction professionals need. When the five top ranked soft skills from this study were compared with the soft skills as suggested by literature, it was evident that only communication, problem solving and professionalism were ranked among the top five soft skills by South African quantity surveyors. Teamwork (ranked 10th), decision-making (ranked 8th) and critical thinking (ranked 6th) were not ranked among the top five as literature suggested. It is evident from existing literature that there is agreement among

quantity surveyors in terms of what is considered as essential soft skills but opinions in terms of ranking of such skills differ.

The findings of this research study are thus in line with literature by confirming that the 16 soft skills identified from literature are considered essential by the quantity surveying profession in South Africa. The soft skills ranking of this study differs from the soft skills ranking of other studies such as research conducted by Crawford and Dalton (2016) Oni and Aina (2020), Shafie *et al.* (2014), van Heerden *et al.* (2023) thus confirming that there is no consensus in terms of the ranking of soft skills.

The soft skills ranking per experience level were also investigated to determine how opinions might differ between these groups. The aim was to establish if young quantity surveyors, especially those with five years or less experience, rank soft skills differently than those with more experience. The results are tabulated below.

Table 7.1: Quantity surveying profession's ranking of soft skills: Comparison of experience

	All respondents		>5 years' experience		0 - 5 years' experience	
	Mean	*Rank*	Mean	*Rank*	Mean	*Rank*
Ethics	4.76	*1*	4.77	*1*	4.72	*3*
Professionalism	4.73	*2*	4.76	*2*	4.69	*5*
Communication	4.62	*3*	4.58	*3*	4.65	*6*
Problem solving	4.59	*4*	4.52	*4*	4.73	*2*
Time Management	4.58	*5*	4.48	*5*	4.78	*1*
Critical Thinking	4.54	*6*	4.42	*7*	4.72	*3*
Work under pressure	4.51	*7*	4.45	*6*	4.61	*7*
Decision-making	4.44	*8*	4.33	*10*	4.59	*8*
Self-confidence	4.40	*9*	4.36	*8*	4.42	*13*
Teamwork	4.37	*10*	4.34	*9*	4.43	*12*
Negotiation	4.37	*11*	4.31	*11*	4.45	*10*
Dispute / conflict resolution	4.35	*12*	4.27	*12*	4.46	*9*
Adaptability	4.34	*13*	4.26	*13*	4.44	*11*
Flexibility	4.23	*14*	4.17	*14*	4.32	*14*
Lifelong learning	4.14	*15*	4.04	*15*	4.29	*15*
Leadership	4.02	*16*	3.96	*16*	4.13	*16*

*Blue text: five top ranked soft skills according to all respondents and respondents with >5 years' experience.

*Green text: five top ranked soft skills according to respondents with 0 - 5 years' experience

Table 7.1 shows the comparison of the mean value and rankings for each soft skill between the following groups: all respondents, respondents with five years or less experience and respondents with more than five years' experience. Since this study has already established that all soft skills were considered important for the quantity

surveying profession, this research study specifically investigate if any trends or patterns existed among the top five ranked soft skills.

The five top ranked soft skills of “all respondents were exactly the same as the top five ranked soft skills for the group “> five years’ experience”. The top five ranked soft skills were ethics, professionalism, communication, problem solving and time management. Respondents with five years or less experience however rated their top five soft skills differently. The top five soft skills of this group, ranked in order of importance, were time management, problem solving, critical thinking, ethics and professionalism.

The only major difference found was quantity surveyors with five years or less experience considered time management as the most important soft skill in comparison to those with more than five years’ experience who considered either ethics or professionalism as the most important soft skill. A possible reason can be that young quantity surveyors need time to transition from academia to industry and have to adapt to the demands of the quantity surveying profession. They are in the process of learning how to best manage their time as their level of responsibility grows.

Therefor time management can be perceived as most important to them during their early career development years. Generation Z quantity surveyors also indicated that they characterise themselves as a generation who want to progress in their careers as quickly as possible and who are eager to learn, grow and develop. Young quantity surveyors who want to progress in their career must be able to demonstrate that they can take on responsibility and execute those responsibilities successfully. Good time management will help young quantity surveyors to prioritise tasks and work effectively to meet deadlines and produce deliverables. Good time management is something that generation Z can learn, grow and develop over time and will contribute positively towards their career progression.

7.2.3 Test for significance

The importance of soft skills for the QS profession was compared with the experience level of respondents to determine if these two variables had any significant relationship. Inferential statistics were used in the form of Fisher’s Exact test to test

whether the two groups compared were independent or had a relationship with each other. Fisher's Exact test is a non-parametric test for independence of two variables, used in place of the Chi-square test, when the expected frequency is less than 5. If the p-value obtained from this test is greater than 5 per cent (0.05), it can be concluded that the two variables do not show a significant relationship and are independent. If the p-value obtained is less than 5 per cent (0.05), it can be concluded that the two variables have a significant relationship and a dependant relationship exists between the two variables (Mehta & Patel, 1983).

Since this research question specifically evaluated the opinions of less experienced respondents compared to more experienced respondents, experience was selected and included as a variable in Fisher's Exact Test. The results of Fisher's Exact Test are shown in Table 7.2.

Table 7.2: Fisher's Exact Test for significance: Importance of 16 soft skills vs Experience level

	Fisher's Exact Test p-value
Communication	0.1204
Teamwork	0.5137
Leadership	0.3958
Ethics	0.3528
Professionalism	0.6847
Critical thinking	0.0005
Problem solving	0.0005
Decision making	0.0020
Dispute / conflict resolution	0.0750
Time management	0.0005
Lifelong learning	0.0760
Negotiation	0.0640
Work under pressure	0.0435
Adaptability	0.0010
Flexibility	0.0175
Self confidence	0.3508

The first column in Table 7.2 lists the 16 essential soft skills for the quantity surveying profession. The second column in the table indicates the p-value calculated from Fisher's Exact Test. There were seven soft skills that obtained a p-value less than 0.05 indicating that a significant relationship exists between the variables under investigation.

The findings revealed that a significant relationship exists between respondents' experience levels and the importance of the soft skills: critical thinking, problem solving, decision making, time management, working under pressure, adaptability and flexibility. All other soft skills had a p-value higher than 0.05 thus indicating that no significant relationship exists. There were thus no association between the experience level of respondents and the importance of the soft skills communication, teamwork, leadership, ethics, professionalism, dispute / conflict resolution, lifelong learning negotiation and self-confidence. Future research should further explore these results to uncover deeper insights in order to draw meaningful conclusions in this regard.

The 16 essential soft skills identified through literature and tested through empirical research were further explored by performing an exploratory factor analysis to determine if these soft skills cluster in some way.

7.2.4 Exploratory factor analysis of essential soft skills

A factor analysis is a statistical technique to reduce a large list of variables into fewer factors by determining if the variables cluster in some way. A total of 16 variables (the 16 soft skills) were used in the factor analysis and these variables were measured on a 5-point Likert scale, ranging from "not at all important" to "extremely important".

A series of tests were conducted to evaluate the appropriateness of a factor analysis on this data. The Kaiser-Meyer-Olkin (KMO) test was conducted to assess the factorability of the data. This test is a measure of sampling adequacy (MSA) (Shrestha, 2021). The calculated value of the overall MSA was 0.8936 which indicates good factorability. Bartlett's test was also performed and yielded a p-value of 0 indicating that a factor analysis was appropriate for the data (Arsham & Lovric, 2011).

The Cronbach alpha coefficient, a measure of the internal consistency of the variables, was calculated and measured 0.8825 indicating good internal consistency since it measured well above the 0.5 threshold. Lastly, the determinant of the correlation matrix was calculated. The determinant was positive, pointing to a potentially successful running of the factor analysis procedure (Shrestha, 2021).

A parallel analysis was conducted to determine the number of factors to use in the factor analysis. The Monte Carlo simulation technique was used to generate artificial data from which eigenvalues were calculated. The number of factors was determined through comparing the eigenvalues from the artificial data with those from the real data. The parallel analysis conducted on this study's data revealed that the number of factors to be considered were four. An exploratory factor analysis with four factors was thus conducted using principal axis factoring as an extraction method. In order to make interpretations of the extracted factors, the factors had to be rotated as this simplifies the factor structure. Oblique rotation was used to calculate the factor loadings. This method allows factors to be correlated (Abdi, 2003).

Factor loadings are interpreted as the correlation between a variable and a factor. The absolute value of a loading for each variable was considered and had to be at least greater than 0.3 in order to be considered significant. Table 7.3 shows which variables load the highest to each of the extracted factors with their corresponding loadings.

Table 7.3: Factor analysis extraction and loadings

Variable	Factor	Loading
Time management	PA1	0.39
Ability to work well under pressure	PA1	0.61
Adaptability	PA1	0.87
Flexibility	PA1	0.76
Communication	PA2	0.24
Ethics	PA2	0.78
Professionalism	PA2	0.50
Teamwork	PA3	0.46
Leadership	PA3	0.64
Dispute and conflict resolution	PA3	0.34
Lifelong learning	PA3	0.28
Negotiation	PA3	0.37
Self confidence	PA3	0.39
Critical thinking	PA4	0.74
Problem solving	PA4	0.83
Decision making	PA4	0.65

There were only two variables, communication and lifelong learning, that obtained poor loadings (<0.3) and were removed from the factor analysis due to their insignificance. Research conducted by van Heerden *et al.* (2023) similarly excluded soft skills that did not load distinctively to any of the identified factors from their study. The factor analysis was performed again using the remaining fourteen variables and four factors. The results are tabulated below:

Table 7.4: Factor analysis extraction and loadings after removal of poor performers

Variable	Factor	Loading
Time management	PA1	0.39
Ability to work well under pressure	PA1	0.60
Adaptability	PA1	0.88
Flexibility	PA1	0.75
Critical thinking	PA2	0.73
Problem solving	PA2	0.84
Decision making	PA2	0.65
Teamwork	PA3	0.42
Leadership	PA3	0.63
Dispute and conflict resolution	PA3	0.35
Negotiation	PA3	0.39
Self confidence	PA3	0.39
Ethics	PA4	0.74
Professionalism	PA4	0.58

All the considered variables had significant loadings (>0.3) with one of the factors, and thus no variables were further removed in the factor analysis. Cronbach alpha's coefficient was calculated for each of the four factors to determine the internal consistency of the extracted factors. Factor 1 (PA1) scored 0.8132, factor 2 (PA2) scored 0.8044, factor 3 (PA3) scored 0.7359 and factor 4 (PA4) scored 0.6201. These results all measured above 0.5 thus showing good internal consistency in the extracted factors and thereby validated the results of the analysis.

Based on the data collected regarding the importance of soft skills for the quantity surveying profession in South Africa, four soft skills clusters were identified. These clusters are designated as:

Table 7.5: Soft skills clusters for the quantity surveying profession

Cluster No.	Name of cluster	Soft skills
1	Self-management	Time management Work under pressure Adaptability Flexibility
2	Analytical	Critical thinking Problem-solving Decision making
3	Interaction	Teamwork Leadership Dispute / conflict resolution Negotiation Self-confidence
4	Professionalism and Ethics	Professionalism Ethics

Each soft skill cluster will now be discussed.

7.2.4.1 Self-management soft skills cluster

The four soft skills that loaded onto factor 1 (PA1) were time management, ability to work well under pressure, adaptability and flexibility. When considering these four soft skills, the common underlying value was the ability of quantity surveyors to manage themselves as construction professionals. These four soft skills collectively formulate the first cluster labelled as the “self-management soft skills cluster”. The findings are in line with existing literature confirming that self-management skills in the built environment include among other efficient and effective work habits, working under pressure, a sense of urgency to complete tasks and adaptability especially in terms of technology (Crawford & Dalton, 2016).

One of the key drivers for successful completion of a construction project is time management. Every construction project has a set completion date that the project team needs to work towards. Quantity surveyors are thus subjected to meeting deadlines, which are coupled with working under pressure, and timeously producing

certain deliverables (such as bills of quantities, payment certificates, evaluation of contractual claims, and so forth). Quantity surveyors work on several projects at a time and have the responsibility to manage their time effectively (Ashworth *et al*., 2013). Flexibility requires quantity surveyors to respond well to change especially when considering technological advancements. Such advancements will in turn require adaptability to ensure quantity surveyors remain relevant.

7.2.4.2 Analytical soft skills cluster

The three soft skills that loaded onto factor 2 (PA2) were critical thinking, problem solving and decision making. For quantity surveyors these soft skills are underpinned by an analytical or systematic approach and therefore the second cluster is labelled as the "analytical soft skills cluster". Existing literature confirms that decision making / problem solving are characterised by identifying and analysing problems, taking appropriate action, transferring knowledge, realising the effect of decisions, finding innovative solutions and abstractly thinking about problems (Crawford & Dalton, 2016).

The soft skills identified in this cluster form an integral part of the role of a quantity surveyor who is required to advise the client and professional team on procurement-, economic- and financial- and contractual aspects. Throughout the various stages of a construction project, the quantity surveyor will need to critically appraise and analyse various types of information and solve problems, such as construction claims, and make decisions in the best interest of the project.

7.2.4.3 Interaction soft skills cluster

The five soft skills that loaded onto factor 3 (PA3) were teamwork, leadership, dispute and conflict resolution, negotiation and self-confidence. These five soft skills all relate to a quantity surveyor's interactions with others and are therefore labelled as the "interaction soft skills cluster". Existing literature confirms that quantity surveyors are expected to collaborate with other construction- and built environment professionals (ASAQS (b), 2023).

A quantity surveyor will be expected to interact daily with other professional consultants, building contractors, colleagues and clients. Such dealings will require

of a quantity surveyor to demonstrate the ability to work as part of a team, lead as the cost consultant on a project, effectively deal with conflict that may arise, negotiate contractual claims with contractors or sub-contractors while doing it all with self-confidence.

7.2.4.4 Professionalism and ethics soft skills cluster

The two soft skills that loaded onto factor 4 (PA4) were ethics and professionalism and are therefore labelled as the "professionalism and ethics soft skills cluster". The quantity surveying community globally expects of quantity surveyors to act professionally and uphold ethical standards (AIQS (b), 2022; HKIS (b), 2023; SACQSP (c), 2020; SISV (b), 2023).

According to van Heerden *et al.* (2023), construction professionals will be exposed to corruption, collusive tendering and bribery and thus need a strong ethical platform. Quantity surveyors as cost consultants are directly involved with the financial aspects of a project. Finances can often be the root cause of dishonest behaviour, highlighting the necessity of ethics and professionalism as skills required by quantity surveyors.

7.2.4.5 Foundation and pinnacle of the soft skills clusters

Communication and lifelong learning as soft skills did not load distinctly onto any one of the four factors, which means that they do not strongly identify with these clusters. It does not mean that communication and lifelong learning should be disregarded when considering the soft skills development of candidate quantity surveyors. The soft skill "communication" should rather be viewed as the foundation that underpins the four identified clusters and "lifelong learning" as the pinnacle that directs future growth and development.

Within each of the four clusters a quantity surveyor will be required to apply communication skills such as writing, listening, speaking or presenting as previously explained in Chapter Three. Communication thus lies at the heart of each of the four soft skills clusters. Lifelong learning on the other hand is a process of continued learning whereby a quantity surveyor demonstrates their willingness to keep on developing and thus creating a cycle of learning, applying and growing. Lifelong

learning can be viewed in a similar context as “continuing professional development”. Candidate quantity surveyors need to obtain 20 hours of CPD prior to professional registration and PrQS need to obtain 25 hours of CPD annually as previously explained in Chapter Three.

7.2.5 Factor analysis evaluation against existing literature

The researcher identified two recent studies that looked at the soft skills required by construction professionals through means of a factor analysis. Since soft skills research in the construction industry and built environment are limited, the researcher specifically wanted to utilise recent research to compare and validate the findings. The factor analysis of these two studies, one local and one abroad, were compared with the findings of this study to determine if they relate in any way. The first study was conducted by Aliu and Aigbavboa (2023) among built environment professionals in South Africa and the second by van Heerden *et al.* (2023) among construction professionals internationally using the RICS database.

Aliu and Aigbavboa (2023) conducted research regarding the key generic skills for employability of built environment graduates in the Gauteng province in South Africa. Respondents to their questionnaire included built environment professionals such as engineers, architects, construction managers, quantity surveyors and construction project managers. Soft skills, or generic skills, were identified from literature and respondents had the opportunity to rate the importance of these skills for graduate employability.

The results were further subjected to an exploratory factor analysis. Through the exploratory factor analysis their study identified four generic skills clusters namely (1) leadership skills, (2) critical thinking and analytical skills, (3) problem solving skills and (4) entrepreneurial skills. Table 7.6 shows the comparison of the factor analysis clusters between this study (study A) and the work of Aliu and Aigbavboa (2023) (study B).

