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**INVESTIGATING THE IMPACT OF ACCREDITATION ON
QUANTITY SURVEYING PROGRAMMES AND THE
PROFESSIONAL PREPAREDNESS OF GRADUATES**

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A dissertation submitted in fulfilment of the requirements for a Masters Degree in Construction Management in the School of Engineering, College of Agriculture, Engineering and Science, University of KwaZulu-Natal, Howard College.

PREFACE

The research contained in this dissertation was completed by the candidate while based in the Discipline of Property Development, School of Engineering of the College of Agriculture, Engineering and Science, University of KwaZulu-Natal, Howard College, South Africa. The research was financially supported by The National Research Fund.

The contents of this work have not been submitted in any form to another university and, except where the work of others is acknowledged in the text, the results reported are due to investigations by the candidate.

Signed by Supervisor

Professor T.C. Haupt

Date

COLLEGE OF AGRICULTURE, ENGINEERING AND SCIENCE

DECLARATION - PLAGIARISM

I,ZAKHEEYA ARMOED....., declare that

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2. This thesis has not been submitted for any degree or examination at any other university.
3. This thesis does not contain other persons' data, pictures, graphs or other information, unless specifically acknowledged as being sourced from other persons.
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ABSTRACT

Accreditation in South Africa is a relatively new phenomenon compared to other countries. The United States of America have used accreditation for over a hundred years as a basis for quality assurance. This private, voluntary system of self-examination and peer review has been central to the creation of a U.S. higher education enterprise that is outstanding in many respects (Council for Higher Education Accreditation, 2013). Since the implementation of accreditation into the South African Quantity Surveying education system at Higher Education Institutes, it has promised numerous benefits with positive outcomes for universities and graduates. However, it has failed to convert these promises into a process that adequately prepares graduates that pass through the quantity surveying education programmes for the working world of the built environment industry. This investigation sought to discover the reasons why accreditation was not producing skilled graduates from accredited programmes in South Africa despite its claimed theoretical benefits.

The research methodology adopted in this study was a quantitative approach. Two close ended well-structured questionnaires were developed and directed to a sample of quantity surveying graduates and built environment organisations who were actively practicing quantity surveying in Kwazulu-Natal. The purpose of the graduate questionnaire was to determine the opinions from graduates of quantity surveying programmes, their level of work readiness and the skills and competencies that they require for the world of work. The employer questionnaire identified the level of graduate quantity surveyors work readiness and the skills and competencies that they require for professional practice. Further investigations highlighted the responses of graduates from traditional universities and universities of technology, as well as male verse female comparisons.

The findings of the study show that quantity surveying graduates were neutral about programme accreditation criterion and in it adequately preparing them for the world of work and professional practice. Employers agreed that students did not demonstrate a good balance of theoretical, practical and experiential knowledge. They were neutral about quantity surveying graduates and their level of work readiness from accredited quantity surveying programmes. They also regarded a combination of traditional, evolved and emerging skills and competencies as important for graduates to possess.

The results indicate that the prescribed programme criterion for quantity surveying programmes do not align themselves with the expectations and needs of professional practice. Further findings indicate the SACQSP routes to registration requires students to graduate from accredited quantity surveying programmes. Only then can graduates professionally register and practice as professionals in society. However, it should be noted that most organizations (72.7%) did not require quantity surveying graduate employees to be registered with the SACQSP. A further analysis of quantity surveying graduates from traditional universities compared to universities of technology and male responses compared to female responses were conducted. The findings showed that there were no statistically significant differences between the them.

To conclude, the current quantity surveying programmes offered by higher education institutes do not meet the requirements of the built environment industry by adequately preparing skilled quantity surveying graduates. The following recommendations were highlighted to assist in improving the current higher education quantity surveying programmes. These recommendations include an increased role and involvement of the built environment industry, collaboration between the SACQSP, higher education institutions and the built environment industry and future programme development.

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TABLE OF CONTENTS

	PAGE NO.
PREFACE	i
DECLARATION	ii
ABSTRACT	iii
ACKNOWLEDGEMENTS	v
TABLE OF CONTENTS	vi
REFERENCES, BIBLIOGRAPHY AND WEBSITES	x
APPENDICES	x
BIOGRAPHICAL SKETCH	x
LIST OF FIGURES	xi
LIST OF TABLES	xi
LIST OF TERMS	xii
GLOSSARY	xiii

CHAPTER ONE – BACKGROUND TO THE STUDY

1. Introduction	1
1.2. Research Background	2
1.2.1. Collaboration between Higher Education Institutes and Professional Bodies	5
1.2.2. The Debate by Professional Accrediting Bodies	6
1.3. Problem Statement	7
1.4. Hypothesis	7
1.5. Objectives	7
1.6. Research Methodology	8
1.7. Assumptions	8
1.8. Limitations	9

1.9. Ethical Considerations	9
1.10. Significance of the Study	9
1.11. Study Outline	10
1.12. Chapter Summary	11

CHAPTER TWO – LITERATURE REVIEW

2. Introduction	12
2.1. History of Quality Assurance and Accreditation in Society	12
2.1.1. Kenya	14
2.1.2. Nigeria	14
2.1.3. Cameroon	15
2.1.4. Ghana	15
2.1.5. Mauritius	15
2.1.6. South Africa	15
2.2. Institutions Responsible for Accreditation in South Africa	
Specific Roles and Functions	16
2.2.1. Department of Higher Education	16
2.2.2. South African Qualifications Authority	17
2.2.3. Council of Higher Education	19
2.2.3.1. CHE and Accreditation	21
2.2.3.2. Why are the Roles of Accreditation Important?	23
2.3. Council for Built Environment (CBE)	24
2.3.1 Background	24
2.3.2. Mission and Vision of the CBE	25
2.3.3. Professional Councils	25
2.3.3.1. Engineering Council of South Africa (ECSA)	26
2.3.3.2. South African Council for the Architectural Profession (SACAP)	27
2.3.3.3. South African Council for the Landscaping Architectural Profession (SACLAP)	28
2.3.3.4. South African Council for the Property Valuers Profession (SACPVP)	28

2.3.3.5. South African Council for Project & Construction Management Professions (SACPCMP)	29
2.3.3.6. The South African Council of the Quantity Surveying Profession (SACQSP)	30
2.4. Accreditation and Higher Education Institutes	33
2.4.1. Higher Education Institutes and their Accredited Quantity Surveying Programmes	33
2.4.1.1. Quantity Surveying Programme Accreditation	34
2.4.1.2. The Accreditation Process	35
2.4.1.3. The SACQSP Accreditation Benefits	36
2.4.2. The Framework of the SACQSP Accreditation System at Higher Education Institutes	37
2.4.2.1. The SACQSP Accreditation Policies and Programme Accreditation Criterion (1-19)	38
2.4.2.2. Purpose of the SACQSP Programme Accreditation Criterion (1-19)	44
2.5. Chapter Summary	44

CHAPTER THREE – LITERATURE REVIEW

3. Introduction	46
3.1. The History of Quantity Surveying in South Africa	46
3.2. The Role of Quantity Surveyors	46
3.2.1. The Traditional Role of Quantity Surveyors	47
3.2.2. The Evolved/Emerging Role of Quantity Surveyors	49
3.3. Work-Readiness and Employer’s Expectations of Quantity Surveying Graduates from Accredited Higher Education Institutes Programmes	50
3.3.1. Methods to Promote Work-Readiness and Employability of Graduates	53
3.5. Quantity Surveying Graduates and Accredited Higher Education Programmes	55
3.6. Chapter Summary	56

CHAPTER FOUR – RESEARCH METHODOLOGY

4. Introduction	57
4.1. Research and the Research Process	57
4.1.1. The Research Approach	59
4.2. A Quantitative Research Approach	60
4.2.1. Survey Questionnaire	62

4.2.2. Advantages and Disadvantages of the Questionnaire	62
4.2.3. The Survey Questionnaire Design	64
4.2.4. Pilot Study	66
4.3. Research Methodology	68
4.4. Population and Sampling	68
4.4.1. Population	68
4.4.2. Sampling	68
4.5. Data Collection	70
4.6. Credibility, Reliability and Validity of the Research Findings	71
4.6.1. Credibility	71
4.6.2. Reliability	72
4.6.3. Validity	73
4.7. Data Analysis	73
4.7.1. Interpretation of Data	73
4.8. Chapter Summary	75

CHAPTER FIVE – DATA COLLECTION AND ANALYSIS

5. Introduction	76
5.1. Data Collection and Analysis	76
5.2. Employer Survey	76
5.2.1. General Information	76
5.2.2. Work Readiness of Graduate Employees	78
5.2.3. Graduates Skills and Competencies	80
5.3. Graduate Survey	85
5.3.1. General Information	85
5.3.2. Assessment of the Academic Programme	85
5.3.3. Work-Readiness of Graduates	94
5.3.4. Graduate Skills and Competencies	96
5.3.5. A Comparison Between Traditional Universities’ and Universities’ of Technology	100
5.3.6. A Comparison Between Male and Female Quantity Surveying Graduates	103
5.4. Chapter Summary	106

CHAPTER SIX - CONCLUSION AND RECOMMENDATIONS

6. Summary, Conclusions and Recommendations	108
6.1. Introduction	108
6.2. Problem Statement	108
6.3. The Hypotheses of the Study	108
6.4. The Research Objectives	109
6.5. Hypotheses Testing	109
6.6. Recommendations	114
6.6.1. Increased Role of the Built Environment Industry	114
6.6.2. Collaboration between Higher Education Institutions and the Built Environment Industry	115
6.6.3. Future Programme Research and Development	115
6.6.4. Recommendations for Future Research	115
6.7. Conclusions	116
<u>REFERENCES, BIBLIOGRAPHY AND WEBSITES</u>	118

APPENDICES

Appendix A: Ethical Clearance	138
Appendix B: Turnitin Report	139
Appendix C: Informed Consent Form	145
Appendix D: Employer Survey Questionnaire	148
Appendix E: Graduate Survey Questionnaire	152
Appendix F: Data Output	158
Appendix G: Council for Higher Education Act	250
Appendix H: The South African Council for the Quantity Surveying Profession Act	261
Appendix I: The South African Council for the Quantity Surveying Profession Programme Accreditation Criterion (1-19)	279

<u>BIOGRAPHICAL SKETCH</u>	293
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LIST OF FIGURES

Figure 1: 2013 Routes to Registration as per the South African Council for the Quantity Surveying Profession	32
Figure 2: The Research Onion	58
Figure 3: Representation of the Triangulation of Data Sources	71

LIST OF TABLES

Table 1: Competencies required by Quantity Surveyors as per RICS, 2014	48
Table 2: The Evolved Role of Quantity Surveyors	50
Table 3: Survey Questionnaire Response Rate	69
Table 4: Cronbach's Accepted Rule of Thumb for Internal Consistency	73
Table 5: Data Interpretation Range – 5point Scale	74
Table 6: Data Interpretation Range – 3point Scale	74
Table 7: Employer Survey Reliability Test (N=11)	76
Table 8: Organisation Type (N=11)	77
Table 9: Employment Position (N=11)	77
Table 10: Employers views on the Work-Readiness of Graduates	78
Table 11: Employers views on the Skills and Competencies of Graduates	80
Table 12: Traditional, Evolved and Emerging Skills and Competencies	82
Table 13: Graduate Survey Reliability (N=43)	85
Table 14: Academic Programme Assessment	86
Table 15: SACQSP Programme Criteria for HEI	92
Table 16: Graduates views on their Work-Readiness	94
Table 17: Graduates views on their Skills and Competencies	96
Table 18: Traditional, Evolved and Emerging Skills and Competencies	98
Table 19: Paired Samples Test; Traditional Universities and Universities of Technology	100
Table 20: Comparison of Traditional Universities with Universities of Technology	101
Table 21: Paired Samples Test; Male and Female Quantity Surveying Graduates	104
Table 22: Comparison of Male Graduates with Female Graduates	104

LIST OF TERMS

CBE	COUNCIL FOR THE BUILT ENVIRONMENT
CHE	COUNCIL FOR HIGHER EDUCATION
BEP	BUILT ENVIRONMENT PROFESSION
DOE	DEPARTMENT OF EDUCATION
DHET	DEPARTMENT OF HIGHER EDUCATION AND TRAINING
ECSA	ENGINEERING COUNCIL OF SOUTHERN AFRICA
ETQA	EDUCATION AND TRAINING QUALITY ASSURERS
HEI	HIGHER EDUCATION INSTITUTE
HEQC	HIGHER EDUCATION QUALITY COMMITTEE
NQF	NATIONAL QUALIFICATIONS FRAMEWORK
SAQA	SOUTH AFRICAN QUALITY ASSURERS
SACQSP	THE SOUTH AFRICAN COUNCIL FOR THE QUANTITY SURVEYING PROFESSION
SACAP	THE SOUTH AFRICAN COUNCIL FOR THE ARCHITECTURAL PROFESSION
SACLAP	THE SOUTH AFRICAN COUNCIL FOR THE LANDSCAPE ARCHITECTURAL PROFESSION
SACPVP	THE SOUTH AFRICAN COUNCIL FOR THE PROPERTY VALUERS PROFESSION
SACPCMP	THE SOUTH AFRICAN COUNCIL FOR PROJECT AND CONSTRUCTION MANAGEMENT PROFESSION
SANAS	THE SOUTH AFRICAN NATIONAL ACCREDITATION SYSTEM
QA	QUALITY ASSURERS
QS	QUANTITY SURVEYOR

GLOSSARY

Accreditation

Recognition status granted to a programme for a stipulated period after an HEQC evaluation indicates that it meets minimum standards of quality (Higher Education Quality Committee, 2004).

Candidacy Status

Status granted to a provider that demonstrates potential to meet the minimum standards of provision determined by the HEQC for the intended programme and qualification. The provider can begin to offer the programme to the first cohort of students (Ibid).

Criteria for programme accreditation

Minimum standards necessary to support and enhance the quality of teaching and learning, research and service learning programmes (Ibid).

Education and Training Quality Assurer

Body responsible for monitoring and auditing the level of achievement of national standards or qualifications offered by providers and to which specific functions have been assigned by the South African Qualifications Authority (SAQA) (Ibid).

Programme

A purposeful and structured set of learning experiences that leads to a qualification (Ibid).

New programme

A programme which has not existed before, or a programme whose purpose, outcomes, field of study, mode or site of delivery has been considerably changed (Ibid).

Existing programme

A programme that is registered on the NQF and has been accredited by SAQA or the HEQC (Ibid).

Professional Programme

A programme that has to meet the licensure and other professional and work-based requirements of statutory councils (Ibid).

Programme Evaluation

The external quality assurance processes undertaken to make an independent assessment of a programme's development, management and outcomes and to validate the findings of an internal programme review (Ibid).

Institutional accreditation

Status attained after an HEQC evaluation has found that a new private higher education institution has the potential and capability to meet minimum quality thresholds of educational provision for higher education (Ibid).

Provisional Accreditation

Status granted by the HEQC to a new programme when it complies with the criteria set for the candidacy phase (Ibid).

Qualification

Formal recognition and certification of learning achievement awarded by an accredited institution (Ibid).

Quality Assurance

Processes of ensuring that specified standards or requirements have been met (Ibid).

Work-Based Learning

A component of a learning programme that focuses on the application of theory in an authentic, work-based context. It addresses specific competences identified for the acquisition of a qualification, which relate to the development of skills that will make the learner employable and will assist in developing his/her personal skills. Employer and professional bodies are involved in the assessment of experiential learning, together with academic staff (Ibid).

The South African Council for the Quantity Surveying Profession (SACQSP)

A professional accrediting body that is mandated to; setting and auditing of academic standards for purposes of registration through a process of accreditation of quantity surveying programmes at universities and universities of technology. They also prescribe a Code of Conduct and Codes of Practice, and enforcing such conduct through an Investigating Committee and a Disciplinary Tribunal (Ibid).

CHAPTER ONE

BACKGROUND TO THE STUDY

1. Introduction

Over the decades there has been much debate about the state of accreditation within the education system. This debate has been a logical step forward in the evolution of the accreditation system, as it poses numerous opportunities and challenges that should be addressed. By addressing these opportunities and challenges, a meaningful understanding will be gained of what the future of accreditation holds. Accreditation within higher education institutes in South Africa, plays a vital role as a form of quality assurance tool and enhancement mechanism, for institutions and their academic programmes. However, in recent years, it has been noted that accredited quantity surveying programmes are not providing industry with entry level graduates who possess the appropriate competencies and skillset to perform efficiently within the built environment industry.

The core factor of accreditation is that it is a type of self-regulation process that consists of an extensive internal and external review process. Both processes occur in relation to national and public standards pertaining to policies and procedures developed by accrediting bodies through consultation with higher education institutes and the industry of professionals (Council for Higher Education Accreditation, 2006). Specialized accreditation, such as quantity surveying academic programme accreditation, has been a long-standing debate throughout the history of higher education, and has therefore been a controversial topic in society (Glenn, 2011). The requirements of accreditation and its processes have been considered as an endeavour that is both tiresome and burdensome to academic programmes at educational institutions. The processes have additional cost implications and regulations that have a limited benefit. However, as the university environment has become more competitive and institutions search for every possible advantage, there has been a renewed interest in specialized accreditation (Ibid).

In South Africa, there are various types of accreditors, with each of them focusing on and regulating various constituents of the higher education system. The accreditation bodies are both national and nongovernmental organizations. National and regional accrediting bodies

accredit higher education institutes in its entirety, while nongovernmental accrediting bodies accredit the programmes of the higher educational institutes. Both, national and regional accrediting bodies in South Africa are evident through organizations such as DoH, CHE and SAQA. These bodies accredit higher education institutes and their processes. An overlap may exist among the various types of accreditors, both on a national and private level. For example, a university may hold institutional accreditation from one of the national bodies and have academic programmes that may hold dual accreditation from different nongovernmental accrediting bodies (Urofsky, 2013).

In the same manner that Haley, Ferraro and Montgomery (2012) found when examining the gerontology industry for its state of academic evolution, the evolution of the quantity surveying industry has raised the fundamental questions pertaining to accreditation of higher education programmes. Is accreditation a good idea for quantity surveying education programmes? Do accredited programmes produce graduates that are equipped with the adequate skill set to work in industry?

In deciphering whether accreditation is good or not, it is important to pursue accredited programmes for three primary reasons, to help establish a core curriculum for graduates that are trained in quantity surveying education, to ensure that a level of consistency is met across similar degree programmes at Higher Education Institutes and to improve employment opportunities for graduates which as a result enhances the relationship of employability between employers and graduates. The initial challenge surrounds the question, “Do accredited programmes produce graduates that are equipped with the adequate skill set to work in industry?” and “What are quantity surveying education graduates trained to do?” Higher education institutes develop quantity surveying education programmes that are accredited; to create a balanced curriculum, which is designed to provide theoretical education and/or practical experience to help graduates acquire that first job within the built environment industry (van Dussen, 2012).

1.2. Research Background

In the present built environment higher education system, quality assurance of both programmes and graduates are becoming increasingly vital to higher education. Since the Second World War, the concept of higher education for the elite ruling class has been replaced

by education for the masses (Brennan, 2004, Ferreira, 2001 and Trow, 1974, 2000, 2005). Therefore, strategies are required to be implemented to ensure that the quality of quantity surveying education, both of theoretical and practical knowledge is upheld when communicated to students who possess an array of learning styles, educational backgrounds and intellectual abilities. Due to the extensive availability of tertiary education by higher education institutions, accreditation is seen as a means of ensuring that a programme is of an acceptable quality and standard which is recognized by other higher educational institutions and industry employers (Felder et al. 2000).

Accreditation has been long believed to be a contributing factor to the success of higher education in South Africa by higher education accrediting bodies. It serves as a central point for establishing a culture of quality programmes at institutions. This culture may be developed in several ways at various learning institutes. Overall, accreditation has been used as a means for assuring a level of quality when identifying institutions and programmes that do not yet have comprehensive academic and economic practices. Accrediting bodies use these methods to remedy insufficiencies of an institute prior to undertaking accreditation. Once it has been remedied, accreditation offers the institution an incentive to improve quality through periodic reviews of higher education institutions and its programmes, as well as focusing on achieving quality through constructive criticism and consultation (Eaton, 2012).

Accreditation can be classified within two major categories, namely institutional and programmatic accreditation. Institutional accreditation refers to the approval of an entire educational institution, which meets the established standards of an accreditation body. Specialized or programmatic accreditation is focused on the evaluation of programmes, departments and schools of institutions. Once a programme is provided with an accreditation status, it implies that the programme is of a reasonable level that is expected of by the public and is acknowledged by the educational community and industry. In the general context of quantity surveying education, accreditation allows graduates from quantity surveying programmes to apply for professional industry registration and status. International agreements on accreditation may enable graduates from accredited programmes to actively practice in other member countries. Therefore, it is deemed desirable for quantity surveying education programmes to be accredited, as they allow their graduates to become built environment professionals and allow international career mobility.

Accreditation may act as a tool of measurement for employers to benchmark the level of quantity surveying education that a graduate employee possesses, since accreditation bodies are expected to pay specific detail to the assessment of the technical and soft skillset of graduates. Consequently, the pursuit of accreditation has become an understated obligatory norm for higher education quantity surveying programmes as the career progression of their graduates will be limited if they do not graduate with an accredited degree (Ibid).

The accreditation body serves as a non-governmental educational association of national and regional scope that develops evaluation standards and criteria. It also conducts peer evaluations and expert visits of institutions and of graduates to assess if the outlined criteria have been met. The accreditation body is entitled to award formal status to higher education institutions or their programmes, following a successful examination of the application and educational unit (van Dussen, 2012).

The accreditation of institutional degree programmes is a constant process that seeks to offer a high degree of reliability that an accredited institutional degree programme fulfils the quality requirements of the different accreditation bodies. A related opportunity of accreditation is the creation of a recognizable higher education construction programme to address the job opportunities of the future and allow graduates entry into existing careers, which previously focused on older aging adults who are increasingly unavailable in society (Ibid).

Quantity surveying education assessments are typically conducted by reputable external bodies which ensure that requisite quality standards and public accountability are met. They encourage trust in students, parents, employers, education administration and society in general of the quantity surveying education programmes which the university offers. Essentially accreditation is a tool for programme development and should facilitate both internal and external evaluation of programmes on a continuous basis. The continuous process of programme evaluation ensures that the quality of programmes offered at universities is constantly improving, and arguably the resultant graduate output meets industry demands. In South Africa, higher education based accreditation is seen as the principal means of assuring and improving the quality of higher education institutions and their programmes. This initiative has been active over the past few years and is central to the creation of an effective and efficient South African higher education initiative. Accreditation is widely known to be a very successful and well-tested system of quality assurance and improvements of institutions and a great example of effective public and private partnership (Council for Higher Education Accreditation, 2013).

1.2.1. Collaboration Between Higher Education Institutes and Professional Bodies

The principle of accreditation of higher education degree programmes by their associated professional bodies is well established and accepted in many higher education systems throughout the world. This is particularly relevant to professional programmes and qualifications. At most higher education institutions professional programmes are at the interconnected point of two organizations. This point reflects the professions which they provide unique knowledge and technical skills and the higher education institutions to which they belong (Churchman and Woodhouse 1999).

The engagement and collaborative processes between universities and professional bodies are not new to South Africa and its higher education system. They occur in numerous higher education institutes and provide a level of quality assurance and accreditation. However, this relationship has become problematic in South Africa over the years due to a host of factors (Ballim, Mabizela and Mubangizi, 2014).

Universities cannot develop the appropriate learning context by themselves, together with the necessary standards of academic and professional excellence without engaging with professional bodies for guidance. These professional bodies need to be certain of the required knowledge and competency levels of graduates who enter the built environment profession. This is necessary to ensure that graduates are suitably prepared to engage with the demands of professional practice at entry level and to be able to participate in the candidacy or internship phase of formal professional learning, which is necessary to attain full registration as a practicing professional (Department of Higher Education and Training, 2010).

This relationship is not only important for the graduates from professional degree programmes, but also serves as a useful communication tool between professional bodies and the higher education institutes. However, while higher education institutes and professional bodies are each regulated independently by formal legislation or by formal agreement, there is no framework that regulates the rights and responsibilities of the parties when they interact on matters of mutual concern. The absence of such a regulatory framework has often led to tensions and challenges in the interactions between Higher Education Institutes and professional bodies. The problematic aspects of the relationship are most apparent in the accreditation of professional degree programmes, where the role and domain of the

professional body are understood differently by the two parties (Harvey, Mason and Wald, 1995).

Problems with accreditation are not new, and have impacted higher education institutes for decades. There is a sense in the South African higher education system that they have become more evident and have taken new forms in recent times. This has escalated to the point where the complaints from universities about professional bodies are becoming increasingly garish. The lack of a regulatory framework to direct the relationship between professional bodies, higher education institutes and the council for higher education has allowed professional bodies to reach into the academic activities of universities in ways that have the potential to undermine the quality and effectiveness of higher education qualifications, in providing adequately skilled graduates (Department of Higher Education and Training, 2010).

While some professional bodies have been successful in self-regulating these relationships, this has been based on understanding and good intentions and has certainly not been the approach of all professional bodies. Equally important has been the fact that universities have not been sufficiently vigilant in ensuring that professional bodies are well balanced in their influence on the structure and form of development of graduates for entry into the professions. The establishment of a framework is required by the Higher Education Institutes, which will guide and regulate the relationships between the three important components of quality assurance in higher education, the higher education institutes, the council for higher education and the professional bodies (Ibid).

1.2.2. The Debate by Professional Accrediting Bodies

Professional accreditation of higher education qualifications, has become increasingly debated over the past two decades in South Africa. The main characteristic of this debate is found by the desire of professional bodies to have an increased level of influence on the form, structure and intent of professional degree programmes in higher education institutes. This view is driven by a sense that universities are not rising adequately to the challenge of preparing graduates, in sufficient numbers or quality, for entry into the world of professional employment. Higher Education Institutes are resisting such influence, seeing it as being unreasonably directive; a conflict of mission and purpose; an affront to the independence of universities; and a frontal attack on the principles of academic freedom (Ballim, Mabizela & Mubangizi 2014).

1.3. Problem Statement

The problem statement may be stated as follows:

Despite the quantity surveying programmes offered at universities being accredited by the relevant councils, the graduates from the programmes are perceived by industry professionals and employers to be inadequately prepared for the world of work as entry-level quantity surveying professionals.

1.4. Hypothesis

The hypotheses to be tested in this dissertation are:

- Accreditation bodies are prescriptive in terms of the universities curriculum of quantity surveying programmes.
- The prescribed learning outcomes of quantity surveying programmes to be accredited do not align themselves with the expectations and needs of professional practice. (traditional vs evolving)
- Quantity surveying bodies only accredit university programmes that focus on the traditional roles, competencies and skills of quantity surveying graduates.
- Graduates from accredited quantity surveying programmes are adequately prepared for the world of work. (Need evolving roles etc.)
- Graduates from accredited quantity surveying programmes are adequately prepared for professional council registration.

1.5. Objectives

- To identify the requirements for accreditation of quantity surveying programmes at universities.
- To determine whether prescribed learning outcomes of quantity surveying programmes to be accredited do not align themselves with the expectations and needs of professional practice. The traditional verse evolving roles.
- To establish whether the quantity surveying accreditation bodies in terms of their accreditation requirements, only focus on the traditional roles, competencies and skills of quantity surveying graduates.

- To what extent does the quantity surveying bodies accommodate or the evolution of quantity surveying roles, competencies and skills of quantity surveying graduates.
- To establish if graduates from accredited quantity surveying programmes are adequately prepared for the world of work.
- To establish whether graduates from accredited quantity surveying programmes are adequately prepared for professional council registration.

1.6. Research Methodology

In order to achieve the objectives of the study, the following research approaches will be adopted:

- An in-depth, comprehensive review will be done of relevant literature and of previous studies. The research will focus on the accreditation requirements and procedures/practices of quantity surveying accreditation and its relevant accreditation bodies.
- Structured questionnaires will be distributed to a selected sample of university graduates, industry representatives and employers' in order to ascertain their views on the preparedness of quantity surveying graduates for the world of work and for council registration.
- The data will be statistically analysed using relevant techniques and appropriate statistical software.
- Conclusions will be drawn from the findings of the study and the recurring themes from the structured questionnaires. Recommendations for implementation will be formulated, based on the study findings.

1.7. Assumptions

The study is subject to the following assumptions:

- It is assumed that the participants of the study will co-operate and provide accurate responses and meaningful information with respect to the research topic.
- It is assumed that the selected participants will be honest and responds accurately to the questionnaires. In order to enhance and reinforce the accuracy of the information

provided, the participants will be notified that their anonymity and confidentiality will be preserved.

1.8. Limitations

The study is subject to the following limitations:

- **Geographical Area:** This study will be confined to the KwaZulu-Natal province of South Africa.
- **Monetary:** Due to the budgetary constraints, this study will be conducted at the University of Kwa-Zulu Natal and at surrounding local organisations.
- **Time:** The time available for this research is from February 2015 to September 2016.

1.9. Ethical Considerations

In order to ensure that ethical considerations of international standards are maintained, the names of all individuals and organisations participative in the study will be withheld. During the course of the research study, the aim of the research will be explained thoroughly, anonymity will be ensured and all responses will be held confidential. The participants will have the opportunity at any time to withdraw from the study, no consequences will be held and no compensation will be issued. The research does not aim to harm or advertise and individual, company or associate organisation that has participated in the study.

The University of Kwa-Zulu Natal will approve all research instruments that will be used via the Ethical Clearance Committee. See Appendix A: Ethical Clearance Letter. The quality will be assured through the correctness and completeness of instruments issued i.e. Questionnaire competence, the accuracy in its statistical calculation and efficiency of data analysis and its capturing.

1.10. Significance of the Study

Accreditation of higher education quantity surveying programmes by their relevant professional bodies is well established and accepted in many higher education systems throughout the world. In South Africa, higher education accreditation promised numerous benefits with positive outcomes for universities and graduates, however it has become

increasingly debated over the past few decades. The evident problems with accreditation are not a new phenomenon, and have had a huge impact on higher education institutes. Due to their lack of regulatory framework to direct the relationship between professional bodies, higher education institutes and the council for higher education has allowed professional bodies to reach into the academic activities of universities in ways that have the potential to undermine the quality and effectiveness of higher education qualifications, in providing adequately skilled graduates for the world of work (Ballim, Mabizela & Mubangizi, 2014).