Table 7.6: Factor analysis comparison with existing literature – study A and B

STUDY A (This research study): Soft skills requirements for quantity surveyors in South Africa	**STUDY B (Aliu & Aigbavboa, 2023):** Soft skills requirements for built environment graduates in South Africa
Cluster 1: Self-management	Cluster 1: Leadership
Time management	Leadership skills
Ability work under pressure	Interpersonal skills
Adaptability	Adaptability skills
Flexibility	Creativity / Innovation skills
	Management skills
	Teamwork skills
	Organising skills
Cluster 2: Analytical	Cluster 2: Critical thinking & analytical
Critical thinking	Critical thinking
Problem solving	Analytical skills
Decision making	Willingness to learn
	Decision-making skills
Cluster 3: Interaction	Cluster 3: Problem solving
Teamwork	Problem-solving skills
Leadership	Networking skills
Dispute and conflict resolution	ICT skills
Negotiation	Communication skills
Self-confidence	
Cluster 4: Ethics & Professionalism	Cluster 4: Entrepreneurship skills
Ethics	Entrepreneurship skills
Professionalism	

Note: Communication and lifelong learning were part of the list of 16 soft skills but were removed from the factor analysis

When comparing the list of soft skills identified from literature between the two studies, which both included 16 soft skills, it was evident that only 50 per cent of the listed soft skills were similar. This indicates a lack of agreement between the two studies regarding the identification of essential soft skills for construction professionals. The variance in soft skills between these two studies lead to a variance in the factor analysis with little correlation between the identified clusters. T

Three soft skills (adaptability, teamwork & leadership) from the “self-management” and “interaction” clusters of study A corresponded with the same soft skills included in the “leadership” cluster from study B. The three soft skills (critical thinking, problem solving and decision-making) included in the “analytical” cluster in study A were split between the “critical thinking and analytical” and “problem solving” clusters of study B. The ethics and professionalism cluster from study A did not correspond to any of

the clusters in study B. Likewise, the "entrepreneurship" cluster from study B did not correspond to any of the clusters in study A.

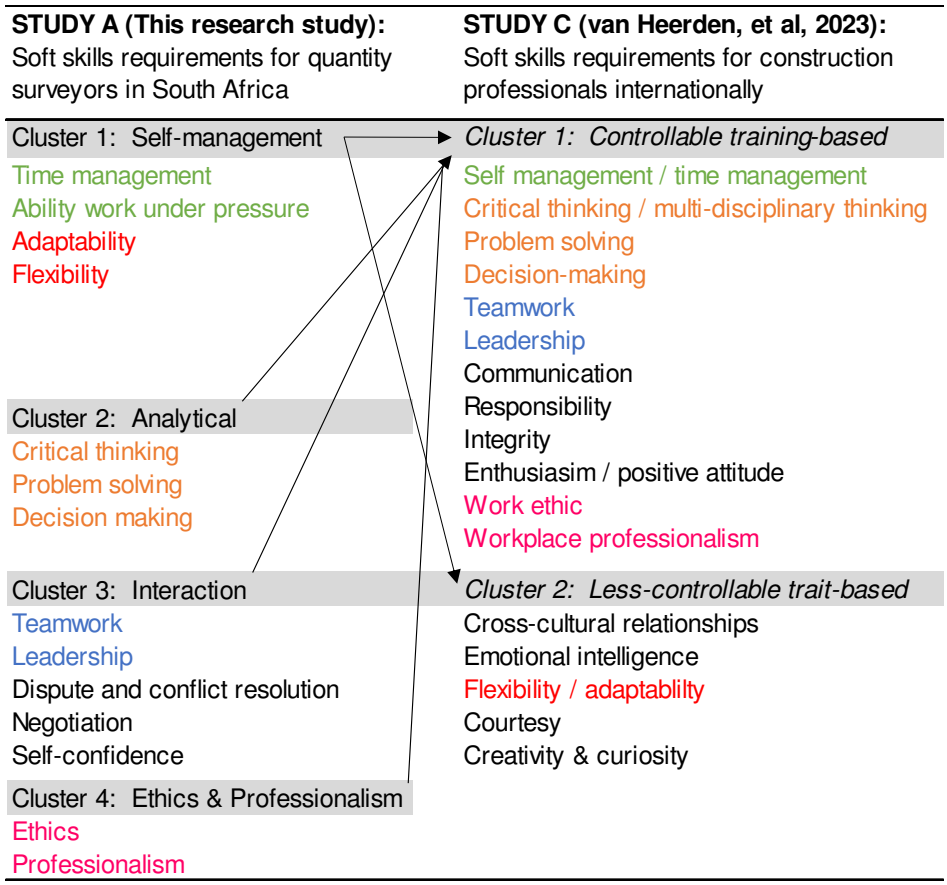
The factor analysis comparison brought to light a concern. The soft skills "ethics" and "professionalism", did not form part of the list of soft skills that Aliu and Aigbavboa (2023) derived from literature and as a result these soft skills were not included in their questionnaire and exploratory factor analysis. The findings of this study, however, revealed that ethics and professionalism were ranked as the most important soft skills (ranked first and second) by quantity surveyors and were identified through the exploratory factor analysis as a skills cluster. It is evident from the research findings that quantity surveyors as construction professionals place clear emphasis on ethics and professionalism (both less- and more experienced quantity surveyors). This study therefore shows that ethics and professionalism should be highly regarded and viewed as essential for early career development.

Research conducted by Shafie *et al.* (2014) regarding soft skills competencies of quantity surveying graduates ranked ethics and professionalism among the top five soft skills that employers desire in these graduates. There are several other research studies (Adnan *et al.*, 2012; Yap *et al.*, 2022; Zaharim *et al.*, 2012) conducted in the built environment and construction industry that highlight the importance of ethics and professionalism as soft skills that construction professionals, including graduates, require, thus supporting the findings of this study.

Research was conducted by van Heerden *et al.* (2023) regarding the soft skills possessed and required in the construction sector. The research was conducted amongst RICS members and their industry partners utilising the RICS database to administer the questionnaire. Twenty-three soft skills were identified from existing literature and included in the questionnaire.

Respondents had to rate the importance of these soft skills as required by their respective occupations. The results were further subjected to a principal component factor analysis. The ratings of the required soft skills were grouped into two clusters namely the more controllable training-based cluster and the less controllable trait-based cluster. Table 7.7 shows the comparison of the factor analysis clusters between this study (study A) and the work of van Heerden *et al.* (2023) (study C).

Table 7.7: Factor analysis comparison with existing literature – study A and C



When comparing the results of this study with the results of the research conducted by van Heerden *et al.* (2023) it became evident that 15 out of the 16 soft skills that formed part of this study also formed part of the study conducted by van Heerden *et al.* (2023), indicating agreement between these two studies regarding the identification of essential soft skills for construction professionals. Some soft skills did not load distinctively onto any of the factors and were thus removed from the factor analysis (applicable to both studies). The soft skills displayed in Table 7.7 only reflect the soft skills that loaded distinctively onto the identified clusters.

The soft skills clusters derived from the factor analysis of study A were compared with the controllable training-based cluster as well as the less-controllable trait-based cluster identified from the factor analysis of study C. It was found that the soft skills of "self-management" cluster of study A were split between the controllable and less-controllable clusters of study C indicating that the soft skills "time management" and "ability to work under pressure" can be developed through appropriate training and skills such as "adaptability" and "flexibility" cannot.

The soft skills in the "analytical", "interaction" and "ethics and professionalism" clusters in study A are all linked to the controllable training-based cluster of study C, thus indicating that they can also be developed through appropriate training. Communication was also included in study C as a soft skill in the controllable training-based cluster. Communication as skill is required when construction professionals need to negotiate or resolve disputes and is therefore indirectly linked with these soft skills (forming part of cluster 3 of study A). These findings are in line with existing literature by confirming that it is possible to promote the development of certain soft skills through appropriate training.

The above comparisons revealed that the soft skills included in each study clustered differently but similarities between certain clusters were evident. It is thus important to carefully consider the number and type of soft skills included in a research study as this will form the basis of a factor analysis.

7.2.6 Sub-conclusions: Research sub-question 1

Based on the discussion of the findings relating to research sub-question 1, the following sub-conclusions were derived:

- Despite the quantity surveying profession's acknowledgement of soft skills as drivers for workplace success, a soft skills shortage was identified in this profession.
- The importance of the 16 soft skills identified through literature and tested through empirical research all ranged between "very important" and "extremely important" for the quantity surveying profession in South Africa.
- A significant relationship exists between respondents' experience levels and the importance of the soft skills, critical thinking, problem solving, decision making, time management, working under pressure, adaptability and flexibility.
- The four soft skills clusters (self-management, interaction, analytical and professionalism and ethics), coupled with the soft skills communication and lifelong learning are the essential soft skills that candidate quantity surveyors in South Africa need to develop prior to professional registration.
- A high competency level is desired for these essential soft skills indicating that these skills should ideally be developed, attained and maintained at a level ranging between "very good" and "excellent".

7.3 DISCUSSION OF FINDINGS: SUB-QUESTION 2 (SOFT SKILLS GAP)

The second sub-question that this research study investigated was:

"What is the extent of the soft skills gap, if such gap exists, among quantity surveyors with five years or less work experience?"

Existing literature confirms the existence of a soft skills gap among young employees (Jaiswani, 2021; Murti, 2014; Mwita *et al.*, 2023; Oni & Aina, 2020; Schulz, 2008; Stewart *et al.*, 2020; Tulgan, 2015). According to Mahasneh and Thabet (2015) this is also true for the construction industry. In order to answer the research question, it was necessary for this study to determine the current soft skills profile of early career candidate quantity surveyors and whether any gaps may exist. In order to derive such a soft skills profile, this study had to identify the essential soft skills that quantity surveyors require and determine respondents' actual skills level in relation to these essential soft skills.

The discussion of research sub-question 1 provided a detailed explanation of how the list of 16 soft skills were derived from literature, tested through empirical research and analysed to form the soft skills clusters (as previously shown in Table 7.5), coupled with communication and lifelong learning, considered to be essential for the quantity surveying profession in South Africa. The soft skills profile of early career candidates was further explored and interpreted from the perspectives of less experienced respondents (five years' experience or less) and more experienced respondents (>five years' experience) as well as the respondents who have acted as mentors for candidate quantity surveyors.

Since the focus of this study is on early career development, experience levels rather than registration status of quantity surveyors were considered because many respondents were registered as candidate quantity surveyors with more than five years' experience. The aim of the soft skills profile comparison was to determine how opinions might differ between the less experienced- and more experienced individuals in the quantity surveying profession. The opinions of mentors were also regarded as important since mentors have a close working relationship with candidate quantity surveyors and will thus be able to provide deeper insights based on their dealings with

candidates. Evaluating the opinions and views of these three groups will provide more in-depth insight and possibly a truer answer to the research question.

7.3.1 Soft skills profile – Average candidate quantity surveyor

Respondents were asked to rate the development of the 16 essential soft skills for the average candidate quantity surveyor with less than five years' experience using a Likert scale ranging from "poor" to "excellent". The findings from Chapter Six revealed that on average (mean score of 2.84) respondents were of the opinion that the level of development of these soft skills in the average candidate quantity surveyor with less than five years' experience ranged between "fair" and "good" but leaning more towards "good".

These findings were further explored by calculating and comparing the mean scores based on the ratings of respondents with five years or less experience, respondents with more than five years' experience as well as respondents who has acted as mentors of candidate quantity surveyors before. The mean scores were used to determine the current soft skills profile of the average candidate quantity surveyor with less than five years' experience as perceived by each group included in the comparison. These soft skills profiles are shown in Figure 7.1.

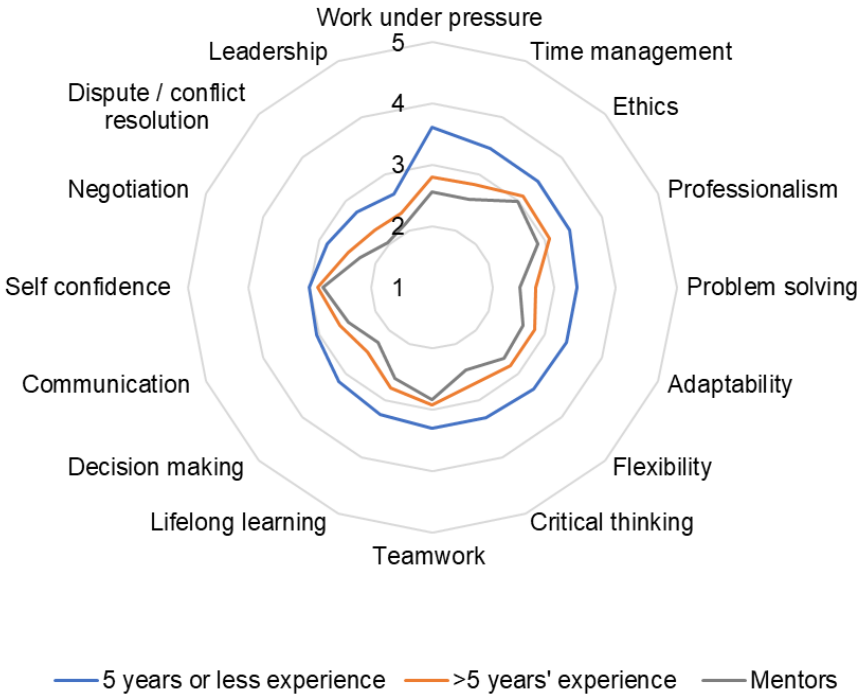


Figure 7.1: Soft skills profile - Average candidate QS with less than five years' experience

The five circles in figure 7.1 represent the five rating scales ranging from 1 (poor) to 5 (excellent). The mean score for each soft skill was calculated, plotted and colour coded and represents the soft skills profile of the average candidate quantity surveyor with less than five years' experience according to the three groups.

Less experienced respondents (five years or less experience; n = 127) indicated that the soft skills profile of the average candidate quantity surveyor with less than five years' experience ranged between "good" and "very good" with an average mean score of 3.21. More experienced respondents (>five years' experience; n = 401) indicated that the soft skills profile of the average candidate quantity surveyor with less than five years' experience ranged between "fair" and "good" with an average mean score of 2.73.

This study also compared the views of respondents who had been mentors of candidate quantity surveyors (n = 180) and found that this group had a similar view as the more experienced respondents. Mentors work closely with candidate quantity surveyors since they are responsible to guide candidates during the APC process and ensure that they obtain the required experience prior to professional registration. Mentors oversee candidate quantity surveyors and help them to meet the required professional standard.

The close working relationship between mentors and candidate quantity surveyors place mentors in a unique position to provide a more realistic and possibly more accurate judgement in terms of the development of soft skills in candidate quantity surveyors. Mentors were of the opinion that the soft skills profile of the average candidate quantity surveyor with less than five years' experience ranged between "fair" and "good" with an average mean score of 2.53.

The current soft skills profile of the average candidate quantity surveyor with less than five years' experience were rated the lowest by respondents who have acted as mentors. More experienced respondents rated the soft skills profile slightly higher than mentors and the less experienced respondents rated the current soft skills profile the highest. This indicated a gap in perception between the groups. Less experienced respondents were thus of the opinion that the soft skills in the average candidate quantity surveyor with less than five years' experience were better

developed than what was actually perceived to be the case by more experienced respondents and mentors of candidate quantity surveyors.

7.3.2 Soft skills profile – Self-assessment

Respondents were asked to conduct a self-assessment of their own soft skills development using a Likert scale ranging from “poor” to “excellent”. The findings presented in chapter 6 revealed that on average (mean score of 3.91) respondents’ self-assessment of their own soft skills ranged between “good” and “very good” but leaning more towards “very good”. These findings were further explored by calculating and comparing the mean scores based on the self-assessments of respondents with 5 years or less experiences, respondents with more than 5 years’ experience as well as respondents who has acted as mentors of candidate quantity surveyors before. The mean scores were used to determine the current soft skills profile of respondents as perceived by each group included in the comparison. The soft skills profile comparison is shown in Figure 7.2.

Figure 7.2: Self-assessment soft skills profile of respondents

The circles in figure 7.2 represent the rating scales ranging from 1 (poor) to 5 (excellent). None of the calculations yielded a mean score less than 2 and therefore figure 7.2 only displays the circles ranging from rating scale 2 (fair) to 5 (excellent). The mean score for each soft skill was calculated, plotted and colour coded and displays the soft skills profile of the respondents based on the self-assessments of to the three groups that formed part of the comparative analysis.

Less experienced respondents (five years or less experience; n = 127) indicated that their own soft skills profile based on their self-assessment ranged between “good” and “very good” with an average mean score of 3.64. The self-assessment of this group of respondents (average mean score of 3.64) was higher compared to how this same group of respondents assessed the soft skills development of the average candidate quantity surveyor with less than five years’ experience (average mean score of 3.21). This indicates that less experienced respondents were of the opinion that their own soft skills were better developed that the average candidate quantity surveyor with less than 5 years’ experience.

More experienced respondents (>five years’ experience; n = 401) indicated that their own soft skills profile ranged between “good” and “excellent” with an average mean score of 3.99. Respondents who have acted as mentors of candidate quantity surveyors (n = 180) indicated that their own soft skills profile also ranged between “good” and “excellent” with an average mean score of 4.07. The soft skills profiles of more experienced respondents and mentors followed a very similar trajectory with average mean scores of 3.99 and 4.07.