This study seeks to discover the reasons why SACQSP accredited quantity surveying programmes from Higher Education Institutes (HEI's), are not producing skilled quantity surveying graduates, despite its theoretical benefits.

1.11. Study Outline

Chapter 1: Introduction - The introductory chapter introduces the research, the background study, problem statement, the hypothesis to be studied, research objectives, the rationale of the study, research methodology, all limitations, assumptions, ethical considerations and the overall significance of the study. Lastly, it will state the anticipated outcomes to be achieved.

Chapter 2: Literature review - This chapter will review all vital research and publications on the study. Firstly, the concept of accreditation, the history and origins of it both internationally and within South Africa will be reviewed to illustrate the effects it has on the Higher Education system. This will then lead to an investigation on the current Higher Education Institutes(HEI's) and the professional bodies responsible for conducting proper accreditation procedures on both the HEI's and their respective quantity surveying programmes. Thereafter, the HEI's are evaluated and the criterion used to accredit quantity surveying problems. This will illustrate if accredited quantity surveying programmes are adequately preparing graduates to enter the built environment industry for the world of work.

Chapter 3: Research methodology - This chapter will discuss the research methods used to test the hypotheses. The methodology will be explained with regards to definitions and what research methods will be followed. The research methodology process will then be further explained, with reference to the population and sample selection through to the sampling process. It will illustrate the manner in which data will be analysed and presented in order to assess the data collected. Information on the reliability and validity of the data collected will be included.

Chapter 4: Analysis of data and discussion of findings - This chapter will present the findings from the analysis of the data collected and captured. The analysis will be executed using statistical techniques and software; such as the SPSS version 23. The coded data will be analysed to identify the general views of the respondents. These findings will be discussed in the context of the reviewed literature and previous studies.

Chapter 5: Conclusion and recommendation - The final chapter presents the conclusion of the research and the extrapolated research findings. Recommendations shall be formulated for implementation and for further research, will be included.

1.12. Chapter Summary

This chapter introduced the concepts of accreditation and its influence on HEI's, with specific references to SACQSP accredited quantity surveying programmes. Accreditation has been believed to be a significant factor to the success of higher education in South Africa by accrediting bodies. However, research has shown that despite accreditations theoretical beliefs, this is not true as quantity surveying graduates from accredited programmes are not equipped with the adequate skillset for entry level positions. The chapter highlights the problem statement, hypotheses, objectives, research methodology, assumptions and limitations, ethical considerations and significance of the study. The next chapter presents a comprehensive literature review and the link between accreditation, HEI's and graduates.

CHAPTER TWO

LITERATURE REVIEW

2. Introduction

2.1. The History of Quality Assurance and Accreditation in Society

The history of quality assurance within the African Higher Education system goes back to the founding universities in Africa.

These include:

- Fourah Bay College in Sierra Leone - 1827 (Affiliated with Durham University in England from 1876),
- The University of Cape Town in South Africa - 1829 (Affiliated with the University of London).
- Liberia College - 1852.
- Makerere University - 1922 (Affiliated with the University of London).
- The University of Ghana, Legon - 1948 (Affiliated with the University of London).
- The University College of Addis Ababa – 1951.
- The University of Dakar - 1957 (Affiliated with the University of Bordeaux).
- The University of Dakar, now known as Cheikh Anta Diop University.

The quality assurance of university education in the earlier days was the authority of governing boards, faculty or the affiliating institution. Through the involvement of an affiliating institution, African higher education institutions became part of the Portuguese, British, French and other systems of quality assurance and were subject to the same kind of quality control procedures. These affiliating institutions usually gave the qualification of the African higher education institutions, however there was a high degree of institutional autonomy (Hayward, 2006). As African countries gained their independence, many countries witnessed an increased role of governmental authority over higher education. Departments and ministries of education also paid greater attention to the university systems and practices. They asserted a greater level authority over decision-making and governance but often lacked in proper quality control practices (Bloom, D. et al. 2006).

Due to an active role of government in higher education, this resulted in a decline of the quality of higher education as an increased desire for political control of higher education emerged. The lack of quality assurance was driven by the dissolving of mentoring relationships with European universities, waning of an external examiner system, an increase in student enrollment, decreased expenditures in education, expansion of private institutes that offered higher education yet questioned quality, increase in graduate unemployment and pressure from globalization. This highlighted the issue that Africa as a nation was lagging behind the rest of the world in creating knowledgeable societies. All these increased pressures on higher education at institutions had an effect on quality and accreditation processes (Ibid).

At numerous higher education institutes the external examiner system aided in reviewing academic programmes and examinations on a regular basis by individuals that are committed to maintaining those standards. These people are now known as accrediting bodies. The use of external examiners assisted in protecting institutions from political pressure that would have destroyed the quality and called into question the authenticity of programmes. This form of accreditation assisted in preserving the quality of higher education at institutes (Effah, 2006).

However, over the decades the ties of universities to most affiliating institutions had deteriorated as well as the effectiveness of the external examiners. The external examining system began to significantly weaken in the 1980's and 1990's. This was a result of the increase in student populations at higher education institutions and the resultant effects it had on effective external examinations. During the period immediately following independence of countries and their institutions', most departments of education gained legal authority over higher education institutions which varied from country to country. Most often than not national governments put their own interests ahead of those of the universities. These interests included increased expectations of university finances to the development of the nation and the desire to control political discord (Ibid).

In the 1990's governments had also begun to face problems that were related to the increased growth of private higher education institutions that had little esteem for quality control. As a result, an increased level of graduate unemployment occurred and a need for relevant university curriculum. Governments had then begun to recognize the need of knowledge societies to enhance their chances in a highly competitive market. Academics from higher education institutes realized a need for setting national benchmarks that focused on international standards.

Businesses, government and the public called for changes in higher education. The previous quality assurance model could no longer be used to ensure that the public and students' best interests were served and that they were getting value for money at higher education institutions (Hayward, 2006). New mechanisms were sought by various parties to improve the quality of higher education. The departments of education had previously assumed power over higher education, therefore they were the driving force behind the establishment of new quality assurance structures. During the 1980's technical higher education institutions in Nigeria and South Africa underwent the first formal accreditation processes. These included the National Board for Technical Education in Nigeria in 1981 and the Committee of Technikon Principals (CTP) in South Africa in the 1986. In 1985, the first accreditation body was established in Kenya at university level, by the Commission for Higher Education by Act of Parliament (Ibid).

2.1.1. Kenya

The Commission for Higher Education in Kenya was set up due to an overall concern for the quality of the higher education system. This was the result of uncoordinated and unregulated higher education institutions that offered university education but were not governed by higher education bodies. In 1989 the standards that outlined accreditation processes were established including rules for the establishment of new universities. One of the first universities to be accredited was the Catholic University of East Africa. Accreditation is now required by all higher education institutes (Bloom, et al. 2006).

2.1.2. Nigeria

Following Kenya, Nigeria was the second pioneer of accreditation in Africa. However, its focus was on programme rather than institutional accreditation. In 1962, The National Universities Commission was established to provide guidance to higher education, however in 1990 it was awarded accreditation responsibilities. From 1990 to 1991, the first accreditation processes were conducted by the National Universities Commission (NUC). A second round of programme accreditation was conducted from 1999 to 2000. Even though the NUC conducts programme and not institutional accreditation, they have ranked universities since 2004 using 12 performance indicators.

2.1.3. Cameroon

In 1991, Cameroon began initiating accreditation procedures with its main focus on private universities. The National Commission on private higher education conducts the accreditation processes, however the final decision is made by the Minister of Higher Education.

2.1.4. Ghana

In 1993, Ghana authorized accreditation practices. However, it was not until 2005 that they began actively conducting accreditation processes at higher education institutes. The Ghanaian National Accreditation Board accredits private, foreign, public and distance education institutions.

2.1.5. Mauritius

In 1997 Mauritius initiated the quality assurance division of the Tertiary Education Commission but only began the process of quality audits and programme accreditation in 2005 (Ibid).

2.1.6. South Africa

The concept of accreditation in South Africa dates back to the early 1970's. However, during the 1980's the process of accreditation was formalized with the National Calibration Services. The National Calibration Service later dissolved and formed the National Laboratory Accreditation Service. In 1994, the National Laboratory Accreditation became an independent company with international requirements pertaining to its self-governance. In 1995, the National Laboratory Accreditation began their accrediting processes by testing and assuming the responsibility of laboratories that were previously accredited by the South African Bureau of Standards (SABS) 0259 (Council for Higher Education, 2001).

In late 1994, the Department of Trade and Industry had recognized that a single national accreditation system was required. As a result, the National Cabinet approved the establishment of an accreditation system. The newly established system was called the South African National Accreditation System, which was managed by the newly independent NLA. In the January of 1996 the accreditation body was registered and officially launched in August of 1996 (SANAS, www.thedti.gov.za).

A memorandum of agreement formalized the relationship between SANAS and the government. This agreement recognizes SANAS as the single national authority that is responsible for accreditation. SANAS operates in accordance with the criteria, rules and regulations laid down in the promulgated Act 19 of 2006 (Accreditation for Conformity Assessment, Calibration and Good Laboratory Practice Act) (Ibid).

Mission statement:

- To initiate, negotiate, conclude and maintain all international mutual recognition agreements and to pursue international acceptance of all bodies accredited by SANAS.
- To accredit organizations in accordance with internationally accepted criteria and to comply with international criteria.
- To review and negotiate methods of reducing the cost of international trade through accreditation.
- To advise national and international organizations on the conditions for accreditation and issues relating to accreditation.
- To promote SANAS as the national accreditation body.
- To ensure that there is consistency amongst accrediting bodies and certification bodies in all activities relating to accreditation.
- To work closely with national government to ensure the continued and adequate support for accreditation activities and international acceptance.

In September 2001, South Africa began the preparation for higher education audits and accreditation with the establishment of the Higher Education Quality Committee (HEQC) of the Council for Higher Education (CHE). These audits and accreditation of institutions and programmes began in 2004. Other countries are now following this lead (Hayward, 2006).

2.2. Institutions Responsible for Accreditation in South Africa

2.2.1. Department of Higher Education

The cornerstone of academia is its excellence but the constant search for high levels of quality and excellence has resulted in a renewed sense of urgency. The higher education system in South Africa has undergone decades of fragmentation, racial segregation and uneven educational resource provisions. As a result, a demand for social and economic justice is at the forefront for change in a democratic society. The purpose of restructuring the higher education

system is to produce a fair, efficient and responsive system. The development in higher education include private sector providers and the associated challenges in ensuring quality education and an improved relationship between private and public sector higher education institutes. Both private and public higher education institutions can only offer educational programmes only once all relevant processes have been followed by the Department of Education (DoE) and South African Quality Assurers (SAQA). (Higher Education Quality Committee Founding Document, 2001).

The South African higher education sector faces numerous quality related goals. These include increasing the levels of access and opportunities to previously disadvantaged individuals, a greater responsiveness teaching and research initiatives, institutional efficiencies, increased throughput rates and retention of students and graduation rates in academic programmes. In recent years, the university system, seems to be operating with increasing autonomy. However, both regional and national government provides higher education institutions with funding and demands an increased level of accountability (Ibid).

2.2.2. South African Qualifications Authority (SAQA)

Through an Act of Parliament in 1995, the South African Qualifications Authority (SAQA), was established as a statutory body with its headquarters in Pretoria, South Africa. SAQA serves as the guardian of the South African National Qualifications Framework (NQF) and oversees the continuous implementation and development of the NQF. In 2008 the SAQA Act was replaced by the NQF Act which strengthened their role (SAQA, www.saqqa.org.za).

Since the establishment of SAQA, they have served as an ideal statutory body with outstanding operational and financial management. Over the years SAQA has proven itself to be a fundamental intellectual resource to South Africa, Africa and abroad. SAQA is often called upon to share their expert advice of the South African experience as they have been internationally recognised as a contributor to the development of the qualifications systems. SAQA's areas of responsibility include, the recognition of professional bodies, the management of information and training systems and registration on the NQF of professional designations and qualifications (Ibid).

The quality of South African qualifications at institutions is a key objective of SAQA. In South Africa's diverse society, qualifications provide a means through which an individual's skills and competencies can be recognised and used abroad. Therefore, SAQA developed the NQF so that it is of international standards and easily comparable. In order to constantly improve and maintain quality, SAQA requires all formal qualifications to meet the minimum requirements set out so that they can be registered on the NQF (SAQA Act 58 of 1995).

Quality councils responsible for the SA education and training system:

- The Council on Higher Education (CHE).
- Umalusi for qualifications in adult education, further education and training colleges, private providers and schools.
- Quality Council for Trades and Occupations (QCTO) for workplace-orientated qualifications offered in post-school institutions and/or workplaces.

SAQA also offers a verification service through which the authenticity of a South African qualification can be checked. Confidentiality is constantly maintained in the process. SAQA is also responsible for the recognition of professional bodies that are involved within the education and training sector and for the registration of their professional designations on the NQF. This is a relatively new development of responsibility and SAQA has developed the rules of engagement. Since 2006 this initiative has been conducted through consultation with professional bodies and the quality councils (SAQA, www.sqa.org.za).

The addition of professional bodies within the NQF, aims to ensure greater cohesion with education and training systems. This is further ensured by coordinating the involvement of professional bodies in the development of professional qualifications and the quality assurance for the delivery of qualifications. Through the inclusion of professional bodies by SAQA it provides significant oversight into the employment and skills development trends of South Africa (Ibid).

2.2.3. Council of Higher Education (CHE)

The Higher Education Act of 1997 was developed by the Department of Higher Education. In 1998, the Council on Higher Education was established as an independent statutory body in terms of the Higher Education Act (Act No 101 of 1997). CHE also plays an integral role of Quality Council for Higher Education in terms of the National Qualifications Framework Act (Act No 67 of 2008). The Department of Higher Education assigns the responsibility for quality assurance in higher education to the Council on Higher Education in South Africa.

CHE's responsibilities are:

- To advise the minister on all matters related to higher education.
- To assume executive responsibility for quality assurance.
- To monitor and evaluate whether the policy goals and objectives are being realized.
- To contribute to developing higher education through publications and conferences.
- To report to parliament on higher education.
- To consult with stakeholders on higher education matters.

The HEQC which is a permanent sub-committee of CHE, is responsible for discharging such responsibilities. The responsibility of the HEQC includes the promotion of quality assurance, programme accreditation and institutional audits. This forms part of the key tasks in developing an efficient national quality assurance system (Higher Education Quality Committee, 2001).

The HEQC quality assurance mandate is carried out within the framework of the Regulations for Education and Training Quality Assurers (ETQA) of SAQA. They uphold the overall responsibility for overseeing the standard setting and quality assurance in support of the National Qualifications Framework (NQF) (Regulations under the South African Qualifications Authority Act, 1995).

ETQA functions are:

- To accredit institutions for specific standards or qualifications registered on the NQF.
- To promote the quality of institutions and monitor their provisions.
- To evaluate, assess and facilitate the moderation of institutions, the registering of assessors and to take responsibility for the certification of students.

- To co-operate with the relevant bodies that are appointed to moderate across Education and Training Quality Assurers.
- To recommend new standards, qualifications or modifications to existing standards or qualifications to the National Standards Bodies for consideration.
- To maintain a database that is of an acceptable quality to the SAQA.
- To submit reports to South African Qualifications Authority in accordance with their requirements.
- To perform functions as required by the South African Qualifications (Authority Higher Education Quality Committee, 2001).

The accreditation function of the HEQC related to specific DoE and SAQA, namely:

- The DoE approves and funds the programme and its qualifications of higher education institutes.
- Higher education programmes are accredited by the HEQC.
- The HEQC registers private higher education institutions.
- SAQA is responsible for registering the learning programmes that are offered by higher education institutes (NQF qualifications).
- The HEQC promotes the accreditation of higher education institutions that offer programmes that provide particular NQF qualifications (Regulations under the South African Qualifications Authority Act, 1995).

The board determines the underlying policies and procedures for quality assurance of the HEQC and have the ultimate responsibility for approving accreditation and audit reports. The HEQC acts independently from other agencies but seeks advice from them to make informed decisions on issues of quality and standards. The decisions and judgements are based on evaluation reports from peer and expert review panels.

2.2.3.1. CHE and Accreditation

Accreditation adapted by institutes, with regards to programmes and qualifications, is a means of quality assurance that is actively practiced throughout the world. The process of quality assurance is usually related to the fundamental purpose of institutional responsibility and the enhancement of programme quality. South African higher education institutes face numerous demands from stakeholders for greater awareness and reaction to the needs of society. This may be achieved through greater student access, research and innovation and through the active engagement with local, regional and international communities of interest. Higher education institutions should also be able to provide the public with detailed information on the manner in which they ensure the quality and standards of their academic activities are maintained and to illustrate the sustained methods of improvement. The key objective of the HEQC protects students against the lack of proper quality programmes and in maintaining the credibility of qualifications (Council on Higher Education, 2004).

In an age where the South African higher education system requires restructuring, programme accreditation aims to be a receptive and hands-on approach in evolving the objectives of the higher education system. Ensuring that improved and sustainable quality is part of the transformation, the objectives of higher education institutions is a fundamental premise of the HEQC's approach to quality assurance and to programme accreditation. This is intended to ensure that only programme that meet the necessary quality requirements will be able to enter the higher education system (Higher Education Quality Committee, 2001).

With respect to existing programmes accreditation and re-accreditation will follow different processes which includes self-accreditation by the institutions themselves, provided that the HEQC quality requirements are maintained. The processes for the development of objectives, criteria and procedures for programme accreditation have been developed through a wide-range of comparative research and pilot tests in consultation with stakeholders (Ibid).

Four pivotal roles of accreditation:

- Sustains and enhances the quality of higher education.
- Maintains the academic values of higher education.
- Serves as a buffer against the politicizing of higher education.
- Serves the public's interests and needs.

The HEQC has developed a detailed programme accreditation model which illustrates the accreditation process. It makes a clear division between the accreditation of new and existing programmes. In new programmes, the HEQC intends on utilizing an accreditation process that consists of a two-phase process. Phase one is the candidacy phase where an institution is required to show that it meets the standards for activities, infrastructure and resources. The institution can also demonstrate to the HEQC that it has the potential to meet standards outlined in the programme accreditation criteria within a specified period of time. An additional requirement of an institution is to submit a plan on how it intends on implementing the new programme. Mid-way through the new programme an institution is required to undergo a compliance and progress evaluation (Council on Higher Education, 2004).

A new programme may only seek accreditation during the accreditation phase. In the first year of students graduating from the accredited programmes, the institution must demonstrate compliance with the conditions set out during the candidacy phase and also evaluate the programme against the HEQC's criteria. In this manner, the HEQC programme accreditation model enables the receptiveness of higher education institutions in developing new programmes to develop institutional and programme capacity (Ibid).

The re-accreditation of existing programmes allows institutions to award themselves self-accreditation status under prescribed conditions. This enables institutes to evaluate and monitor the quality of the programme in the absence of statutory councils and transfers the responsibility for programme re-accreditation to the institute. This process is based on the trust in the institutions and in their assurance to quality maintenance and improvement of their programmes (South African Qualifications Authority Act, 1995). Accreditation in its entirety, holds the concept of accountability at the forefront. The programme accreditation model allows also for constant improvement and development of programmes to ensure that the students' needs are met (Ibid).

The principles of CHE programme accreditation are:

- Academic programmes within the higher education system should be of a good quality.
- Programmes should conform to the minimum quality requirements.
- The responsibility for programme quality, rests with higher education institutions.
- The HEQC's responsibility is to establish an external system of programme evaluation.

- The HEQC will conduct peer and expert reviews in order to ensure an informed and constructive programme evaluation is conducted.

The objectives of programme accreditation include:

- To enhance and assure the quality of higher education programmes.
- To protect students from poor quality programmes through the processes of accreditation and re-accreditation.
- To encourage and support institutions in maintaining a culture of self-evaluation that exceeds minimum standards.
- To increase the confidence levels of the public in higher education programmes and its qualifications.
- To facilitate interaction between programmes of different higher education institutes.

2.2.3.2. Why are the roles of accreditation important?

The accreditation system has an ongoing battle to strengthen the quality of higher education and to serve the public over time. Its four pivotal roles of enhancing quality, sustaining academic values, managing politicization and in serving public interest by ensuring a dynamic system of scrutiny and constructive criticism of higher education is in the forefront of sustaining the accreditation system. Institutions and the HEQC carries out these roles while being steadfast to its own quality improvements. This is executed through exploring various ways in which the higher education system, students, government and the public can be further enhanced. Essential to continuous quality improvement are the beliefs that once quality is achieved, it must be nurtured and developed to greater levels (Council for Higher Education, 2003).

“The goal of accreditation is to ensure that education provided by institutions of higher education meets acceptable levels of quality.” (U.S Department of Education, <http://ope.ed.gov/accreditation/>).

The Department of Higher Education, Council for Higher Education, South African Quality Assurers, Higher Education Quality Committee and various accrediting agencies (third party bodies), are entities whose roles are to ensure that both higher education institutions and

programmes meet the standards for programme quality and that they are dedicated to continuous improvement. In order to attain accreditation the programme or higher education institution must illustrate that it fulfills the prescribed requirements with regards to curriculum design, programme admission, exit requirements, course layout, faculty, facilities and financial resources. Higher educational institutions and their programmes undertake an intense and in-depth review before accreditation is granted. This evaluation process occurs on a regular basis to ensure that continued compliance with standards and policies are demonstrated so that the quality of education required to produce competent graduates is maintained (www.che.ac.za).

Accreditation promotes programme accountability to the public and engagement in continuous peer reviews and on-going developments. By obtaining a degree from a higher education programme that is nationally accredited, it illustrates the quality of the education provided by the higher learning institute. That the degree will be recognized by future prospective employers and that the graduates exiting the Higher Education Institutes will be adequately prepared for the world of work. The Council for Higher Education subsequently designates the role of governing accreditation at Higher Education Institutes, to the Council for Built Environment (Ibid).

2.3. Council for the Built Environment

2.3.1. Background

The Council for the Built Environment (CBE) is a statutory body that has been established under the Council for the Built Environment Act No. 43 of 2000. It serves as an all-encompassing body that co-ordinates six professional councils. These include the councils for Architecture, Engineering, Landscape Architecture, Project and Construction Management, Property Valuation and Quantity Surveying, all of which operate within the built environment industry. The built environment is comprised of buildings, products and spaces that are created or improved by people. These includes homes, schools, workplaces, recreation areas, greenways, business areas and transportation systems which impacts communities in residential, urban and rural areas through land use planning and policies. In order to regulate and elevate standards, the Council for the Built Environment Act No. 43 of 2000 was constituted.

Mandated with the execution of this new act, a statutory body called the Council for the Built Environment (CBE) was subsequently established. This governing body encompasses all the Professional Councils within the built environment industry (<http://www.cbe.org.za>). The government acknowledged the necessity to form such formal structures that would promote a cohesive and sustainable development of the built environment. As a result, the CBE was developed. The importance of founding a statutory body such as the CBE has been affirmed by the analysis of research data, which indicated an international trend of markets that are constantly growing in multi-disciplinary forms of professional practice. The potential to attract new recruits does exist, but is reliant on the various professions that supply multi-skilled opportunities. The core objectives of the CBE include effectively addressing the shortcomings of the built environment industry, creating a suitable climate that will stimulate ongoing transformation within the built environment industry and successful development of professions within the built environment industry (Ibid).

2.3.2. Mission and Vision of the CBE

The CBE envisions an environment that is built to constantly meet individuals and communities needs and aspirations. Their mission includes the implementation of programmes and projects that address built environment issues and add value to the built environment professions, government and the public.

2.3.3. Professional Councils

The most common definition of a professional body was provided by the Minister of Higher Education and Training, Dr. Nzimande, as a group of people in a specific regulated occupation who are entrusted with maintaining control or oversight of the legitimate practice of the occupation and who have a significant influence on education linked to the professions, and ultimately have the final say as to who it will register as one of its own and who it will reject (DHET, 2011). The definition goes on to include that professional bodies are usually non-profit organisations, existing to further a particular profession and to protect members of the public as well as interests of its own members (Harvey, Mason and Wald 1995).

The professional bodies governed by the CBE include, the South African Council for The Architectural Profession, The Engineering Council of South Africa, The South African Council for The Landscape Architectural Profession, The South African Council for Project and Construction Management Profession, The South African Council for The Property Valuers Profession and The South African Council for The Quantity Surveying Profession. These councils manage the process of accreditation at Higher Education Institutes, both for their programmes and higher education institutional accreditation.

2.3.3.1. Engineering Council of South Africa (ECSA)

ECSA is a statutory body established in terms of the Engineering Profession Act No. 46 of 2000. It compiles its mandate and responsibilities from the Engineering Profession Act. The Act focuses on the promotion of public health and safety, and all relevant aspects to the actions of persons both direct and indirect, that are registered with ECSA.

ECSA's mission statement reflects its commitment to education and training: *“To ensure, through a process of quality assurance, that persons entering the profession are educated and trained according to widely accepted standards, so as to be able to render a professional service for the benefit of the public and the country as a whole.”*

The vision of ECSA is to ensure that as South Africans we should appreciate the benefits of a strong, competent, growing, sustainable and representative engineering profession. A profession that is able to provide the necessary expertise for the socio-economic needs of the country and exert a positive influence in the Southern African region. Its mission is to create circumstances in which society has confidence in the engineering profession in South Africa, and that they are able to carry out the necessary functions for socio-economic growth in the country. This is done through the setting and monitoring of standards that is in accordance to international norms, by certifying and ensuring the level of competence of individuals through professional registration, by ensuring appropriate levels of quality engineering education through accreditation, by regulating professional conduct of individuals and institutions and by growing the profession in quantity and quality and in partnership with the various stakeholders (<https://www.ecsa.co.za>).

a) Professional Candidate Registration

The application process for registration as a candidate engineer requires proof that the candidate holds a recognised or accredited academic qualification from an accredited higher education institution. After obtaining the required accredited academic qualification and experience, ECSA registers engineering practitioners in the following professional registration categories, Professional Engineer (Pr Eng), Professional Engineering Technologist (Pr Tech Eng), Professional Certified Engineer (Pr Cert Eng) and Professional Engineering Technician (Pr Tech Eng) (Ibid).

2.3.3.2. South African Council for the Architectural Profession

The Architects Act 35 of 1970, established the South African Council for Architects on 1 March 1971 and remained in force for almost 30 years. This included all legislation and amendments made to the Act. The Architectural Profession Act 44 of 2000, was published on 1 December 2000 and came into operation on 26 January 2001. The SACAP was then established. The Act provides for the registration of Professional Architects, Senior Architectural Technologists, Architectural Technologists and Architectural Draughtspersons, while the previous legislation had dealt only with architects (<http://www.sacapsa.com>).

The function of the SACAP includes its control of the standards of education at higher education institutions for the purpose of professional registration. This is ensured by means of visiting boards, ensuring continuous professional development takes place, registering individuals in the architectural profession, the administration of a code of conduct and protection of the public interest by identifying the type of architectural work each category of registered person is competent to perform. SACAP will be obliged to consult with CHE and ETQA bodies in relation to the educational standards and with the CBE on matters such as the code of conduct and the identification of work. SACAP centres its value system around people-centred architecture for Southern Africa. Its mission is pursuit a level of excellence by transforming, promoting and regulating the architectural profession through collaborative engagement (Ibid).

a) Professional Candidate Registration

The Architectural Profession Act 44 of 2000 later replaced the Architects' Act No. 35 of 1970 includes Architectural Technologists, Senior Architectural Technology and Draughtspersons. The Act enabled access to registration for both candidates and professionals within the profession. The application process for registration as a candidate requires proof that the candidate holds a recognised or accredited academic qualification from an accredited higher education institution. Individuals who are registered with SACAP may only be allowed to practice or render architectural services directly to the public (<http://www.sacapsa.com>).

2.3.3.3. South African Council for the Landscape Architectural Profession

The SACLAP was established as a statutory council in terms of the South African Council for the Landscape Architectural Profession Act No. 45 of 2000. The council developed from the Board of Control for Landscape Architects (BOCLASA), which functioned under the Council of Architects in terms of The Architectural Act No. 73 of 1970. SACLAP's mission is to establish, direct, sustain and ensure a high level of professional responsibilities and ethical conduct within the art and science of landscape architecture. This should be conducted with honesty, dignity and integrity keeping in mind the interest of public health, safety and welfare (<http://www.saclap.org.za>).

a) Professional Candidate Registration

The application process for registration as a candidate requires proof that the candidate holds a recognised or accredited academic qualification from an accredited higher education institution. SACLAP aims to ensure that HEI's offering education in landscape architecture related courses are accredited, that a rigorous accreditation process is conducted in a fair and transparent manner and sets up accreditation panels for the various institutions (Ibid).

2.3.3.4. South African Council for The Property Valuers Profession

The SACPVP is a statutory body which was established on the 1st of January 1983. This was later replaced by the South African Council for the Property Valuers Profession (SACPVP), which was established by The Property Valuers Profession Act No.47 of 2000. The SACPVP is liable for the protection of the public by ensuring that all property valuation work is conducted by registered persons who are qualified, competent and who adhere to a professional

code of conduct. The SACPVP sees itself in a partnership with governmental organisations and the property valuers profession to promote a distinct level of education and training of practitioners. This partnership seeks to enable complete recognition of professionalism in the valuers profession, both locally and internationally. It enjoys its independence although it is liable to governmental organisations, the profession and the public to conduct clear and fair administration of its business in the pursuit of its goals (<http://www.sacpvp.co.za>).

The vision of the council is to create transformed property valuer professionals who deliver world class valuation services. The application process for registration as a candidate requires proof that the applicant holds a recognised or accredited academic qualification from an accredited higher education institution. The SACPVP aims to provide professionalism and high standards of competencies by promoting access to the profession and by promoting awareness of the range of valuation services to members of society (Ibid).

a) Professional Candidate Registration

The application process for registration as a candidate requires certified proof that the candidate holds a recognised or accredited academic qualification from an accredited higher education institution (<http://www.cbe.org.za>).

2.3.3.5. The South African Council for Project and Construction Management Profession

The SACPCMP is a statutory body which was established by the Project and Construction Management Act No. 48 of 2000, to regulate both professions. These being Construction Management and Construction Project Management. Construction Management is the management of the physical construction process within the built environment, including the co-ordination, administration and management of resources where the Construction Manager is held responsible. Construction Project Management is the management of projects within the built environment where the Construction Project Manager is the one held.

The vision of the council is to aid with the development of Project and Construction Management Professionals that is of an international standard. In order to achieve this, the councils mission is to promote access to project and construction management professions to society, to promote professional standards by maintaining the practice of the professions, to ensure competence through relevant higher education programmes, by continuing professional

practice and through developing quality relationships in order to constantly improve the status of the profession (<http://www.sacpcmp.org.za>).

a) Professional Candidate Registration

Only persons who have graduated from accredited programmes and are accredited by the SACPCMP are allowed to practice as professionals. Non-compliance with the SACPCMP rules and regulations is deemed an infringement of the law. Prospective clients have the guarantee that the work will be carried out according to best practice standards and will have the legal option when dealing with incompetent professionals. Professional registration assists in elevating the profile of an individual and the profession. It also eliminates the tainted perceptions of the profession. A code of conduct ensures that a professional is restricted from working in any field that they are not skilled and experienced in or in areas where there are inadequate resources. Continuous professional development will assist in ensuring that professionals are up to date with latest developments within the built environment industry (Ibid).

2.3.3.6. The South African Council for the Quantity Surveying Profession

The Quantity Surveying profession has been governed by institutions in one form or another since 1905. The Association of South African Quantity Surveyors (ASAQS) was formed in 1971 with the declaration of Act 36 of 1970. This legislation along with amendments, governed the profession until the establishment of the SACQSP in terms of the Quantity Surveying Professions Act 49 of 2000, which came into operation on 26 January 2001. The underlying vision and mission of the professional council is to be a successful regulatory body for a dynamic and constantly evolving quantity surveying profession. Their role is to ensure that the council fulfils its decree in the development and maintenance of standards, in the improvement of the profession and its status, in the achievement of excellence, integrity and the protection of the public. The council fulfils all its statutory powers and obligations as per the Act 36 of 1970 (www.cbe.org.za).

The SACQSP has the power to perform various functions which include the setting out and auditing of academic standards for registration. This occurs through a process of accreditation of quantity surveying programmes at higher education institutes. Only persons who have graduated from accredited programmes and are accredited by the SACQSP are allowed to practice as professionals in society. The council is responsible for suggesting requirements for

CPD and in determining the stipulated time period within which individuals must apply for the renewal of their registrations. The council prescribes a code of conduct and practice that is enforced through an investigating committee and disciplinary tribunal. The function of the council also includes advising the CBE and Minister of Public Works on matters relating to the quantity surveying profession (<http://www.sacqsp.org.za>).

a) Professional Candidate Registration

The application process for registration as a candidate quantity surveyor requires first and foremost proof that the individual holds an accredited academic qualification from an accredited higher education institution. Attached below is the routes to registration for a Candidate Quantity Surveyor (CanQS) (Ibid).

Routes To Registration for Candidate Quantity Surveyor

Entry Qualifying Programme	Academic Route						R P L			
	SACQSP Accredited Quantity Surveying		SACQSP Accredited Cognate Degree +		Non Accredited QS Degree		MRICS / FRICS QS Pathway Only	Matric + Certificates	Other Tertiary Diplomas + Degrees	National Diploma in Building
Route Code	1 A	1 B	2 A	2 B	3 A	3 B	4	5	6	7
NQF Credit	480	360	480	360	480	360	480 Equivalent	120	240 / 360 / 480	240
SAOA / NQF Exit Level	Level 8	Level 7	Level 8	Level 7	Level 8	Level 7	Level 8 equivalent	Level 4 + 5	Level 6-8	Level 6
Professional Skills Modules *	Nil	18	Programme Dependant	18	Programme Dependant	18	Nil	18	18	18
Minimum duration under a PQOS supervision**	3-Years	4-Years	4-Years	5-Years	4-Years	5-Years	N/A	15-Years #	10-Years #	5-Years #
Maximum Candidate Registration Period ***	10-Years	10-Years	10-Years	10-Years	10-Years	10-Years	N/A	5-Years	5-Years	10-Years
Compulsory Interim Submission	1 off	1 off	1 off	2 off	1 off	2 off	N/A	1 off	1 off	1 off
Compulsory Final Submission	Yes	Yes	Yes	Yes	Yes	Yes	N/A	Yes Plus 3-yr	Yes Plus 3-yr	Yes Plus 3-yr
Daily Diary	Yes	Yes	Yes	Yes	Yes	Yes	N/A	Yes Plus 3-yr	Yes Plus 3-yr	Yes Plus 3-yr
Log Book	Yes 3-yr	Yes 4-yr	Yes 4-yr	Yes 5-yr	Yes 4-yr	Yes 5-yr	N/A	Yes Plus 3-yr	Yes Plus 3-yr	Yes Plus 3-yr
General report - current	Yes 3-yr	Yes 4-yr	Yes 4-yr	Yes 5-yr	Yes 4-yr	Yes 5-yr	N/A	Yes Plus 3-yr	Yes Plus 3-yr	Yes Plus 3-yr
Detailed Resume'							Yes	Yes 5-yr	Yes 5-yr	Yes 5-yr
Project Report	Yes	Yes	Yes	Yes	Yes	Yes	N/A	Yes	Yes	Yes
APC Interview	Yes	Yes	Yes	Yes	Yes	Yes	N/A	Yes	Yes	Yes
PQOS Peer Interview							Yes			

Effective 1st January 2013

Applicable to New Registrations from 1st January 2013 - Approved Council Meeting 7th March 2013

Notes to Above

- * If registered before 2013, the Candidate has 3-years to complete the specified list of PSM allocated per their official letter of registration
- ** This period may include secondment, external appointed PQOS supervision or whilst working under a PQOS in an construction company. Minimum of 12-months in RSA.
- *** This period commences from date of initial registration. Candidates registered before 2007 will be given 5-years to complete their PQOS registration process.
- # This period of RPL requires to be proven on application.
- + Limited to BSc: Construction Management and BSc: Property Studies from (UP) and (UCT)

Figure 1 – 2013 SACQSP Routes to Registration

2.4. Accreditation and Higher Education Institutes

The Council of Higher Education, Higher Education Institutions, Statutory Professional Councils and registered professional bodies have a combined responsibility to produce competent and extremely capable graduates that are instilled with the right values and attitudes to serve society at large. At the core of the work from of all these role players is a student who must be adequately equipped with the appropriate knowledge, attitudes and skills to develop as a competent and capable professional ready to enter the industry and workplace. The CHE, HEIs and PCs namely the SACQSP, play a vital role in the advancement of the teaching and learning process that would result in developing competent graduates fit for practice/specific working environment. This requires creating a relationship based on collaboration and cooperation between the role players, and the recognition of the importance of each role player's contribution to improve and enhance the quality of higher education (Council for Higher Education, 2016).

2.4.1. HEI's and their Accredited Quantity Surveying Programmes

The built environment profession and higher education in South Africa has been largely influenced by British practices over the decades. The profession deals with the application of technical, practical, scientific and mathematical knowledge with the use of natural laws and physical resources to create and implement materials, structures, machines, operating systems and development processes to accomplish a desired objective; safely, economically and efficiently. Essentially, the built environment profession is a creative and interactive process that borders between structural, scientific and mathematical knowledge with society. Built environment professionals design, develop and execute successful projects that lead to an improved quality of life. The major challenge for such processes, is that it should comply with realistic constraints such as technical, economic, business, political, social, and ethical issues. In addition, built environment professionals are facing increasingly societal challenging expectations, and demanding job experiences (Walkington, 2002; Yeomans and Atrens, 2001; Yokomoto and Bostwick, 1999; Memon et al., 2009; Fitzpatrick et al., 2009).

Therefore, built environment education must be carefully planned and executed so that the students not only attain the necessary skills and competencies but also continue life-long learning to be successful professionals, who are capable to face such challenges. Built environment education programmes such as quantity surveying programmes, are mainly

designed to provide the basic undergraduate education within the specific discipline. The profession began as a building accountant programme which included costing practices and provided the quantity surveyor the role of a cost advisor in built environment industry. The quantity surveyor in the current built environment industry uses their abilities to analyse cost components of a construction project in a scientific way and apply the results of his analysis to various of financial and economic problems confronting the developer and the designer. A great level of importance is placed on the fundamentals of building principles and design techniques which enables the students to identify and define problems and to develop construction concepts and solutions. The success of quantity surveying programmes is measured by the high levels of competency from its graduates in their professional career, and the full satisfaction of their employers and society. Quantity Surveying programmes, as any educational programme, has to clearly outline its mission and vision that serve both the school of engineering and the university missions (Walther et al., 2011).

2.4.1.1. Quantity Surveying Programme Accreditation

Quantity Surveying programmes in Southern Africa are accredited by the SACQSP. The fundamental criteria of the SACQSP for accrediting quantity surveying programmes are based upon knowledge, skills and the behaviour that students acquire through the curriculum of a programme. The criteria set out is intended to assure quality and to create the systematic pursuit of improvement in the quality of quantity surveying education that satisfies the needs of constituencies in a dynamic and competitive market. The constituencies of any educational programme are the students, faculty, alumni, employers and society at large. Accrediting bodies like CHE, SAQA and the SACQSP to name a few; continuously changes and updates its criteria, policy and procedures through annual review cycles. Programmes seeking accreditation need to keep track on the updating changes in its criteria, policy and procedures that can affect aspects as the programme educational objectives, student outcomes and programme criteria (Khan, Mourad and Waleed, 2014).

Each programme needs to establish its own programme educational objectives (PEOs) and to ensure that these PEOs serve and lead to the mission of both school of engineering and university. To achieve the PEOs, the programme needs to set the necessary student outcomes (SOs) that will lead the graduates to achieve the PEOs. The SOs are related to the skills, knowledge, and behaviour that students acquire through the programme. The SOs are acquired from criteria that are set by well-known qualified accreditation authorities. SOs of the

programme are expected to be acquired by the students through different courses in the curriculum of the programme. The higher education institutes quantity surveying departments are required to periodically review their programmes based on the current qualifications and economical changes that affect the related profession and industry as a whole. These periodic reviews may result in developing new specialized built environment quantity surveying programmes or adjusting existing programmes to cope with the changes that occur either in the industry or at institutional level. Such developments are expected to result in graduates with high levels of skills and professional attributes that enhance their contribution in industry, especially with the growing demand on highly qualified professionals to deal with challenges facing today's society.

A higher education institute that provides quantity surveying education, should strive to provide a level of quality education that aims to prepare students for the various facets within the construction industry, commercial property industry and academia. The quantity surveying programme through its comprehensive course content coupled with teaching practices are designed towards developing and improving the frontiers of learning and instilling a curious mind by implementing outcome-based education. Students should be trained to develop into multi-skilled professionals who possess mental, intellectual and emotional fortitude to succeed in the world of work (Faculty of Engineering and Built Environment, Malaysia, 2010).

2.4.1.2. The Accreditation Process

Specific criterion address areas which include student support services, finances, facilities, faculty, curricula and student learning outcomes. The SACQSP uses practices including a self-review by the institution and its programme in comparison to standards and evaluation processes conducted by a team of experts through on-site visits. A review process is followed by a decision made by the accrediting body regarding the accredited status. This review process is repeated every three to ten years if the institution or programme is required to sustain its accreditation. Established accrediting bodies are usually subject to external review, a process called recognition. The periodic examination is conducted by professional bodies based on a set of standards which is carried out by the Department of Higher Education or in the private sector, CHE (Ballim, Mabizela & Mubangizi 2014).

1. Advantages of The SACQSP accreditation system:

- The affirmation of the quality of education.
- The honour and prestige by the institution.
- The attractiveness of the institution to prospective students and their parents.
- International or national recognition of the degrees awarded by the institution.
- Incentives such as administrative and financial autonomy.
- The availability of funding and subsidies based on an objective study and data for performance.
- A culture of periodical evaluation and improvement.
- Peer recognition and ranking as a competitive institution.

2.4.1.3. The SACQSP Accreditation Benefits

Once a quantity surveying programme has an accredited status by the SACQSP, it means that students and the public can expect that the institute or programme lives up to its promises. It means that a student and the public can have confidence in the worth of an institution or programme and that the degree or credential has value. Accreditation provides real life value for students related to not only judging quality but also obtaining employment within industry (Council for Higher Education Accreditation, 2010).

The accredited programme seeks to encourage a level of confidence that the accredited programme has been found to be reasonable. It assists with student mobility within institutions and signals to prospective employers that the educational programme offered to students has met acceptable standards and that they have graduated from an accredited programme. It enables students who attend accredited organisations to access financial aid. In the public's view, the accreditation process provides value by not only evaluating the quality of the programme/institute, but also ensuring consistent information about institutions and their programmes. Accreditation promotes liability and identifies successful improvements of an institute and its programmes (Ibid).

2.4.2. Framework of the SACQSP Accreditation System at Higher Education Institutions

The accreditation system is required to consider all national policies and regulatory frameworks, the institutions quality landscape and international trends with respect to quality and standards in higher education. The built environment discipline ensures that awareness of the SACQSP general policies are adopted, most particularly those related to registration requirements. Awareness is made of the National Qualifications Framework Act 67 of 2008, and the White Paper for Post-School Education and Training issued by the Council for Higher Education in January 2014.

The fundamental principle upon which the SACQSP accreditation policy is founded, compliant with the requirements of the Quantity Surveying Profession Act No.49 of 2000, is that all educational service providers are required to have their quantity surveying programmes evaluated for accreditation purposes at any of the four academic qualification levels recognized in the 2013 SACQSP Route to Registration as Government Gazetted (Honours Degree, Bachelor's Degree, Diploma, and Certificate). These qualifications refer to a minimum of 480 for an honours degree, 360 for a bachelor's degree, 240 for a diploma and 120 credits for a certificate respectively. These four levels of academic programmes highlights the minimum academic route to registration with the SACQSP. The above qualification levels are defined by fundamental and core knowledge areas as compiled by the Quantity Surveying Standards Generating Body (QSSGB).

In the case of the SACQSP, criteria have been developed and used by HEI's. They are based on the HEQC Criteria. At all four academic qualification levels, the HEQC criteria for programme accreditation is applied. Outcomes of the programme evaluation should be in line with HEQC procedures. A differential accreditation process has been adopted for existing accredited programmes compared to those that have not previously been subjected to an accreditation review. However, the criteria for the re-accreditation of existing programmes are identical to those for new programmes and comprise of the same categories;

- Programme input.
- Programme process.
- Programme output and impact.
- Programme review.

The criteria for re-accreditation of existing programmes should be used as the basis for an institutions self-evaluation along with additional standards that the institution might set for itself. The accreditation process should not be used as a means to establish a hierarchy of higher education providers at the expense of others. The purpose of criteria and its outcome of programme evaluation are intended to provide a framework. The framework aims at promoting the fundamental principles of academic development within higher education institutes that provide quantity surveying programmes. Programmes that are not accredited by the SACQSP are required to follow specific procedures highlighted within the accreditation policy documentation to enable institutes to address their inadequacies in order to be re-evaluated.

2.4.2.1. SACQSP Accreditation Policy and Programme Accreditation Criterion

Criterion 1: Programme Design

In order to meet the criterion of programme design, the programme needs to be consistent with the institutions mission, needs to be congruent with institutional planning and resource allocation, meet national requirements, fulfil the requirements of students and other active role player and is credible. The programme design needs to be comprehensible and articulates well with other associated programmes. The design is required to meet the national requirements within the National Qualifications Framework. The learning outcomes, curriculum, teaching and learning methods, mode of delivery, learning materials and programme completion time cater for the requirements of its target student population. The programme competencies are explicitly outlined with respect to the expectations from students. The fundamental design of the programme should seek to maintain a balance of theoretical, practical and experiential knowledge and skills. The programme should have the appropriate levels of theory and disciplinary content to serve educational purposes.

The design should offer students learning and career opportunities for articulation with other programmes within and across other higher education institutions. Courses in the programme should be designed in accordance with the content, level, credits, purpose and outcomes. Policies and procedures should be developed for evaluating the learning materials used and ensuring their alignment with the programme philosophies and goals. Programme outcomes should meet the requirements of the labour market or other socio-cultural needs. The characteristics and needs of professional and vocational education should be provided for in the design of the programme.

This includes the following:

- The programme should promote the students level of understanding of the specific industry for which they are being trained.
- Students should master skills and competencies required for a specific profession.
- Experiential learning should form a vital part of the curriculum.

Criterion 2: Student Recruitment, Admission and Selection

In order to meet the criterion, recruitment documentation should inform budding students of the programme efficiently and ensures that the admission process adheres to current regulations. The admission and selection processes of students should be conducive to the programmes academic requirements. The quantity of students admitted should consider the programmes intended learning outcomes, its ability to offer quality education and in meeting the requirements of the particular profession. Admission policies, academic completion standards and requirements, NQF levels and the accreditation status of the programme should be clearly depicted and contain accurate and comprehensive information about the programme on advertising and promotional material. This is done in accordance to regulations set out by the DoE and SAQA. Programmes should ensure that the admission criteria are in accordance with the National Plan for Higher Education's (NPHE's) aim of increasing access to higher education. The number of students admitted should be balanced with the proposed learning outcomes of the programme, the mode of delivery and programme curricula. In professional programmes the quality and number of students admitted considers the needs of the profession. It should also be consistent with the equity considerations of the institution.

Criterion 3: Academic Staffing

In order to meet the criterion, the academic staff for both undergraduate and postgraduate programmes should have the appropriate academic qualifications higher than or on the same level as the exit level of the programme. The full-time academic staff are required to have more than two years of teaching experience in areas of importance to the programme from recognised HEI. Professional programmes also require a level of relevant professional experience. Academic staff should be competent to apply the appropriate assessment policies of the institution and should ensure ongoing professional development occurs in accordance with SAQA requirements. Orientation and induction opportunities should be provided by institutions of new academic staff members.

Criterion 4: Support Staffing

In order to meet the criterion, the academic and support staff balance should be of an appropriate size and superiority for the field of the programme. The magnitude of the student population should be balanced to ensure that the programme is carried out professionally and effectively. The recruitment and employment of staff are required to appropriate administrative procedures, including compensation and equity considerations. The support staff should be appropriately qualified and their skills and competencies should be constantly updated.

Criterion 5: Teaching and Learning Strategy

In order to meet the criterion, the institution should give recognition to the significance of promoting student learning. This is mirrored within the higher education institutions operating policies and procedures. This includes the allocation of resources, staff appointments, provision of support services, marketing and promotions. The teaching and learning strategy comprises of processes to ensure the appropriate teaching and learning methods occur. It also makes adequate provision for staff to enhance and develop their teaching methods. The teaching and learning strategy sets institutional goals, implements plans and processes to monitor progress, measures the impact and effect of staff development and provide feedback.

Criterion 6: Student Assessment Policies and Procedures

In order to meet the criterion, the programme should have the correct policies and procedures for various internal assessment procedures that are conducted by academic staff who are responsible for teaching course work of a programme. Appropriately qualified personnel should conduct the external moderation process of students learning achievements. External moderators are required to be elected in terms of concise procedures and criteria. A detailed guideline illustrated the manner in which they may conduct their responsibilities. The monitoring process of a student's progression within the course of the programme should be executed proficiently while ensuring the validity and reliability processes are maintained of the assessment practices.

Criterion 7: Infrastructure and Library Resources

In order to meet the criterion, adequate and accessible venues should be available at higher education institutes where the programme is being offered. This includes venues that proved teaching and learning as well as laboratories and various other facilities. Careful planning of venues and scheduling is required to accommodate the needs of students with proper codes of conduct in place to ensure safe and ethical practices are maintained. Efficient and programme suitable IT infrastructure should be available at all venues of learning. Policies are required to ensure that the appropriate management of library resources is maintained and that continuous renewal and expansion occurs.

Criterion 8: Programme Administrative Services

In order to meet the criterion, programme administrative services should be administered efficiently to ensure consistent information is provided to students and academic staff. This includes information on venues, access to the library, IT facilities, timetables and the availability of academic and support staff for student consultations. The programme administrative services provides detailed information of the diverse student population in the programme including their admission, grading, progression, fees and graduation for SAQA's National Learner Records Database (NLRD). An efficient process is in place by the programme administrative services to ensure the integrity of the certification processes of the qualifications are obtained.

Criterion 9: Postgraduate Policies, Procedures and Regulations

In order to meet the criterion, suitable regulations, policies and procedures are required to be implemented for student selection, admission and assessment processes. These processes are executed consistently throughout the HEI and its respective programmes. The information is also communicated to all postgraduate students, academic and administrative staff. The roles and responsibilities of supervisors and students are explicitly explained as well as all relevant information pertaining to the performance of research.

Criterion 10: Programme Co-ordination

In order to meet the criterion, a programme coordinator conducts his/her practices within the framework of an institute and programme with transparency and well-defined responsibilities and procedures. Opportunities should be available for students to provide their suggestions and active involvement in various aspects of programme coordination. Certification processes are effectively implemented in order to obtain programme qualification.

Criterion 11: Academic Development for Student Success

In order to meet the criterion, the staff responsible for the academic development should be qualified and skilled for their duties. Their knowledge and skillsets should be constantly developed to ensure students receive current and up to date information. The curriculum development of programmes should include a mechanism in which language skills development occurs, advanced numeracy and cognitive skills of students are enhanced. The effectiveness of academic improvements need to be constantly monitored and feedback should be used for improvement.

Criterion 12: Teaching and Learning Interactions

In order to meet the criterion, students should be provided with guidance on the manner in which various programme constituents contribute to the learning outcomes of the programme. A suitable balance should exist between various teaching and learning methods which provides appropriate learning opportunities to students in order to assist in the acquisition of the knowledge and skillsets highlighted in the programme outcomes within a stipulated period of time. Teaching and learning interactions are regularly monitored to ensure continuous improvements are maintained.

Criterion 13: Student Assessment Practices

In order to meet the criterion, assessments are required to be a vital aspect the teaching and learning process. Assessment practices are methodical and intently used to produce accurate data for grading, ranking, selecting and predicting student outcomes. The assessment system provides feedback to inform the academic staff the teaching and learning styles required to improve the curriculum. Students learning achievements should be internally assessed by the academic staff who are directly accountable for teaching a module through internal moderation practices. Student who are on the exit level of a qualification should be externally moderated

by qualified individuals who are selected according to practices and procedures. These individuals are required to conduct their responsibilities in accordance with clear guidelines.

Criterion 14: The Assessment System

In order to meet the criterion, the programme has to take appropriate steps to ensure the reliability, rigour and security of the institutes assessment system. The student appeals processes are concise, fair and efficient with coherent guidelines for marking and grading of results, the progression and final awards, credit allocation and articulation.

Criterion 15: Coordination of Work-Based Learning

In order to meet the criterion, the co-ordination of work-based learning should be integrated seamlessly within programmes that require students to interact within the chosen field with industry professionals. In some professional programmes, work-based learning does not traditionally form part of the curriculum. Although strongly supported, it is recognized that work-based learning is not a mandatory requirement for higher education programmes. However, for those programmes which do incorporate this learning approach, the requirements of this criteria should be adhered to. An alternative mentoring system may be implemented to aid students with work based learning. This process enables students to recognise their strengths and weaknesses, to develop existing and new abilities and to gain knowledge of professional practices.

Criterion 16: Delivery of Postgraduate Programmes

In order to meet the criterion, the postgraduate programme should be managed efficiently and provide adequate opportunities for students to develop research proficiency and to ensure that research is properly assessed by supervisors and moderators. Associated policies accompanied by guidelines are required to be implemented with regards to the roles and responsibilities of supervisors and their students. Students and their supervisors should maintain a relationship that enables clear and consistent communication. A constant review of the postgraduate system should occur including student feedback practices that outline the quality of the learning experience, supervision and available support infrastructure.

Criterion 17: Student Retention and Throughput

In order to meet the criterion, student retention and throughput rates in the programme are monitored with respect to race, gender equity and remedial actions.

Criterion 18: Employability

In order to meet the criterion, the programme should take the necessary measures to enhance the employability of students and to relieve the shortages of expertise in the respective fields.

Criterion 19: Programme Effectiveness

In order to meet the criterion, the programme effectiveness should be evaluated through the use of surveys, reviews and impact studies on the effectiveness of the programme. This evaluation process should occur at regular intervals throughout the duration of the programme and module. The results are used to improve the programmes structure, mode of delivery, resource acquisition and allocation, staff development and student support.

2.4.2.2. Purpose of the SACQSP Programme Accreditation Criterion

The purpose of criterion by which quality surveying education programmes are governed, can be traced back to HEI seeking accreditation or re-accreditation from the SACQSP for their programmes. Criterion serves as a programme evaluation tool. A programme functions best if the HEI's able to actively monitor and promote quality quantity surveying programmes. Assessment tools can provide a structure for assessing the HEI's programme structure and for identifying areas that need development. Quality programmes tend to be programmes that are reflective and willing to constantly evolve in relation to the market and built environment industry, to improve and grow. Those institutions that are committed to their mission, strive to do so. Therefore, these criteria have been developed to help programmes be reflective, to pinpoint strengths and weaknesses and to target areas for improvement (ACCE, 2014).

2.5. Chapter Summary

This chapter presents a review of the literature which provides a greater understanding of the manner in which accreditation, higher education institutes and professional councils affect each other. The chapter focuses on the history of quality assurance and accreditation in society, the institutions responsible for accreditation in South Africa and their accreditation models/systems. It examines the Council for Built Environment (CBE), which includes a background study, the mission and vision of the CBE as well as discussing the six different professional councils governed by the CBE and their roles in relation to accreditation. More specifically the SACQSP. It further describes accreditation and its effects on Higher Education Institutes (HEI's) in Kwazulu-Natal. A detailed study of HEI's and its accredited quantity

surveying programmes along with the framework of the SACQSP's accreditation system at HEI's is presented.

Chapter three explains the quantity surveying profession, its traditional and evolved roles in society and the manner in which it affects accreditation and quantity surveying programmes at Higher Education Institutions.

CHAPTER THREE

LITERATURE REVIEW

3. Introduction

3.1. The History of Quantity Surveying in South Africa

The early development of the quantity surveying profession in South Africa was first sparked by the change within the economic system, from being solely agricultural to a system where mining became increasingly important. Architects, mainly from Britain, immigrated to Johannesburg and Pretoria and other developing towns. These first architects were forced to either issue their own quantities or employ other architects to handle the tendering and contracting procedure on them. Eventually, the first fully qualified quantity surveyor arrived in South Africa in the beginning of 1896. The need for quantity surveying in South Africa led to the creation of the profession (Maritz and Sigel, 2010).

3.2. The Role of Quantity Surveyors

The role of the quantity surveyor is often an undefined concept among the public. South African quantity surveyors are recognised as world class leaders in their profession worldwide, representing the country on numerous international professional bodies and often serving as presidents of global organisations (Worthmann, 2009). The quantity surveying profession is an integral part of the built environment industry as it is a specialized field that lends itself to contractual and financial management of construction projects that offers a distinct service within the built environment. In addition to this a competent quantity surveyor must have a broad spectrum of skills and services to offer and knowledge and understanding which can be applied in a range of contexts. According to Cartlidge (2009) quantity surveyors are employed in several different fields which includes private practice (PQS) and contracting quantity surveying (CQS). The quantity surveyors' involvement differs from project to project and relies on the specific nature of the project and the methods by which the project is delivered (Cunningham, 2014).

Quantity surveyors are financial consultants within the construction industry who provide a service within the parameters of costing and contractual arrangements. They work with a group of building consultants which includes the architect, a constituent of engineers, the project manager and principal agent who is often the architect. As the professional team, they have to “safe guard” the client’s interests to the best of their ability. Within the laws of the country, it states that “The title quantity surveyor was reserved under the Quantity Surveyors’ Act of 1970 for exclusive use by those who had obtained the necessary qualifications and experience prescribed under the Act. In terms of it, such persons must register with the SACQSP before they may offer their service as consultants to the public” (<http://www.asaqs.co.za/public/history.html>, 2010).

The regulations of a quantity surveyor state: “A quantity surveyor has to comply with a strict code of professional conduct, which includes responsibility to their employers or clients and to their profession. They need to have full regard to the public interest, conducting themselves so as to uphold the dignity and reputation of the profession and discharging their duties to their employers and clients in an efficient and competent manner with complete fidelity and without undue delay” (<http://www.asaqs.co.za/public/history.html>, 2010).

3.2.1. The Traditional Role of Quantity Surveyors

The traditional role of a quantity surveyor includes the original and core professional services for which the quantity surveying profession was established. The traditional roles are often described as a measure and value system (Ashworth, 2010). RICS defines the traditional roles by defining the core competencies of a quantity surveyor. Smith, 2004; Pereira and Pearson, 2011 suggest that experiential studies within the built environment industry illustrate that the traditional roles of a quantity surveyor continue to be of great important now and in the future. It is recognized that over past few decades, PQSs have embarked on the journey of diversifying into services and roles beyond the traditional boundaries of contractual and financial management. The emergence of the evolving roles was as a consequence of the changes in key environmental influences. These include changes in the clients’ needs, market fluctuations, the built environment industry and the quantity surveying profession as a whole (RICS, 1991), the education system received from higher education institutes (Badu and Amoah, 2004) the conducting and distribution of research as well as the trends in sustainability (Ashworth, Hogg and Higgs, 2013).

Table 1: Competencies required by Quantity Surveyors for RICS APC

Competency	Attribute
Mandatory	Conduct rules, ethics and professional practice, client care, communication and negotiation, health and safety, accounting principles and procedures, business planning, conflict avoidance, management and dispute resolution procedures, data management, sustainability and team working.
Core - Traditional	Design economics and cost planning, contract practice, construction technology and environmental services, procurement and tendering, project financial control and reporting, quantification and costing of construction works.
Optional - Evolved and Emerging	BIM management, capital allowances, commercial management of construction, conflict avoidance, management and dispute resolution procedures, contract administration, corporate recovery and insolvency, due diligence, insurance, programming and planning, project evaluation, project management, risk management and sustainability.