These scores marginally deviate from 4, which indicates that the soft skills profiles of more experienced respondents as well as mentors can both be seen as “very good”. It is evident from Figure 7.2 that the soft skills profiles of the more experienced respondents as well as mentors were both rated higher compared to the soft skills profile of less experienced respondents. It was expected that respondents with more experience and mentors of candidate quantity surveyors would have better developed soft skills because they have had more exposure to industry and opportunities to develop these skills. The findings were able to confirm this expectation. This positively contributes toward the soft skills development of candidate quantity surveyors since these individuals will benefit from good role models with the ability to

demonstrate and model good soft skills to them. This study could therefore eliminate any gaps related to poor modelling of soft skills.

Overall, most respondents displayed a high level of confidence in their own soft skills abilities. The high self-assessments however stand in contrast to the question that respondents had to answer regarding a soft skills shortage in the quantity surveying profession. The findings to this question revealed that collectively 76 per cent of all respondents were in agreement that a soft skills shortage exists in the quantity surveying profession thus acknowledging that there is a soft skills gap. Yet, the actual soft skills profiles, based on the self-assessments of the various groups that formed part of the comparative analysis, did not reveal any significant soft skills gaps. On average there were no soft skills considered to be fairly or poorly developed among any of the groups.

The overestimation of soft skills development can be countered by allowing others to also assess the development of these skills. This study therefore compared the self-assessment of less experienced respondents (five years or less experience) against the assessment of the average candidate quantity surveyor with less than five years' experience as rated by more experienced respondents (>five years' experience) as well as mentors. The aim of the comparative analysis was to determine if the self-assessment of less experienced respondents was in line with the views of their seniors in the profession or if gaps are highlighted among this cohort.

7.3.3 Comparison of soft skills profiles

The purpose of the soft skills profile comparison was to identify gaps as well as opportunities for improvement regarding the soft skills development of candidate quantity surveyors with less than five years' experience. The actual soft skills profile of respondents with five years or less experience, based on their self-assessment, were compared with the soft skills profiles of the average candidate quantity surveyor with less than five years' experience, based on the assessment of more experienced respondents and mentors. The soft skills profile comparison is presented in Figure 7.3.

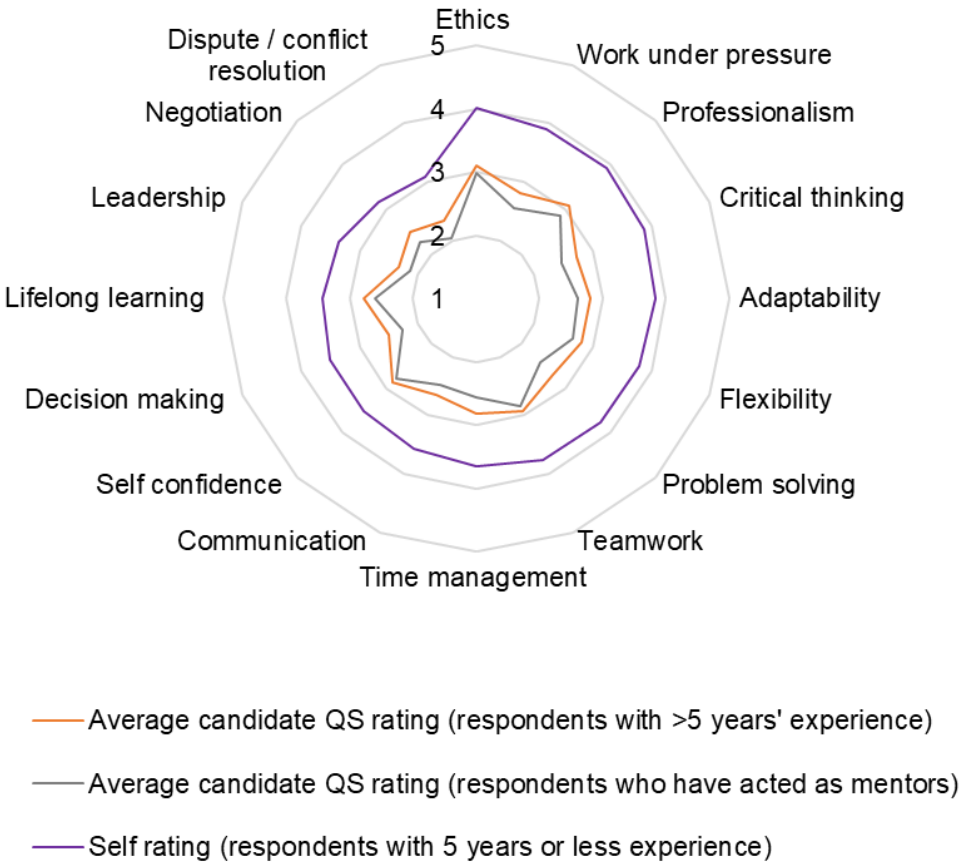


Figure 7.3: Soft skills profile comparison (Self rating vs average rating of candidate QS)

The circles in figure 7.3 represent the rating scales ranging from 1 (poor) to 5 (excellent). The mean score for each soft skill was calculated, plotted and colour coded to display the various soft skills profiles. The outer soft skills profile is based on the self-assessment of respondents with five years or less experience. The middle soft skills profile is based on the assessment of the average candidate quantity surveyors with less than five years' experience according to more experienced respondents. The inner soft skills profile is based on the assessment of the average candidate quantity surveyors with less than five years' experience according to mentors.

The findings revealed that less experienced respondents indicated that their soft skills profile ranged between "good" and "very good" with an average mean score of 3.64. More experienced respondents indicated that the soft skills profile of the average candidate quantity surveyor with less than five years' experience ranged between

"fair" and "good" with an average mean score of 2.73. Respondents who have acted as mentors of candidate quantity surveyors indicated that the soft skills profile of the average candidate quantity surveyor with less than five years' experience ranged between "fair" and "good" with an average mean score of 2.53.

The soft skills profiles derived from the ratings of more experienced respondents and mentors followed a similar trajectory, both ranging between "fair" and "good" with marginal differences. Mentors rated the soft skills development of candidate quantity surveyors with less than five years' experience the lowest. More experienced respondents had a similar view as mentors but ranked the development of soft skills of the average candidate quantity surveyor with less than five years' experience slightly higher. Respondents with five years or less experience rated their own soft skills profile the highest.

Respondents with five years or less experience have had limited exposure to professional situations, limited responsibility assigned to them and limited interaction with other construction professionals. This cohort might therefore not yet comprehend the expected level of competency in terms of soft skills. Respondents with more than five years' experience, including mentors, have had greater exposure to professional situation, increased levels of responsibility and dealings with clients, consultants and contractors at a professional level.

These respondents therefore have a more comprehensive understanding of the soft skills requirements that candidate quantity surveyors need to obtain prior to professional registration. The soft skills profiles derived from the ratings of more experienced respondents and mentors were thus considered to be more realistic and a truer reflection of the actual soft skills development among candidate quantity surveyors with less than five years' experience.

7.3.4 Soft skills profile gaps

The findings revealed a gap in perception in terms of how less experienced respondents perceived the development of their own soft skills compared to how more experienced respondents as well as mentors perceived the soft skills development of this cohort. The self-assessment of soft skills by less experienced respondents did not meet the expectation of more experienced respondents nor

mentors of candidate quantity surveyors. The findings of this study related to research done by Ayodele *et al.* (2021) who conducted a soft skills gap analysis among real estate graduates in Nigeria. Their findings also highlighted a soft skills gap in terms of employers' perception and the perception of graduate employees in terms of expected soft skills.

This study found that the biggest divergence in soft skills perceptions between more experienced and less experienced respondents was found to be with the soft skills "working under pressure", "critical thinking", "problem solving", "decision making" and "leadership". Less experienced respondents rated the development of these soft skills much higher than more experienced respondents and mentors.

A possible reason for the higher self-assessment of less experienced respondents can be that of Tsirkas *et al.* (2020) who stated that employees often tend to overestimate their own soft skills. Less experienced respondents might therefore have an elevated perception of their own soft skills development than what is actually perceived to be the case by more experienced respondents and mentors in the quantity surveying profession. Another possible reason can be that of Mahasneh and Thabet (2015) who stated that there is no consensus in the construction industry regarding the standard required for soft skills development. Without clear expectations from employers regarding the development and attainment of soft skills, less experienced respondents might have a lower benchmark compared to their seniors in the quantity surveying profession when assessing their own soft skills.

Since the soft skills profiles of candidate quantity surveyors with less than five years' experience, as assessed by more experienced respondents and mentors, are considered to be more realistic, these soft skills profiles were evaluated to determine if any gaps exist or if there are any areas for improvement. The average assessment of soft skills development according to more experienced respondents and mentors ranged between "fair" and "good".

This study therefore did not identify any gaps of great concern in terms of soft skills development of candidate quantity surveyors with less than five years' experience since none of the soft skills were perceived to be "poorly" developed. When analysing the soft skills profile of candidates with less than five years' experience, the soft skills that this cohort are lacking in most, as rated by more experienced

respondents as well as mentors, were leadership, dispute / conflict resolution, decision making and negotiation.

On the other hand, the soft skills that candidates seemed to be fairing best at, according to more experienced respondents and mentors, were ethics, professionalism, teamwork and self-confidence. Leadership according to Crawford and Dalton (2016) is a soft skill that entry level employees might not initially possess and is something that can be developed over time within an organisation. This was also the case with dispute- and conflict resolution.

7.3.5 Test for significance

The soft skills development of the average candidate quantity surveyor with less than five years' experience were compared with the experience level of respondents as well as mentorship to determine if any significant relationships existed. Inferential statistics were used in the form of Fisher's Exact test as explained earlier in this chapter, to test whether any two variables compared were independent or had a relationship with each other. The results of Fisher's Exact Test are shown in Table 7.8.

Table 7.8: Fisher's Exact Test for significance: soft skills development vs experience and mentorship

Soft skills development vs Experience		Soft skills development vs Mentorship	
	p-value		p-value
Communication	0.0015	Communication	0.0005
Teamwork	0.0005	Teamwork	0.0015
Leadership	0.0105	Leadership	0.0005
Ethics	0.0070	Ethics	0.0040
Professionalism	0.0025	Professionalism	0.0005
Critical thinking	0.0005	Critical thinking	0.0005
Problem solving	0.0005	Problem solving	0.0005
Decision making	0.0005	Decision making	0.0005
Dispute / conflict resolution	0.0005	Dispute / conflict resolution	0.0005
Time management	0.0005	Time management	0.0005
Lifelong learning	0.0005	Lifelong learning	0.0005
Negotiation	0.0010	Negotiation	0.0005
Work under pressure	0.0005	Work under pressure	0.0005
Adaptability	0.0005	Adaptability	0.0005
Flexibility	0.0005	Flexibility	0.0005
Self confidence	0.4198	Self confidence	0.1224

The first and third columns in Table 7.8 lists the 16 essential soft skills for the quantity surveying profession. The second column in the Table indicates the p-value calculated from Fisher's Exact Test based on soft skills development compared to the experience level of respondents. The fourth column in the Table indicates the p-value calculated from Fisher's Exact Test based on soft skills development compared to mentorship. All the soft skills in the colour blue, except for self-confidence, obtained a p-value < 0.05 indicate that a significant relationship exists between these soft skills and experience as well as between the soft skills and mentorship. There were thus no association between the soft skill self-confidence and experience levels of respondents as well as between self-confidence and mentorship. Future research should further explore these results to uncover deeper insights in order to draw meaningful conclusions in this regard.

7.3.6 Sub-conclusions: research sub-question 2

Based on the discussion of the findings relating to research sub-question 2, the following sub-conclusions were derived:

- A gap in perception exists regarding the soft skills profile of candidate quantity surveyors with less than five years' experience. Less experienced respondents have an elevated perception of their own soft skills development than what is actually perceived to be the case by more experienced respondents and mentors in the quantity surveying profession.
- A significant relationship exists between the soft skills development of the average candidate quantity surveyor and levels of experience as well as between the former and mentorship.
- A soft skills gap exists in terms of the desired level of soft skills development compared to the actual level of soft skills development of candidate quantity surveyors with five years or less experience.
- The soft skills that candidates are lacking most, as rated by more experienced respondents as well as mentors, were leadership, dispute / conflict resolution, decision making and negotiation. The soft skills in which this cohort fare best are ethics, professionalism, teamwork and self-confidence.

7.4 DISCUSSION OF FINDINGS: SUB-QUESTION 3 (STAKEHOLDER ENGAGEMENT)

The third sub-question that this research study investigated was:

"What is the current level of stakeholder engagement in terms of soft skills development of candidate quantity surveyors?"

The responsibility to develop soft skills in candidate quantity surveyors forms an integral part of professional identity formation. This process starts with pre-professional identity formation, the concept borrowed from Jackson (2016), and will progress to the formation of a professional identity (Tomlinson & Jackson, 2021) which is required prior to registering as a professional quantity surveyor (PrQS). In order to register as a PrQS a candidate must undergo an assessment of professional competence (APC). The SACQSP's APC is a well-established process and primarily centres around evaluating candidates' academic knowledge and technical skills but currently includes no soft skills specific requirements that candidates need to adhere to (SACQSP (a), 2020).

This highlights a potential gap in the APC process but does not exempt stakeholders from their responsibility towards the development of soft skills in candidates. The key stakeholders currently involved in the assessment of professional competence (APC) process of candidate quantity surveyors in South Africa are higher education institutions (HEIs), QS employers, the ASAQS and SACQSP. Pre-professional identity formation will largely take place at HEIs and professional identity formation will commence once a QS graduate enters the workplace. Both pre-professional identity formation at HEIs and professional identity formation in the workplace will require support from the ASAQS and SACQSP. Stakeholder responsibility as well as stakeholder involvement will be discussed in relation to the research findings previously presented in Chapter Six.

7.4.1 Stakeholder Responsibility

According to existing literature, ambiguity regarding stakeholder responsibility is a hinderance towards the soft skills development of employees. Research conducted by Hurrell (2016) refers to this as the skills deficit "blame game" where one stakeholder blames the other for the lack of soft skills development in graduates and

young employees. Without a clear allocation of stakeholder responsibility, the development of soft skills in candidate quantity surveyors will not receive the attention it deserves.

It is therefore important for key stakeholders (HEIs, QS employers, ASAQS and SACQSP) to know where their responsibility lie and how they can best support the development of soft skills in candidates as part of the journey of pre-professional and professional identity formation. Synergy between stakeholders will also be required to collectively form, shape and develop soft skills in graduates and young quantity surveyors.

The development of soft skills according to the Kraaijenbrink (2023) 4E model will require explanation (equipping with theoretical knowledge), examples, experience and exercise. When contextualising this model for the quantity surveying profession in South Africa, the "explanation" can be seen as the soft skills knowledge transfer that takes place at HEIs as well as through continuous professional development opportunities in the workplace (such as webinars, workshops, conferences, and so forth.). HEIs can provide QS students with theoretical soft skills examples through scenario-based learning and other such means.

In the workplace, mentors can be seen as real-life examples who model soft skills to candidates. Candidates will naturally be exposed to professional situations in the workplace where they can both experience soft skills in terms of being on the receiving end thereof as well as practically apply what they have learned in terms of soft skills. Another soft skills development aspect that does not specifically form part of the 4E model is "evaluation". When considering the APC process for candidate quantity surveyors nationally as well as internationally, it is evident that candidates need to demonstrate competency through a formal assessment process. For the quantity surveying profession "assessment" forms an integral part of professional development.

In the light of these soft skills development aspects, the research findings presented in Chapter Six revealed that the following stakeholders should primarily carry the responsibility to:

- Equip with knowledge (explain): QS employers (74%)
- Model / demonstrate good soft skills (examples): QS employers (83%)

- Provide opportunities to practically apply soft skills (experience and exercise): QS employers (92%)
- Assess / measure the development of soft skills (assess): QS employers (70%)

The findings indicated that QS employers were identified as the stakeholders primarily responsible for each of the above listed activities. When considering the activity "equip with knowledge", the findings from Chapter Six indicated that HEIs (68 per cent) are also largely responsible for this activity although they take a secondary position to QS employers. This is in line with research conducted by Sparrow (2017) indicating that HEIs should help students to develop the necessary soft skills by informing students of key soft skills required for the workplace.

Sparrow (2017), however, also alludes to HEI's responsibility to model soft skills to students as far as possible, creating opportunities for students to practise soft skills, assessing the development of soft skills and providing feedback to students. The primary responsibility of HEIs thus lies in equipping QS students with soft skills knowledge prior to them entering the workplace. Thus, QS employers should continue to build on this platform from a professional development point of view.

In the QS profession in South Africa, the ASAQS is the institution responsible for support by providing continuous professional development (CPD) training to quantity surveyors, among others. This research study therefore expected respondents to assign a greater level of responsibility to the ASAQS in terms of "equipping with knowledge" but only 25 per cent of respondents indicated that the ASAQS should carry the responsibility for this task.

In reality, QS employers and employees would rely to some extent on the ASAQS to provide soft skills training as part of CPD. It can thus be concluded that for the quantity surveying profession the responsibility to "equip with soft skills knowledge" should be a dual effort on the part of HEIs and QS employers, with the support of the ASAQS, and forms an integral part of pre-professional- and professional identity formation of candidates.

The findings revealed that the responsibility to model / demonstrate soft skills to candidate quantity surveyors primarily resides with QS employees. This is in line with literature stating that organisational leadership should lead by example in terms of

soft skills as this will prompt young employees to take the development of soft skills seriously (Tulgan, 2016). Candidates will look up to senior and top management of their firms and learn from them through observing their soft skills. A key aspect of leadership in the quantity surveying profession is the mentorship of candidate quantity surveyors.

Mentors, who are professionally registered quantity surveyors, are responsible to guide candidates and ensure that they obtain the required experience prior to professional registration. The close working relationship between mentors and candidates, places mentors in a unique position to regularly model soft skills to candidates. Part of the responsibility of mentors will thus include the modelling of soft skills to candidates.

The findings further revealed that the responsibility to provide candidates with opportunities to practically apply soft skills primarily resides with QS employers, indicating that soft skills are best developed in a real-word context. Although the SACQSP's APC process does not include specific soft skills requirements for candidates in South Africa, other international QS professional bodies do have these requirements. Such soft skills requirements need to be adhered to as part of the practical experience component of professional assessment.

Thus, QS employers are responsible to provide candidates with opportunities to practically apply and develop soft skills. Workplace experience and exposure to professional situations are crucial for candidates to develop and attain both technical- and soft skills prior to professional registration. It can also be argued that opportunities to practically apply soft skills should form part of pre-professional identity formation through initiatives such as work-integrated learning or scenario-based learning. Such opportunities can allow students to experience and practice soft skills in a real-world context. The findings presented in Chapter Six revealed that only 38 per cent of respondents indicated that it is the responsibility of HEIs to provide opportunities to practically apply soft skills.

The findings revealed that the responsibility to assess / measure the soft skills development in candidate quantity surveyors primarily resides with QS employers. This study, however, expected respondents to assign a greater level of responsibility to the SACQSP since it is the professional body that governs the APC process and

responsible for the registration of professional quantity surveyors in South Africa. The findings from Chapter Six revealed that only 41 per cent of respondents indicated that the SACQSP should carry this responsibility in comparison to the 70 per cent of respondents who indicated that it is the responsibility of QS employers.

When considering the SACQSP's APC requirements, practical experience under the mentorship / supervision of a PrQS (between three to five years depending on academic qualification) is required. Although the SACQSP governs the APC process, QS employers carry the primary responsibility to ensure that candidates receive the mentorship and guidance necessary to prepare them for formal evaluation by the SACQSP. Mentorship will therefore require of QS employers to evaluate the soft skills of their candidates to some extent prior to professional registration.

7.4.2 Stakeholder involvement: Higher Education

Higher educational institutions play an integral role in preparing QS students for the workplace and have a responsibility to equip students with technical skills as well as soft skills required by the quantity surveying profession. It is evident from existing literature that it is possible to effectively teach soft skills in higher education through various means such as scenario-based learning (Bancino & Zevalkink, 2007), problem-solving- and project-based approaches (Caeiro-Rodriguez *et al.*, 2021), serious games (Almeida & Buzady, 2022), stand-alone soft skills modules and work-based learning (Malhi, 2009; Murti, 2014) as well as soft skills workshops (Rashidi Abbas & Azmie, 2013). Existing literature indicates that soft skills are deemed important in terms of graduate employability but in most cases, graduates do not possess the soft skills that industry requires (Murti, 2014; Oni & Aina, 2020; Schulz, 2008).

The empirical findings of this study revealed that the majority of respondents (50 per cent) leaned towards dissatisfaction regarding the soft skills with which quantity surveying students enter the profession. The findings have further shown a somewhat dispersed response regarding HEI equipping students with basic soft skills but did, however, lean more towards a positive viewpoint (43 per cent of respondents) in this regard. The findings also revealed that the majority of respondents (51 per cent) leaned towards dissatisfaction regarding the opportunities that HEIs provide students to practically apply soft skills while studying.

Chapter Four of this study provided a review of the curricula of five universities in South Africa offering degrees in quantity surveying. The review revealed that currently three out of the five universities have included practical work experience as a module in their curricula. However, the requirements of each university differ in this regard as some require students to obtain practical work experience from their first year of study whilst others only require students to obtain practical work experience as part of their honours year of study.

Practical work experience allows students to be submerged in a real-world context where they can experience and practically apply soft skills. Curriculum details also revealed that only two universities offer soft skills specific modules. One university has included "communication skills" as a module at first year level and another university included "professionalism in the built environment" at second-year level.

Another university has included a community-based project as an undergraduate module that is not directly focused on soft skills development but does contribute positively towards the development of students' soft skills. However, a high-level review of the five university curricula revealed that soft skills specific modules are limited. Practical work experience, also referred to as work-based learning or work-integrated learning, seem to be the main vehicle driving soft skills development of QS students at HEIs. The reality, however, is that work integrated learning initiatives at HEIs mainly focus on technical skills development and not necessarily soft skills development.

A review of university curricula included the development of QS students' soft skills through a formal lens via specific academic modules. However, it is important to note that even if a curriculum does not include specific soft skills modules, it does not mean that students' soft skills are not being developed. Various academic modules will require of students to apply soft skills such as communication, teamwork on assignments, time management, decision making, critical thinking, problem solving, and so forth, to some extent.

The finding from the empirical research presented in Chapter Six indicated that the soft skills development of QS graduates in South Africa does not yet meet the demands of the QS profession in this country. There is room for HEIs to improve

their current efforts towards equipping students with basic knowledge on soft skills and providing opportunities to practically apply such soft skills. Knowledge put to practice will lead to the development of soft skills.

HEIs should create awareness among students regarding (1) the importance of soft skills for the QS profession, (2) the essential soft skills that students will require in the workplace and (3) what such soft skills entail. HEIs can also provide more practical application opportunities to students directed specifically at soft skills development inside and outside the classroom.

7.4.3 Stakeholder involvement: QS Employer

The empirical research findings regarding stakeholder responsibility highlighted QS employers as the stakeholders primarily responsible for equipping candidates with soft skills knowledge, modelling soft skills to candidates, providing opportunities to candidates to practically apply soft skills and the assessment / measurement of soft skills development in candidates. The soft skills development of candidate quantity surveyors thus largely depends on the commitment, or lack thereof, on the part of QS employers.

Existing literature confirms that when organisations value soft skills and incorporate them as part of their organisational culture it will drive the required behaviours within employees (Tulgan, 2016). De Villiers (2010), however, cautions organisations that the cultivation of soft skills behaviour in employees takes time and that once-off soft skills development initiatives will not necessarily help organisations to create the soft skills culture they desire. Creating a responsive and supporting culture towards learning and developing such soft skills will require organisations to intentionally dedicate time and resources (Tulgan, 2016; Weedon & Tett, 2013). Organisational leadership should also lead by example by modelling good soft skills to employees, especially young employees (Tulgan, 2016).

The findings of the empirical research revealed that the majority of respondents (63 per cent) indicated that QS employers value the development of soft skills and promote it as part of their company culture. Thus, QS employers seem to be fostering organisational cultures that value soft skills. This sheds a positive light on

the cultivation of soft skills and shows that QS organisations are heading in the right direction regarding soft skills development of employees.

However, from the perspective of a responsive and supporting learning culture, QS employers are lacking in terms of providing soft skills training to candidates. Respondents previously indicated that soft skills are very- to extremely important for the quantity surveying profession and that soft skills contributed between 40 per cent to 50 per cent of workplace success. Respondents also indicated that QS employers should primarily be responsible to equip candidates with basic soft skills knowledge.

Despite these views, only 43 per cent of respondents indicated that QS employers are offering training opportunities to equip candidates with soft skills knowledge. In light of the importance of soft skills and the contribution of soft skills towards workplace success, more QS employers should take up the responsibility to offer training on essential soft skills to candidates.

The findings also revealed that only 24 per cent of respondents indicated that QS employers have a tool / system in place to assess the soft skills development of candidates. This indicates that a gap exists in QS firms regarding the evaluation of candidates' soft skills development. Evaluation and feedback from QS employers will help candidates to identify personal soft skills gaps and, in collaboration with their employers, direct intentional efforts to improve such soft skills.

A possible reason for the lack of soft skills evaluation in QS firms response can be that of Mahasneh and Thabet (2015) stating that there is no consensus in the construction industry regarding the standard required for soft skills and no tools available to measure the development of soft skills in employees. The QS profession in South Africa currently has no soft skills benchmark that allows QS employers to evaluate the development of soft skills in candidate quantity surveyors on a uniform basis. Existing literature also confirms the notion that standardisation in terms of soft skills definitions and evaluation methods are required (Mahasneh & Thabet, 2015; Stewart *et al.*, 2020).

The findings lastly revealed that majority of the respondents (60 per cent) indicated that quantity surveyors employed in top- and middle-management positions are modelling good soft skills to candidate quantity surveyors. Existing literature

indicates that coaching and mentoring plays an integral part towards the soft skills development of young employees (Tulgan, 2016). QS employers especially organisational leadership thus seem to be faring well in this regard but there will always be room for improvement, especially for those PrQSs who take up a leadership role as mentors for candidates.

7.4.4 Stakeholder involvement: ASAQS & SACQSP

The SACQSP is the only juristic person allowed to register quantity surveyors in South Africa. Part of the mandate of the SACQSP is to register suitably qualified persons into the quantity surveying profession. The SACQSP's assessment of professional competence (APC) considers academic qualifications in combination with practical training and experience as criteria for professional registration (SACQSP (a), 2020).

The ASAQS on the other hand is a voluntary association recognised by the SACQSP that supports the quantity surveying profession by providing among other CPD programmes through their Edutech division. The SACQSP requires of candidate quantity surveyors to obtain 20 hours of CPD prior to professional registration. A reasonable expectation would be that a candidate who has gone through the SACQSP's APC successfully will register as a well-rounded PrQS with the technical- and soft skills that the QS profession demands.

Existing literature, however, found that the SACQSP's current APC does not include any soft skills specific requirements or soft skills competencies that candidate quantity surveyors are required to obtain prior to professional registration (SACQSP (a), 2020). It can be argued that the current APC process is indirectly developing soft skills in candidates since candidates need to utilise a variety of soft skills to execute workplace activities.

This viewpoint, however, assumes that soft skills will automatically develop through practical experience. This view is not necessarily incorrect but the problem remains that without a soft skills assessment criterion it will be difficult to determine to what extent essential soft skills have been developed and whether or not it is deemed adequate for professional registration. Existing literature also found that the ASAQS CPD programme includes a track called the "QS Lifestyle". In 2023 this track only

included soft skills webinars related to leadership, mentoring and coaching. However, the QS lifestyle track is fairly new and will be expanded in future to address the "softer" needs of the quantity surveying profession (ASAQS (g), 2023).

The findings from the empirical research revealed that only 33 per cent of respondents agreed that the SACQSP's current APC is sufficient to ensure the acquisition of both technical skills as wells as soft skills in candidate quantity surveyors. When considering the soft skills related CPD offered by the ASAQS, the findings revealed that only 28 per cent of respondents found it to be sufficient in terms of equipping quantity surveyors with soft skills knowledge. These findings indicate that current efforts by the SACQSP and ASAQS do not sufficiently support the soft skills development of candidates.

7.4.4.1 PrQS and Candidate QS views on SACQSP and ASAQS stakeholder involvement

Candidate quantity surveyors are currently in the APC process and PrQSs have already gone through the APC process and understand what it entails. This research study therefore deemed it necessary to further analyse the responses by investigating how opinions might differ between candidate quantity surveyors and PrQSs. The findings are presented in Figure 7.4 below.

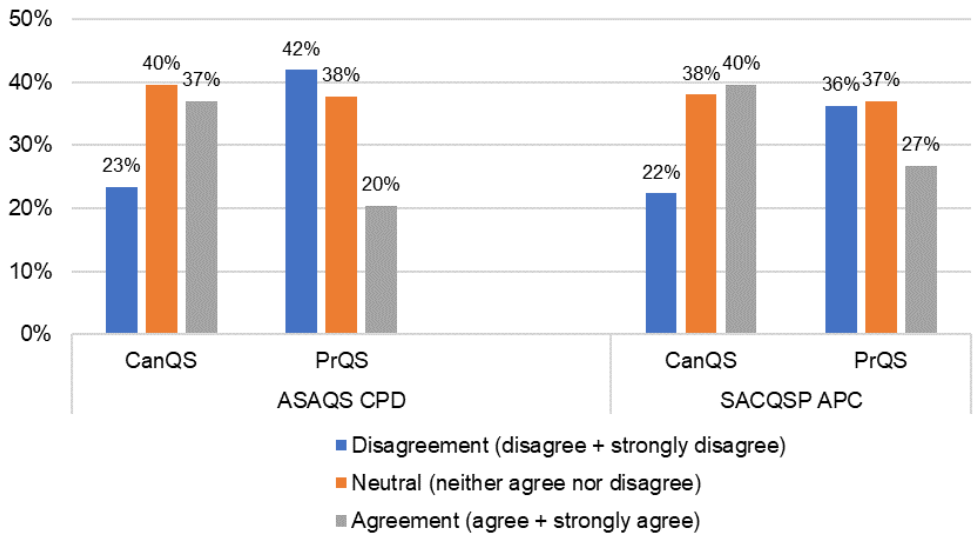


Figure 7.4: ASAQS CPD & SACQSP APC: Comparative analysis between candidate QS and PrQS views

Figure 7.4 indicates that the views of candidate quantity surveyors differ when compared to the views of PrQSs regarding soft skills related CPD offered by the ASAQS and the sufficiency of the SACQSP's current APC to ensure the acquisition of both technical and soft skills in candidate QSs. The comparative analysis revealed that most candidate QSs and PrQSs (between 37 per cent - 40 per cent) were neutral on the matter, indicating a level of uncertainty among both these groups regarding the ASAQS' and SACQSP's efforts towards soft skills development.

Disparities were found between the "agreement" and "disagreement" categories of candidate QSs and PrQSs. When considering whether the CPD offered by the ASAQS is sufficient to equip quantity surveyors with soft skills knowledge, it was found that more candidate QS (37 per cent) agreed with this compared to PrQS (20 per cent). Automatically fewer candidate QS (23 per cent) respondents were in disagreement in this regard compared to PrQS (42 per cent). When considering the SACQSP's current APC and the sufficiency thereof to equip candidate QSs with both technical- and soft skills, it was found that more candidate QS (40 per cent) respondents were in agreement with this compared to PrQS (27 per cent). Automatically less candidate QS (22 per cent) respondents were in disagreement in this regard compared to PrQS (36 per cent).

PrQSs have gone through the APC process and have progressed further down their career paths and have thus gained more experience. PrQSs therefore have a deeper understanding and insight in terms of the soft skills that the profession demands of quantity surveyors and might thus scrutinise the current efforts of the ASAQS and SACQSP through a more critical lens compared to candidate QSs, hence the lower levels of agreement towards the current soft skills efforts from the ASAQS and SACQSP. Although the views between candidate QS and PrQS differ, the findings are, however, not favourable towards the current efforts of the ASAQS and SACQSP. This highlights a gap in the current CPD training offered by the ASAQS as well as a gap in terms of the SACQSP's APC process for candidate quantity surveyors.

7.4.5 Test for significance

The variable "soft skills CPD offered by the ASAQS" and "sufficiency of the SACQSP's current APC to ensure the acquisition of soft skills" were subjected to

Fisher's Exact test, as explained earlier in this chapter, to determine if any significant associations existed between these variables and the registration status of quantity surveyors. The findings are presented in Table 7.9.

Table 7.9: Fisher's Exact Test: ASAQS and SACQSP stakeholder involvement

	Fisher's Exact Test p-value
ASAQS soft skills CPD offered vs QS registration status	0.0010
SACQSP APC soft skills sufficiency vs QS registration status	0.0090
ASAQS soft skills CPD offered vs Experience level	0.0115
SACQSP APC soft skills sufficiency vs Experience level	0.0135

The first column in Table 7.9 lists the variables under investigation. The second column in the Table indicates the p-value calculated from Fisher's Exact Test. All the variables under investigation obtained a p-value <0.05. This indicated that a significant relationship exists between the ASAQS soft skills CPD offered and QS registration status as well as experience level. It also indicated that a significant relationship exists between the SACQSP's APC soft skills sufficiency and QS registration status as well as experience level.