Source: RICS (2014)

According to Buildings Construction (2010) the **traditional roles** of a Quantity Surveyor are:

1. Establishing a client's requirements
2. Conducting feasibility studies.
3. Cost planning and value analysis during the design stage of a project.
4. The preparation of bills of quantities and schedules of quantities of materials, labour and services.
5. Attending site visits.
6. Preparing tender and contractual documents.
7. Preparation of specifications and the bills of quantities.
8. Undertaking costs analysis for repair and maintenance project work.
9. Performing value management and cost control.
10. Preparing and analysing costing for tenders.
11. Assessing and negotiating tenders
12. Advising on procurement strategy.

13. Identifying, analysing and developing responses to commercial risks.
14. Allocating work to subcontractors.
15. Providing advice on contractual claims.
16. Analysing outcomes and writing detailed progress reports.
17. Valuing completed work and arranging payments, interim valuations and final accounts.
18. Preparing financial statements.
19. Maintaining awareness of the different building contracts in current use.

3.2.2. The Evolving/Emerging Role of the Quantity Surveyor

According to Ashworth, Hogg and Higgs (2013:1) *'ensuring that the resources of the construction industry are utilised to the best advantage of society by providing, inter alia, the financial management for projects and a cost consultancy service to the client and designer during the whole construction process.'* This aspiration is considered to remain valid nearly fifty years later. The Report found that quantity surveyors' distinctive competence is a skill in measurement and valuation in the field of construction.

The construction industries needs are constantly changing to accommodate the fluctuations in the economy. These economic fluctuation may include various built environment professions re-evaluating their professional services with regards to cost and efficiency as there is an increased demand for innovative methods of providing these services at a lower cost. The current trend for professional services costs is fluctuating immensely in the last decade or so. This drives the needs for clients in an already strained market to invest in staff, graduates, professionals, tradesman and technicians whose fees are not as high as the standard rates published by the SACQSP. This requires graduate quantity surveyors to be highly competent, to possess adequate skillsets and knowledge to provide a service of impeccable standards to their employers and clients by providing traditional services and by incorporating evolved and emerging roles such as project management which is underutilized by the average quantity surveying company. Through broadening the services of a quantity surveyor the client will get more out of the quantity surveyor at a lower cost in relation to the appointment of both a project manager and quantity surveyor. A single point of responsibility is therefore a highly-recommended to the construction industry (Burger and Jonkers, 2013).

Table 2: The Evolved Role of Quantity Surveyors

Evolved and Emerging Roles of the Quantity Surveyor	Investment Appraisal. Advice on Cost Limits and Budgets. Whole Life Costing. Value Management. Risk Analysis. Insolvency Services. Cost Engineering Services. Subcontract Administration. Environmental Services Measurement and Costing. Technical Auditing. Planning and Supervision. Valuation for Insurance Purposes. Project Management. Facilities Management. Administering Maintenance Programmes. Advice on Contractual Disputes. Planning Supervisor. Employers' Agent. Programme Management. Cost Modelling. Sustainability Advisor.
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(Ashworth and Hogg, 2002)

3.3. Work-Readiness and Employer's Expectations of Quantity Surveying Graduates from Accredited Higher Education Institutes Programmes

An important objective of many higher education quantity surveying programmes is to prepare students for the work place. Graduates from accredited professional degree programmes expect to join a profession as they have a clearly identified career path. Prospective employers often expect students from accredited programmes to be instantly employable. Therefore, academics involved with professional degree programmes should balance the demands of employers with programme objectives that prepares graduates with suitable skills for not just the immediate work entry years but a lifelong career that will enable them to be adaptable to the changing

work practices and skills needs of the built environment industry. Davies, Csete and Poon (1999) as cited in Rawlins and Marasini (2011), suggest that employers often describe graduates from professional courses as deficient in useful immediate fee-earning skills. Harvey (2001), suggests that the graduate employability is associated with enhancing the capacity of a graduate to find employment, however graduate employability is also about graduates being better equipped with the necessary skillset and competencies to be adequately prepared for the world of work. However, many graduates find themselves unemployed upon graduation which is an alarming issue.

Nabi (2003), stated that the maximum use of a graduates' skill aims at further enhancing the competitiveness of an organisation. Davies (2000), mentioned that "one of the most noticeable trends in employment over the last decade or so has been the rising expectations among employers of newly recruited graduates". Graduates are expected to make a valued contribution to their employers take ownership of their careers (Ibid). Employers hope that the graduates employed bring forward relevant skills, knowledge, values and practical experience to the organisation (Dymock and Gerber, 2002). However, the reality is that the skills and competencies acquired from higher education programmes do not necessarily lead to the competencies valued by the labour market (Jorgensen, 2004).

Raftopoulos (2006), suggests the following categories of skills are required for graduates for the world of work:

1. Academic skills and knowledge learned during school years and studies.
2. Basic skills/transferable skills/employability skills/core skills/basic work readiness skills.
3. Practical experience.

It is commonly known that higher education tends to favour academic knowledge that are taught in technical terms rather than professional competencies. Technical knowledge is may be regarded as a type of propositional knowledge, commonly expressed in higher education curricula (Eraut, 2000). Ashworth and Bridge, (1996) as cited in Nicolescu, N., and P[acaron]un, C. (2009). Practical knowledge which is often required by employers, is learned only through experience with practice.

Learning can occur from a range of sources such as reading publications, practical experience and through mentors at work or tutors at HEI's. HEI's have been recognised as having an autonomous role in the development and validation of knowledge that is away from professional industry inputs. There is typically a two-tiered route to professional registration which begins with an accredited degree followed by a period of practical experience from an organisation and a further test of professional competence that is usually required. Technical and practical knowledge are separated in a large number of HEI's and their professional routes to qualification even though professional bodies recommend it in their policies and programme accreditation criteria. This separation between technical and practical knowledge is increasingly seen as becoming a potential problem (Mole, 1997).

Li, Gao and Chen, (1994) as cited in Perrenet, J. C., Bouhuijs, P. A. J., and Smits, J. G. M. M. (2000), suggest that HEI's are criticised for not providing the right graduates for the world of work and employers claim that graduates have very little practical knowledge. However, higher education institutes still defend their right to develop quantity surveying programmes that are based on educational objectives. Degrees from these programmes do not guarantee employment to its graduates. Davis, (1996) as cited by Love, P.E.D., Haynes, N.S., and Irani, Z. (2001) suggest that therefore, students must develop the skills necessary for work before leaving HEI's. HEI's need to ensure that graduates have a range of skills of potential use to all employers. Organisations require graduates to be adequately equipped by higher education institutes with technical, practical and social skills to meet the demands of a competitive built environment industry and globalisation (Zinser, 2003). Graduates are also required to ensure that they developed their transferable skills that are required for the workplace (Falconer and Pettigrew, 2003).

Employers and HEI organisations found that there are characteristics, both basic and technical, practical and social skills and intellectual capability elements that are required for specific roles. In addition, combinations of transferable skills were also deemed particularly relevant.

These include:

- Team work and leadership.
- Analysis and problem solving.
- Self-management.

- Knowledge of the business.
- Gathering, interpreting and giving information.
- Literacy and numeracy.
- Software knowledge, the use of equipment and IT.
- Good interpersonal and communication skills.
- Ability to use own initiative but also to follow instructions.
- Creativity.

In addition to these skillsets, employers also highlight the need for appropriate quantity surveying knowledge, attitudes and outlooks including motivation, the tenacity to work and commitment. Therefore, work readiness, which is also referred to as the necessary skills required in order to enhance graduate employability is vital.

3.3.1. Methods to Promote Work-Readiness and Employability of Graduates

1. Use of Internships, Mentorship Placements and Work-Based Learning

Higher education institutes (HEI's) and employers are seen as having a complementary role to play in developing graduate employability. Where HEI's with accredited quantity surveying programmes provide high quality career services and career advice, employers can offer relevant work placements to students to provide valuable work place experience to pick up additional skills and awareness of quantity surveying work.

Studies have shown that work experience leads to the following improved skills, namely:

- The analyses of information and decision making skills,
- Effective leadership skills that include effective verbal and oral communication, improved planning, organising and co-ordinating skills and
- The ability to be self-motivated and motivate others (Falconer and Pettigrew, 2003).

Employers, students and graduates see internships and work experience as effective modes to enhance quantity surveying graduate employability. However, a key factor in the usefulness of work experience and placements is the duration of the experience. Industry professionals and employers advise that for the students and employers to acquire the full benefits of this type of experience it has to be at least six months and preferably longer. This can be seen at many HEI's in Kwazulu-Natal as it is a mandatory criterion for programme accreditation by the SACQSP (Lowden, Hall, Elliot and Lewin, 2011).

2. Employability Awards and Programmes

HEI's may implement employability awards. Students could volunteer to choose from a range of activities that amounted to 100 hours of work experience, through voluntary work, work placements, or other extra-curricular activities involved in the built environment industry; that enables them to gain employability related skills. Some HEI's may include mentoring within their programmes to help students identify their strengths, to develop their capacity and identify what career areas they wanted to work in and what they could offer to respective future employers.

- Academic Skills: Research skills, academic writing, time management, exam preparation and academic skills development.
- Extra-Curricular Activities: Clubs, societies, associations, volunteering and becoming a student representative.
- Work-Based Learning: Work placements, meeting employers and internships.
- Jobs and Careers: Meeting employers, CVs, interviews, career planning and developing the skills required to find a job at the end of the degree (Ibid).

3. Involving Employers in The Design and Delivery of Courses

There is little involvement from employers and the built environment industry with the design and delivery of accredited quantity surveying programmes. Employers are likely to be involved in providing workshops, seminars, guest lectures, case study material and data for use in HEI programmes.

3.4. Quantity Surveying Graduates and Accredited Higher Education Programmes

Professions must evolve in response to the ever-increasing changes in the global built environment industry. The Quantity Surveying profession is not invulnerable to these changes. The role of the graduate quantity surveyor continues to develop and change in response to the evolving built environment industry and rising expectations from employers. Therefore, change is required to evolve the profession within society. The portrayal of the profession in the 1980's was mainly a technical back office operation offering a limited range of services (Cartlidge, 2006). This has largely disappeared in society, with the demand for graduate quantity surveyors to be well rounded individuals, who are equipped with the necessary skillsets and competencies required for the world of work.

There will always be a demand for traditional quantity surveying practices, accompanied by the evolved/emerging roles of the profession. However, Moss (2004) urges the profession to accept change and not regress. He encourages quantity surveyors to adopt a proactive, cooperative approach to complement and strengthen the profession. To assist quantity surveyors' with implementing the changes, HEI along with employers need to take an active role in student development to produce skilled graduates. A significant gap exists in the building industry in terms of the survival and growth of the quantity surveying industry since it is felt that there is a shortage of skilled, qualified, affordable quantity surveyors (Frei and Mbachu, 2013). Graduates from professionally accredited quantity surveying programmes are often described by employers as lacking in useful immediately fee-earning skills. These graduates perhaps unrealistically expect that they will be work-ready because of their accredited qualifications, but are then disappointed when they cannot find suitable employment within the built environment industry. Therefore, both graduates and employers agree that a combination of traditional and evolved and emerging skills are required by graduates.

HEI's accredited quantity surveying programmes are not fulfilling the SACQSP programme criterion adequately in instilling graduates with the required skillsets. Even though the accredited quantity surveying programmes meet the policies and criterion 1 to 19, some fall short in preparing the graduate adequately in respect to ***Criterion 15: The Co-ordination of work-based learning***. This stipulates that even though work-based learning is not a mandatory requirement for accredited quantity surveying tertiary programmes, a mentoring system should be implemented. This enables the student to recognise strengths and weaknesses in his/her

work, to develop existing and new abilities, and to gain knowledge of industry practices. Employers have highlighted the need for quantity surveying graduates to have adequate skillsets, competencies and a degree of work-based learning in order for them to successfully integrate into the built environment industry upon graduation from an accredited programme. Davies, Csete and Poon, (1999) as cited in Nicolescu, N., and P[acaron]un, C. (2009) suggest that therefore, HEI's accredited quantity surveying programmes need to revise or re-align themselves with the stipulated criterion and thus act as a mechanism for curriculum design and revision. A measure of the quality of any academic programme is the success of graduates in practice. Therefore, there must be communication with alumni, industry and periodic follow ups of graduates.

3.5. Chapter Summary

This chapter presents a review of the literature and provides a level of understanding of the quantity surveying industry. This includes the history of quantity surveying in South Africa, the traditional, evolved and emerging roles of quantity surveyors in the current built environment industry, higher education institutes and their role in adequately preparing quantity surveying graduates for entry level positions, built environment employers' expectations from quantity surveying graduates who graduate from accredited quantity surveying programmes, the work-readiness of graduates, and methods to promote graduate employability. The chapter focuses on the manner in which accreditation, higher education institutes and quantity surveying graduates impact each other. This concludes chapter three and the next chapter explains the research methodology to be used on this study.

CHAPTER FOUR

RESEARCH METHODOLOGY

4. Introduction

4.1. Research and The Research Process

According to Kothari (2004), research is an original contribution to the existing stock of knowledge making for its development. It is a systematic investigation that is conducted in order to ascertain new facts and get additional information. Saunders, Lewis and Thornhill (2003) define research as something that people undertake in order to find out new things in a systematic way, thereby increasing their knowledge. As a result, the term research refers to the systematic method consisting of articulating the problem, developing a hypothesis, collecting the data, analysing the facts and realizing conclusions by either forming solution towards the problem or for theoretical preparation and design.

Research is an art aided by skills of inquiry, experimental design, data collection, measurement and analysis, by interpretation and by presentation. Therefore, conducting research is the skilful process of finding answers related to the questions. It is a systematic search for truth and in identifying new knowledge about our world through combination of ideas and facts. One of the essential requirements to any research work is the research and analysis of its processes. These processes must be appropriate to test hypotheses and to facilitate the design of the research such as data collection and data analysis. The purpose of research is to discover answers to questions through the application of scientific procedures and seek the truth which is hidden. Though each research study is specific, research objectives may fall into a number of groupings, namely:

- To gain familiarity with a phenomenon or to achieve new insights into it,
- To portray accurately the characteristics of a particular individual, situation or a group,
- To determine the frequency with which something occurs or with which it is associated with something else and,
- To test a hypothesis of a causal relationship between variables (Kothari, 2004).

The research process onion provides a brief outline highlighting important issues that need to be considered before undertaking any research. The different layers of the onion serve as a basis from which to consider the following processes:

- The philosophical orientation of the researcher,
- The research approach adopted,
- Appropriate research strategies,
- The research time lines that are under review and
- The data collection techniques to be employed by the researcher (Saunders, et al., 2003).

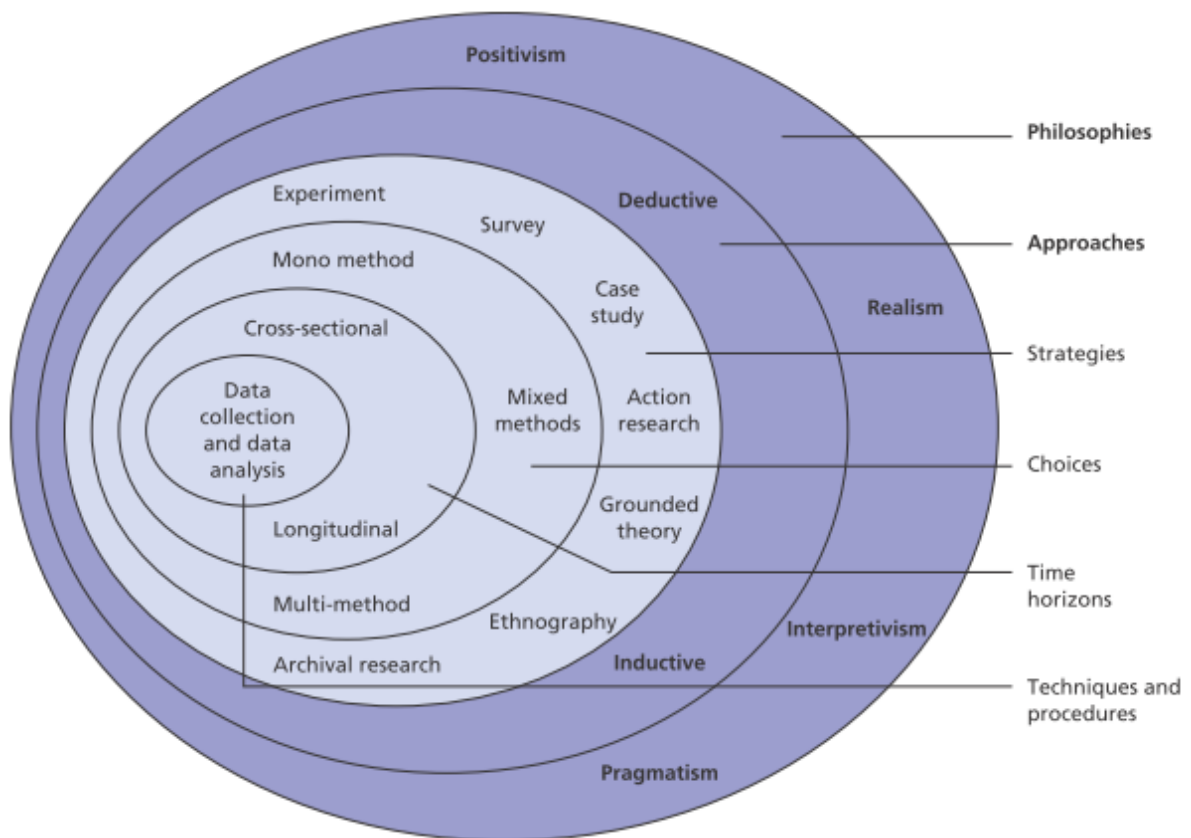


Figure 2: The Research Onion
(Saunders, Lewis and Thornhill, 2008)

4.1.1. The Research Approach

There are two basic approaches to research, a quantitative approach and a qualitative approach.

Quantitative Approach: A quantitative approach involves the generation of data which can be subjected to meticulous quantitative analysis in a formal manner. The quantitative approach can be sub-classified into inferential, experimental and simulation approaches to research (Kothari, 2004).

- Inferential Approach - The purpose of an inferential approach to research is to form a data base from which to infer characteristics or the relationships of population. This means that during survey where a sample of population is studied, questioned or observed to determine its characteristics, it is then inferred that the population has the same characteristics.
- Experimental Approach – The purpose of experimental approach is to have a much greater control over the research environment. Variables may be manipulated to observe their effect on other variables.
- Simulation Approach – A simulation approach involves the construction of a simulated environment wherein all relevant information and data can be generated. This enables an observation of the behaviour of an environment under controlled conditions. A simulation approach can also be useful in building models for understanding future conditions.

Qualitative Approach: Qualitative approach to research is concerned with the assessment of attitudes, opinions and behaviour. Research conducted in this manner is a representation of the researcher's insights and impressions. The techniques of focus group interviews, projective techniques and interviews are used in a (Ibid).

Mixed Research Approach: Thirdly, as stated by Tashakkori and Teddlie (2003), a mixed research approach involves the mixing of both quantitative and qualitative methods, techniques and/or other paradigm characteristics are mixed in one overall study.

In this research study a quantitative research approach was used, in particular an inferential approach. This will be used to test the hypotheses of the study. The data was analysed by using the Statistical Package for Social Sciences (SPSS) version 24, which can be used to do a myriad of simple and complex statistical tests and transformations.

4.2. A Quantitative Research Approach

Quantitative research is a study into either a human or social phenomenon which uses numerically measured variables. This is conducted in the form of data in order to test a hypothesis and illustrate the results statistically. Quantitative research is therefore a more analytical process when compared with qualitative research (Creswell, 1999).

Quantitative research objectives:

- All aspects are carefully and precisely designed before data collection.
- Data are in the form of numbers and statistics.
- The study can be used to generalise concepts more widely, predict future results or investigate causal relationships.

Quantitative research methods can be highlighted under natural or hard science grouping. These natural and hard sciences include experimental, evaluation research, quasi-experimental, surveys, current data, causal comparative and meta-analysis. These approaches differ but have similar assumptions that seek to maintain control, objectivity, precise measurement, quantification of data, and descriptive statistics. The results are then quantified so they can be converted for statistical analysis. Quantitative methods work under a "normative" approach, with two ideas: first, that behaviour is essentially governed by rule and secondly, that it should be investigated by the methods of natural science (Cohen et al, 2000).

1. Surveys

Probability and non-probability sampling methods are used for testing a set of the general population for any research problem. In probability methods, every person within the population being studied has the opportunity to partake in the random sample. The concept of probability sampling is to achieve a near close representative

of the general population under study as possible, given time and cost constraints (Thomas, 2004). In non-probability methods randomness is not used.

2. Experiments

Experimental research includes the deliberate control and manipulation of the conditions to determine if the variables have an effect on each other. Experiments consist of making a change in the independent variable and then observing how that affects the dependent variables (Chen, 2011).

3. Quasi Experiments

Quasi experiments differ from true experiments, as it requires the selection process for the control group and the group tested to be randomly selected. In a quasi-experiment that is not possible (Ibid).

4. Evaluation Research

Evaluation research within a quantitative paradigm, refers to a systematic evaluation which is conducted under conditions that are similar to other approaches with regards to gathering evidence and information. These conditions are the ability to duplicate results through the same instruments and the ability to conduct further tests on the evidence to see if any findings could have taken place without the intervention.

5. Existing Data

Existing data research includes the use of existing data, documents, records, etc. In other words, the data was not created specifically for the particular project in which it will be used. These existing data sets are subject to a variety of limitations including; potential errors in selection and sampling, changes in recording methods and techniques, a lack of fit between one database and another and outdated information.

6. Causal Comparative

Causal comparative research resembles experimental research in some ways in that two groups are examined to determine the variables that are causing the differences between them. According to Franke and Wallan (2007); causal comparative researchers attempt to determine the causes and or consequences of the differences that exist among groups of individuals. This is in contrast to experimental studies, in which a researcher creates

a difference between groups and then compares their performances to determine the effects of the differences created.

7. Meta-Analysis

Meta analytic research arose out of the concern that traditional analysis and systematic review of studies dealing with a particular subject matter were too dependent on the judgment of specific reviewer Johnson, B. T., and Eagly, A. H. (2014). According to Franke and Wallan (2001): "Put simply, when a researcher does a meta-analysis, he or she averages the results of selected studies to get an overall index of outcome or relationship. This is done statistically". According to Glass (1976), who was the first modern statistician to formalize the use of the term meta-analysis, meta-analysis quantifies, integrates and analyses empirical study findings with respect to a particular hypothesis or subject. The way it does this is through what is called the effect size, a statistical quantification defined as the difference between the means of the experimental and control conditions divided by the standard deviation.

4.2.1. Survey Questionnaires

There are various definitions of the term questionnaires (Oppenheim, 2000). Kervin (1999) as cited in Eriksson, P., and Kovalainen, A. (2015) reserves it exclusively for surveys where the person answering the question records their own answers. A survey questionnaire is one of the most widely used data collection techniques as there are various methods in which surveys gather information. This includes structured or semi-structured interviews, attitude scales, self-completion questionnaires and standardized tests of achievement or performance. The attractions of a survey lie in its appeal to be universal within given parameters, its ability to make statements which are supported by large data banks and its ability to establish the degree of confidence which can be placed in a set of findings (Cohen et al., 2000). Surveys are used as a data gathering device constitutes of observations undertaken from a sample where the indicators of factors are the responses to questions which are generally presented in written form or verbally (Ibid).

4.2.2. Advantages and Disadvantages of the Survey Questionnaire

According to the University of South Alabama's Education Department, both advantages and disadvantages exists with survey questionnaires. The advantages and disadvantages are illustrated below.

1. Advantages of Survey Questionnaires

- Questionnaires are a good measuring tool for attitudes and eliciting other content from research participants.
- It is deemed an inexpensive method for data distribution and collection (email/mailed/faxed).
- Questionnaires provide information about participants' internal meanings and level of thinking.
- It can administer to probability samples.
- A quick turnaround is ensured with administered questionnaires.
- It can be administered to groups.
- Perceived anonymity by respondent may be high.
- Moderately high measurement of reliability and for well-constructed and validated questionnaires.
- Closed ended items can provide exact information needed for the study.
- Open ended items can provide detailed information in respondents' own words.
- There is an ease of data analysis for closed ended items.
- Questionnaires are useful for exploration as well as confirmation (Johnson and Christensen, 2012).

2. Disadvantages of Survey Questionnaires

- Questionnaires must usually be kept short and to the point.
- Reactive effects may occur as respondents may want to show only what is socially desirable.
- Participants may be non-responsive.
- Participants filling out questionnaires may not recall important information and may lack self-awareness.
- The questionnaire response rate may be low for mailed and emailed questionnaires.
- Open ended items may reflect differences in verbal ability, thus obscuring the issues of interest.
- Data analysis can be time consuming for open ended items.
- Measures need a source of validation (Ibid).

4.2.3. The Survey Questionnaire Design

Designing a survey questionnaire is a detailed and highly complex procedure. It is vital to consider the order of the questions and the length of the questionnaire. It is therefore advisable to start the questionnaire process with general questions and then proceed into specific topics related to the study (Kothari, 2004). Respondents are more likely to commit to answer a questionnaire when they see it as interesting, of value, short, clearly thought through, and well presented.

Oppenheim (1992) as cited by Biggam, J, (2015) suggests the following steps in constructing a survey questionnaire:

- Identify the study objectives and the hypotheses to be investigated.
- Select a target population.
- Select a research method and prepare the survey instrument.
- Pre-test the instrument.
- Administer the survey.
- Organise the data.
- Analyse the data.
- Interpret the data.
- Reach conclusions.
- Make recommendations based on the research findings.

Saunders et al., (2003), highlights that the survey questionnaire should be of a reasonable length, brief and concise in order to avoid the possibility of unreliable data stemming from fatigued respondents. The survey shall include close ended questions or multiple choice questions as they require the respondent to select from a possible set of answers. The response will indicate what most closely represents his/her viewpoint. The respondent is usually asked to tick or circle the chosen answer. In this study a research questionnaire with close ended questions shall be used to ensure efficiency of the study (Siniscalco and Auriat, 2005).

The following steps were taken in designing the survey questionnaire:

- Listing of required information based on the pre-determined hypotheses.
- Framing questions with suitable scale of measurement.

- Draft of questionnaire and pre-testing.
- Final questionnaire design.
- Distribution of questionnaires in the selected sample.

As a measuring instrument for this study, a survey questionnaire was used.

The survey questionnaire was developed as follows:

1. Quantity Surveying Graduate Questionnaire

- Section A - Aims at identifying the graduates' general particulars including the level of higher education attained, did they attend an accredited or non-accredited higher education institute, their current employment standing and role within the organisation.
- Section B - Assesses the graduates' perceptions and experience of HEI's academic quantity surveying programmes as per the criteria outlined by the SACQSP and is measured using a 5-point scaled response.
- Section C - Evaluates a graduates' level of work readiness in relation to their associated skills and competencies and is measured using a 5-point scaled response and a 3-point scaled response.

2. Employer Questionnaire

- Section A - Aims at identifying the employers' general particulars including the type of organisation, size of the organisation, participants' role at the organisation, do they actively recruit graduates and do these graduates have to be from an accredited or non-accredited quantity surveying programme.
- Section B - Evaluates a graduates' level of work readiness within the employers' organisation, in relation to their associated skills and competencies and is measured using a 5-point scaled response and a 3-point scaled response.

The questionnaires were distributed via email and hand delivered to a sample of quantity surveying graduates from the University of Kwazulu-Natal and surrounding University of Technologies, and their respective employers who were actively practicing quantity surveying in the construction industry in Kwazulu-Natal. A copy of the survey questionnaire is attached as Appendix B.

4.2.4. *Pilot Study*

A pilot study is a mini version of a full-scale study which is done in preparation of the complete study. It can also be a specific pre-testing of research instruments which includes questionnaires or interview schedules (Polit, et al. and Baker, 2002; Van Teijlingen and Hundley, 2001). The pilot study is developed once the researcher has a clear vision of the research topic and questions, the techniques and methods which will be applied. The goal of a pilot study is directly related to the aim of the research project and therefore forms part of the study. The aim of a pilot study is to provide appropriate and relevant information which can contribute to the success of the research project (this needs to follow an unbiased approach in order to provide a near accurate reflection of the study). The latter is supported by the following quotes concerning the value and goal of pilot studies: “to see if the beast will fly” (De Vos, 2002:410) and “Do not take the risk. Pilot test first.” (Van Teijlingen and Hundley, 2001). The general goal of a pilot study is to therefore save the researcher time, effort and money, which can be lost if a major research study fails because of unforeseen attributes.

1. Advantages of a Pilot Study:

- Pilot studies permit preliminary testing of the hypotheses. This may lead to changing some hypotheses, eliminating some or developing new hypotheses which enable more precise hypotheses in the main study.
- It provides the researcher with ideas and approaches that may not have been foreseen before conducting the pilot study. This enables the researcher to increase his/her chances of getting clearer findings in the main study.
- It permits a thorough check of the planned statistical and analytical procedures, giving you a chance to evaluate their usefulness for the data. It enables alterations in the data collecting methods and therefore analyse data in the main study more efficiently.
- It can greatly reduce the number of unanticipated problems because it allows the opportunity to redesign parts of the study to overcome difficulties that the pilot study reveals.
- It may save a lot of time and money. Unfortunately, many research ideas that seem to show great promise are unproductive when conducted. The pilot study almost always provides enough data to decide whether to go ahead with the main study.

- In the pilot study, a number of alternative measures may be conducted and then those selected should produce the clearest results for the main study. Especially for students: If the researcher is a student planning to continue beyond the master's degree, the master's research may sometimes serve as a pilot study for later research to be carried out as part of a doctoral programme. The less research experiences the student has, the more she or he is likely to profit from a pilot study. Because of that possibility, the student should attempt a pilot study whenever possible, even if it must be limited to only a few cases or to a population limited in scope in some other way.

In this study, the survey questionnaire was piloted among quantity surveying graduates who worked amongst the researcher at the same consortium of companies. The pilot study aimed at assisting the researcher in identifying ambiguous sections in the questionnaire which required additional details and clarity. The quantity surveying graduates from the pilot study were referred to as "Sample A". A total number of 15 quantity surveying graduates participated in the study which was conducted over a period of 2 weeks.