7.4.6 Sub-conclusions: Research sub-question 3

Based on the discussion of the findings relating to research sub-question 3, the following sub-conclusions were derived:

- QS employers are the stakeholders primarily responsible to equip candidate quantity surveyors with soft skills knowledge, act as examples by modelling good soft skills, provide candidates with opportunities to experience and exercise soft skills through practical application and to evaluate the development of soft skills in candidate quantity surveyors.
- The current efforts of HEIs towards the soft skills development of QS students are not equipping QS students sufficiently with the soft skills that the QS profession requires of graduates.
- QS employers are lacking in providing soft skills training and need to take this responsibility more seriously.
- A gap exists in QS firms regarding the evaluation of candidates' soft skills development.

- The quantity surveying profession in South Africa currently does not have a formal method or tool in place to assess candidates' development of soft skills in terms of professional competence.
- A gap was identified in the SACQSP's APC as it currently includes no soft skills specific requirements that candidates need to adhere to.
- A gap exists regarding CPD training opportunities offered by the ASAQS.
- A significant relationship exists between the SACQSP's APC soft skills sufficiency and QS registration status as well as experience level.

7.5 DISCUSSION OF FINDINGS: SUB-QUESTION 4 (BRIDGING THE SOFT SKILLS GAP)

The fourth sub-question that this research study investigated was:

"What can be done to help bridge the soft skills gap, if such gap is determined, among candidate quantity surveyors?"

The findings of the previous three sub-questions have revealed several gaps regarding the soft skills development of candidate quantity surveyors. The following gaps were identified:

- A gap in perceptions exists regarding the soft skills profile of the average candidate quantity surveyor with less than five years' experience. Less experienced respondents had a more elevated view of this soft skills profile compared to more experienced respondents and mentors of candidates.
- A gap exists regarding the desired level of soft skills development (very good to excellent) compared to the actual level of soft skills development of candidate QSs (fair to good).
- A gap exists in terms of pre-professional identity formation related to the efforts of HEIs towards equipping QS students with the soft skills required in the workplace.
- A gap exists in terms of professional identity formation related to skills training opportunities offered to candidate quantity surveyors by QS employers.
- A gap was identified in terms of professional identity formation related to the SACQSP's APC as it currently includes no soft skills specific requirements that candidates need to adhere to.

- A gap exists in terms of professional identity formation related to soft skills CPD opportunities offered to the quantity surveying profession.

7.5.1 Improvement suggestions

The findings from the empirical research revealed that all seven suggestions to improve the soft skills development of candidate quantity surveyors were received positively by the respondents. This indicates that the QS profession believes that these seven suggestions should work effectively towards bridging the soft skills gap among candidate quantity surveyors in South Africa. The seven suggestions are presented in Table 7.10 in order of effectivity as indicated by the respondents (based on "very effective" to "extremely effective" responses received). Table 7.10 also indicates how the soft skills improvement suggestions relate to pre-professional / professional identity formation of candidate quantity surveyors

Table 7.10: Effectivity of improvement suggestions related to pre-professional / professional identity formation

Soft skills improvement suggestion	% of respondents	Pre-professional / professional identity formation
HEI to introduce work-integrated-learning into QS curriculums	83%	Pre-professional
Scenario based learning to learn soft skills prior to real-world application	75%	Both
HEI to introduce soft skills specific content into their QS curriculums	71%	Pre-professional
Soft skills training courses / workshops / webinars	68%	Both
Utilisation of a soft skills assessment tool by candidates and their mentors	65%	Professional
SACQSP to include soft skills development as APC requirement	59%	Professional
Accumulate soft skills specific CPD prior to professional registration	46%	Professional

The first three soft skills improvement suggestions in Table 7.10 each obtained more than 70 per cent of respondents' votes, with exception of the first suggestion that obtained more than 80 per cent of the votes. These suggestions were thus identified as the three suggestions that will be most effective towards bridging the soft skills gap among candidate quantity surveyors. These three suggestions also relate to the pre-

professional identity formation of a candidate that takes place at HEIs. Work-integrated learning initiatives and soft skills specific content incorporated into QS curriculums are specific to higher education environments but scenario-based learning can be applied at both HEIs and in the workplace by QS employers.

The findings from the empirical research regarding work-integrated learning initiatives, scenario-based learning and the transformation of HEI curriculums to help bridge the soft skills gap were in line with findings from existing literature. Research conducted by Dogara *et al.* (2020), Malhi (2009) and Murti (2014) also suggested work-integrated learning as initiative to develop soft skills in students prior to graduation.

Currently three out of the five universities in South Africa have already incorporated work-integrated learning opportunities into their curriculums indicating their recognition of the value of work-based learning towards not only technical- but also the soft skills development of students. Scenario-based learning was highlighted by Bancino and Zevalkink (2007) as a good starting point for HEIs to demonstrate the importance of soft skills to students.

Shafie *et al.* (2014) similarly suggest that real-life case studies will help students to develop soft skills such as critical thinking, problem solving and decision making among others. When considering the transformation of HEIs curricula, Succi and Canovi (2020) confirm the importance of transforming QS curricula with a particular focus on enhancing graduate's soft skills and overall employability.

Research conducted by Aliu and Aigbavboa (2020) suggested that HEIs revisit their curricula to develop non-technical skills (soft skills) and Oni and Aina (2020) also suggested that critical soft skills must form part of QS curriculums in HEIs. Respondents from the quantity surveying profession in South Africa positively supported these soft skills improvement suggestions, thereby confirming the relevance thereof when compared to existing literature.

The last four improvement suggestions listed in Table 7.10 related to professional identity formation that takes place in the workplace. Respondents considered soft skills training courses / workshops / webinars and the utilisation of a soft skills assessment tool as more effective means compared to the SACQSP incorporating

soft skills as part of the APC and candidate quantity surveyors accumulating CPD prior to professional registration. Respondents in the QS profession in South Africa perceived the latter suggestion as the least effective suggestion of the seven soft skills improvement suggestions.

When comparing the findings of this study with research conducted by Oni and Aina (2020) among employers in the QS profession in Nigeria, it was found that respondents from the QS profession in South Africa had a similar opinion regarding suggestions to bridge the soft skills gap. Both studies revealed soft skills training opportunities and the integration of soft skills as requirement for professional registration as effective means to help bridge the soft skills gap.

Soft skills training opportunities can either be offered to the QS profession in South Africa via the ASAQS's CPD programme or can be offered by QS employers as part of "in-house" employee development. Currently the SACQSP's APC requires candidates to accumulate 20 hours of CPD prior to professional registration, however, does not include any soft skills specific requirements that candidates need to adhere to.

Fifty-nine per cent of respondents were of the opinion that incorporating soft skills development as part of the formal APC process will work effectively to help bridge the gap in the QS profession in South Africa but only 46 per cent were of the opinion that the accumulation of soft skills specific CPD will be an effective solution. When comparing the SACQSP's APC requirements, including CPD that candidates need to accumulate, with the requirements of the RICS it is clear that the SACQSP's APC still has room for improvement regarding the soft skills development of candidate quantity surveyors.

The RICS is currently taking the lead when considering the soft skills assessment of candidate quantity surveyors globally. The RICS's APC includes certain soft skills as part of their mandatory competencies and they also offer a webinar on these soft skills. The RICS also requires of candidates to obtain 96 hours of CPD, compare to the 20 hours CPD requirement of the SACQSP that will supplement both mandatory- and core competencies.

The RICS's "requirements and competencies guide" provides clear soft skills definitions as well as examples for each level of attainment expected of candidates. This acts as a guideline for not only candidates but also RICS counsellors to measure the level of attainment of such soft skills prior to professional registration of candidates.

The findings of the empirical research revealed that 65 per cent of respondents indicated that the utilisation of a soft skills assessment tool by candidates and their mentors will work effectively to help bridge the soft skills gap among candidate quantity surveyors. There is currently not an official assessment tool available that mentors and candidates can use to evaluate the attainment of soft skills in candidate quantity surveyors in South Africa.

Mahasneh and Thabet (2015) similarly indicate a lack in terms of consensus regarding the standard required for soft skills in the construction industry and that there are no tools available to assess soft skills development. In addition to utilising a soft skills assessment tool in the workplace, it can also be utilised as part of work-integrated learning initiatives where QS employers can evaluate the soft skills development of QS students.

Soft skills evaluation or assessment can thus take place at a pre-professional development level as well as a professional development level. Feedback based on a standard evaluation process will allow all candidates to identify soft skills gaps that require improvement. Candidates can then address these gaps, with the support of their employers, prior to professional registration.

Overall, the seven soft skills improvement suggestions were received well by respondents in the QS profession. Negative views ("not so effective" and "not at all effective") regarding the effectiveness of these seven suggestions ranged between 2 per cent - 16 per cent. This study deemed these statistics as low, thus supporting the positive view of the QS profession towards the effectiveness of the seven soft skills improvement suggestions as a means to help bridge the soft skills gap among candidate quantity surveyors.

7.5.2 Sub-conclusions: Research sub-question 4

Based on the discussion of the findings relating to research sub-question 4, the following sub-conclusions were derived:

- There are several means that will be effective towards bridging the soft skills gap among candidate quantity surveyors linked to both pre-professional- and professional development.
- Suggestions to bridge the soft skills gap at a pre-professional level included work-integrated learning opportunities, scenario-based learning, HEI curriculums incorporating soft skills specific content and soft skills training opportunities.
- Suggestions to bridge the soft skills gap at professional level included scenario-based learning, soft skills training opportunities, utilisation of a soft skills assessment tool, SACQSP's APC incorporating soft skills requirements and candidates accumulating soft skills CDP prior to professional registration.

7.6 CONCLUSION

In this chapter, the findings from the empirical research were discussed in relation to each research sub-question and evaluated against existing literature in order to derive justified and realistic sub-conclusions to each research sub-question. The research sub-questions aimed to determine what soft skills candidate QSs require, the extent of the soft skills gap among candidate QSs with less than five years' experience, the current level of stakeholder engagement and possible solutions to help bridge the soft skills gap among candidate quantity surveyors.

The essential soft skills that candidate quantity surveyors need to develop were identified, ranked and grouped into four clusters. Although the soft skills development of candidate quantity surveyors is a collaborative effort between stakeholders, QS employers were identified as the stakeholder primarily responsible for this task. Soft skills development needs to start at a pre-professional level (HEI) and continue to develop at a professional level in the workplace. Soft skills development at pre-professional- and professional level will require the support of the SACQSP and ASAQS. This study identified several gaps relating to the soft skills development of candidate quantity surveyors at both pre-professional- and professional level.

Suggestions to bridge the soft skills gap, identified as most effective, resided at a pre-professional level at HEIs.

The discussion of the findings and sub-conclusions presented in this chapter will be utilised to create a soft skills development framework to help shape and foster capability relating to soft skills development of candidate quantity surveyors. This framework will be presented and discussed in the next chapter.

8 CHAPTER 8: SOFT SKILLS DEVELOPMENT FRAMEWORK

8.1 INTRODUCTION

Based on the findings from the present study and the conclusions drawn, this chapter suggests and presents a proposed soft skills development framework for early career candidate quantity surveyors in South Africa. The general purpose of such a framework will be briefly discussed followed by a discussion of the theoretical concepts underpinning the framework. The proposed framework will then be presented including a discussion of its various elements and components.

8.2 FRAMEWORKS

An advance search in the Oxford English Dictionary (a) (2024) explains that the word "framework" can be understood as a structure designed to provide support. It can also be seen as a method, means, or course of action by which a result can be brought about. The RICS, as global professional body in the construction industry and built environment, has a well-developed and established competency framework to guide the quantity surveying profession in terms of developing professional competence in candidates prior to professional registration.

The RICS has included specific soft skills as mandatory competencies in their framework (RICS, 2018). The Project Management Institute (PMI) similarly has a competency framework (PMCDF) in place which includes a component for soft skills development (Cartwright & Yinger, 2007). The purpose of frameworks in the built environment and construction industry are thus to guide employers and employees on the development and assessment of professional competence. This should include the development of both technical skills as well as soft skills.

The research findings presented in the previous chapter identified several gaps related to the soft skills development of candidate quantity surveyors during their early career development years. The quantity surveying profession in South Africa places a great emphasis on technical skills development but currently has no guidelines directing the development of soft skills among early career candidate quantity surveyors. This signalled the need to develop and propose a soft skills development framework that

can help shape and foster capability among candidate quantity surveyors in this regard.

8.3 THEORETICAL UNDERPINNING OF THE FRAMEWORK

The theoretical concepts that guided the development of the proposed soft skills framework will be discussed as well as the empirically researched essential soft skills included in this framework.

8.3.1 Recognition

The professional body / institution responsible for registering professional quantity surveyors (the SACQSP in South Africa) needs to recognise soft skills as requirement for professional competence as the starting point. Institutions such as the RICS and PMI have recognised and included soft skills as requirements for professional competence (Cartwright & Yinger, 2007; RICS, 2018).

In addition to recognising soft skills as requirement for professional competence, professional bodies / institutions also need to ensure that a benchmark exists to guide the profession in this regard. The benchmark for soft skills development should include standardised soft skills definitions, specify required levels of attainment as well as standardised assessment criteria (Cartwright & Yinger, 2007; Mahasneh & Thabet, 2015; RICS, 2018; Stewart *et al.*, 2020). These requirements guided the "recognition" section of the framework.

8.3.2 Pre-professional and professional identity formation

The concept of pre-professional identity formation as explained by Jackson (2016), allows a student to discover who they are in relation to their future profession using higher education as a landscape of practice. Soft skills development is a component of pre-professional identity formation where students, while studying at HEIs, can learn, discover, practice and reflect on soft skills as requirements for professional competence and in doing so develop a better understanding of their professional selves.

Professional identity formation is a process of discovering your future self in relation to your work and profession as well as self-development in relation to professional competence guided by the beliefs and values of the respective profession (Tomlinson & Jackson, 2021). Professional identity formation usually commences once a graduate enters the workplace. Soft skills development is only a single component of professional identity formation. During this process early career candidate quantity surveyors should develop a better understanding of their own soft skills strengths and weaknesses and how this will benefit and dictate their career growth.

Developing soft skills at as part of pre-professional and professional identity formation can be viewed through the lens of Kraaijenbrink's 4E model of soft skills development (Kraaijenbrink, 2023). This model is centred on explanation (equip with knowledge), example (model soft skills), experience and exercise (practical application) which all relate to stakeholder responsibilities included in the framework.

The quantity surveying profession, locally and abroad, however, places a huge emphasis on the assessment of professional competence (RICS, 2018; SACQSP (a), 2020). This study therefore also considered "assessment" as a key aspect of soft skills development included in the proposed framework.

8.3.3 Competency assessment

The assessment of professional competence of candidate quantity surveyors globally considers academic qualifications in combination with practical experience as criteria for professional registration. Currently the RICS seems to be only professional institution that has included soft skills as mandatory requirement for professional registration.

The RICS follows a structured approach in terms of soft skills development of candidate quantity surveyors. A candidate's soft skills are assessed based on levels of attainment stipulated by the RICS. There are clear definitions provided for each soft skill as well as examples of likely knowledge, skills and experience required at each level. The RICS's guidelines were thus used as a further requirement guiding the competence assessment section of the framework.

8.3.4 Essential soft skills clusters

Chapter Seven presented a detailed explanation of how the essential soft skills were identified, tested through the empirical part of the research and subjected to a factor analysis in determining the soft skills clusters considered essential for the quantity surveying profession. The main ideas are briefly highlighted again for ease of reference.

The literature review in this study revealed which soft skills construction professionals require to succeed in the construction industry. A list of 38 soft skills were identified which was then reduced to a list of 16 based on the soft skills most frequently mentioned in literature. These soft skills were tested using a structured survey questionnaire to indicate the importance of these soft skills for the quantity surveying profession.

The findings revealed that 90 per cent of respondents indicated that the importance of these 16 soft skills ranged between “very” to “extremely” important, thus confirming that the list of 16 soft skills as derived from literature can be viewed as essential for the quantity surveying profession. The 16 soft skills were further subjected to an exploratory factor analysis to determine whether these soft skills cluster in any way. Four soft skills clusters were identified as indicated below:

Cluster 1: Self-management (time management, ability to work well under pressure, adaptability, flexibility)
Cluster 2: Analytical (critical thinking, problem solving, decision making)
Cluster 3: Interaction (teamwork, leadership, dispute and conflict resolution, negotiation self-confidence)
Cluster 4: Professionalism and Ethics (professionalism, ethics)

The soft skills “communication” and “lifelong learning” did not load distinctly onto any one of the four clusters, which indicated that they did not strongly identify with these clusters. It does however not mean that communication and lifelong learning should be disregarded when considering soft skills development. The soft skill communication should rather be viewed as the foundation that underpins the four identified clusters and lifelong learning as the pinnacle that directs future growth and development. The four soft skills clusters coupled with communication and lifelong

learning were identified as the essential soft skills for the quantity surveying profession included in the proposed framework.

8.4 PROPOSED SOFT SKILLS FRAMEWORK

The research-based soft skills development framework presented below is proposed for the quantity surveying profession to help develop professional competence related to soft skills among early career candidate quantity surveyors. The framework is presented in Figure 8.1.