2. Administration of Survey Questionnaire Pilot Study

The survey questionnaire was administered via personal delivery to participants who worked on site with the researcher. These consisted of quantity surveying graduates who are actively employed within the built environment industry. The participants of the study were issued a survey questionnaire which included a covering letter explaining the concept and facets of the study and included a consent form. The participants were given the opportunity to voluntarily participate. The researcher stressed all data collected from the survey questionnaire would be treated with utmost levels of anonymity and confidentiality. The participants had the opportunity to withdraw at any time during the survey questionnaire. Due to the urgency of the study and the close proximity of the participants, they were given two weeks to complete and return the survey questionnaire.

4.3. Research Methodology

According to Polit and Hungler (2004), research methodology refers to ways of obtaining, organising and analysing data. The decisions used to conduct effective methodology depend on the nature of the research question or problem. It is often referred to the theory of correct scientific decisions (Weber, M. (2015). Burns and Grove (2003) suggest that methodology includes the design, setting, sample, methodological limitations and the data collection and analysis techniques in a study.

In this study, the research methodology refers to how the research was done and its logical sequence. The specific research objectives are highlighted along with the research nature and its characteristics. The research in this study looks at whether quantity surveying graduates are receiving the appropriate quantity surveying education, as per the SACQSP criterion, from HEI that adequately prepares them for the world of work. It also looks at the built environment employers and their perceptions of graduate competency.

4.4. Population and Sampling

4.4.1. Population

The population includes all components that meet specific criteria for inclusion in a study (Burns and Grove 2003). An array of questions need to be considered with regards to the population for a survey. This includes if the population can be counted, if there are a barrier to language and if there are any geographic restrictions. The appropriateness of the study population refers to its suitability for the attainment of the objectives of the study (MacDonald and Headlam, 2009).

4.4.2. Sampling

The sample is the section of the wider population that will be engaged in the survey questionnaire. Detailed consideration is required when selecting sample sizes to ensure the validity of the results. The following considerations include, the details of the respondent, the sampling frame, the response rates and if there will be a statistical significance. Sampling techniques provide a range of methods that enable the researcher to reduce the amount of data collected by considering only data from a subgroup rather than all possible cases (Saunders, et al., 2003).

It is common to read in introductory books on biostatistics that working with a sample size of at least 30 is safe for the design of field studies, which involves collecting data outside of an experimental or lab setting. Cohen and Cohen (1995) as cited in Devore, J. L. (2015) suggests that this type of data collection is most often done in natural settings or environments and can be done in a variety of ways for various disciplines (). The sample size of a study commonly refers to the number of units that are chosen from which data is gathered. There is a designated sample size, which is the number of sample units selected for data collection. Thereafter, there is a final sample size, which includes the number of completed survey questionnaires of which data may be collected. The final sample size may be considerably smaller than the designated sample size, if there are non-responses from participants or ineligibility (Lavrakas, 2008).

Survey questionnaires were emailed and hand delivered to 15 employers, of which 11 was completed by built environment employers and 150 survey questionnaires were emailed and hand delivered to 150 quantity surveying graduates, of which 43 quantity surveying graduates responded. This reflects a response rate of 73.3% from employers and 30.7% from graduate quantity surveyors. It should be noted that the low response rate from graduate quantity surveyors was due to the non-response rate of participants. Akintoye and Fitzgerald (2000), cited in Odeyinka et al., (2008) recommended 20-30 percent response rate as the acceptable norm in most postal questionnaires in the construction industry. Therefore, it can be argued that a response rate of 30.7% is deemed adequate for data analysis.

Table 3: Survey Questionnaire Response Rate

Respondents	Survey Questionnaires Emailed/Hand delivered	Survey Questionnaires Received	Response Rate
Employer	15	11	73.3%
Graduate	150	43	30.7%

4.5. Data Collection

Data gathering is often referred to the precise, systematic gathering of information relevant to the research sub-problems. This is conducted by using methods such as interviews, participant observation, focus group discussion, narratives and case histories (Burns and Grove 2003). The empirical phase which includes the actual collection of data, is followed by preparation for data analysis (Polit and Hungler 2004). Talbot (1995) as cited in Cronin, P., Ryan, F., & Coughlan, M. (2008) suggest that data collection begins with the researcher deciding from where and from whom data will be collected . The data collection gives the participants the opportunity to reflectively express their experience.

A plan for data collection enables the researcher to:

- Have a clear overview of what tasks should be carried out, who should perform them and the duration of these tasks.
- Organise both human and material resources for data collection in the most efficient way and,
- Minimise errors and delays which may result from a lack of planning.

It is likely that while developing a plan for data collection the researcher will identify problems, which will require the modification of the study. Such modifications might include the adjustment of the sample size or extension of the period for data collection (Degu and Yigzaw, 2006).

1. Data Collection Process:

Stage 1: Permission to proceed.

Stage 2: Data collection.

Stage 3: Data handling.

Data is usually collected from different sources by using various methods to achieve certain objectives of the study. This process is known as triangulation. Cohen, Manion and Morrison (2000) define triangulation as the manner in which two or more systems of data collection is used to study a particular phenomenon. Bailey, Beckett and Turner (2001) refer to the work of Jakob (2001), who indicates that by combining various data collection methods which include multiple theories, methods and empirical materials researchers can overcome the

weakness and the problems that come from single-method, single-observer, and single-theory studies. Often the purposes of triangulation in specific contexts are to obtain confirmation of findings through convergence of different perspectives. The point at which the perspectives converge is seen to represent reality.

Triangulation is often viewed as a verification procedure where researchers search for convergence among different sources of information to form themes or categories in a study. It serves as a system to find reliability and validity of the findings therefore, the process of triangulation was employed in this study.

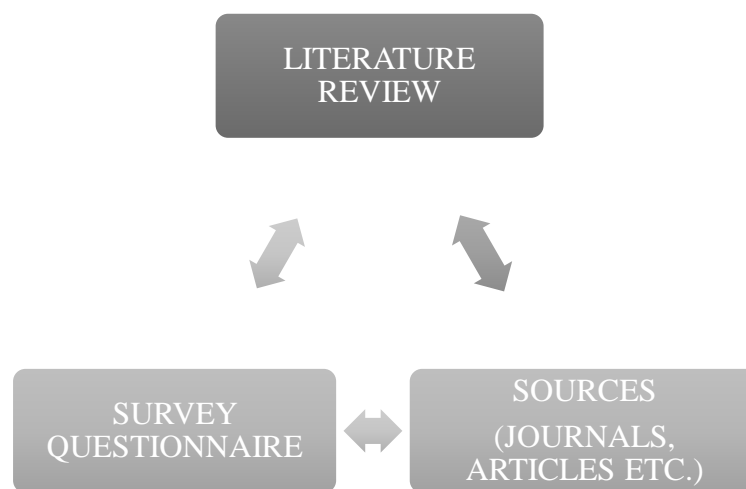


Figure 3: Representation of The Triangulation of Data Sources

4.6. Credibility, Reliability and Validity of the Research Findings

Good research is required to meet the credibility, validity and reliability standards. These are most important in evaluating a measurement tool of a research.

4.6.1. Credibility

Credibility of a study is illustrated when the participants of the study identify with the reported research findings as their own experiences (Streubert, Speziale and Carpenter 2003). It is the truth of how the participants know and experience the phenomenon. To ensure credibility is maintained the researcher must ensure that the participants are identified and described

accurately (Holloway 2005). Prolonged engagement, triangulation, participants debriefing and member checks may be used to ensure credible findings are produced.

(<http://uir.unisa.ac.za/bitstream/handle/10500/1962/04chapter3.pdf>).

4.6.2. Reliability

Reliability seeks to ensure that if other individuals were to repeat a specific research study, they should be able to deduce the same results. There are two ways that reliability is usually estimated, these are the test/retest and internal consistency.

1. Test/Re-test - This method of reliability is seen as a more conservative approach.

The three main components to this method are as follows:

- Implement a measurement instrument at two separate times for each subject,
- Compute the correlation between the two separate measurements, and
- Assume there is no change in the underlying condition between test 1 and test 2.

2. Internal Consistency

Internal consistency estimates reliability by grouping questions in a questionnaire that measure the same concept. Cronbach's Alpha is often used to test internal consistency by computing the correlation of values from the questions on the survey questionnaire. In short, Cronbach's alpha splits all the questions on the instrument every possible way and computes correlation values for them all (<http://www.socialresearchmethods.net/tutorial/Colosi/colosi2.htm>).

The Cronbach's alpha test for reliability correlates both the size of the sample and the number of average responses. This tests whether the average item correlation is affected by the skewness of the data just as any other average is (Kothari, 2004). Internal consistency involved the use of a survey questionnaire. For the data analysed to be reliable, Cronbach's alpha coefficient scale needs to be above 0.700 (Pallant, 2013).

Table 4: Cronbach's Accepted Rule of Thumb for Internal Consistency

Cronbach's Alpha	Internal Consistency
$a \geq 0.9$	Excellent
$0.9 > a \geq 0.8$	Good
$0.8 > a \geq 0.7$	Acceptable
$0.7 > a \geq 0.6$	Questionable
$0.6 > a \geq 0.5$	Poor
$a < 0.5$	Unacceptable

(Pallant, 2013)

4.6.3. Validity

Cook and Campbell (1979) as cited in Maxwell, J. A. (2012) defines validity as the "best available approximation to the truth or falsity of a given inference, proposition or conclusion." Validity and reliability are fundamental aspects of all research. Careful and thorough attention to these aspects can make the difference between a good research and poor research. Research may be seen as having highly levels of validity if the study contains what the researcher wants to study and nothing else. Validity refers to how well the data collection and data analysis of the research captures the reality being studied (Ibid).

4.7. Data Analysis

Data analysis is tool for organising and condensing data to assist the researcher with the interpretation to produce findings (Burns and Grove 2003). The process of data analysis is often a challenging and a creative process that displays an intimate relationship of the researcher with the participants and the data generated (De Vos 2002). In this study, once all survey questionnaires were completed by the participants, the researcher used the SPSS version 24 statistical software to capture the data.

4.7.1. Interpretation of Data

Data analysis and interpretation is the process of assigning meaning to the collected information and determining the conclusions, significance, and implications of the findings. (<https://blog.udemy.com/interpretation-of-data/>). Once the data collection process was completed, the surveys that were incomplete, were excluded from the study. Statistical

procedures were performed on the completed survey questionnaires for the data capture. For the purpose this study, the group interval coefficient value was obtained “through division of the difference between the biggest and the lowest value in the set of measurement results by the determined number of groups (Kan, 2009).”

In this study, the group interval coefficient value was calculated as $(5 - 1) / 5 = 0.80$ and the following intervals were taken as reference values in evaluating of the responses obtained through the implementation of the 5-point scale.

Table 5: Data Interpretation Range – 5-point Scale

Range	5-point Likert Scale
4.21 – 5.00	Strongly Agree
3.41 – 4.20	Agree
2.61 – 3.40	Neutral
1.81 – 2.60	Disagree
1.00 - 1.80	Strongly Disagree

(Kan, 2009)

The range interpretations as shown in Table 5 are used throughout where 5-point scales of agreement were used.

The group interval coefficient value was calculated as $(3 - 1) / 3 = 0.66$ and the following intervals were taken as reference values in evaluating of the responses obtained through the implementation of the 3-point scale.

Table 6: Data Interpretation Range – 3point Scale

Range	3-point Likert Scale
1.00 – 1.66	Extremely Important
1.67 – 2.33	Important
2.34 – 3.00	Unimportant

The range interpretations as shown in Table 6 are used throughout where 3-point scales of importance were used.

4.8. Chapter Summary

This chapter provided an in-depth view on the research methodology, processes, structure and design to be used to achieve the research objectives of the study. Highlighted in this chapter is the data collection method used for this study, population and sampling methodology to be employed. A survey questionnaire was used as a means of data collection, with a final sample size of 15 employers that are actively practicing quantity surveying in the construction industry and 150 quantity surveying graduates from the various higher education institutes in Kwazulu-Natal. To ensure a high response rate for the study, survey questionnaires were hand delivered and emailed to participants, with follow-up visits to the participants. A total of 11 employers and 43 quantity surveying graduates responded to the survey questionnaire. The chapter also discussed the quantitative method of hypotheses testing and its verification through credibility, reliability through Cronbach's Alpha and validity processes. Thereafter the research findings are presented. Chapter four will analyse the data collected and test the hypotheses by means of SPSS version 24.

CHAPTER FIVE
DATA COLLECTION AND ANALYSIS

5. Introduction

5.1. Data Collection and Analysis

This chapter presents the research findings of the data collected from respondents to the survey questionnaires. The SPSS version 24 (Statistical Package for the Social Sciences) computer statistical software was used to capture and analyse the data collected from quantity surveying graduates and built environment employer survey questionnaires. The objective of the research was to identify the skills and competencies required from quantity surveying graduates for entry level positions, and to determine whether the skills and competencies that were offered by accredited higher education institutes were considered by graduates to be adequate to be employed in the construction industry as junior quantity surveyors.

5.2. Employer Survey

5.2.1. General Information

Survey questionnaires were completed by 11 built environment employers. The data collected was analysed to identify the overall opinions from employers of the work readiness and skills and competencies; that graduate quantity surveyors possess. The degrees of internal consistencies for the survey questionnaire as reflected by Cronbach's Alpha as shown in Table 7 illustrates statistically high levels of internal consistencies with values greater than 0.700.

Table 7: Employer Survey Reliability Test (N=11)

Scale	Cronbach's Alpha	Number of Items
Graduates Level of Work Readiness (5-point Likert Scale)	0.744	26
Graduates Skills and Competencies (3-point Likert Scale)	0.965	25

These organisations employed a median of 11 employees in their workforce ranging from 4 years to 24 years. The organisations have been actively practicing quantity surveying for a median of 4 years ranging from 1 years to 17 years. More than three-quarters (81%) actively recruited graduates, with 81% of organisations reporting that they actively recruited graduates from all the universities in KZN. Organisations also reported that a median of two quantity

surveying graduates were recruited annually ranging from 0 graduates to 10 graduates per year. However, more than half (54.5%) of organisations did not only employ graduates from accredited quantity surveying programs. Most organizations (72.7%) did not require graduate employees to be registered with the SACQSP. Just over a quarter of graduates recruited either had a Bachelor of Science degree in Quantity Surveying (30.0%) or an Honours degree in Quantity Surveying (30.0%), with the remaining number of graduates holding neither an undergraduate Diploma nor a Bachelor of Technology degree in Quantity Surveying.

Table 8: Organisation type (N=11)

Organisation Type	Percentage %
Construction Firm	27.3
Quantity Surveying Firm	45.5
Other	27.3
Total	100

Table 8 illustrates that 45.5% of quantity surveying graduates were actively recruited and employed by Quantity Surveying practices. Construction companies employed 27.3% quantity surveying graduates while other built environment organisations employed the rest.

Table 9: Employment position (N=11)

Position	Percentage %
Quantity Surveyor	30.0
Owner	10.0
Director	20.0
Contract Manager	20.0
Project Manager	20.0
Total	100

Table 9 shows that 30.0% of employers were Quantity Surveyors by profession and 20.0% each were Directors, Contracts Managers and Project Managers. Further, 81.8% of organizations actively recruited graduates to work in their businesses while 54.5% employed students from non-accredited programs.

5.2.2. Work Readiness of Graduate Employees

Employers were presented with 26 statements about the work readiness of their graduate quantity surveying employees and asked to indicate their level of agreement with the statements using a 5-point Likert type scale with 1=strongly disagree, 2=disagree, 3=neutral, 4=agree and 5=strongly agree.

Table 10: Employees views on the Work-Readiness of Graduates

Statement	Mean	SD	Scale	Rank
Students who achieved high levels on their academic records are not necessarily prepared for work at our organisation	4.27	0.786	Strongly Agree	1
Students employed at our organisation develop and maintain effective relationships with colleagues and superiors at work	4.09	0.539	Agree	2
The students employed at our organisation use physical resources, computer/printer, effectively at work	3.82	0.873	Agree	3
Students with work based learning experience enhanced their level of employment at our organisation	3.82	0.873	Agree	3
Organisations are not contacted by higher education institutes to provide input when constructing quantity surveying programs	3.82	0.981	Agree	5
Students employed at our organisation have excellent oral communication skills	3.55	0.687	Agree	6
The level of employee success is driven by their own efforts and self-motivation	3.55	1.128	Agree	7
Students employed at our organisation function effectively in a team, at work and on projects	3.45	0.687	Agree	8
Students employed at our organisation show commitment towards their tasks at work	3.45	0.820	Agree	9
Students employed at our organisation have advanced numeracy skills to execute their tasks effectively	3.45	0.820	Agree	10
Students employed at our organisation have high levels of self-confidence	3.36	0.674	Neutral	11
The students employed at our organisation showed high levels of self-discipline at work	3.36	1.026	Neutral	12
Students employed at our organisation adapt to the constant changing circumstances of the quantity surveying industry	3.18	0.404	Neutral	13
Students employed at our organisation have efficient listening skills	3.18	0.750	Neutral	14
Students employed at our organisation have excellent written communication skills	3.09	0.700	Neutral	15

Students employed at our organisation effectively manage interpersonal conflict within the organisation	3.00	0.632	Neutral	16
Students employed at our organisation use quantity surveying computer software efficiently to execute daily tasks	3.00	1.095	Neutral	17
Students employed at our organisation are effective with their decision-making skills	2.90	0.539	Neutral	18
Students employed at our organisation show effective problem solving skills on projects	2.90	0.700	Neutral	19
Students employed at our organisation have high levels of innovation	2.82	0.603	Neutral	20
Students employed at our organisation understand the impact of economic influences on the organisation	2.73	0.904	Neutral	21
The students employed at our organisation independently plan their time at work	2.64	0.809	Neutral	22
The students employed at our organisation have good leadership skills at work	2.63	0.809	Neutral	23
Students employed at our organisation demonstrate a good balance of theoretical, practical and experiential knowledge	2.45	0.934	Disagree	24
Only graduates with quantity surveying diplomas are employed at our organisation	2.00	1.000	Disagree	25
Only graduates with quantity surveying degrees are employed at our organisation	1.90	0.944	Disagree	26

From Table 10 it is evident that employers strongly agreed with one statement (mean=4.27), agreed with nine statements (means =4.09-3.45), were neutral about 13 statements (means=3.36-2.63), and disagreed with three statements (means=2.45-1.90). For example, employers strongly agreed with the statement that students who had achieved high levels on their academic records were not necessarily prepared for work at their organisation.

They agreed that students employed at their organisation had excellent oral communication skills, they developed and maintained effective relationships with colleagues and superiors at work, used physical resources, computer/printer effectively at work and highlighted that the students with work based learning experience enhanced their level of employment at their organisation.

Employers also indicated that they agreed with the statement that they were not contacted by higher education institutes to provide input when constructing quantity surveying programs. They tended to agree that the level of employee success was driven by their own efforts and self-motivation that students employed functioned effectively in a team at work and on projects, showed commitment towards their tasks at work and had advanced numeracy skills to execute their tasks effectively.

Employers were neutral about the students employed at their organisation having high levels of self-confidence and self-discipline at work, had efficient listening skills and excellent written communication skills, adapted to the constant changing circumstances of the quantity surveying industry, and used quantity surveying computer software efficiently to execute daily tasks. They were neutral about the students being effective with their decision-making skills, showing effective problem solving skills, and having high levels of innovation on projects. Employers were also neutral point about students understanding the impact that economic influences had on an organisation, having the ability to independently plan their time at work and having good leadership skills at work.

Employers disagreed that students demonstrated a good balance of theoretical, practical and experiential knowledge and that not only graduates with quantity surveying diplomas or degrees were employed. The statistical mean across the 26 work readiness statements was 3.176 suggesting that overall employers were neutral about quantity surveying graduates and their work readiness.

5.2.3. Graduates Skills and Competencies

Employers were asked to rate 25 skills and competencies (including traditional, evolved and emerging) that quantity surveying graduates should possess at entry level positions, on a scale from 1 – 3, with; 1= Extremely Important, 2= Important and 3= Unimportant

Table 11: Employers views on the Skills and Competencies of Graduates

Skills and Competencies	Mean	SD	Scale	Rank
Personal and Interpersonal Skills	1.09	0.305	Extremely Important	1

Accounting	1.18	0.404	Extremely Important	2
Design Appraisal and Measurement (Quantity Surveying)	1.18	0.603	Extremely Important	3
Project Valuation and Payments	1.18	0.603	Extremely Important	4
Ethics	1.27	0.646	Extremely Important	5
Construction Contract Practice (JBCC/GCC)	1.36	0.674	Extremely Important	6
Leadership and Management Skills	1.36	0.674	Extremely Important	7
Professional Practice and Ethics	1.36	0.674	Extremely Important	8
Financial Reporting	1.36	0.809	Extremely Important	9
Procurement and Financial Management	1.45	0.687	Extremely Important	10
Interpretation of Data, Information and Information Technology	1.54	0.687	Extremely Important	11
Drawing Interpretation (Architectural)	1.54	0.687	Extremely Important	12
Drawing Interpretation (Structural)	1.54	0.687	Extremely Important	13
Construction Law	1.63	0.809	Extremely Important	14
Project Management	1.63	0.809	Extremely Important	15
Health and Safety Acts and Procedures	1.63	0.924	Extremely Important	16
Site Surveying	1.72	0.786	Important	17
Construction Technology and Environmental Services	1.81	0.750	Important	18
Marketing	1.90	0.700	Important	19
Insolvency and Insurances	1.90	0.875	Important	20
Construction Economics	1.90	0.943	Important	21
Property Law	2.00	0.774	Important	22
Facilities Management	2.00	0.774	Important	23
Dispute Resolution and Associated Procedures	2.00	0.894	Important	24
Research Methodologies and Techniques	2.09	0.943	Important	25

From Table 11 it is evident that employers regarded all the skills and competencies as important to varying degrees. For example, they regarded 16 skills and competencies as extremely important and 9 skills and competencies as important. Employers regarded the top five extremely important skills and competencies as follows:

- Personal and Interpersonal Skills,
- Accounting,
- Design Appraisal and Measurement (Quantity Surveying),

- Project Valuation and Payments, and
- Ethics.

They also highlighted the following skills and competencies as extremely important but less so namely:

- Construction Contract Practice (JBCC/GCC),
- Leadership and Management Skills,
- Professional Practice and Ethics,
- Financial Reporting,
- Procurement and Financial Management,
- Interpretation of Data,
- Information and Information Technology,
- Drawing Interpretation (Architectural and Structural),
- Construction Law,
- Project Management, and
- Health and Safety Acts and Procedures.

It is evident that employers regarded in varying degrees the importance of the following skills and competences, namely:

- Site Surveying,
- Construction Technology and Environmental Services,
- Marketing,
- Insolvency and Insurances,
- Construction Economics,
- Property Law,
- Facilities management,
- Dispute resolution and associated procedures, and
Research methodologies and techniques.

The statistical mean across the 25 skills and competencies was 1.51 suggesting that employers regarded the skills and competencies that quantity surveying graduates should possess as extremely important.

Table 12: Traditional, Evolved and Emerging Skills and Competencies

Skills and Competencies	Mean	SD	Scale	Rank
Traditional Skills and Competencies				
Personal and Interpersonal Skills	1.09	0.305	Extremely Important	1
Design Appraisal and Measurement (Quantity Surveying)	1.18	0.603	Extremely Important	2

Project Valuation and Payments	1.18	0.603	Extremely Important	3
Ethics	1.27	0.646	Extremely Important	4
Leadership and Management Skills	1.36	0.674	Extremely Important	5
Professional Practice and Ethics	1.36	0.674	Extremely Important	6
Financial Reporting	1.36	0.809	Extremely Important	7
Interpretation of Data, Information and Information Technology	1.54	0.687	Extremely Important	8
Drawing Interpretation (Architectural)	1.54	0.687	Extremely Important	9
Drawing Interpretation (Structural)	1.54	0.687	Extremely Important	10
Construction Technology and Environmental Services	1.81	0.750	Important	11
Evolved and Emerging Skills and Competencies				
Accounting	1.18	0.404	Extremely Important	1
Construction Contract Practice (JBCC/GCC)	1.36	0.674	Extremely Important	2
Procurement and Financial Management	1.45	0.687	Extremely Important	3
Construction Law	1.63	0.809	Extremely Important	4
Project Management	1.63	0.809	Extremely Important	5
Health and Safety Acts and Procedures	1.63	0.924	Extremely Important	6
Site Surveying	1.72	0.786	Important	7
Marketing	1.90	0.700	Important	8
Insolvency and Insurances	1.90	0.875	Important	9
Construction Economics	1.90	0.943	Important	10
Property Law	2.00	0.774	Important	11
Facilities Management	2.00	0.774	Important	12
Dispute Resolution and Associated Procedures	2.00	0.894	Important	13
Research Methodologies and Techniques	2.09	0.943	Important	14

From Table 12 it is evident that employers regarded all the skills and competencies as important to varying degrees. For example, they regarded ten traditional skills and competencies as extremely important with only one traditional skill as important, namely construction technology and environmental services. Employers also regarded six evolved and emerging skills and competencies as extremely important and eight emerging skills and competencies as important. None were considered as unimportant.

Employers regarded the following traditional skills and competencies as extremely important, namely:

- Personal and Interpersonal Skills,
- Design Appraisal and Measurement (Quantity Surveying),
- Project Valuation and Payments,
- Ethics,
- Leadership and Management Skills,
- Professional Practice and Ethics,
- Financial Reporting,
- Interpretation of Data, Information and Information Technology,
- Drawing Interpretation (Architectural) and
- Drawing Interpretation (Structural)

They also highlighted the following evolved and emerging skills and competencies as extremely important namely:

- Accounting,
- Construction Contract Practice (JBCC/GCC),
- Procurement and Financial Management,
- Construction Law,
- Project Management and
- Health and Safety Acts and Procedures.

Employers regarded the following evolved and emerging skills and competencies as important namely:

- Site Surveying,
- Marketing,
- Insolvency and Insurances,
- Construction Economics,
- Property Law,
- Facilities Management,
- Dispute Resolution and Associated Procedures and
- Research Methodologies and Techniques.

The findings illustrate that in the current built environment industry, organisations that are actively practicing quantity surveying find traditional, evolved and emerging skills and competencies in varying degrees of importance. They do not solely focus on traditional skills and competencies for graduate quantity surveyors to possess but rather a combination of traditional, evolved and emerging skills and competencies.

5.3. Graduate Survey

5.3.1. General Information

Survey questionnaires were completed by 43 quantity surveying graduates. The data collected were analysed to identify the overall opinions from graduates and their personal assessment of the quantity surveying academic programme, their perception of the work readiness, and skills and competencies that they possess. The degrees of internal consistencies in the various scales used in the survey questionnaire as reflected by Cronbach's Alpha are shown in Table 13 indicating statistically high levels of internal consistencies with reliability co-efficient values greater than 0.700.

Table 13: Graduate Survey Reliability (N=43)

Survey Questionnaire Construct	Cronbach's Alpha	Number of Items
Assessment of Academic Programme as per the SACQSP Programme Criteria (5-point Likert Scale)	0.893	55
Graduates Level of Work Readiness (5-point Likert Scale)	0.857	24
Graduates Skills and Competencies (3-point Likert Scale)	0.926	25

The median age of a graduate quantity surveyor who participated in the study was 28 years old ranging from 23 years old to 53 years old. Just under three quarters (73.8%) of graduates were male. Almost all (97.7%) of graduates were actively employed and practicing quantity surveying in the construction industry in consulting or contracting firms. More than half of the graduates (52.5%) had attended a University of Technology and less than half (40.5%) had attended the University of KwaZulu-Natal. Almost all (95.0%) the graduates had graduated from an accredited quantity surveying programme.

5.3.2. Assessment of the Academic Programme

Quantity Surveying graduates were presented with 55 statements within the 19 categories of quantity surveying programme accreditation criterion, as stipulated by the SACQSP and were asked to indicate their level of agreement with the statements using a 5-point Likert type scale with 1=strongly disagree, 2=disagree, 3=neutral, 4=agree and 5=strongly agree.