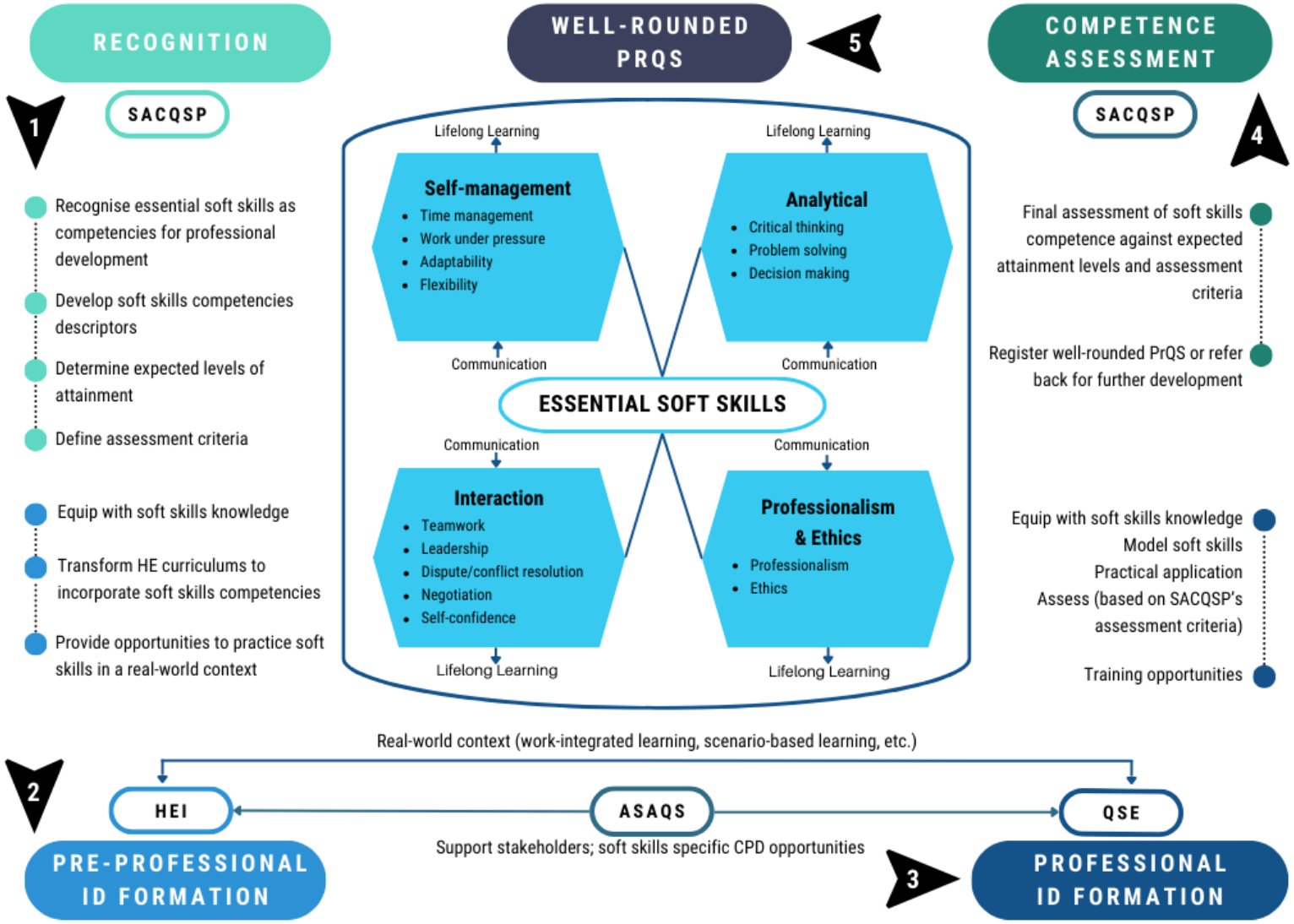


Figure 8.1: Soft skills development framework for early career candidate quantity surveyors

The proposed soft skills development framework presented in Figure 8.1 is centred around the development of the essential soft skills (soft skills clusters) required to succeed in the quantity surveying profession. Communication is considered as the foundational soft skill required for each soft skills cluster and lifelong learning demonstrates a candidate's willingness to keep on learning and developing the soft skills included in each cluster. The development of soft skills among early career candidate quantity surveyors should focus on essential soft skills in order to equip this cohort for the demands of the quantity surveying profession prior to professional registration.

The framework further includes four key elements that scaffolds the development of soft skills in early career candidate quantity surveyors to ultimately deliver a well-rounded PrQS equipped with both technical- and soft skills. These four elements are (1) recognition, (2) pre-professional identity formation, (3) professional identity formation and (4) competence assessment that will lead to (5) registration of a well-rounded PrQS. Each element identified the key stakeholder responsible to support the development of soft skills.

The element "recognition" will require the support and involvement of the SACQSP, the element "pre-professional identity formation" will require the support and involvement of higher education institutions (HEIs), the element "professional identity formation" will require the support and involvement of quantity surveying employers (QSE) and the element "competence assessment" will require the support and involvement of the SACQSP. The negligence or absence of one element will result in an increased responsibility being placed on other elements to achieve the same results. All elements thus play an integral part towards the soft skills development of early career candidate quantity surveyors and will require active participation from key stakeholders.

Each framework element briefly highlights the responsibilities and / or actions required from key stakeholders towards the soft skills development of early career candidate quantity surveyors.

8.4.1 Element 1: Recognition

The first element of the framework is “recognition” and will require of the SACQSP as governing body of the quantity surveying profession to formally recognise soft skills as competencies for professional development prior to professional registration. Formal recognition will require of the SACQSP to set a standardised soft skills development benchmark to guide the quantity surveying profession and bring about clarity and standardisation in this regard.

Such benchmark should include the development of soft skills descriptors, determining the expected levels of attainment as well as defining soft skills assessment criteria. Formal recognition of soft skills as requirement for professional competence will highlight the importance thereof for the quantity surveying profession and can be used by key stakeholders as a roadmap to develop professional competence related to soft skills.

The SACQSP can act in this regard by formally incorporating essential soft skills as APC competencies. This will require of the SACQSP to develop APC documentation that define soft skills competencies, clearly stipulate the expected levels of attainment for each soft skill prior to registration and include assessment criteria. Well defined assessment criteria will allow the SACQSP to develop an assessment method which in turn will help candidates and mentors to monitor the development of soft skills during the APC process.

In addition to this the SACQSP can develop a soft skills professional skills module (PSM) compulsory for all candidate quantity surveyors to undertake prior to professional registration. As previously explained in Chapter Four some routes to professional registration require of candidates to undertake several PSM in order to bridge the academic gap between NQF exit level 7 and 8. A soft skills PSM can similarly help to bridge the soft skills gap between pre-professional- and professional development levels.

8.4.2 Element 2: Pre-professional identity formation

The second element of the framework is “pre-professional identity formation” which takes place at HEIs. Pre-professional identity formation allows students to discover

who they are in relation to their future profession. Part of this process is the development of essential soft skills in students prior to graduation. The findings of this study revealed that HEIs should mainly be responsible for equipping students with soft skills knowledge. This will help students understand what each of the essential soft skills entail and the level of mastery that the QS profession expects. Graduates are currently not entering the profession with the required entry-level soft skills indicating that the current efforts of HEIs are not sufficiently equipping these students with the soft skills that the QS profession requires.

HEIs should restructure their educational curriculums to ensure that the development of soft skills receives the attention it deserves. HEIs should also provide real-world opportunities for students to practice soft skills. Real-world contextualisation is linked between pre-professional- and professional identity formation as a transition takes place between academia and the workplace. The findings of this study revealed that real-world contextualisation is a very effective method to improve soft skills development.

There are several ways for HEIs to take action to develop essential soft skills in students prior to graduation. Curriculums can be re-structured to include stand-alone soft skills modules or develop soft skills through existing modules. Approaches to incorporate soft skills development in curriculums can include problem-solving approaches, project-based approaches, game-based learning, simulation, team activities, soft skills workshops, peer assessment and work-integrated learning.

The findings of this study were favourable towards work-integrated learning as effective means to improve the development of soft skills in students. Each HEI is different in terms of size, capacity, availability of resources, financial constraints, and so forth and incorporating soft skills will look different at each institution. HEIs should, however, align their soft skills development approaches with the requirements of the SACQSP. Soft skills development approaches of HEIs should, as far as possible, include real-world contextualisation to help students understand why soft skills are essential. HEIs should also encourage students to participate in extra-curricular activities that will develop their soft skills. One such activity can be for students to become a student member of the ASAQS and attend industry-specific learning opportunities offered by the ASAQS.

8.4.3 Element 3: Professional identity formation

The third element in the framework is “professional identity formation”, a process of self-discovery that commences once a student has entered the workplace. Professional identity formation is influenced by the level to which students have developed their pre-professional identity, specifically referring to soft skills development. Early career candidate quantity surveyors should continue to build on the soft skills foundation laid during their pre-professional identity formation years.

Being exposed to professional situations in the workplace will allow early career candidate quantity surveyors to develop an understanding of their soft skills strengths and weaknesses. The findings of this research study indicated that QS employers should primarily take responsibility to equip candidates with soft skills knowledge, to be a good example to candidates by modelling soft skills, to allow candidates opportunities to practically apply soft skills and to assess the development of soft skills in candidates.

QS employers can act by providing soft skills specific training opportunities to candidates to equip them with soft skills knowledge. Such opportunities can include workshops, webinars, courses or conferences related to essential soft skills. This can also be done in collaboration with the ASAQS through CPD. The ASAQS also offers PSM pre-exam webinars to candidates and, should a soft skills PSM be developed, can similarly offer pre-exam webinars related to such PSM. The ASAQS can also consider developing CPD soft skills webinars / courses based on the four soft skills clusters included in the framework.

QS employers could also act by being aware of the impact of their own actions. The working relationship between early career candidate quantity surveyors and their mentors plays an essential role. Candidates look to their mentors for guidance and it is thus especially important for mentors to model good soft skills to candidates.

QS employers could further act by assessing the soft skills development of candidates and to provide feedback that will help them identify personal soft skills gaps and, in collaboration with their employers, direct intentional efforts to improve such soft skills. It is therefore necessary that the SACQPS develop soft skills guidelines that QS employers can utilise to assess the soft skills development of

candidates. These guidelines can be, as previously suggested, documentation that define soft skills competencies, stipulate the expected levels of attainment and include assessment criteria. The development of an assessment method will also be of help to candidates and their mentors.

8.4.4 Element 4: Competence assessment

The fourth element of the framework is “competence assessment”. This element of the framework addresses the competence assessment of soft skills in candidates once they have gone through the APC process and apply for final assessment by the SACQSP. The objective of the APC is to ensure that a registered person is competent to practice as a PrQS. If soft skills are formally recognised as a requirement for professional competence there must be a competency assessment to determine if the required attainment levels have been achieved.

As previously alluded to, the SACQSP should take action to develop soft skills documentation to guide the profession and assess the development of a candidate’s soft skills development against these pre-defined requirements. Candidates must also be required to provide proof of their soft skills development efforts as part of their APC documentation submission the SACQSP. Such proof can include proof of attendance of soft skills CPD events / training, passing the soft skills PSM as well as proof of assessment and feedback from QS employers.

The SACQSP should take this into consideration when evaluating the documentation of a candidate. The final step in the APC process is when a candidate attends the APC interview with the SACQSP. The SACQSP can use the APC interview as a final opportunity to assess particular soft skills in candidates such as professionalism and communication for example.

Passing the SACQSP’s competence assessment should signify that a candidate has developed the essential soft skills to succeed in the quantity surveying profession. This then leads to the fifth element in the framework, which is also the end-goal of the framework, delivering a well-rounded PrQS with strong technical- and soft skills able to navigate the complexities of the construction industry.

8.5 VALIDATION OF THE FRAMEWORK

This research study was approved as a full doctoral project by UP's ethics committee. The ethics approval granted for this study (reference number EBIT/252/2022) approved the collection of primary data utilising a questionnaire as data collection instrument and the use of such data to develop and propose a soft skills development framework. Validation of the soft skills development framework is seen as an extension of this research study that will require additional data collection and therefore falls outside the scope of the study and its ethics approval.

Validation of the proposed framework among industry experts is therefore suggested as much needed further research. The researcher aims to conduct such further research and in addition to this, plans to sustain the proposed framework by occasionally evaluating the relevancy of the essential soft skills included in the framework.

8.6 CONCLUSION

This chapter proposed a soft skills development framework for early career candidate quantity surveyors as a pertinent contribution flowing from this research study. This framework was developed based on professional requirements, theoretical exploration and empirical research and includes elements and components to support the development of soft skills in early career candidate quantity surveyors.

What is recognised is that relevant stakeholders in the quantity surveying profession need to play a key role in developing soft skills in candidates and they must take this responsibility seriously. Soft skills are essential for career success in the quantity surveying profession and their development can no longer be delayed or neglected. The final chapter of this research study summarises the findings, draws main conclusions, and points to contributions and suggestions for further research.

9 CHAPTER 9: CONCLUSIONS AND RECOMMENDATIONS

9.1 INTRODUCTION

The present study focused on early career development of candidate quantity surveyors in South Africa, in particular their soft skills development. The premise of this research study is that academic and professional knowledge together with sound technical skills constitute the foundation of quantity surveying. In addition, the development and use of soft skills have become equally important and will help early career quantity surveyors to better navigate the complexities and challenges of the construction industry.

However, the problem remains that soft skills development in the construction industry has not yet received the attention it deserves. Stakeholders in the quantity surveying profession play a key role in terms of supporting the soft skills development of candidate quantity surveyors. The main research question under investigation in this study was thus formulated as: “To what extent, if at all, are soft skills developed in candidate quantity surveyors prior to professional registration?”

The research sub-questions that guided the study were:

- “What soft skills do candidate quantity surveyors need to succeed in the construction industry?”
- “What is the extent of the soft skills gap, if such gap exists, among quantity surveyors with five years or less work experience?”
- “What is the current level of stakeholder engagement in terms of soft skills development of candidate quantity surveyors?”
- “What can be done to help bridge the soft skills gap, if such gap is determined, among candidate quantity surveyors?”

Accordingly, this chapter will commence with a summary of the findings relating to each research sub-questions and will continue to present the overall conclusions for this study. The contributions of this study will also be clearly stipulated followed by suggestions for future research.

9.2 SUMMARY OF THE MAIN FINDINGS

A summary of the findings is presented next as related to each research sub-question. Findings from relevant literature and the empirical part of the research were utilised to answer the research sub-questions.

9.2.1 Research sub-question 1: Essential soft skills

Research sub-question 1: "What soft skills do candidate quantity surveyors need to succeed in the construction industry?"

Despite the quantity surveying profession's acknowledgement of soft skills as drivers for workplace success, a soft skills shortage was identified in this profession. Sixteen soft skills were identified through an extensive literature review and their importance tested through empirical research. It was found that the importance of these 16 soft skills for the quantity surveying profession ranged between "very important" and "extremely important".

These soft skills are communication, teamwork, leadership, critical thinking, problem solving, decision making, professionalism, ethics, dispute and conflict resolution, time management, lifelong learning, negotiation, adaptability, self-confidence, an ability to work under pressure and flexibility.

The five top-ranked soft skills for the quantity surveying profession were identified as ethics, professionalism, communication, problem solving and time management. It was found that a significant relationship exists between respondents' experience levels and the importance of the soft skills critical thinking, problem solving, decision making, time management, working under pressure, adaptability and flexibility.

The sixteen essential soft skills were further subjected to an exploratory factor analysis to determine if they clustered in some way. Four soft skills clusters were identified namely the self-management skills cluster, the interaction skills cluster, the analytical skills cluster and the ethics and professionalism skills cluster. The soft skills "communication" and "lifelong learning" did not group well with any of these clusters but were still considered important to the QS profession. This study therefore concluded that the four soft skills clusters linked with the soft skills communication

and lifelong learning, are the essential soft skills that quantity surveyors in South Africa need to develop.

These essential soft skills are key drivers for success in the quantity surveying profession. Based on the high level of importance of the essential soft skills, this research study concluded that a high competency level is desired for all 16 essential soft skills. This indicates that these soft skills should ideally be developed, attained and maintained at a level ranging between "very good" and "excellent". Candidate quantity surveyors therefore need to ensure that they develop these essential soft skills to the desired competency level prior to registering as a professional quantity surveyor. The acquisition of essential soft skills will contribute to workplace success in the quantity surveying profession as well as the construction industry at large.

The above discussion demonstrates that the first research sub-question was clearly addressed and answered.

9.2.2 Research sub-question 2: Soft skills gap

Research sub-question 2: "What is the extent of the soft skills gap, if such gap exists, among quantity surveyors with five years or less work experience?"

This study found that less experienced respondents (five years or less experience) had an elevated perception of their own soft skills development compared to the perceptions of more experienced respondents (>five years' experience) as well as respondents who have acted as mentors of candidate quantity surveyors. Candidate quantity surveyors with less than five years' experience perceived the development of their own soft skills to range between "good" and "very good". More experienced respondents and mentors on the other hand, perceived the current soft skills development of this cohort to range between "fair" and "good".

The biggest divergence in soft skills perceptions related to the soft skills "working under pressure", "critical thinking", "problem solving", "decision making" and "leadership". Less experienced respondents rated the development of these soft skills much higher than more experienced respondents and mentors. However, the perceptions of more experienced respondents and mentors were considered to be more realistic in this regard. This study therefore concluded that a gap in perceptions

exists regarding soft skills development of candidate quantity surveyors with less than five years' experience. This study also found a significant relationship between the soft skills development of the average candidate quantity surveyor and experience levels as well as between the former and mentorship.

When evaluating the current soft skills profile of candidate quantity surveyors with less than five years' experience against the level of soft skills development that the QS profession desires, it was found that a gap exists. The actual soft skills development of candidate quantity surveyors falls short when evaluated against the desired level of soft skills development. The soft skills that candidate quantity surveyors with less than five years' experience seem to be lacking most were leadership, dispute / conflict resolution, decision making and negotiation. On the other hand, the soft skills that candidates seemed to be fairing best at were ethics, professionalism, teamwork and self-confidence. Overall, there is room to improve the actual soft skills profile of candidate quantity surveyors.

The second research sub-question was therefore addressed and answered by the researcher.

9.2.3 Research sub-question 3: Stakeholder engagement

Research sub-question 3: "What is the current level of stakeholder engagement in terms of soft skills development of candidate quantity surveyors?"

In the quantity surveying profession, the formation of a professional identity will start a pre-professional level at a HEI and progress towards a professional level in the workplace with the support of the ASAQS and SACQSP. Although the soft skills development of candidate quantity surveyors will be a collaborative effort between stakeholders, this study found that QS employers were identified as the stakeholders primarily responsible for the soft skills development of this cohort.

QS employers should primarily take responsibility to equip candidate quantity surveyors with soft skills knowledge, act as examples to candidates by modelling good soft skills to them, provide candidates with opportunities to practically apply soft skills and lastly evaluate the development of soft skills in candidate quantity surveyors.

This study found that QS employers seem to be fostering organisational cultures that value soft skills. Organisational leadership in QS firms are faring well at modelling good soft skills to candidate quantity surveyors but are lacking in providing soft skills training and need to take this responsibility more seriously. A gap was also identified in terms of QS employers having no tool / system in place to assess the development of soft skills in candidates.

An important purpose of assessment is to provide feedback to candidates that will help them improve their soft skills. A lack in assessment will thus lead to a lack in feedback and hinder the soft skills development of candidate quantity surveyors. QS firms require guidance in the form of assessment criteria and an assessment method to help them assess the soft skills of candidates.

HEIs play a crucial role in the pre-professional identity formation of QS students. This study found that HEIs are currently dedicating specific efforts towards the soft skills development of QS students, although limited, but these efforts are not sufficiently equipping QS students with the soft skills that the QS profession requires of graduates. HEIs should create awareness among students regarding (1) the importance of soft skills for the QS profession, (2) the essential soft skills that students will require in the workplace and (3) what such soft skills entail.

HEIs can also provide more practical application opportunities to students directed specifically at soft skills development inside and outside the classroom. Knowledge put to practice will lead to the development of soft skills. There is thus room for HEIs to improve their current efforts towards equipping students with basic knowledge of soft skills and providing opportunities to practically apply such soft skills. Challenges that HEI might face in this regard are congested QS education curricula and placement of students in the construction industry to obtain practical work experience while studying. There is a need for in-depth interrogation of existing QS education curricula in order to create space for more meaningful impartation of soft skills.

This study found that there are no soft skills specific requirements included in the SACQSP's APC. Coupled with this is a lack of support offered to the quantity surveying profession in terms of soft skills related CPD opportunities. The quantity surveying profession in South Africa currently does not have a formal method or tool

in place to assess candidates' development of soft skills in terms of professional competence.

The SACQSP can thus better support the QS industry by developing an official or formalised assessment method, such as an assessment rubric for example, to evaluate the soft skills development of candidate quantity surveyors. The ASAQS in turn can better support the QS industry by providing more CPD training opportunities. This study also found that a significant relationship exists between the SACQSP's APC soft skills sufficiency and QS registration status as well as experience level.

There is thus ample reason to believe that the study properly addressed and answered the third research sub-question.

9.2.4 Research sub-question 4: Bridging the soft skills gap

Research sub-question 4: "What can be done to help bridge the soft skills gap (if such gap is determined) among candidate quantity surveyors?"

The previous sub-questions highlighted several gaps and areas for improvement in terms of the soft skills development of candidate quantity surveyors. However, this study further found that there are several means that will be effective towards bridging the soft skills gap in the QS profession linked to both pre-professional- and professional development level. Intentionally developing the soft skills of QS graduates at a pre-professional level at HEIs will create a stronger platform that candidates and employers can build on in terms of developing professional competence in this regard.

Suggestions to bridge the soft skills gap identified as most effective resided at a pre-professional level at HEIs and included work-integrated learning opportunities, scenario-based learning, HEI curricula incorporating soft skills specific content and soft skills training opportunities. Suggestions identified as effective in terms of professional development in the workplace were scenario-based learning, soft skills training opportunities, utilisation of a soft skills assessment tool, SACQSP including soft skills requirements as part of the APC and candidates accumulating soft skills CPD prior to professional registration. Scenario-based learning and soft skills training

opportunities were linked to pre-professional development at HEIs as well as professional development levels in the workplace.

A soft skills development framework was developed and proposed as another solution to help bridge the soft skills gap in the quantity surveying profession. This framework includes key elements and components as well as stakeholder responsibility towards the soft skills development of early career candidate quantity surveyors.

The fourth research sub-question was thus also properly addressed and answered.

9.3 CONCLUSIONS

The main research question that this study intended to address and answer was:

"To what extent, if at all, are soft skills developed in candidate quantity surveyors prior to professional registration?"

The findings and sub-conclusions allowed this study to derive the following main conclusions:

a) This study concluded that the quantity surveying profession acknowledges soft skills as drivers of workplace success and key stakeholders are dedicating efforts to develop essential soft skills at a pre-professional- as well as professional development level. These efforts are, however, not equipping candidates sufficiently with the soft skills that the QS profession desires.

The SACQSP's assessment of professional competence considers academic qualifications in combination with practical experience as criteria for professional registration. Developing professional competence thus starts at a pre-professional level at HEIs (academic qualifications) and will progress to a professional development level in the workplace (practical experience), with the support of the SACQSP and ASAQS.

Candidate quantity surveyors will have to develop technical skills as well as soft skills to meet the demands of the quantity surveying profession in South Africa.

Soft skills development can thus be seen as a component of professional competence linked to pre-professional- as well as professional development. This study was able to determine that the development of soft skills among early career candidate quantity surveyors is receiving attention at a pre-professional level, alluding to the current efforts of HEIs, as well as at a professional development level, alluding to the current efforts of QS employers, the SACQSP and ASAQS.

The quantity surveying profession in South Africa acknowledged that it is important to cultivate soft skills as it largely contributes to workplace success. Despite the quantity surveying profession's acknowledgement of soft skills as driver of workplace success, it was found that a soft skills shortage exists in this profession.

An analysis of the current soft skills profile of candidate quantity surveyors confirmed among others that a soft skills gap exists in terms of the desired level of soft skills compared to the actual level of soft skills among this cohort. Although key stakeholders in this profession are dedicating efforts to develop soft skills among candidates, at pre-professional- as well as professional development level, these efforts are not equipping candidates sufficiently with the essential soft skills that the QS profession requires.

The entry level soft skills of QS students are not meeting the expectations of the QS profession, signalling the need for HEIs to transform their curriculums to incorporate soft skills requirements that are linked to professional competence. HEIs need to design their curriculums and educational environments with a particular focus on enhancing students' soft skills. An in-depth exploration of HEI curriculums will be required to determine the exact level of transformation required.

QS employers on the other hand, need to direct their focus on soft skills training, assessment and feedback to candidate quantity surveyors. Training, assessment and feedback from QS employers will help candidates to identify personal soft skills gaps and, in collaboration with their employers, direct intentional efforts to bridge such gaps. There are currently no soft skill specific competencies included in the SACQSP's APC and no benchmark or assessment criteria guiding candidates and their mentors in this regard. The soft skills related CPD offered by the ASAQS are also very limited with room for expansion.

b) This study concluded that the lack of formal recognition of essential soft skills as requirement for professional competence prior to professional registration is an underlying factor affecting soft skills development at both pre-professional and professional development level.

Since soft skills are a key driver of success in the quantity surveying profession, a well-rounded PrQS must be proficient in not only technical skills but also soft skills. There are currently no soft skill specific competencies included in the SACQSP's APC and no benchmark or assessment criteria guiding candidates and their mentors as well as other key stakeholders.

The lack of formal recognition of soft skills as requirement for professional competence prior to professional registration can therefore be seen as an underlying factor affecting the soft skills development of candidates at both pre-professional- and professional development level. Formal- or official recognition of soft skills as requirement for professional competency needs to start with the SACQSP.

The SACQSP is the only juristic person allowed to register quantity surveyors and governs the APC process. The objective of the APC is to ensure that a registered person is competent to practice as a PrQS. The SACQSP should therefore consider recognising soft skills as professional competencies, develop descriptors to describe such competencies, determine expected levels of attainment and define related assessment criteria. The formal recognition of soft skills as requirement for professional competence can then guide other stakeholders such as HEIs, QS employers and the ASAQS to align their efforts to meet the soft skills requirements stipulated by the SACQSP and bring about a certain level of standardisation in terms of soft skills development.

Recognising soft skills as requirements for professional competence goes hand in hand with assessing soft skills competencies to determine if the expected level of attainment was achieved prior to professional registration. A gap was identified in terms of QS employers having no tool/system in place to assess the development of soft skills in candidates.

The SACQSP in collaboration with the ASAQS should therefore consider developing a soft skills assessment tool based on pre-defined assessment criteria. Such tool can be used by candidates and their mentors to assess the development of soft skills throughout the APC process. Data generated from such an assessment tool will highlight the soft skills needs of candidate quantity surveyors which in turn will allow QS employers to identify the soft skills training needs of early career quantity surveyors employed within their company. It will also allow the ASAQS to develop soft skills specific CPD training to address such needs.

Assessing soft skills can similarly be implemented at a pre-professional development level. Work-integrated learning initiatives will benefit from a soft skills assessment tool as students and their employers can utilise it to assess soft skills development at a pre-professional level. This will allow lecturers to identify soft skills development needs among QS students.

Without clear direction and guidance from the SACQSP, stakeholders in the QS profession will have to rely on their own knowledge, requirements and expectations for developing soft skills in candidates. This is currently the case and has not yielded the desired results.

c) Suggestions to bridge the soft skills gap, identified as most effective, are linked to real-world contextualisation.

Suggestions to help bridge the soft skills gap, identified as most effective, are linked to real-world contextualisation. Whether soft skills are being developed at HEIs at a pre-professional level or as part of early career development in the workplace at professional level, stakeholders need to bear in mind that real-world contextualisation is required. There are various means to help bridge the soft skills gaps in the quantity surveying profession.

However, it is important for key stakeholders to have a clear understanding of the soft skills requirements and expectations of the profession in order to effectively address the soft skills gap. The QS profession indicated that work-integrated learning will be the most effective means to help bridge the soft skills gap. This initiative is linked with pre-professional development and professional development as both HEIs and QS employers carry a responsibility towards the development of

soft skills in students. This will also help the development of soft skills among QS students prior to entering the profession and create a stronger platform that QS employers can continue to build on.

Contextualising soft skills development to real-world professional situations will help QS students as well as early career candidate quantity surveyors to link theoretical knowledge with practical application. This will help them understand why certain soft skills are essential and how it will benefit their career growth but also how the absence of essential soft skills will hinder their career growth.

Various measures were implemented to ensure the validity and reliability of the study in order to ultimately deliver valid and reliable conclusions. Content validity was addressed by reviewing existing literature which guided the researcher to include relevant questions in the questionnaire that adequately covered the research questions under investigation and measured what was intended. A pilot study was conducted and feedback received from participants incorporated into the final questionnaire.

Participation bias was addressed by distributing an anonymous online questionnaire and a sufficient number of responses were received (n = 528) to allow this study to draw valid and reliable conclusions. The Cronbach Alpha coefficient test was used to measure the internal consistency of the data and good internal consistency was achieved throughout. As a result of these measures, the conclusions of this study can be accepted as reliable and valid.

The discussion above demonstrates that this study answered the main research question.

9.4 SUMMARY OF THE STUDY'S CONTRIBUTION TO KNOWLEDGE

Research regarding soft skills development within the quantity surveying profession in South Africa is very limited. The aim of this research study was thus to contribute to narrowing that knowledge gap. Its originality lies in enquiring into the soft skills development of early career candidate quantity surveyors including efforts by key stakeholders towards the soft skills development of this cohort. A novel contribution of this study was to propose a soft skills development framework for early career

candidate quantity surveyors in South Africa. The following are a summary of the main contributions that this study made to the body of knowledge within quantity surveying:

- Despite the quantity surveying profession's acknowledgement of soft skills as drivers for workplace success, a soft skills shortage was identified for this profession.
- The essential soft skills that candidate quantity surveyors need to succeed in the construction industry can be grouped into four soft skills clusters namely the self-management skills cluster, the interaction skills cluster, the analytical skills cluster and the ethics and professionalism skills cluster. These soft skills clusters are key drivers for success in the construction industry.
- The current soft skills profile of early career candidate quantity surveyors was determined and highlighted a gap in perceptions. Less experienced respondents have an elevated perception of their own soft skills development than what is actually perceived to be the case by more experienced respondents and mentors in the quantity surveying profession. The actual soft skills development of candidate quantity surveyors falls short when evaluated against the desired level of soft skills development
- QS employers were identified as the stakeholders primarily responsible to equip candidate quantity surveyors with soft skills knowledge, act as examples by modelling good soft skills, provide candidates with opportunities to experience and exercise soft skills through practical application and to evaluate the development of soft skills in candidate quantity surveyors.
- Current efforts of HEIs towards the soft skills development of QS students are not equipping students sufficiently with the soft skills that the QS profession requires of graduates.
- QS employers need to improve their efforts related to soft skills training, assessment and feedback to candidate quantity surveyors.
- The quantity surveying profession in South Africa currently does not have a formal method in place to assess candidates' development of soft skills in terms of professional competence.
- There is currently no soft skills framework guiding the development of soft skills among early career candidate quantity surveyors in South Africa. This research study specifically contributed to that gap in knowledge by proposing a soft skills development framework that can help shape and foster capability in this regard.

9.5 PRACTICAL IMPLICATIONS

The results and findings from the present study could be of major value to key stakeholders in the quantity surveying profession such as the SACQSP, ASAQS, HEI and QS employers as well as early career candidate quantity surveyors.

9.5.1 Implications for the SACQSP

The practical implications for the quantity surveying profession will require the SACQSP to re-think and re-structure the current APC to include soft skills development requirements. The SACQSP thus needs to set a soft skills benchmark to guide key stakeholders and candidate quantity surveyors towards the development of soft skills prior to professional registration. HEIs, QS employers and the ASAQS should align their efforts with the SACQSP requirements.

It is suggested that the SACQSP considers developing soft skills guidelines, a soft skills PSM and developing a soft skills assessment method to support the profession in this regard. This will be in line with efforts of other global professional bodies such as the RICS. As a professional council the SACQSP must continually evolve in the way they assess the professional competence of candidate quantity surveyors. This will ensure that the skills level of quantity surveyors remain relevant not just locally but globally.

9.5.2 Implications for HEI

HEIs should re-structure their curriculums to ensure that they equip students with the entry-level soft skills that the profession requires. This will benefit students entering the workplace but will also positively contribute towards the accreditation of HEI degrees by the SACQSP. Formal recognition by the SACQSP of soft skills as competencies for professional development could potentially impact accreditation requirements for HEI.

9.5.3 Implications for QS employers

QS employers should intentionally dedicate time and resources to develop soft skills in early career candidate quantity surveyors. This will create a culture of care and a

positive learning environment for young quantity surveyors. Over time such candidates will have the ability to confidently deal with clients, other professional team members, face challenges and solve problems. Ultimately the return on investment goes back to the company.

9.5.4 Implications for the ASAQS

The ASAQS should expand their current CPD programme to include more soft skills CPD webinars, including a potential PSM pre-exam webinar on soft skills. The role and function of the ASAQS is to support the quantity surveying profession. The ASAQS, similar to the SACQSP, continually need to evaluate the ways in which they are training, equipping and developing the profession in order to remain relevant locally and globally. Soft skills development is becoming more relevant and the ASAQS is starting to incorporated more soft skills related topics in their CPD programme.