Table 14: Academic Programme Assessment

Statement	Mean	SD	Scale	Rank
Criteria One: Programme Design	3.47	0.613	Agree	
The mode of instruction used in my classes catered for my own particular learning needs	3.51	0.702	Agree	1
The modules in the curriculum that I had to take had a good balance of theoretical, practical and experiential knowledge and skills	3.46	0.797	Agree	2
During my period of study at university a descriptive understanding of the quantity surveying industry was promoted	3.44	0.958	Agree	3
Criteria Two: Student Recruitment, Admission and Selection	3.45	0.754	Agree	
The large number of students in my classes did not hinder me from attaining a level of good quality quantity surveying education	3.86	0.709	Agree	1
The material I received from the university to recruit me as a potential student more than adequately informed me about the quantity surveying programme at the university accurately and sufficiently	3.07	1.155	Neutral	2
Criteria Three: Academic Staffing	3.79	0.816	Agree	
The academic staff for the quantity surveying programme at the university had relevant academic qualifications, skills and knowledge to conduct lectures	4.04	0.843	Agree	1
The academic staff for the quantity surveying programme at the university were suitably qualified and experienced to teach my classes	4.02	0.912	Agree	2
There was enough academic staff to teach all the required modules in the programme	3.32	1.340	Neutral	3
Criteria Four: Support Staffing	3.40	0.894	Neutral	
The academic and support staff were competent and had sufficient appropriate experience	3.60	1.000	Agree	1
There were enough academic and support staff in the quantity surveying programme	3.20	1.124	Neutral	2
Criteria Five: Teaching and Learning Strategy	3.30	0.809	Neutral	
I found that the program promoted both practical and vocational teaching methods	3.44	0.983	Agree	1
My academic progress was monitored efficiently	3.25	0.847	Neutral	2
I was given regular feedback on my progress	3.20	1.013	Neutral	3
Criteria Six: Student Assessment Policies and Procedures	3.55	0.707	Agree	
The tests and examinations were conducted efficiently	3.93	0.827	Agree	1

The projects and assignments were challenging but helped me grasp the knowledge and skills I needed	3.85	0.751	Agree	2
I found the feedback very useful	3.41	0.879	Agree	3
I was given feedback on my performance reasonably quickly	3.41	0.956	Agree	4
Many different evaluation methods were used to measure and monitor my progress	3.18	1.006	Neutral	5
Criteria Seven: Infrastructure and Library Resources	3.11	0.941	Neutral	
The university had suitable and sufficient IT infrastructure and facilities that I could use	3.55	1.160	Agree	1
The university teaching or instructional spaces were well-equipped with working technology	3.26	1.037	Neutral	2
The computer laboratories were available for my use whenever I needed to use them	3.20	1.282	Neutral	3
There were adequate printing facilities available	2.97	1.184	Neutral	4
There were sufficient computers in the labs	2.95	1.208	Neutral	5
The software was up-to-date and the latest versions	2.95	1.271	Neutral	6
The labs always had someone available to help me when I had problems with the computers	2.86	1.036	Neutral	7
Criteria Eight: Programme Administrative Services	3.59	0.788	Agree	
Information about the programme curricula was clearly communicated to me	3.66	0.928	Agree	1
The programme was very well managed	3.53	0.959	Agree	2
Criteria Nine: Postgraduate Policies, Procedures and Regulations	3.41	1.406	Agree	
I was also aware of my own roles and responsibilities as an honours student	3.44	1.439	Agree	1
In my honours year I was very aware of the roles and responsibilities of my immediate supervisors	3.33	1.434	Neutral	2
Criteria Ten: Programme Co-ordination	2.69	1.006	Neutral	
The programme had an industry advisory board	2.85	0.975	Neutral	1
My input was taken seriously	2.68	1.192	Neutral	2
I had many opportunities to give input into the programme	2.60	1.172	Disagree	3
Criteria Eleven: Academic Development for Student Success	3.37	0.833	Neutral	
I found the academic staff to be adequately qualified and experienced	3.85	0.871	Agree	1
I was satisfied with the level of foundational skills that I gained while studying in the programme	3.71	0.891	Agree	2

Academic staff took an interest in my academic development	3.33	1.004	Neutral	3
Academic staff arranged regular counselling sessions with me to ensure that I was coping academically	2.56	1.265	Disagree	4
Criteria Twelve: Teaching and learning interactions	4.15	3.381	Agree	
The programme curricula were taught to me within the stipulated time frame of the qualification	4.90	6.698	Strongly Agree	1
Academic staff provided me with adequate guidance of the programme	3.40	0.989	Neutral	2
Criteria Thirteen: Student Assessment Practices	3.55	0.884	Agree	
I was assessed systematically and purposefully	3.59	0.857	Agree	1
Feedback from the assessments were efficiently reported back to me	3.52	0.993	Agree	2
Criteria Fourteen: The Assessment System	3.19	0.876	Neutral	
I found that the programme took appropriate measures to ensure the reliability, rigour and security of the assessments were maintained	3.38	0.882	Neutral	1
The appeals process to the faculty were clearly explained to me and ensured its explicitly and fairness	3.00	1.059	Neutral	2
Criteria Fifteen: Co-ordination of Work-Based Learning	3.15	1.045	Neutral	
Work based learning allowed me to develop existing and new abilities	3.41	1.117	Agree	1
Through work based learning I was able to recognise my strengths and weaknesses	3.41	1.182	Agree	2
Work based learning promoted a higher understanding of the quantity surveying programme and industry practices	3.36	1.219	Neutral	3
I found that work based learning was implemented effectively within the programme	3.02	1.297	Neutral	4
In the absence of work based learning, a mentoring system was implemented effectively within the programme	2.63	0.970	Neutral	5
Criteria Sixteen: Delivery of Postgraduate Programmes	3.32	1.392	Neutral	
In my honours year I was able to develop research competence	3.37	1.416	Neutral	1
There was sufficient contact with my supervisor and other instructors	3.29	1.425	Neutral	2
Criteria Seventeen: Student Retention and Throughput Rates	3.32	0.833	Neutral	
I found that the programme actively promoted diversity with regards to race and gender equity within my classes	3.68	0.960	Agree	1

The programme student throughput rate was quite high/satisfactory	3.25	1.006	Neutral	2
The programme did everything possible to retain me as a student even when I was struggling academically	3.07	1.060	Neutral	3
Criteria Eighteen: Employability	3.75	0.915	Agree	
The programme contributed to enhancing my opportunities of employability	3.75	0.915	Agree	1
Criteria Nineteen: Programme Effectiveness	3.21	1.006	Neutral	
I regularly completed the QPA questionnaires	3.24	1.113	Neutral	1
My input was requested via numerous surveys, reviews and impact studies that measured the effectiveness of the programme	3.19	1.077	Neutral	2

From Table 14 it is evident that quantity surveying graduates agreed with nine SACQSP programme criteria (means=4.15-3.41) and were neutral with ten programme criteria (means=3.40-2.69).

Criteria One: Graduates agreed with the programme design and highlighted that the mode of instruction used in their classes catered for their particular learning needs, the modules in the curriculum had a good balance of theoretical, practical and experiential knowledge and skills, and a descriptive understanding of the quantity surveying industry was promoted.

Criteria Two: Graduates agreed with the programmes student recruitment, admission and selection criteria and highlighted that the large number of students in their classes did not hinder them from attaining a level of good quality quantity surveying education. However, they were neutral about the material that they received from the university to recruit them as a potential student more than adequately informing them about the quantity surveying programme at the university accurately and sufficiently.

Criteria Three: Graduates agreed with the programme academic staffing and that the academic staff employed in the quantity surveying programmes at universities had relevant academic qualifications, skills and knowledge to conduct lectures, that the staff were suitably qualified and experienced to teach their classes. However, they were neutral about there being enough academic staff to teach all the required modules in the programme.

Criteria Four: Graduates were neutral response about the support staff in the programs and about there being enough academic and support staff in the quantity surveying programmes. However, they agreed that the academic and support staff were competent and had sufficient and appropriate experience.

Criteria Five: Graduates were neutral response about the teaching and learning strategies of the programs, and that their academic progress was monitored efficiently and that regular feedback was provided on their progress. However, they agreed that the programme promoted both practical and vocational teaching methods.

Criteria Six: Graduates agreed with the programme student assessment policies and procedures, and that the tests and examinations were conducted efficiently, the projects and assignments were challenging but helped them grasp the knowledge and skills that they required, that feedback on their performance was provided reasonably quickly and found the feedback very useful. However, they were neutral about the different evaluation methods that were used to measure and monitor their progress.

Criteria Seven: Graduates were neutral about the programmes infrastructure and library resources, and that the university teaching or instructional spaces were well-equipped with working technology, that the computer laboratories were available for their use, that there were adequate printing facilities available, there were sufficient computers in the labs, the software was up-to-date with the latest versions and that the labs always had someone available to assist them when they had problems with the computers. They agreed that the university had suitable and sufficient IT infrastructure and facilities.

Criteria Eight: Graduates agreed with the programmes administrative services, and that the information provided about the programme curricula was clearly communicated to them and that the programme was very well managed.

Criteria Nine: Graduates agreed with the programmes postgraduate policies, procedures and regulations, and that they were aware of their roles and responsibilities as honours students. They were neutral about them in their honours year being very aware of the roles and responsibilities of their immediate supervisors.

Criteria Ten: Graduates were neutral about the programme co-ordination, the programme industry advisory board and about their input being taken seriously. They disagreed that they had many opportunities to give input into the programme.

Criteria Eleven: Graduates were neutral about the provisions for academic development for student success, and that the academic staff took interest in their academic development. They agreed that the academic staff were adequately qualified and experienced and were satisfied with the level of foundational skills that they gained while studying in the programme. Graduates disagreed that the academic staff arranged regular counselling sessions with them to ensure that they were coping academically.

Criteria Twelve: Graduates agreed with the teaching and learning interactions in the programs, and strongly agreed with the curricula that was taught to them within the stipulated time frame of the qualification. They were neutral about the academic staff having provided them with adequate guidance of the programme.

Criteria Thirteen: Graduates agreed with the student assessment practices and that they were assessed systematically and purposefully and that the feedback from the assessments were efficiently reported back to them.

Criteria Fourteen: Graduates were neutral about the assessment system in the programs and that the programmes took appropriate measures to ensure the reliability, rigour and security of the assessments were maintained, that the appeals process to the faculty were clearly explained to them and that it ensured explicitly and fairness.

Criteria Fifteen: Graduates were neutral about the co-ordination of work-based learning, and that work-based learning promoted a higher understanding of the quantity surveying programme and industry practices, that it was implemented effectively within the programme and that in the absence of work based learning, a mentoring system was implemented effectively. They agreed that through work-based learning they were able to recognise their strengths and weaknesses and that it allowed them to develop existing and new abilities.

Criteria Sixteen: Graduates were neutral about the delivery of postgraduate programmes, and that in their honours year they were able to develop research competence and that there was sufficient contact with their supervisor and other instructors.

Criteria Seventeen: Graduates were neutral about student retention and throughput rates, and that the student throughput rate was quite high/satisfactory and that the programme did everything possible to retain them as student even when they were struggling academically. They agreed that the programme actively promoted diversity with regards to race and gender equity within their classes.

Criteria Eighteen: Graduates agreed with the employability criteria and highlighted that the programme contributed to enhancing their opportunities of employability.

Criteria Nineteen: Graduates were neutral about the effectiveness of the programs, and that their input was requested via numerous surveys, reviews and impact studies that measured the effectiveness of the programme and that they regularly completed the QPA questionnaires.

Table 15: SACQSP Programme Criteria for HEI

Criteria	Mean	SD	Level	Rank
Teaching and Learning Interactions	4.15	3.381	Agree	1
Academic Staffing	3.79	0.816	Agree	2
Employability	3.75	0.915	Agree	3
Programme Administrative Services	3.59	0.788	Agree	4
Student Assessment Policies and Procedures	3.55	0.707	Agree	5
Student Assessment Practices	3.55	0.884	Agree	6
Programme Design	3.47	0.613	Agree	7
Student Recruitment, Admission and Selection	3.45	0.754	Agree	8
Postgraduate Policies, Procedures and Regulations	3.41	1.406	Agree	9
Support Staffing	3.40	0.894	Neutral	10
Academic Development for Student Success	3.37	0.833	Neutral	11
Delivery of Postgraduate Programmes	3.32	1.392	Neutral	12
Student Retention and Throughput Rates	3.32	0.833	Neutral	13
Teaching and Learning Strategy	3.30	0.809	Neutral	14
Programme Effectiveness	3.21	1.006	Neutral	15
The Assessment System	3.19	0.876	Neutral	16
Co-ordination of Work-Based Learning	3.15	1.045	Neutral	17
Infrastructure and Library Resources	3.11	0.941	Neutral	18
Programme Co-ordination	2.69	1.006	Neutral	19

From Table 15 it is evident that quantity surveying graduates agreed with nine SACQSP programme criteria (means=4.15-3.41) and were neutral about ten programme criteria (means=3.40-2.69).

Graduates were in agreement about the following programme criteria, namely:

- Teaching and Learning Interactions,
- Academic Staffing,
- Employability,
- Programme Administrative Services,
- Student Assessment Policies and Procedures,
- Student Assessment Practices,
- Programme Design,
- Student Recruitment, Admission and Selection and
- Postgraduate Policies, Procedures and Regulations.

Graduates were neutral about the following programme criteria, namely:

- Support Staffing,
- Academic Development for Student Success,
- Delivery of Postgraduate Programmes,
- Student Retention and Throughput Rates,
- Teaching and Learning Strategy,
- Programme Effectiveness,
- The Assessment System,
- Co-Ordination of Work-Based Learning,
- Infrastructure and Library Resources and
- Programme Co-Ordination.

The statistical mean across the 55 statements of the SACQSP Programme Criteria for HEI was 3.36 suggesting that overall quantity surveying graduates were neutral about the programme criteria and it adequately preparing them for the world of work and professional practice.

5.3.3. Work-Readiness of Graduates

Quantity Surveying graduates were presented with 24 statements about their work readiness, and were asked to indicate their level of agreement with the statements using a 5-point Likert type scale with; 1=strongly disagree, 2=disagree, 3=neutral, 4=agree and 5=strongly agree.

Table 16: Graduates views on their Work-Readiness

Statement	Mean	SD	Scale	Rank
I am expected to show commitment towards my work and towards tasks given to me	4.48	0.592	Strongly Agree	1
I am expected to have high levels of self-discipline at work	4.44	0.547	Strongly Agree	2
My success is driven by my own efforts and self-motivation	4.37	0.690	Strongly Agree	3
I am expected to develop and maintain effective relationships with colleagues and superiors	4.34	0.752	Strongly Agree	4
I am expected to have excellent written communication skills	4.32	0.565	Strongly Agree	5
I am expected to have advanced numeracy skills to execute my tasks effectively	4.32	0.565	Strongly Agree	6
I am expected to have excellent oral communication skills	4.30	0.604	Strongly Agree	7
I am expected to have high levels of self-confidence	4.30	0.772	Strongly Agree	8
I must be able to adapt to changing circumstances	4.25	0.693	Strongly Agree	9
I am expected to show effective problem solving skills	4.16	0.614	Agree	10
I am expected to be effective with my decision-making skills	4.16	0.659	Agree	11
When I started to work, I had efficient listening skills	4.16	0.614	Agree	12
I am expected to have good leadership skills	4.13	0.833	Agree	13
I am expected to have high levels of innovation	4.13	0.742	Agree	14
I was able to function effectively in a team when I started working	4.06	0.593	Agree	15
When I started to work, I was able to use physical resources; computer/printer, effectively in an organisation	4.04	0.950	Agree	16
When I started to work, I was expected to independently plan my time at work	4.00	0.872	Agree	17
When I started to work, I was required to use quantity surveying computer software to execute daily tasks	3.79	1.059	Agree	18

I am expected to understand the impact of economic influences on the organisation	3.79	0.940	Agree	19
Having work based learning experience helped me to get a job	3.74	1.156	Agree	20
When I started to work I could effectively manage my time	3.62	1.000	Agree	21
When I started to work, I was able to effectively manage interpersonal conflict	3.60	0.954	Agree	22
Only graduates with quantity surveying diplomas are employed	2.58	1.179	Disagree	23
Only graduates with quantity surveying degrees are employed	2.51	1.202	Disagree	24

From Table 16 it is evident that quantity surveying graduates strongly agreed with nine statements (means=4.48-4.25), agreed with thirteen statements (means=4.16-3.60), and disagreed with two statements (means=2.58-2.51). For example, quantity surveying graduates strongly agreed that graduates showed commitment towards their work and towards tasks given to them, that they had high levels of self-discipline and confidence at work, and that their success was driven by their own efforts and self-motivation.

Graduates also indicated that they strongly agreed that they had excellent written communication and oral communication skills, they developed and maintained effective relationships with colleagues and superiors. They tended to strongly agree that they had advanced numeracy skills to execute their tasks effectively and adapted to changing circumstances at an organisation.

Graduate quantity surveyors agreed that they showed effective problem solving skills, decision-making skills, efficient listening skills, good leadership skills and had high levels of innovation. They functioned effectively in a team and used physical resources; computer/printer, effectively in an organisation. Graduates also indicated that they agreed with the statements that they effectively managed their time and interpersonal conflict. They could independently plan their time at work and used quantity surveying computer software to execute daily tasks. Graduates also indicated that they understood the impact of economic influences on the organisation and that having work-based learning experience assisted them in gaining employment.

Graduates disagreed that not only graduates with quantity surveying diplomas or degrees were employed by organisations. The statistical mean across the 24 work readiness statements was 3.98 suggesting that overall quantity surveying graduates agreed that they were ready for the world of work and professional practice.

5.3.4. Graduate Skills and Competencies

Quantity Surveying Graduates were asked to rate 25 skills and competencies (including traditional, evolved and emerging) that they should possess at entry level positions on a scale from 1 – 3 with; 1= Extremely Important, 2= Important and 3= Unimportant.

Table 17: Graduates views of their Skills and Competencies

Skills and Competencies	Mean	SD	Scale	Rank
Interpretation of Data, Information and Information Technology	1.18	0.500	Extremely Important	1
Drawing Interpretation (Architectural)	1.20	0.558	Extremely Important	2
Design Appraisal and Measurement (Quantity Surveying)	1.20	0.599	Extremely Important	3
Professional Practice and Ethics	1.21	0.519	Extremely Important	4
Construction Contract Practice (JBCC/GCC)	1.23	0.570	Extremely Important	5
Drawing Interpretation (Structural)	1.25	0.581	Extremely Important	6
Ethics	1.25	0.581	Extremely Important	7
Project Valuation and Payments	1.28	0.635	Extremely Important	8
Personal and Interpersonal Skills	1.30	0.557	Extremely Important	9
Construction Law	1.30	0.557	Extremely Important	10
Financial Reporting	1.34	0.686	Extremely Important	11
Leadership and Management Skills	1.42	0.630	Extremely Important	12
Construction Technology and Environmental Services	1.46	0.702	Extremely Important	13
Accounting	1.51	0.668	Extremely Important	14
Procurement and Financial Management	1.53	0.667	Extremely Important	15
Health and Safety Acts and Procedures	1.58	0.793	Extremely Important	16
Construction Economics	1.64	0.655	Extremely Important	17
Project Management	1.65	0.612	Extremely Important	18
Property Law	1.67	0.565	Important	19

Dispute Resolution and Associated Procedures	1.73	0.664	Important	20
Site Surveying	1.81	0.763	Important	21
Insolvency and Insurances	1.90	0.750	Important	22
Research Methodologies and Techniques	2.02	0.780	Important	23
Marketing	2.06	0.632	Important	24
Facilities Management	2.07	0.600	Important	25

From Table 17 it is evident that graduate quantity surveyors regarded all the skills and competencies as important to varying degrees, with none being considered as unimportant. For example, they regarded 18 skills and competencies as extremely important and 7 skills and competencies as important. Quantity surveying graduates regarded the following skills and competencies as extremely important namely:

- Interpretation of Data, Information and Information Technology,
- Drawing Interpretation (Architectural),
- Design Appraisal and Measurement (Quantity Surveying) and,
- Professional Practice and Ethics.
- Construction Contract Practice (JBCC/GCC),
- Drawing Interpretation (Structural),
- Ethics,
- Project Valuation and Payments,
- Personal and Interpersonal Skills,
- Construction Law,
- Financial Reporting,
- Leadership and Management Skills,
- Construction Technology and Environmental Services,
- Accounting,
- Procurement and Financial Management,
- Health and Safety Acts and Procedures,
- Construction Economics and
- Project Management.

It is evident that quantity surveying graduates regarded in varying degrees the importance of the following skills and competences, namely:

- Property Law,
- Dispute Resolution and Associated Procedures,
- Site Surveying,
- Insolvency and Insurances,
- Research Methodologies and Techniques,
- Marketing and
- Facilities Management.

The statistical mean across the 25 skills and competencies was 1.51 suggesting that graduates regarded the skills and competencies that they should possess as extremely important.

Table 18: Traditional, Evolved and Emerging Skills and Competencies

Skills and Competencies	Mean	SD	Scale	Rank
Traditional Skills				
Interpretation of Data, Information and Information Technology	1.18	0.500	Extremely Important	1
Personal and Interpersonal Skills	1.30	0.557	Extremely Important	2
Drawing Interpretation (Architectural)	1.20	0.558	Extremely Important	3
Design Appraisal and Measurement (Quantity Surveying)	1.20	0.599	Extremely Important	4
Professional Practice and Ethics	1.21	0.519	Extremely Important	5
Ethics	1.25	0.581	Extremely Important	6
Drawing Interpretation (Structural)	1.25	0.581	Extremely Important	7
Project Valuation and Payments	1.28	0.635	Extremely Important	8
Financial Reporting	1.34	0.686	Extremely Important	9
Leadership and Management Skills	1.42	0.630	Extremely Important	10
Construction Technology and Environmental Services	1.46	0.702	Extremely Important	11
Evolved and Emerging Skills				
Construction Contract Practice (JBCC/GCC)	1.23	0.570	Extremely Important	1
Construction Law	1.30	0.557	Extremely Important	2
Accounting	1.51	0.668	Extremely Important	3
Procurement and Financial Management	1.53	0.667	Extremely Important	4
Health and Safety Acts and Procedures	1.58	0.793	Extremely Important	5
Construction Economics	1.64	0.655	Extremely Important	6
Project Management	1.65	0.612	Extremely Important	7
Property Law	1.67	0.565	Important	8
Dispute Resolution and Associated Procedures	1.73	0.664	Important	9
Insolvency and Insurances	1.90	0.750	Important	10
Site Surveying	1.81	0.763	Important	11
Research Methodologies and Techniques	2.02	0.780	Important	12
Marketing	2.06	0.632	Important	13
Facilities Management	2.07	0.600	Important	14

From Table 18 it is evident that graduate quantity surveyors regarded all the skills and competencies as important to varying degrees, with 11 traditional skills and competencies being regarded as extremely important, 7 evolved and emerging skills and competencies as being regarded as extremely important and 7 evolved and emerging skills and competencies being regarded as important.

Quantity surveying graduates regarded the following traditional skills and competencies as extremely important namely:

- Interpretation of Data, Information and Information Technology,
- Personal and Interpersonal Skills,
- Drawing Interpretation (Architectural),
- Design Appraisal and Measurement (Quantity Surveying),
- Professional Practice and Ethics,
- Ethics,
- Drawing Interpretation (Structural),
- Project Valuation and Payments,
- Financial Reporting,
- Leadership and Management Skills and
- Construction Technology and Environmental Services.

It is evident that quantity surveying graduates regarded 7 evolved and emerging skills and competencies as extremely important, namely:

- Construction Contract Practice (JBCC/GCC),
- Construction Law,
- Accounting,
- Procurement and Financial Management,
- Health and Safety Acts and Procedures,
- Construction Economics and
- Project Management.

They also regarded 7 evolved and emerging skills and competencies as important, namely;

- Property Law,
- Dispute Resolution and Associated Procedures,
- Insolvency and Insurances,
- Site Surveying,
- Research Methodologies and Techniques,
- Marketing and
- Facilities Management.

Table 18 illustrates that in the current built environment industry, organisations that are actively practicing quantity surveying find traditional, evolved and emerging skills and competencies in varying degrees of importance. They do not solely focus on traditional skills and competencies for graduate quantity surveyors to possess but rather a combination of traditional, evolved and emerging skills and competencies.

5.3.5. *A Comparison Between Traditional Universities' and Universities' of Technology*

In order to determine whether there were any statistically significant differences between the responses of quantity surveying graduates from traditional universities and universities of technology, the means of the two sets of graduates were compared using a dependent t-test. Most authors refer to statistically significant as P (calculated probability) < 0.05 and statistically highly significant as P (calculated probability) < 0.001 (less than one in a thousand chance of being wrong) (http://www.statsdirect.com/help/basics/p_values.htm).

Table 19 tells us whether the difference between the means of the two sets of graduates was large enough to not be a chance result. The table tells us the mean difference between scores, the standard deviation of the differences between the means, the standard error of the differences between graduates scores, the test statistic and the degrees of freedom. SPSS uses the degrees of freedom to calculate the exact probability that a value as big as the one obtained could occur if the null hypothesis were true. A two-tailed probability, which is the probability when no prediction was made about the direction of group differences was used to determine the chance that a value of 't' this big could happen if the null hypothesis were true (Field, 2009).

Table 19: Paired Samples Test – Traditional Universities and Universities of Technology

Pair One	Paired Differences					t	df	Sig. (two-tailed)
	Mean	SD	Std. Error Mean	95% Confidence Interval of The Mean Difference				
				Lower	Upper			
Traditional University and University of Technology	-0.119	0.967	0.149	-0.420	0.182	-0.797	41	0.430

Table 19 shows that the sample mean responses of graduates from traditional universities and universities of technology are statistically significantly different because $0.430 > 0.50$. The responses from both pairs of graduates were statistically different, and the null hypothesis may be rejected.

Table 20 shows the comparative means from the institutes, with the overall mean in standard font, traditional universities in **bold font** and universities of technology represented in *bold italic font*.

Table 20: Comparison of Traditional Universities with Universities of Technology

Sections	Mean	SD	Level
Section A			
Academic Programme Assessment Criteria: 1-19	3.36 ¹ 3.16² <i>3.40³</i>	0.570 0.630 <i>0.426</i>	Neutral Neutral <i>Neutral</i>
Teaching and Learning Interactions	4.15 4.67 <i>3.66</i>	3.381 5.282 <i>0.763</i>	Agree Strongly Agree <i>Agree</i>
Academic Staffing	3.79 3.37 <i>4.01</i>	0.816 0.949 <i>0.577</i>	Agree Neutral <i>Agree</i>
Employability	3.75 3.64 <i>3.85</i>	0.915 0.861 <i>0.933</i>	Agree Agree <i>Agree</i>
Programme Administrative Services	3.59 3.32 <i>3.65</i>	0.788 0.900 <i>0.564</i>	Agree Neutral <i>Agree</i>
Student Assessment Policies and Procedures	3.55 3.25 <i>3.64</i>	0.707 0.757 <i>0.607</i>	Agree Neutral <i>Agree</i>
Student Assessment Practices	3.55 3.20 <i>3.66</i>	0.884 0.884 <i>0.795</i>	Agree Neutral <i>Agree</i>
Programme Design	3.47 3.31 <i>3.51</i>	0.613 0.606 <i>0.623</i>	Agree Neutral <i>Agree</i>
Student Recruitment, Admission and Selection	3.45 3.32 <i>3.50</i>	0.754 0.705 <i>0.690</i>	Agree Neutral <i>Agree</i>
Postgraduate Policies, Procedures and Regulations	3.41 3.65 <i>3.00</i>	1.406 1.207 <i>1.622</i>	Agree Agree <i>Neutral</i>
Support Staffing	3.40	0.894	Neutral

¹ The normal font data are those of the whole sample of graduates

² The bold data are those of traditional university graduates

³ The italicized data are those of university of technology graduates

	3.08 3.47	0.987 0.731	Neutral Agree
Academic Development for Student Success	3.37 3.13 3.50	0.833 0.834 0.818	Neutral Neutral Agree
Delivery of Postgraduate Programmes	3.32 3.56 2.86	1.392 1.152 1.540	Neutral Agree Neutral
Student Retention and Throughput Rates	3.32 3.19 3.30	0.833 0.707 0.831	Neutral Neutral Neutral
Teaching and Learning Strategy	3.30 2.78 3.59	0.809 0.790 0.625	Neutral Neutral Agree
Programme Effectiveness	3.21 3.20 3.12	1.006 0.867 1.074	Neutral Neutral Neutral
The Assessment System	3.19 3.02 3.16	0.876 0.874 0.826	Neutral Neutral Neutral
Co-ordination of Work-Based Learning	3.15 2.48 3.72	1.045 0.922 0.719	Neutral Disagree Agree
Infrastructure and Library Resources	3.11 2.99 2.95	0.941 0.889 0.846	Neutral Neutral Neutral
Programme Co-ordination	2.69 2.50 2.68	1.006 1.099 0.958	Neutral Disagree Neutral
Section B			
Work-Readiness of Graduates	3.98 3.92 3.99	0.390 0.386 0.388	Agree Agree Agree
Section C			
Skills and Competencies	1.51 1.50 1.50	0.370 0.300 0.415	Extremely Important Extremely Important Extremely Important

From Table 20, it is evident from the t-test conducted that quantity surveying graduates from traditional universities and universities of technology agreed with one SACQSP programme criteria (means=3.85-3.64), were neutral about four programme criteria (means=3.30-2.95) and tended to have differing views about eleven programme criteria (means=4.01-2.48). Overall the statistical mean of the 19 programme criteria was 3.36, with quantity surveying graduates from traditional universities reporting a mean of 3.16 and quantity surveying graduates from the universities of technology a mean of 3.40. This finding suggests that quantity surveying graduates from both traditional universities and universities of technology were in agreement about the 19 programme criteria as they applied to their higher education institutions.

The overall statistical mean for the graduates' work-readiness was 3.98, with graduates from traditional universities reporting a mean of 3.92 and graduates from universities of technology a mean of 3.99. This suggests that both quantity surveying graduates from traditional universities and universities of technology agreed with their level of work-readiness for the world of work and professional practice. The overall statistical mean for the importance of graduates' skills and competencies was 1.51, with graduates from traditional universities having a mean of 1.50 and graduates from universities of technology a mean of 1.50. This finding suggests that both cohorts of quantity surveying graduates expressed that the skills and competencies were extremely important for the world of work and professional practice.

5.3.6. A Comparison Between Male and Female Quantity Surveying Graduates

In order to determine whether there were any statistically significant differences between the responses of responses of male quantity surveying graduates to that of female quantity surveying graduates, the means of the two sets of graduates were compared using a dependent t-test. Most authors refer to statistically significant as P (calculated probability) < 0.05 and statistically highly significant as P (calculated probability) < 0.001 (less than one in a thousand chance of being wrong) (http://www.statsdirect.com/help/basics/p_values.htm). According to

Table 20 the difference between the means of the two sets of graduates was large enough to not be a chance result. The mean difference between scores, the standard deviation of the differences between the means, the standard error of the differences between graduates scores, the test statistic and the degrees of freedom are shown in Table 20. SPSS uses the degrees of freedom to calculate the exact probability that a value as big as the one obtained could occur if the null hypothesis were true. A two-tailed probability, which is the probability when no prediction was made about the direction of group differences was used to determine the chance that a value of 't' this big could happen if the null hypothesis were true (Field, 2009).

Table 21: Paired Samples Test – Male and Female Quantity Surveying Graduates

Pair One	Paired Differences					t	df	Sig. (two-tailed)
	Mean	SD	Std. Error Mean	95% Confidence Interval of The Mean Difference				
				Lower	Upper			
Male Graduates and Female Graduates	0.476	0.890	0.137	0.198	0.753	3.467	41	0.001

Table 21 shows that the sample mean responses of male and female graduates are highly statistically significant different because 0.001 = 0.001 (less than one in a thousand chance of being wrong). The responses were statistically similar, and therefore the null hypothesis cannot be rejected.

Table 22 shows the comparative means from the institutes, with the overall mean in standard font, male responses in **bold font** and female responses represented in *bold italic font*.

Table 22: Comparison of Male Graduates with Female Graduates

Sections	Overall Mean	Overall SD	Level
Section A			
Academic Criteria: 1-19	3.36 ⁴ 3.40⁵ <i>3.28⁶</i>	0.570 0.591 <i>0.536</i>	Neutral Neutral <i>Neutral</i>
Teaching and Learning Interactions	4.15 4.46 <i>3.30</i>	3.381 3.881 <i>0.752</i>	Agree Strongly Agree <i>Neutral</i>
Academic Staffing	3.79 3.75 <i>3.90</i>	0.816 0.820 <i>0.870</i>	Agree Agree <i>Agree</i>
Employability	3.75 3.76 <i>3.70</i>	0.915 0.971 <i>0.823</i>	Agree Agree <i>Agree</i>
Programme Administrative Services	3.59 3.69 <i>3.40</i>	0.788 0.737 <i>0.889</i>	Agree Agree <i>Neutral</i>
Student Assessment Policies and Procedures	3.55 3.57	0.707 0.720	Agree Agree

⁴ The normal font data are those of the whole sample of graduates

⁵ The bold data are those of male graduates

⁶ The italicized data are those of female graduates

	3.49	0.734	Agree
Student Assessment Practices	3.55 3.56 3.50	0.884 0.928 0.816	Agree Agree Agree
Programme Design	3.47 3.55 3.18	0.613 0.592 0.621	Agree Agree Neutral
Student Recruitment, Admission and Selection	3.45 3.56 3.22	0.754 0.760 0.684	Agree Agree Neutral
Postgraduate Policies, Procedures and Regulations	3.41 3.42 3.38	1.406 1.320 1.728	Agree Agree Neutral
Support Staffing	3.40 3.41 3.40	0.894 0.975 0.700	Neutral Agree Neutral
Academic Development for Student Success	3.37 3.50 3.02	0.833 0.796 0.901	Neutral Agree Neutral
Delivery of Postgraduate Programmes	3.32 3.42 3.05	1.392 1.331 1.609	Neutral Agree Neutral
Student Retention and Throughput Rates	3.32 3.33 3.41	0.833 0.825 0.828	Neutral Neutral Agree
Teaching and Learning Strategy	3.30 3.24 3.54	0.809 0.811 0.778	Neutral Neutral Agree
Programme Effectiveness	3.21 3.06 3.80	1.006 1.023 0.714	Neutral Neutral Agree
The Assessment System	3.19 3.11 3.35	0.876 0.937 0.668	Neutral Neutral Neutral
Co-ordination of Work-Based Learning	3.15 3.19 2.96	1.045 1.075 0.996	Neutral Neutral Neutral
Infrastructure and Library Resources	3.11 3.22 2.91	0.941 1.035 0.472	Neutral Neutral Neutral
Programme Co-ordination	2.69 2.70 2.66	1.006 0.980 1.186	Neutral Neutral Neutral
Section B			
Work-Readiness of Graduates	3.98 4.01 3.97	0.390 0.392 0.345	Agree Agree Agree
Section C			
Skills and Competencies	1.51 1.55 1.40	0.370 0.390 0.320	Extremely Important Extremely Important Extremely Important

From Table 22 it is evident that male and female graduates agreed with four SACQSP programme criteria (means=3.90-3.49), were neutral about four programme criteria (means=3.35-2.66) and tended to have differing views on eleven programme criteria (means=4.46-2.66). Overall the statistical mean of the nineteen programme criteria was 3.36, with male graduates having a mean of 3.40 and female graduates a mean of 3.28. This finding suggests that both male and female graduates were neutral about all nineteen programme criteria.

The overall statistical mean for the graduates' work-readiness was 3.98, with male graduates having a mean of 4.01 and female graduates a mean of 3.97. This suggests that both male and female graduates agreed with their level of work-readiness for the world of work and professional practice. The overall statistical mean for the importance of graduates' skills and competencies was 1.51, with male graduates having a mean of 1.55 and female graduates a mean of 1.40. This finding suggests that both male and female quantity surveying graduates regarded the skills and competencies as being extremely important for the world of work and professional practice.

5.4. Chapter Summary

This chapter provides a detailed analysis of the data collected from respondents. SPSS version 24 was used to capture and analyse the data collected from 43 quantity surveying graduates and 11 employer survey questionnaires. The questionnaires identify the profile of employers who are actively practicing quantity surveying in the construction industry and that of quantity surveying graduates from both traditional universities and universities of technology. The degrees of internal consistencies for the survey questionnaires illustrated statistically high levels with values greater than 0.700. The findings from the employer questionnaire illustrated that they disagreed that students demonstrated a good balance of theoretical, practical and experiential knowledge and that not only graduates with quantity surveying diplomas or degrees were employed at their organisations. Overall employers were neutral about quantity surveying graduates and their work readiness.

They also tended to agree that a combination of traditional, evolved and emerging skills and competencies were regarded as extremely important for quantity surveying graduates to possess. The findings from the quantity surveying graduate questionnaire indicated that

graduates were neutral about the SACQSP programme criterion and it adequately preparing them for the world of work and professional practice. Graduates tended to be neutral about ten of the programme criteria, highlighting higher education institutes assessment systems, co-ordination of work-based learning, infrastructure and library resources and programme co-ordination. Graduates agreed with their level of work-readiness and that they were ready for the world of work. They also expressed that a combination of traditional, evolved and emerging skills and competencies were extremely important for quantity surveying graduates to possess.

A dependent t-test was conducted to determine whether there were any statistically significant differences between the responses of quantity surveying graduates from traditional universities and universities of technology, as well as the comparison between male and female quantity surveying graduates. The dependent t-test compared the means of the two sets and determined via a pair sample test that the mean responses of graduates from traditional universities and universities of technology are statistically significantly differing because $\text{sig} = 0.430$. The mean responses of male and female graduates are highly statistically significant because $\text{sig} = 0.001$ (less than one in a thousand chance of being wrong). The responses were statistically similar, supporting the null hypothesis.

The next chapter summarises and concludes the study and offers recommendations for future research.

CHAPTER SIX

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6. Summary

6.1. Introduction

The chapter provides a summary of the key findings and conclusions of the study, and provides recommendations for future studies relative to the research objectives. The purpose of this study was to investigate the impact of accreditation on quantity surveying programmes and the professional preparedness of graduates. The study aimed at determining if the SACQSP was prescriptive in terms of accredited quantity surveying programmes and curriculum design. If these accredited programmes adequately prepared quantity surveying graduates, from higher education institutes in Kwazulu-Natal for the world of work and professional practice, did these graduates possess the necessary skills and competencies, and have these quantity surveying programmes aligned themselves with the current built environment industry and the expectations of industry employers. It further addresses the perceptions of graduates about their level of work-readiness and the skills and competencies required in the workplace for entry level positions.

6.2. Problem Statement

The problem statement that forms the basis of the study is restated as follows:

Despite the quantity surveying programmes offered at universities being accredited by the relevant councils, the graduates from the programmes are perceived by industry professionals and employers to be inadequately prepared for the world of work as entry-level quantity surveying professionals.

6.3. The Hypotheses of the Study

- H1 – Accreditation bodies are prescriptive in terms of the universities curriculum of quantity surveying programmes.
- H2 – The prescribed learning outcomes of quantity surveying programmes to be accredited do not align themselves with the expectations and needs of professional practice.

- H3 – Quantity surveying bodies only accredit university programmes that focus on the traditional roles, competencies and skills of quantity surveying graduates.
- H4 – Graduates from accredited quantity surveying programmes are adequately prepared for the world of work.
- H5 - Graduates from accredited quantity surveying programmes are adequately prepared for professional council registration.

6.4.The Research Objectives

- To identify the requirements for accreditation of quantity surveying programmes at universities.
- To determine whether prescribed learning outcomes of quantity surveying programmes to be accredited do not align themselves with the expectations and needs of professional practice.
- To establish whether the quantity surveying accreditation bodies in terms of their accreditation requirements, only focus on the traditional roles, competencies and skills of quantity surveying graduates.
- To what extent does the quantity surveying bodies accommodate or the evolution of quantity surveying roles, competencies and skills of quantity surveying graduates.
- To establish if graduates from accredited quantity surveying programmes are adequately prepared for the world of work.
- To establish whether graduates from accredited quantity surveying programmes are adequately prepared for professional council registration

6.5. Hypotheses Testing

- Hypothesis One: Accreditation bodies are prescriptive in terms of the universities curriculum of quantity surveying programmes.

Studies by Walkington, (2002), Yeomans and Atrens, (2001), Yokomoto and Bostwick, (1999), Memon et al., (2009) and Fitzpatrick et al., (2009) have shown that the built environment profession is a highly creative and interactive process that is constantly facing increasingly societal challenging expectations and demanding job experiences. Therefore, built environment education must be carefully planned and executed so that the students not only attain the necessary skills and competencies but also continue life-

long learning to be successful professionals, who are capable to face such challenges. The success of higher education quantity surveying programmes is measured by high levels of competency from its graduates in their professional careers and the full satisfaction of their employers (Walther et al., 2011).

In South Africa, the SACQSP accredits quantity surveying programmes. They have developed 19-fundamental programme criterion that serve as an assessment tool for assessing quantity surveying programmes (ACCE, 2014). These 19 criterion are based upon knowledge, skills and the behaviour that students acquire through the curriculum of a programme. The criteria is intended to assure quality and to create the pursuit of improvement in the quality of quantity surveying education that satisfies the needs of employers in a competitive market. A higher education institution that provides quantity surveying education, should strive to provide a level of quality education that aims to prepare students for the various fields in the construction industry, commercial property industry and academia. Students should be trained to develop into multi-skilled professionals possessing mental, intellectual and emotional fortitude to succeed in the world of work (Faculty of Engineering and Built Environment, Malaysia, 2010). The criterion serve as a programme evaluation tool to help programmes be reflective, to pinpoint strengths and weaknesses and to target areas for improvement.

The hypothesis that accreditation bodies are prescriptive in terms of the universities curriculum of quantity surveying programmes cannot be rejected.

- Hypothesis Two: The prescribed learning outcomes of quantity surveying programmes to be accredited do not align themselves with the expectations and needs of professional practice.

Studies by Burger and Jonkers, (2013) showed that the construction industry needs are constantly changing to accommodate the shifts in the economy. These changes require graduate quantity surveyors to be highly competent, to possess adequate skillsets and knowledge to provide a service of exceptional standards to employers and clients through delivery of traditional, evolved and emerging roles and services. An important objective of higher education quantity surveying programmes is to prepare graduates with the required skillsets for the world of work and professional practice, as employers

expect students from accredited programmes to be instantly employable. Therefore, programmes should balance the expectations of employers with educational aims that will prepare graduates for not just the immediate work entry years but a lifelong career. The SACQSP has prescribed 19 fundamental programme criterion that aids in assessing and implementing quantity surveying programmes that seeks ensure that quantity surveying programmes balance the expectations of employers with educational aims.

This study has shown that quantity surveying graduates were neutral about the 19 programme criterion and these adequately preparing them for the world of work and professional practice. Graduates from traditional universities tended to disagree that the university co-ordinated work-based learning, while graduates from the universities of technology agreed that the university coordinated work-based learning and were neutral about the co-ordination of their programmes. Employers disagreed that students demonstrated a good balance of theoretical, practical and experiential knowledge. Overall employers were neutral about quantity surveying graduates and their level of work readiness from accredited quantity surveying programmes. They also regarded a combination of traditional, evolved and emerging skills and competencies as extremely important for graduates to possess. The results indicate that the prescribed programme criterion for quantity surveying programmes do not align themselves with the expectations and needs of professional practice.

The hypothesis that the prescribed learning outcomes of quantity surveying programmes to be accredited do not align themselves with the expectations and needs of professional practice cannot be rejected.

- Hypothesis Three: Quantity surveying bodies only accredit university programmes that focus on the traditional roles, competencies and skills of quantity surveying graduates.

The SACQSP have developed an accreditation policy and 19-fundamental programme criterion based upon knowledge, skills and the behaviour that students have to acquire through the curriculum of a programme. Quantity surveying programmes seeking accreditation are required to meet these requirements with regards to its accreditation policy and to keep track of the constant changes in its criteria such as faculty, student support services, finance and facilities, curricula and student learning outcomes, policy

and procedures that can affect aspects as the programme educational objectives, student outcomes and programme criteria (Khan, Mourad and Waleed, 2014).

In this study, it has been highlighted that even though the SACQSP is prescriptive towards its accreditation policy and 19-fundamental programme criterion, it does not detail the required skills and competencies that quantity surveying graduates should possess for professional practice. As a result, the SACQSP accredits any higher education institute that meets the councils' accreditation policy and criterion and does not solely focus on programmes that only target traditional skills and competencies. It should be noted that both employers and graduates agreed that a combination of traditional, evolved and emerging skills and competencies were regarded as either extremely important or important for graduates to possess in order to function efficiently in the current and constantly evolving built environment industry.

The hypothesis that quantity surveying bodies only accredit university programmes that focus on the traditional roles, competencies and skills of quantity surveying graduates cannot be rejected.

- Hypothesis Four: Graduates from accredited quantity surveying programmes are adequately prepared for the world of work.

One of the most noticeable trends in employment over the last decade or so has been the rising expectations among employers of newly recruited graduates. Davies, Csete and Poon (1999) as cited in Rawlins and Marasini (2011), suggest that graduates from professional courses are often described by employers as lacking in useful immediate fee-earning skills. Graduates are expected to make a significant contribution from the start of their employment and to take ownership of their careers in order for them to successfully integrate into the built environment (Davies, 2000). Therefore, employers hope that the graduates they employed would bring appropriate skills, knowledge, values and practical experience to the organisation (Dymock and Gerber, 2002). However, the reality is that the skills and competencies acquired from higher education programmes do not necessarily lead to the competencies valued by the labour market (Jorgensen, 2004).

Findings from this study show that employers were neutral about students being effective with their decision-making skills, showing effective problem solving skills, and having high levels of innovation on projects. They were neutral about students understanding the impact that economic influences had on an organisation, having the ability to independently plan their time at work and having good leadership skills at work. Employers disagreed that students demonstrated a good balance of theoretical, practical and experiential knowledge and that not only graduates with quantity surveying diplomas or degrees were employed. They agreed that they were not contacted by higher education institutes to provide input when constructing quantity surveying programs in order for programmes to be consistent and relevant to current built environment practice. It should be noted that more than half (54.5%) of organisations did not only employ graduates from accredited quantity surveying programs. Overall employers were neutral about quantity surveying graduates and their level of work readiness.

The hypothesis that graduates from accredited quantity surveying programmes are adequately prepared for the world of work can be rejected.

- Hypothesis Five: Graduates from accredited quantity surveying programmes are adequately prepared for professional council registration.

Quantity surveying programmes in SA are accredited by the South African Council for the Quantity Surveying Profession (SACQSP) in terms of the Quantity Surveying Professions Act 49 of 2000. The vision and mission of the council is to be an appropriate regulatory body for a successful, dynamic and ever-evolving quantity surveying profession who are leaders in the development of the built environment. The Council performs a variety of functions, such as setting out and auditing of academic standards for purposes of registration through a process of accreditation of quantity surveying programmes at universities. Only persons who have graduated from programmes accredited by the SACQSP can practice as professionals in society (www.sacqsp.org.za). Accredited quantity surveying programmes instil confidence in the worth of an institution or programme within the minds of students and the public. For students, accreditation provides real life value related to not only judging quality,

but also obtaining employment within industry (Council for Higher Education Accreditation, 2010).

This study indicated that 95.0% of the graduates who participated in the study had graduated from accredited quantity surveying programmes. More than half of the graduates (52.5%) had attended Universities of Technology and 40.5% had attended the University of KwaZulu-Natal – a traditional university. The SACQSP routes to registration states that the requirement for professional registration is for students to graduate from accredited quantity surveying programmes. Then only can graduates professionally register and practice as professionals in society. However, it should be noted that 54.5% of organisations employed graduates from non-accredited quantity surveying programs and that 72.7% did not require quantity surveying graduate employees to be registered with the SACQSP. Therefore, whether a graduate comes from an accredited program or not is inconsequential to employers. Similarly, graduates found no added advantage by having studied at an accredited program as they were still not well-prepared for the world of work and professional practice.

The hypothesis that graduates from accredited quantity surveying programmes are adequately prepared for professional council registration can be rejected.

6.6. Recommendations

Based on the research findings from this study, there are a few areas that may be used for future research.

6.6.1. Increased Role of the Built Environment Industry

The built environment industry plays an integral role in the employment and further development of quantity surveying graduates and therefore needs to have a greater sense of involvement in the development of quantity surveying education. Even though employers are supportive in hiring graduates for their organisations, greater commitment and an increased number of graduates should be given to the opportunity to develop at an organisation. Employers could also have a greater level of involvement with the SACQSP and higher education institutions in the development of accredited programme criterion and quantity surveying programme curriculum design and development.

6.6.2. Collaboration between the SACQSP, Higher Education Institutions and the Built Environment Industry

It is important that quantity surveying programmes are designed and developed to address the skills and competencies required by graduates for the world of work. Therefore, it is necessary that the SACQSP, higher education institutes institutions and potential employers work together to achieve this integration. Employers may also seek to provide greater involvement at higher education institutes by providing mentorship programmes to students during their studies, in providing guest lectures, workshops and seminars. This collaboration will seek to ensure that graduates receive a level of higher education that it current with industry requirements and adequately prepares them for the world of work and professional practice.

6.6.3. Future Programme Development

Quantity surveying programmes should aim to continue to evolve and develop in response to the needs of the built environment industry. Therefore, constant input from the employers and industry is essential as the needs of the construction industry is constantly changing due to economic influences. As a result, quantity surveying programmes can only be successful if they meet the needs of the built environment industry and it is essential that continued research and development is conducted.

6.6.4. Recommendations for Future Research

This study was limited to the responses of 11 organisations and 43 graduates. The scope of the study can be extended across the nine provinces to include more organisations and graduates from higher education institutes. Employers skills and competency requirements of quantity surveying graduates may be compared and accredited quantity surveying programmes from higher education institutes may be examined.

6.7. Conclusion

This study sought to investigate the impact of accreditation on quantity surveying programmes and the professional preparedness of graduates. The study tested five hypotheses of which none can be rejected. The results indicate that the SACQSP is prescriptive towards its accreditation policy and 19-fundamental programme criterion, however it does not detail the required skills and competencies that quantity surveying graduates should possess for professional practice. The criterion serve as a programme evaluation tool, as a programme functions best if higher education institutes can actively monitor and promote quality quantity surveying programmes. Higher education quantity surveying programmes should be willing to constantly evolve in relation to industry trends. Therefore, these criteria have been developed to help programmes be reflective, to identify their strengths and weaknesses and highlight areas for improvement. The results show that quantity surveying graduates were neutral towards the 19 programme criterion and in it adequately preparing them for the world of work and professional practice.

Employers agreed that students did not demonstrate a good balance of theoretical, practical and experiential knowledge and graduates with both quantity surveying diplomas and degrees were employed at their organisation. They were neutral about quantity surveying graduates and their level of work readiness from accredited quantity surveying programmes. They also regarded a combination of traditional, evolved and emerging skills and competencies as important for graduates to possess. The results indicate that the prescribed programme criterion for quantity surveying programmes do not align themselves with the expectations and needs of professional practice.

Findings from this study also showed that employers were neutral about students being effective with their decision-making skills, problem solving skills and in having high levels of innovation on projects. They were neutral about students understanding the impact that economic influences had on an organisation, having the ability to independently plan their time at work and having good leadership skills at work. Most organisations employed graduates from both accredited and non-accredited quantity surveying programs. Overall employers were neutral about quantity surveying graduates and their level of work readiness. Therefore, higher education accredited quantity surveying programmes need to re-align themselves with the industry expectations of graduates and re-examine the SACQSP programme criterion. This basis should act as a mechanism for curriculum design and revision as the current offerings are

not meeting industry expectations of quantity surveying graduates. A measure of the quality of any academic programme is the success of graduates in practice, therefore there must be communication with professional bodies, higher education institutes, alumni, industry and periodic follow ups of graduates.

Further findings indicate that the requirements for professional registration as per the SACQSP routes to registration requires students to graduate from accredited quantity surveying programmes. Then only can graduates professionally register and practice as professionals in society. However, it should be noted that most organizations (72.7%) did not require quantity surveying graduate employees to be registered with the SACQSP.

Current accredited quantity surveying programmes do not meet the requirements of the built environment industry by adequately preparing skilled quantity surveying graduates, despite its theoretical benefits. The recommendations seek to improve the current higher education programmes by increasing the role and involvement of the built environment industry, collaboration between the SACQSP, higher education institutions and the built environment industry and future programme development.

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APPENDIX A – ETHICAL CLEARANCE



19 August 2016

Ms Zakheeya Armoed 208512825
School of Engineering
Howard College Campus

Dear Ms Armoed

Protocol reference number: HSS/1244/016M

Project Title: Investigating the impact of accreditation on Quantity Surveying Programs and the professional preparedness of graduates

Full Approval – Expedited Application

In response to your application received 15 August 2016, the Humanities & Social Sciences Research Ethics Committee has considered the abovementioned application and the protocol has been granted **FULL APPROVAL**.

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment /modification prior to its implementation. In case you have further queries, please quote the above reference number.

PLEASE NOTE: Research data should be securely stored in the discipline/department for a period of 5 years.

The ethical clearance certificate is only valid for a period of 3 years from the date of issue. Thereafter Recertification must be applied for on an annual basis.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully

.....
Dr Shenuka Singh (Chair)
Humanities & Social Sciences Research Ethics Committee

/pm

Cc Supervisor: Professor Theo C Haupt
Cc Academic Leader Research: Professor Christina Trois
Cc School Administrator: Ms Nombuso Dlamini

Humanities & Social Sciences Research Ethics Committee

Dr Shenuka Singh (Chair)

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Founding Campuses  Edgewood  Howard College  Medical School  Pietermaritzburg  Westville

APPENDIX B – TURNITIN REPORT

Turnitin Originality Report

Submission Two by Zakheeya Armoed

From Papers (Research)



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APPENDIX B - INFORMED CONSENT FORM

To Whom It May Concern:

I, ***Zakheeya Armoed***, am currently registered for studies leading to the Masters in Construction Management. A requirement to be met in the awarding of the Masters in Construction Management is that an approved research project should be undertaken leading to a submission of a dissertation. The study involves Investigating the impact of Accreditation on Quantity Surveying Programs and the professional preparedness of graduates. Despite the quantity surveying programs offered at universities being accredited by the relevant councils, the graduates from the programs are perceived by industry professionals and employers to be inadequately prepared for the world of work as entry-level quantity surveying professionals.

Accreditation of higher education quantity surveying degree programs by their relevant professional bodies is well established and accepted in many higher education systems throughout the world. In South Africa higher education accreditation has become increasingly debated over the past few decades. The evident problems with accreditation are not a new phenomenon, and have had a huge impact on higher education institutes. Due to their lack of regulatory framework to direct the relationship between professional bodies, higher education institutes and the council for higher education has allowed professional bodies to reach into the academic activities of universities in ways that have the potential to undermine the quality and effectiveness of higher education qualifications, in providing adequately skilled graduates.

Therefore, the significance of the study is to identify the need for an establishment of a framework, by the higher learning institutes. This will serve as a guide and regulate the relationships and quality assurance between; the higher education institutes, the council for higher education and the related quantity surveying education professional bodies. The research will also talk about structuring a relationship between professional bodies and higher education institutes such as The University of Kwazulu-Natal, in a manner that best serves the interest of students, universities and the professions.

Please note that only a summary of the data will be included in the report and that your name will not be included. Your ***anonymity and confidentiality*** is of utmost importance and will be maintained throughout the study. Your participation in the study is completely voluntary. You also have the right to withdraw at any time during the study. Should you want feedback on the findings of this research project a summary of the key findings will be provided to you if you include your contact details on the notice of declaration.

Please note that this investigation is being conducted in my personal capacity. Should you need to contact me regarding any aspect of this research, you can do so either by email on: zakheeya.armoed@gmail.com or telephonically on: 074 589 2244. My academic supervisor is Prof. Theo Haupt, based in the School of Engineering on the Howard campus of the University of KwaZulu Natal. He can be contacted by email at: haupt@ukzn.ac.za or telephonically at: 031 260 2687

I would highly appreciate your participation, as it would help me to complete this research project.

I appreciate the time and effort it will take for you to participate in this study.

Kind Regards



Zakheeya Armoed

(Student Number 208512825)

Supervisor: Prof. T.C. Haupt

DECLARATION OF CONSENT

I _____

(Full Name)

hereby confirm that I have read and understand the contents of the letter and the nature of the research project has been clearly defined prior to participating in this research project.

I understand that I am at liberty to withdraw from the project at any time, should I so desire.

Organisation: _____

Capacity/Role: _____

Contact Number: _____

Participants Signature: _____

Date: _____

RESEARCHER

Full Name: Zakheeya Armoed

University: The University of Kwazulu-Natal

School: School of Engineering, Prop. Dev.

College: Agriculture, Engineering and Science

Campus: Howard College

Proposed Qualification: MSc. Construction Management

Contact: 074 589 2244

Email: zakheeya.armoed@gmail.com

HSSREC RESEARCH OFFICE

Full Name: Premlall Mohun

HSS Research Office

Natal

Govan Bheki Building

Westville Campus

Contact: 0312604557

Email: mohunp@ukzn.ac.za

SUPERVISOR

Full Name: Prof. Theodore. C.

University: The University of Kwazulu-

School: School of Engineering, Prop. Dev.

**College: Agriculture, Engineering and
Science**

Campus: Howard College

Contact: 031 260 2712

Email: haupt@ukzn.ac.za

APPENDIX D - EMPLOYERS SURVEY QUESTIONNAIRE

Employer Questionnaire

This questionnaire presents a series of questions related to the program criteria and graduate skills and competences that may be important for the success of an organisation. The answers may be very valuable in improving course planning for future students studying to become quantity surveyors.

Section A – General Information

Please answer all the questions below by indicating an “X” in the appropriate box

GENERAL INFORMATION				
1.	Name of respondent (optional)			
2.	Position in the organisation			
3.	Name of organisation			
4.	Size of organisation			
5.	No. of years in the organisation			
6.	Organisation Sector	Construction Company		
		Quantity Surveying Firm		
		Government		
		Financial Institutions		
		Other		
7.	Does your organisation actively recruit graduates?	Yes		No
	If yes, please state why			
	If no, please state why			
8.	Do you only employ students from accredited quantity surveying programs?	Yes		No
	If yes, please state why			
	If no, please state why			
9.	No. of graduates recruited annually			
10.	Highest level of graduates' qualification	Undergraduate Diploma		
		Undergraduate Degree		
		Honours Degree		
		Masters Degree		
		Other		
10.	Are the graduates required to be registered as candidates with the SACQSP?	Yes		No

Section B – A Graduates Work Readiness: Skills and Competencies

Indicate on a scale of **1 to 5** the extent to which you agree with the following statements where,

1=strongly disagree, 2=disagree, 3=neutral, 4=agree and 5=strongly agree

<u>STATEMENT</u>	1	2	3	4	5
Students who achieved high levels on their academic records are not necessarily prepared for work at our organisation					
Organisations are not contacted by higher education institutes to provide input when constructing quantity surveying programs					
Students employed at our organisation demonstrate a good balance of theoretical, practical and experiential knowledge					
Students with work based learning experience enhanced their level of employment at our organisation					
Only graduates with quantity surveying degrees are employed at our organisation					
Only graduates with quantity surveying diplomas are employed at our organisation					
The students employed at our organisation showed high levels of self-discipline at work					
The students employed at our organisation have good leadership skills at work					
The students employed at our organisation use physical resources; computer/printer, effectively at work					
The students employed at our organisation independently plan their time at work					
Students employed at our organisation function effectively in a team, at work and on projects					
Students employed at our organisation are have excellent oral communication skills					
Students employed at our organisation are have excellent written communication skills					
Students employed at our organisation adapt to the constant changing circumstances of the quantity surveying industry					
The level of employee success is driven by their own efforts and self-motivation					
Students employed at our organisation have high levels of innovation					
Students employed at our organisation show commitment towards their tasks at work					
Students employed at our organisation have high levels of self-confidence					
Students employed at our organisation develop and maintain effective relationships with colleagues and superiors at work					

Students employed at our organisation use quantity surveying computer software efficiently to execute daily tasks					
Students employed at our organisation show effective problem solving skills on projects					
Students employed at our organisation are effective with their decision making skills					
Students employed at our organisation have advanced numeracy skills to execute their tasks effectively					
Students employed at our organisation understand the impact of economic influences on the organisation					
Students employed at our organisation have efficient listening skills					
Students employed at our organisation effectively manage interpersonal conflict within the organisation					

Please rate the following **skills and competencies** in terms of importance.

1 = Most Important, 2 = Important and 3 = Unimportant

	SKILLS & COMPETENCIES	1	2	3
1	Personal and Interpersonal Skills			
2	Leadership and Management Skills			
3	Interpretation of Data, Information and Information Technology			
4	Drawing Interpretation (Architectural)			
5	Drawing Interpretation (Structural)			
6	Professional Practice and Ethics			
7	Property Law			
8	Construction Law			
9	Design Appraisal and Measurement (Quantity Surveying)			
10	Construction Economics			
11	Construction Contract Practice (JBCC/GCC)			
12	Construction Technology and Environmental Services			
13	Project Management			
14	Procurement and Financial Management			
15	Facilities Management			
16	Project Valuation and Payments			
17	Health and Safety Acts and Procedures			
18	Dispute Resolution and Associated Procedures			
19	Insolvency and Insurances			
20	Marketing			
21	Research Methodologies and Techniques			
22	Site Surveying			

23	Ethics			
24	Accounting			
25	Financial reporting			

Are there any skills not referred to in this questionnaire which should be incorporated into an accredited quantity surveying program? Please list them below.

Please note that the data provided in this questionnaire will be treated in the strictest confidence

Thank you for your co-operation

APPENDIX E - GRADUATES SURVEY QUESTIONNAIRE

Graduate Questionnaire

This survey is designed to establish the program criteria, skills and competences that impact careers in quantity surveying. Please answer all the questions as your responses are important to improve program planning for future quantity surveying students.