9.6 SUGGESTIONS FOR FURTHER RESEARCH

The present study points to a number of suggestions regarding future and on-going research. For instance, developing soft skills will be a process of lifelong learning and developing which will continue to prompt new research in this regard. This study identified several areas and issues that require further investigation and exploration and the following agenda for further research is thus suggested:

- Essential soft skills for the quantity surveying profession should be reviewed periodically against evolving skills demands as well as new academic publications to ensure that soft skills identified as essential for this profession remain relevant.
- An in-depth exploration into HEI curricula is required to determine the level of transformation necessary in order to incorporate soft skills requirements that will promote professional competence among QS students.
- The development of a soft skills assessment strategy and methods will require investigation and exploration of existing assessment requirements in order to propose an effective soft skills assessment method for the quantity surveying profession in South Africa.

- Testing of the proposed soft skills development framework among industry experts is needed to identify areas for improvement, expansion or possible limitations to such framework.
- A longitudinal study to investigate the impact of implementing the proposed framework in practice seems essential.

9.7 CONCLUSION

This study concludes by reiterating the opening remarks: “There is nothing ‘soft’ about soft skills”. The next generation of quantity surveyors must be equipped to lead a profession that continuously undergoes economic, political and technological disruptions and advances. Early career candidate quantity surveyors will have to deal with complexities and challenges from an early age and technical skills alone will not suffice for a successful career in the quantity surveying profession.

Direction is therefore needed from the SACQSP as this will allow other key stakeholders to effectively teach, promote and assess the development of soft skills at a pre-professional- as well as professional development level. Soft skills have become drivers for workplace success in the quantity surveying profession and stakeholders need to invest in soft skills development of QS students and candidate quantity surveyors to ensure the future leaders of this profession are well-rounded competent professionals.

It is hoped that the present study has contributed, through its research, in meaningful ways to promote, extend and support QS education and training in South Africa as well as acknowledging the profession’s quality at large.

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11 ANNEXURES

A – ETHICS APPROVAL

B – QUESTIONNAIRE

ANNEXURE A – ETHICS APPROVAL

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Engineering, Built Environment and Information Technology

Fakulteit Ingenieurswese, Bou-omgewing en Inligtingtegnologie / Lefapha la Boetšenere, Tikologo ya Kago le Theknolotši ya Tshedimošo

5 December 2022

Reference number: EBIT/252/2022

Mrs E Van Eck
Department: Construction Economics
University of Pretoria
Pretoria
0083

Dear Mrs E Van Eck,

FACULTY COMMITTEE FOR RESEARCH ETHICS AND INTEGRITY

Your recent application to the EBIT Research Ethics Committee refers.

Conditional approval is granted.

This means that the research project entitled "Early career development of candidate quantity surveyors: A focus on soft skills" is approved under the strict conditions indicated below. If these conditions are not met, approval is withdrawn automatically.

Conditions for approval:

Permission (can be in the form of email correspondence from someone who has the authority in the association) from South African Council for the Quantity Surveying profession (SACQSP) and Association of South African Quantity Surveyors (ASAQS) to allow the researcher to share the survey link on their websites and newsletter need to be provided. Submit them under Docs Due Conditional Approval once obtained.

This approval does not imply that the researcher, student or lecturer is relieved of any accountability in terms of the Code of Ethics for Scholarly Activities of the University of Pretoria, or the Policy and Procedures for Responsible Research of the University of Pretoria. These documents are available on the website of the EBIT Ethics Committee.

If action is taken beyond the approved application, approval is withdrawn automatically.

According to the regulations, any relevant problem arising from the study or research methodology as well as any amendments or changes, must be brought to the attention of the EBIT Research Ethics Office.

The Committee must be notified on completion of the project.

The Committee wishes you every success with the research project.

Kai-Yin

Prof K.-Y. Chan
Chair: Faculty Committee for Research Ethics and Integrity
FACULTY OF ENGINEERING, BUILT ENVIRONMENT AND INFORMATION TECHNOLOGY

ANNEXURE B – QUESTIONNAIRE

Faculty of Engineering,
Built Environment and
Information Technology
Fakulteit Ingenieurswese, Bou-omgewing en
Inligtingtegnologie / Lefapha la Boetšenere,
Tikologo ya Kago le Theknolotši ya Tshedimošo

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Questionnaire: Soft skills of candidate QS

Welcome and introduction

A doctoral research study regarding the soft skills development of candidate quantity surveyors is currently underway at the Department of Construction Economics, University of Pretoria. This study has been approved by the UP EBIT ethics committee.

We invite all quantity surveyors (candidate and PrQS), QS employers, QS educators, QS institutions and QS governing bodies to participate in this online questionnaire. Please share your insights and opinions on this topic. We want to know what you think!

The estimated time to complete this questionnaire is approximately 12 minutes.

The questionnaire is structured as follow:
Part 1 - Consent and voluntary participation
Part 2 - Classification of research participants
Part 3 - Soft skills development
Part 4 - Stakeholder engagement
Part 5 - Improvement suggestions

Questionnaire: Soft skills of candidate QS

PART 1: CONSENT AND VOLUNTARY PARTICIPATION

PROJECT INFORMATION

TITLE OF RESEARCH
Early career development of candidate quantity surveyors: A focus on soft skills development

CONTACT DETAILS OF RESEARCHER
Elzane van Eck
Lecturer in the Department of Construction Economics, EBIT Faculty, University of Pretoria
Email: elzane.vaneck@up.ac.za
Tel: 012 420 3781

RESEARCH STUDY DESCRIPTION
This research study focuses on the development of soft skills among candidate quantity surveyors. Those who want to enter the construction industry must realize that one can no longer afford to neglect the development of soft skills. To remain relevant the quantity surveying profession must evolve in the way they train and develop future professionals. The purpose of this research study is to determine stakeholder involvement in terms of soft skills development of candidate quantity surveyors, to measure the softs skills gap in candidate quantity surveyors and to propose solutions to bridge such a gap in the quantity surveying profession in South Africa. This research study makes use of an online questionnaire to collect data. Research participants are required to set aside approximately 12 minutes to answer this online questionnaire.

The questionnaire is completed anonymously. Participants are NOT required to provide personal details such as your name, surname, ID, email, number, gender, name of your company, etc. You will be required to complete the questionnaire in one sitting and participants can opt out of the questionnaire at any time.

There are no health and safety risks / implications involved in this research study.

INFORMED CONSENT
a) I hereby voluntarily grant my permission to participate in this online questionnaire as explained above.

b) The nature, objective, possible safety and health implications have been explained to me and I understand them.

c) I understand my right to choose whether to participate in the project and that the information furnished will be handled confidentially. I am aware that the results of the investigation may be used for the purposes of academic

publication.

* 1. **Informed consent**

- ◯ I hereby agree to item (a), (b) and (c) above.

Questionnaire: Soft skills of candidate QS

PART 2: DETAILS OF RESEARCH PARTICIPANT

* 2. What is your current registration status as a Quantity Surveyor?

- ◯ Registered as a Candidate Quantity Surveyor with the SACQSP
- ◯ Registered as a Professional Quantity Surveyor (PrQS) with the SACQSP
- ◯ Non-registered Quantity Surveyor
- ◯ Not applicable because I am not a Quantity Surveyor

* 3. What type of company/organisation/sector are you currently working in?

- ◯ Consulting QS firm
- ◯ Contractor
- ◯ Engineering
- ◯ Higher Education
- ◯ Property/Real Estate
- ◯ Government
- ◯ Banking
- ◯ Other (please specify)

* 4. How many years of experience do you have to date?

- ◯ 0 - 5 Years
- ◯ 6 - 10 Years
- ◯ 11 - 15 Years
- ◯ 16 - 20 Years
- ◯ 21 - 25 Years
- ◯ 26 - 30 Years
- ◯ 31 - 35 Years
- ◯ more than 35 years

* 5. What position do you currently hold in your company?

- ◯ Junior quantity surveyor
- ◯ Senior quantity surveyor
- ◯ Associate
- ◯ Director
- ◯ Executive
- ◯ CEO
- ◯ Lecturer
- ◯ Senior Lecturer
- ◯ Associate Professor
- ◯ Professor
- ◯ Other (please specify)

* 6. Have you ever been a mentor/supervisor of candidate quantity surveyors during their Assessment of Professional Competence (APC)?

- ◯ Yes
- ◯ No
- ◯ Not applicable because I am a candidate QS

* 7. What generation do you belong to?

- ◯ Boomers (born 1946 - 1964)
- ◯ Generation X (born 1965 - 1980)
- ◯ Generation Y (born 1981 - 1996)
- ◯ Generation Z (born 1997 - 2012)

Questionnaire: Soft skills of candidate QS

PART 3: SOFT SKILLS DEVELOPMENT

* 8. How important is it to cultivate soft skills in the Quantity Surveying profession?

Not important at all	Not so important	Somewhat important	Very important	Extremely important
◯	◯	◯	◯	◯

* 9. Do you think there is a soft skills shortage in the Quantity Surveying profession? Indicate your level of agreement.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
◯	◯	◯	◯	◯

* 10. Soft skills and technical skills (hard skills) both contribute toward success in the workplace. In what ratio is this true for the quantity surveying profession? (e.g 50%/50% means that soft skills and hard skills carry an equal weight towards workplace success)

* 11. How important is each soft skill for the quantity surveying profession in general?

	Not important at all	Not so important	Somewhat important	Very important	Extremely important
Communication	○	○	○	○	○
Teamwork	○	○	○	○	○
Leadership	○	○	○	○	○
Ethics	○	○	○	○	○
Professionalism	○	○	○	○	○
Critical thinking	○	○	○	○	○
Problem solving	○	○	○	○	○
Decision-making	○	○	○	○	○
Dispute and conflict resolution	○	○	○	○	○
Time management	○	○	○	○	○
Lifelong learning	○	○	○	○	○
Negotiation	○	○	○	○	○
Ability to work well under pressure	○	○	○	○	○
Adaptability	○	○	○	○	○
Flexibility	○	○	○	○	○
Self-confidence	○	○	○	○	○

* 12. How well has each soft skill been developed in the average candidate quantity surveyor with less than 5 years' work experience?

	Poor	Fair	Good	Very good	Excellent
Communication	○	○	○	○	○
Teamwork	○	○	○	○	○
Leadership	○	○	○	○	○
Ethics	○	○	○	○	○
Professionalism	○	○	○	○	○
Critical thinking	○	○	○	○	○
Problem solving	○	○	○	○	○
Decision-making	○	○	○	○	○
Dispute and conflict resolution	○	○	○	○	○
Time management	○	○	○	○	○
Lifelong learning	○	○	○	○	○
Negotiation	○	○	○	○	○
Ability to work well under pressure	○	○	○	○	○
Adaptability	○	○	○	○	○
Flexibility	○	○	○	○	○
Self-confidence	○	○	○	○	○

* 13. How well has each soft skill been developed in yourself?

	Poor	Fair	Good	Very good	Excellent
Communication	○	○	○	○	○
Teamwork	○	○	○	○	○
Leadership	○	○	○	○	○
Ethics	○	○	○	○	○
Professionalism	○	○	○	○	○
Critical thinking	○	○	○	○	○
Problem solving	○	○	○	○	○
Decision-making	○	○	○	○	○
Dispute and conflict resolution	○	○	○	○	○
Time management	○	○	○	○	○
Lifelong learning	○	○	○	○	○
Negotiation	○	○	○	○	○
Ability to work well under pressure	○	○	○	○	○
Adaptability	○	○	○	○	○
Flexibility	○	○	○	○	○
Self-confidence	○	○	○	○	○

* 14. How would you describe generation Z quantity surveyors (those currently 26 years and younger) in the workplace?

Select **3 answers** that you think are best suited.

- ☐ Hard working and motivated
- ☐ Eager to learn, develop and grow
- ☐ Want to advance their careers as quickly as possible
- ☐ Flexibility and work-life balance is important
- ☐ A good salary is what matters most to them
- ☐ Require recognition and acknowledgement when a task has been completed successfully
- ☐ Want constant feedback from managers/seniors in the office
- ☐ Can manage themselves and their work well
- ☐ Prefer to work individually rather than in a team

Questionnaire: Soft skills of candidate QS

PART 4 - STAKEHOLDER ENGAGEMENT

This part of the questionnaire aims to determine the level of stakeholder engagement towards the soft skills development of student and candidate quantity surveyors. This questionnaire focuses on the following stakeholders: Higher Education Institutions, QS employers, ASAQS and SACQSP.

* 15. In your opinion, which stakeholder is responsible for what? You are allowed to select more than one stakeholder per row if/where applicable.

	Higher Education	QS Employers	ASAQS	SACQSP	None of the stakeholders
Equip with knowledge on soft skills	☐	☐	☐	☐	☐
Provide opportunities to practically apply soft skills	☐	☐	☐	☐	☐
Assess/measure the development of soft skills	☐	☐	☐	☐	☐
Model/demonstrate good soft skills	☐	☐	☐	☐	☐

HIGHER EDUCATION AS STAKEHOLDER

Indicate your level of agreement with the following statements:

* 16. Quantity surveying graduates enter the profession with sufficient entry-level soft skills.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
◯	◯	◯	◯	◯

* 17. Higher education institutions equip quantity surveying students with basic knowledge regarding the soft skills needed in the quantity surveying profession.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
◯	◯	◯	◯	◯

* 18. Higher education institutions are providing quantity surveying students with enough opportunities to practically apply soft skills.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
◯	◯	◯	◯	◯

QUANTITY SURVEYING EMPLOYERS AS STAKEHOLDER

Indicate your level of agreement with the following statements regarding Quantity Surveying Employers. Answer the questions based on your own experience of Quantity Surveying Employers to date:

* 19. Quantity surveying employers value the development of soft skills in employees and strongly promotes this as part of their company culture.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
◯	◯	◯	◯	◯

* 20. Quantity surveying employers provide training to candidate quantity surveyors to equip them with knowledge about soft skills.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
◯	◯	◯	◯	◯

* 21. Quantity surveying employers have a tool / system in place to assess soft skills development of candidate quantity surveyors.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
◯	◯	◯	◯	◯

* 22. Quantity surveyors in middle and top management positions (e.g. associates, directors, executives, CEO’s, etc.) model good soft skills to candidate quantity surveyors?

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
◯	◯	◯	◯	◯

ASAQS & SACQSP AS STAKEHOLDER

Indicate your level of agreement with the following questions:

* 23. The CPD training offered by the ASAQS is sufficient to equip quantity surveyors with knowledge on essential soft skills needed for this profession.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
◯	◯	◯	◯	◯

* 24. The current SACQSP's Assessment of Professional Competence (APC) is sufficient to ensure the acquisition of both technical skills as well as soft skills in candidate quantity surveyors.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
◯	◯	◯	◯	◯

Questionnaire: Soft skills of candidate QS

PART 5 - IMPROVEMENT SUGGESTIONS

This part of the questionnaire offers 7 suggestions to improve the soft skills development of candidate quantity surveyors. Indicate how effective you think these suggestions will be.

* 25. SUGGESTION 1: Candidate quantity surveyors are required to accumulate 20 hours of CPD prior to professional registration. Focusing part of the 20 hours CPD specifically on soft skills will help to improve the development of such skills in candidate quantity surveyors.

Not at all effective	Not so effective	Somewhat effective	Very effective	Extremely effective
○	○	○	○	○

* 26. SUGGESTION 2: If the SACQSP includes soft skills development as a requirement for assessment of professional competence (APC) it will help to improve the soft skills of candidate QSs.

Not at all effective	Not so effective	Somewhat effective	Very effective	Extremely effective
○	○	○	○	○

* 27. SUGGESTION 3: Utilisation of a soft skills assessment tool by candidate quantity surveyors and their mentors/supervisors to assess soft skills and provide feedback will help to improve soft skills in candidate QSs.

Not at all effective	Not so effective	Somewhat effective	Very effective	Extremely effective
○	○	○	○	○

* 28. SUGGESTION 4: Scenario based learning where candidate quantity surveyors can learn soft skills prior to real world application will help to improve soft skills development in candidate QSs.

Not at all effective	Not so effective	Somewhat effective	Very effective	Extremely effective
○	○	○	○	○

* 29. SUGGESTION 5: Soft skills training courses / workshops / webinars that address essential soft skills in the quantity surveying profession will help to improve soft skills development of candidate QSs.

Not at all effective	Not so effective	Somewhat effective	Very effective	Extremely effective
○	○	○	○	○

* 30. SUGGESTION 6: If higher education institutions introduce soft skills specific content into their Quantity Surveying curriculums it will help to improve the development of soft skills in QS students prior to entering the workplace.

Not at all effective	Not so effective	Somewhat effective	Very effective	Extremely effective
○	○	○	○	○

* 31. SUGGESTION 7: Higher education institutions to introduce work-integrated-learning initiatives (students working while studying) into the curriculum whereby students can get exposure to soft skills in a real world context.

Not at all effective	Not so effective	Somewhat effective	Very effective	Extremely effective
○	○	○	○	○

* 32. Do you have any other suggestions to improve the soft skills development of candidate quantity surveyors? Share your suggestions below or answer "no" if you have no further suggestions.