Section A – General Information

Please answer the questions below by indicating an “X” in the appropriate box

PARTICULARS		
1.	Name	
2.	Age	
3.	Gender	
4.	Employed	YES NO
5.	Employment Position	
	Is the position directly related to your degree?	YES NO
	Have you worked before?	YES NO
6.	Type of Organisation where you are currently working:	
	Contractor	YES NO
	Consultant	YES NO
	Other	YES NO
EDUCATION		
7.	Name of institution where you obtained your degree?	
8.	Was the quantity surveying program accredited?	YES NO
9.	Degree	
10.	Year completed	

11. After graduation I was well-prepared to work as a quantity surveyor

strongly disagree	disagree	neutral	agree	strongly agree

Section B – Assessment of the academic program

Please answer the questions below by indicating an “X” in the appropriate box
Indicate on a scale of **1 to 5** the extent to which you agree with the following statements where,

1=strongly disagree, 2=disagree, 3=neutral, 4=agree and 5=strongly agree

<u>STATEMENT</u>	1	2	3	4	5
<u>Program design</u>					
The modules in the curriculum that I had to take had a good balance of theoretical, practical and experiential knowledge and skills					
During my period of study at university a descriptive understanding of the quantity surveying industry was promoted					
The mode of instruction used in my classes catered for my own particular learning needs					
<u>Student Recruitment, Admission and Selection</u>					
The material I received from the university to recruit me as a potential student more than adequately informed me about the quantity surveying programme at the university accurately and sufficiently					
The large number of students in my classes did not hinder me from attaining a level of good quality quantity surveying education					
<u>Academic Staffing</u>					
The academic staff for the quantity surveying program at the university had relevant academic qualifications, skills and knowledge to conduct lectures					
The academic staff for the quantity surveying program at the university were suitably qualified and experienced to teach my classes					
There was enough academic staff to teach all the required modules in the program.					
<u>Support Staffing</u>					
There were enough academic and support staff in the quantity surveying program					
The academic and support staff were competent and had sufficient appropriate experience					
<u>Teaching and Learning Strategy</u>					
I found that the program promoted both practical and vocational teaching methods					
My academic progress was monitored efficiently					
I was given regular feedback on my progress					
<u>Student Assessment Policies and Procedures</u>					
Many different evaluation methods were used to measure and monitor my progress					

The tests and examinations were conducted efficiently					
The projects and assignments were challenging but helped me grasp the knowledge and skills I needed					
I was given feedback on my performance reasonably quickly					
I found the feedback very useful					
<u>Infrastructure and Library Resources</u>					
The university had suitable and sufficient IT infrastructure and facilities that I could use					
The computer laboratories were available for my use whenever I needed to use them					
There were sufficient computers in the labs					
The software was up-to-date and the latest versions					
The university teaching or instructional spaces were well-equipped with working technology					
The labs always had someone available to help me when I had problems with the computers					
There were adequate printing facilities available					
<u>Program Administrative Services</u>					
The program was very well managed					
Information about the program curricula was clearly communicated to me					
<u>Postgraduate Policies, Procedures and Regulations</u>					
In my honors year I was very aware of the roles and responsibilities of my immediate supervisors					
I was also aware of my own roles and responsibilities as an honors student					
<u>Program Co-ordination</u>					
I had many opportunities to give input into the program					
My input was taken seriously					
The program had an industry advisory board					
<u>Academic Development for Student Success</u>					
I found the academic staff to be adequately qualified and experienced					
I was satisfied with the level of foundational skills that I gained while studying in the program					
Academic staff took an interest in my academic development					
Academic staff arranged regular counselling sessions with me to ensure that I was coping academically					
<u>Teaching and learning interactions</u>					

Academic staff provided me with adequate guidance of the program					
The program curricula were taught to me within the stipulated time frame of the qualification					
<u>Student Assessment Practices</u>					
I was assessed systematically and purposefully					
Feedback from the assessments were efficiently reported back to me					
<u>The Assessment System</u>					
I found that the program took appropriate measures to ensure the reliability, rigour and security of the assessments were maintained					
The appeals process to the faculty were clearly explained to me and ensured its explicitly and fairness					
<u>Coordination of Work-Based Learning</u>					
I found that work based learning was implemented effectively within the program					
In the absence of work based learning, a mentoring system was implemented effectively within the program					
Work based learning promoted a higher understanding of the quantity surveying program and industry practices					
Through work based learning I was able to recognise my strengths and weaknesses					
Work based learning allowed me to develop existing and new abilities					
<u>Delivery of Postgraduate Programs</u>					
In my honors year I was able to develop research competence					
There was sufficient contact with my supervisor and other instructors					
<u>Student Retention and Throughput Rates</u>					
The program did everything possible to retain me as a student even when I was struggling academically					
The program student throughput rate was quite high/satisfactory					
I found that the program actively promoted diversity with regards to race and gender equity within my classes					
<u>Employability</u>					
The program contributed to enhancing my opportunities of employability					
<u>Programme Effectiveness</u>					
My input was requested via numerous surveys, reviews and impact studies that measured the effectiveness of the program					
I regularly completed the QPA questionnaires					

Section C – A Graduates Work Readiness: Skills and Competencies

Indicate on a scale of **1 to 5** the extent to which you agree with the following statements about expectations from an entry-level graduate where,

1=strongly disagree, 2=disagree, 3=neutral, 4=agree and 5=strongly agree

<u>STATEMENT</u>	1	2	3	4	5
Having work based learning experience helped me to get a job					
Only graduates with quantity surveying degrees are employed					
Only graduates with quantity surveying diplomas are employed					
I am expected to have high levels of self-discipline at work					
I am expected to have good leadership skills					
When I started to work I was able to use physical resources; computer/printer, effectively in an organisation					
When I started to work I was expected to independently plan my time at work					
I was able to function effectively in a team when I started working					
I am expected to have excellent oral communication skills					
I am expected to have excellent written communication skills					
I must be able to adapt to changing circumstances					
My success is driven by my own efforts and self-motivation					
I am expected to have high levels of innovation					
I am expected to show commitment towards my work and towards tasks given to me					
I am expected to have high levels of self-confidence					
I am expected to develop and maintain effective relationships with colleagues and superiors					
When I started to work I was required to use quantity surveying computer software to execute daily tasks					
I am expected to show effective problem solving skills					
I am expected to be effective with my decision making skills					
I am expected to have advanced numeracy skills to execute my tasks effectively					
I am expected to understand the impact of economic influences on the organisation					

When I started to work I had efficient listening skills					
When I started to work I was able to effectively manage interpersonal conflict					
When I started to work I could effectively manage my time					

Please rate the following skills and competencies in terms of importance; using the following 3-point scale where,

1 = Extremely Important, 2 = Moderately Important and 3 = Unimportant

	SKILLS & COMPETENCIES	1	2	3
1	Personal and Interpersonal Skills			
2	Leadership and Management Skills			
3	Interpretation of Data, Information and Information Technology			
4	Drawing Interpretation (Architectural)			
5	Drawing Interpretation (Structural)			
6	Professional Practice and Ethics			
7	Property Law			
8	Construction Law			
9	Design Appraisal and Measurement (Quantity Surveying)			
10	Construction Economics			
11	Construction Contract Practice (JBCC/GCC)			
12	Construction Technology and Environmental Services			
13	Project Management			
14	Procurement and Financial Management			
15	Facilities Management			
16	Project Valuation and Payments			
17	Health and Safety Acts and Procedures			
18	Dispute Resolution and Associated Procedures			
19	Insolvency and Insurances			
20	Marketing			
21	Research Methodologies and Techniques			
22	Site Surveying			
23	Ethics			
24	Accounting			
25	Financial reporting			

Are there any skills not referred to in this questionnaire which should be incorporated into an accredited quantity surveying program? Please list them below.

Please note that the data provided in this questionnaire will be treated in the strictest confidence

Thank you for your co-operation

APPENDIX F - DATA OUTPUT

DESCRIPTIVE SPSS V24 DATA ANALYSIS – EMPLOYER SURVEY

		Position in the organisation	Name of organisation	Size of organisation	No. of years in the organisation	Organisation Sector
N	Valid	10	11	4	10	11
	Missing	1	0	7	1	0
Mean		2.9000	5.4545	12.5000	5.9000	2.5455
Median		3.0000	5.0000	11.0000	4.0000	2.0000
Std. Deviation		1.59513	2.87623	8.96289	4.67737	1.63485

		Does your organisation actively recruit graduates?	Do you only employ students from accredited quantity surveying programs?	No. of graduates recruited annually	Highest level of graduates' qualification	Are the graduates required to be registered as candidates with the SACQSP?
N	Valid	11	11	7	10	11
	Missing	0	0	4	1	0
Mean		1.1818	1.5455	2.7143	2.8000	1.7273
Median		1.0000	2.0000	2.0000	2.5000	2.0000
Std. Deviation		.40452	.52223	3.35233	1.61933	.46710

		Students who achieved high levels on their academic records are not necessarily prepared for work at our organisation	Organisations are not contacted by higher education institutes to provide input when constructing quantity surveying programs	Students employed at our organisation demonstrate a good balance of theoretical, practical and experiential knowledge	Students with work based learning experience enhanced their level of employment at our organisation	Only graduates with quantity surveying degrees are employed at our organisation
N	Valid	11	11	11	11	10
	Missing	0	0	0	0	1
Mean		4.2727	3.8182	2.4545	3.8182	1.9000
Median		4.0000	3.0000	3.0000	4.0000	2.0000
Std. Deviation		.78625	.98165	.93420	.87386	.99443

		Only graduates with quantity surveying diplomas are employed at our organisation	The students employed at our organisation showed high levels of self-discipline at work	The students employed at our organisation have good leadership skills at work	The students employed at our organisation use physical resources; computer/printer, effectively at work	The students employed at our organisation independently plan their time at work
N	Valid	11	11	11	11	11
	Missing	0	0	0	0	0
Mean		2.0000	3.3636	2.6364	3.8182	2.6364
Median		2.0000	4.0000	3.0000	4.0000	2.0000
Std. Deviation		1.00000	1.02691	.80904	.87386	.80904

Statistics

		Students employed at our organisation function effectively in a team, at work and on projects	Students employed at our organisation are have excellent oral communication skills	Students employed at our organisation are have excellent written communication skills	Students employed at our organisation adapt to the constant changing circumstances of the quantity surveying industry	The level of employee success is driven by their own efforts and self-motivation
N	Valid	11	11	11	11	11
	Missing	0	0	0	0	0
Mean		3.4545	3.5455	3.0909	3.1818	3.5455
Median		4.0000	3.0000	3.0000	3.0000	4.0000
Std. Deviation		.68755	.68755	.70065	.40452	1.12815

		Students employed at our organisation have high levels of innovation	Students employed at our organisation show commitment towards their tasks at work	Students employed at our organisation have high levels of self-confidence	Students employed at our organisation develop and maintain effective relationships with colleagues and superiors at work	Students employed at our organisation use quantity surveying computer software efficiently to execute daily tasks
N	Valid	11	11	11	11	11
	Missing	0	0	0	0	0
Mean		2.8182	3.4545	3.3636	4.0909	3.0000
Median		3.0000	4.0000	3.0000	4.0000	3.0000
Std. Deviation		.60302	.82020	.67420	.53936	1.09545

		Students employed at our organisation show effective problem solving skills on projects	Students employed at our organisation are effective with their decision making skills	Students employed at our organisation have advanced numeracy skills to execute their tasks effectively	Students employed at our organisation understand the impact of economic influences on the organisation	Students employed at our organisation have efficient listening skills
N	Valid	11	11	11	11	11
	Missing	0	0	0	0	0
Mean		2.9091	2.9091	3.4545	2.7273	3.1818
Median		3.0000	3.0000	3.0000	3.0000	3.0000
Std. Deviation		.70065	.53936	.82020	.90453	.75076

		Students employed at our organisation effectively manage interpersonal conflict within the organisation	Personal and Interpersonal Skills	Leadership and Management Skills	Interpretation of Data, Information and Technology	Drawing Interpretation (Architectural)
N	Valid	11	11	11	11	11
	Missing	0	0	0	0	0
Mean		3.0000	1.0909	1.3636	1.5455	1.5455
Median		3.0000	1.0000	1.0000	1.0000	1.0000
Std. Deviation		.63246	.30151	.67420	.68755	.68755

Statistics

		Drawing Interpretation (Structural)	Professional Practice and Ethics	Property Law	Construction Law	Design Appraisal and Measurement (Quantity Surveying)
N	Valid	11	11	11	11	11
	Missing	0	0	0	0	0
Mean		1.5455	1.3636	2.0000	1.6364	1.1818
Median		1.0000	1.0000	2.0000	1.0000	1.0000
Std. Deviation		.68755	.67420	.77460	.80904	.60302

		Construction Economics	Construction Contract Practice (JBCC/GCC)	Construction Technology and Environmental Services	Project Management	Procurement and Financial Management
N	Valid	11	11	11	11	11
	Missing	0	0	0	0	0
Mean		1.9091	1.3636	1.8182	1.6364	1.4545
Median		2.0000	1.0000	2.0000	1.0000	1.0000
Std. Deviation		.94388	.67420	.75076	.80904	.68755

Statistics

		Facilities Management	Project Valuation and Payments	Health and Safety Acts and Procedures	Dispute Resolution and Associated Procedures	Insolvency and Insurances
N	Valid	11	11	11	11	10
	Missing	0	0	0	0	1
Mean		2.0000	1.1818	1.6364	2.0000	1.9000
Median		2.0000	1.0000	1.0000	2.0000	2.0000
Std. Deviation		.77460	.60302	.92442	.89443	.87560

		Marketing	Research Methodologies and Techniques	Site Surveying	Ethics	Accounting
N	Valid	11	11	11	11	11
	Missing	0	0	0	0	0
Mean		1.9091	2.0909	1.7273	1.2727	1.1818
Median		2.0000	2.0000	2.0000	1.0000	1.0000
Std. Deviation		.70065	.94388	.78625	.64667	.40452

		Financial reporting
N	Valid	11
	Missing	0
Mean		1.3636
Median		1.0000
Std. Deviation		.80904

Position in the organisation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Quantity Surveyor	3	27.3	30.0	30.0
	Owner	1	9.1	10.0	40.0
	Director	2	18.2	20.0	60.0
	Contract Manager	2	18.2	20.0	80.0
	Project Manager	2	18.2	20.0	100.0
	Total	10	90.9	100.0	
Missing	99.00	1	9.1		
Total		11	100.0		

Name of organisation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	EQS Consultants PTY Ltd	1	9.1	9.1	9.1
	Elke Hefer Quantity Surveyors	1	9.1	9.1	18.2
	DP Quantity Surveyors	1	9.1	9.1	27.3
	Contractors Management Services	1	9.1	9.1	36.4
	LDM Quantity Surveyors	2	18.2	18.2	54.5
	Edison Power Electrical	1	9.1	9.1	63.6
	AGLTA	1	9.1	9.1	72.7
	Rockhard Plumbers cc	1	9.1	9.1	81.8
	DDT CIVILS	1	9.1	9.1	90.9
	Luft Technik	1	9.1	9.1	100.0
	Total	11	100.0	100.0	

Size of organisation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	4.00	1	9.1	25.0	25.0
	7.00	1	9.1	25.0	50.0
	15.00	1	9.1	25.0	75.0
	24.00	1	9.1	25.0	100.0
	Total	4	36.4	100.0	
Missing	99.00	7	63.6		
Total		11	100.0		

No. of years in the organisation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	1	9.1	10.0	10.0
	3.00	2	18.2	20.0	30.0
	4.00	3	27.3	30.0	60.0
	5.00	1	9.1	10.0	70.0
	8.00	1	9.1	10.0	80.0
	10.00	1	9.1	10.0	90.0
	17.00	1	9.1	10.0	100.0
	Total	10	90.9	100.0	
Missing	99.00	1	9.1		
Total		11	100.0		

Organisation Sector

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Construction company	3	27.3	27.3	27.3
	Quantity Surveying Firms	5	45.5	45.5	72.7
	Other	3	27.3	27.3	100.0
	Total	11	100.0	100.0	

Does your organisation actively recruit graduates?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	9	81.8	81.8	81.8
	No	2	18.2	18.2	100.0
	Total	11	100.0	100.0	

Do you only employ students from accredited quantity surveying programs?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	5	45.5	45.5	45.5
	No	6	54.5	54.5	100.0
	Total	11	100.0	100.0	

No. of graduates recruited annually

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	1	9.1	14.3	14.3
	1.00	2	18.2	28.6	42.9
	2.00	2	18.2	28.6	71.4
	3.00	1	9.1	14.3	85.7
	10.00	1	9.1	14.3	100.0
	Total	7	63.6	100.0	
Missing	99.00	4	36.4		
Total		11	100.0		

Highest level of graduates' qualification

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Undergraduate Diploma	2	18.2	20.0	20.0
	Undergraduate Degree	3	27.3	30.0	50.0
	Honours Degree	3	27.3	30.0	80.0
	BTech Degree	1	9.1	10.0	90.0
	Other	1	9.1	10.0	100.0
	Total	10	90.9	100.0	
Missing	99.00	1	9.1		
Total		11	100.0		

Are the graduates required to be registered as candidates with the SACQSP?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	3	27.3	27.3	27.3
	No	8	72.7	72.7	100.0
	Total	11	100.0	100.0	

Students who achieved high levels on their academic records are not necessarily prepared for work at our organisation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	2	18.2	18.2	18.2
	Agree	4	36.4	36.4	54.5
	Strongly agree	5	45.5	45.5	100.0
	Total	11	100.0	100.0	

Organisations are not contacted by higher education institutes to provide input when constructing quantity surveying programs

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	6	54.5	54.5	54.5
	Agree	1	9.1	9.1	63.6
	Strongly agree	4	36.4	36.4	100.0
	Total	11	100.0	100.0	

Students employed at our organisation demonstrate a good balance of theoretical, practical and experiential knowledge

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	2	18.2	18.2	18.2
	Disagree	3	27.3	27.3	45.5
	Neutral	5	45.5	45.5	90.9
	Agree	1	9.1	9.1	100.0
	Total	11	100.0	100.0	

Students with work based learning experience enhanced their level of employment at our organisation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	9.1	9.1	9.1
	Neutral	2	18.2	18.2	27.3
	Agree	6	54.5	54.5	81.8
	Strongly agree	2	18.2	18.2	100.0
	Total	11	100.0	100.0	

Only graduates with quantity surveying degrees are employed at our organisation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	4	36.4	40.0	40.0
	Disagree	4	36.4	40.0	80.0
	Neutral	1	9.1	10.0	90.0
	Agree	1	9.1	10.0	100.0
	Total	10	90.9	100.0	
Missing	99.00	1	9.1		
Total		11	100.0		

Only graduates with quantity surveying diplomas are employed at our organisation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	4	36.4	36.4	36.4
	Disagree	4	36.4	36.4	72.7
	Neutral	2	18.2	18.2	90.9
	Agree	1	9.1	9.1	100.0
	Total	11	100.0	100.0	

The students employed at our organisation showed high levels of self-discipline at work

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	3	27.3	27.3	27.3
	Neutral	2	18.2	18.2	45.5
	Agree	5	45.5	45.5	90.9
	Strongly agree	1	9.1	9.1	100.0
	Total	11	100.0	100.0	

The students employed at our organisation have good leadership skills at work

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	9.1	9.1	9.1
	Disagree	3	27.3	27.3	36.4
	Neutral	6	54.5	54.5	90.9
	Agree	1	9.1	9.1	100.0
	Total	11	100.0	100.0	

The students employed at our organisation use physical resources; computer/printer, effectively at work

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	9.1	9.1	9.1
	Neutral	2	18.2	18.2	27.3
	Agree	6	54.5	54.5	81.8
	Strongly agree	2	18.2	18.2	100.0
	Total	11	100.0	100.0	

The students employed at our organisation independently plan their time at work

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	6	54.5	54.5	54.5
	Neutral	3	27.3	27.3	81.8
	Agree	2	18.2	18.2	100.0
	Total	11	100.0	100.0	

Students employed at our organisation function effectively in a team, at work and on projects

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	9.1	9.1	9.1
	Neutral	4	36.4	36.4	45.5
	Agree	6	54.5	54.5	100.0
	Total	11	100.0	100.0	

Students employed at our organisation are have excellent oral communication skills

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	6	54.5	54.5	54.5
	Agree	4	36.4	36.4	90.9
	Strongly agree	1	9.1	9.1	100.0
	Total	11	100.0	100.0	

Students employed at our organisation are have excellent written communication skills

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	18.2	18.2	18.2
	Neutral	6	54.5	54.5	72.7
	Agree	3	27.3	27.3	100.0
	Total	11	100.0	100.0	

Students employed at our organisation adapt to the constant changing circumstances of the quantity surveying industry

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	9	81.8	81.8	81.8
	Agree	2	18.2	18.2	100.0
	Total	11	100.0	100.0	

The level of employee success is driven by their own efforts and self-motivation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	3	27.3	27.3	27.3
	Neutral	1	9.1	9.1	36.4
	Agree	5	45.5	45.5	81.8
	Strongly agree	2	18.2	18.2	100.0
	Total	11	100.0	100.0	

Students employed at our organisation have high levels of innovation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	3	27.3	27.3	27.3
	Neutral	7	63.6	63.6	90.9
	Agree	1	9.1	9.1	100.0
	Total	11	100.0	100.0	

Students employed at our organisation show commitment towards their tasks at work

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	18.2	18.2	18.2
	Neutral	2	18.2	18.2	36.4
	Agree	7	63.6	63.6	100.0
	Total	11	100.0	100.0	

Students employed at our organisation have high levels of self-confidence

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	8	72.7	72.7	72.7
	Agree	2	18.2	18.2	90.9
	Strongly agree	1	9.1	9.1	100.0
	Total	11	100.0	100.0	

Students employed at our organisation develop and maintain effective relationships with colleagues and superiors at work

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	1	9.1	9.1	9.1
	Agree	8	72.7	72.7	81.8
	Strongly agree	2	18.2	18.2	100.0
	Total	11	100.0	100.0	

Students employed at our organisation use quantity surveying computer software efficiently to execute daily tasks

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	9.1	9.1	9.1
	Disagree	3	27.3	27.3	36.4
	Neutral	2	18.2	18.2	54.5
	Agree	5	45.5	45.5	100.0
	Total	11	100.0	100.0	

Students employed at our organisation show effective problem solving skills on projects

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	3	27.3	27.3	27.3
	Neutral	6	54.5	54.5	81.8
	Agree	2	18.2	18.2	100.0
	Total	11	100.0	100.0	

Students employed at our organisation are effective with their decision making skills

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	18.2	18.2	18.2
	Neutral	8	72.7	72.7	90.9
	Agree	1	9.1	9.1	100.0
	Total	11	100.0	100.0	

Students employed at our organisation have advanced numeracy skills to execute their tasks effectively

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	9.1	9.1	9.1
	Neutral	5	45.5	45.5	54.5
	Agree	4	36.4	36.4	90.9
	Strongly agree	1	9.1	9.1	100.0
	Total	11	100.0	100.0	

Students employed at our organisation understand the impact of economic influences on the organisation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	5	45.5	45.5	45.5
	Neutral	5	45.5	45.5	90.9
	Strongly agree	1	9.1	9.1	100.0
	Total	11	100.0	100.0	

Students employed at our organisation have efficient listening skills

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	18.2	18.2	18.2
	Neutral	5	45.5	45.5	63.6
	Agree	4	36.4	36.4	100.0
	Total	11	100.0	100.0	

Students employed at our organisation effectively manage interpersonal conflict within the organisation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	18.2	18.2	18.2
	Neutral	7	63.6	63.6	81.8
	Agree	2	18.2	18.2	100.0
	Total	11	100.0	100.0	

Personal and Interpersonal Skills

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely important	10	90.9	90.9	90.9
	Moderately important	1	9.1	9.1	100.0
	Total	11	100.0	100.0	

Leadership and Management Skills

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely important	8	72.7	72.7	72.7
	Moderately important	2	18.2	18.2	90.9
	Unimportant	1	9.1	9.1	100.0
	Total	11	100.0	100.0	

Interpretation of Data, Information and Information Technology

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely important	6	54.5	54.5	54.5
	Moderately important	4	36.4	36.4	90.9
	Unimportant	1	9.1	9.1	100.0
	Total	11	100.0	100.0	

Drawing Interpretation (Architectural)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely important	6	54.5	54.5	54.5
	Moderately important	4	36.4	36.4	90.9
	Unimportant	1	9.1	9.1	100.0
	Total	11	100.0	100.0	

Drawing Interpretation (Structural)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely important	6	54.5	54.5	54.5
	Moderately important	4	36.4	36.4	90.9
	Unimportant	1	9.1	9.1	100.0
	Total	11	100.0	100.0	

Professional Practice and Ethics

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely important	8	72.7	72.7	72.7
	Moderately important	2	18.2	18.2	90.9
	Unimportant	1	9.1	9.1	100.0
	Total	11	100.0	100.0	

Property Law

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely important	3	27.3	27.3	27.3
	Moderately important	5	45.5	45.5	72.7
	Unimportant	3	27.3	27.3	100.0
	Total	11	100.0	100.0	

Construction Law

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely important	6	54.5	54.5	54.5
	Moderately important	3	27.3	27.3	81.8
	Unimportant	2	18.2	18.2	100.0
	Total	11	100.0	100.0	

Design Appraisal and Measurement (Quantity Surveying)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely important	10	90.9	90.9	90.9
	Unimportant	1	9.1	9.1	100.0
	Total	11	100.0	100.0	

Construction Economics

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely important	5	45.5	45.5	45.5
	Moderately important	2	18.2	18.2	63.6
	Unimportant	4	36.4	36.4	100.0
	Total	11	100.0	100.0	

Construction Contract Practice (JBCC/GCC)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely important	8	72.7	72.7	72.7
	Moderately important	2	18.2	18.2	90.9
	Unimportant	1	9.1	9.1	100.0
	Total	11	100.0	100.0	

Construction Technology and Environmental Services

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely important	4	36.4	36.4	36.4
	Moderately important	5	45.5	45.5	81.8
	Unimportant	2	18.2	18.2	100.0
	Total	11	100.0	100.0	

Project Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely important	6	54.5	54.5	54.5
	Moderately important	3	27.3	27.3	81.8
	Unimportant	2	18.2	18.2	100.0
	Total	11	100.0	100.0	

Procurement and Financial Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely important	7	63.6	63.6	63.6
	Moderately important	3	27.3	27.3	90.9
	Unimportant	1	9.1	9.1	100.0
	Total	11	100.0	100.0	

Marketing

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely important	3	27.3	27.3	27.3
	Moderately important	6	54.5	54.5	81.8
	Unimportant	2	18.2	18.2	100.0
	Total	11	100.0	100.0	

Research Methodologies and Techniques

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely important	4	36.4	36.4	36.4
	Moderately important	2	18.2	18.2	54.5
	Unimportant	5	45.5	45.5	100.0
	Total	11	100.0	100.0	

Site Surveying

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely important	5	45.5	45.5	45.5
	Moderately important	4	36.4	36.4	81.8
	Unimportant	2	18.2	18.2	100.0
	Total	11	100.0	100.0	

Ethics

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely important	9	81.8	81.8	81.8
	Moderately important	1	9.1	9.1	90.9
	Unimportant	1	9.1	9.1	100.0
	Total	11	100.0	100.0	

Accounting

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely important	9	81.8	81.8	81.8
	Moderately important	2	18.2	18.2	100.0
	Total	11	100.0	100.0	

Financial reporting

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely important	9	81.8	81.8	81.8
	Unimportant	2	18.2	18.2	100.0
	Total	11	100.0	100.0	

Case Processing Summary

		N	%
Cases	Valid	10	90.9
	Excluded ^a	1	9.1
	Total	11	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.744	26

Case Processing Summary

		N	%
Cases	Valid	10	90.9
	Excluded ^a	1	9.1
	Total	11	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.965	25

DESCRIPTIVE SPSS V24 DATA ANALYSIS – EMPLOYERS VIEWS ON GRADUATES LEVEL OF WORK READINESS

Statement	1 %	2 %	3 %	4 %	5 %	Mean	SD	Rank
Students who achieved high levels on their academic records are not necessarily prepared for work at our organisation	-	-	18.1	36.4	45.5	4.27	0.786	1
Students employed at our organisation develop and maintain effective relationships with colleagues and superiors at work	-	-	9.1	72.7	18.2	4.09	0.539	2
The students employed at our organisation use physical resources, computer/printer, effectively at work	-	9.1	18.2	54.5	18.2	3.82	0.873	3
Students with work based learning experience enhanced their level of employment at our organisation	-	9.1	18.2	54.5	18.2	3.82	0.873	3
Organisations are not contacted by higher education institutes to provide input when constructing quantity surveying programs	-	-	54.5	9.1	36.4	3.82	0.981	5
Students employed at our organisation have excellent oral communication skills	-	-	54.5	36.4	9.1	3.55	0.687	6
The level of employee success is driven by their own efforts and self-motivation	-	27.3	9.1	45.5	18.2	3.55	1.128	7
Students employed at our organisation function effectively in a team, at work and on projects	-	9.1	36.4	54.5	-	3.45	0.687	8
Students employed at our organisation show commitment towards their tasks at work	-	18.2	18.2	63.6	-	3.45	0.820	9
Students employed at our organisation have advanced numeracy skills to execute their tasks effectively	-	9.1	45.5	36.4	9.0	3.45	0.820	10
Students employed at our organisation have high levels of self-confidence	-	-	72.7	18.2	9.1	3.36	0.674	11
The students employed at our organisation showed high levels of self-discipline at work	-	27.3	18.2	45.5	9.0	3.36	1.026	12
Students employed at our organisation adapt to the constant changing circumstances	-	-	81.8	18.2	-	3.18	0.404	13

of the quantity surveying industry								
Students employed at our organisation have efficient listening skills	-	18.1	45.5	36.4	-	3.18	0.750	14
Students employed at our organisation have excellent written communication skills	-	18.2	54.5	27.3	-	3.09	0.700	15
Students employed at our organisation effectively manage interpersonal conflict within the organisation	-	18.2	63.6	18.2	-	3.00	0.632	16
Students employed at our organisation use quantity surveying computer software efficiently to execute daily tasks	9.0	27.3	18.2	45.5	-	3.00	1.095	17
Students employed at our organisation are effective with their decision-making skills	-	18.2	72.7	9.1	-	2.90	0.539	18
Students employed at our organisation show effective problem solving skills on projects	-	27.3	54.5	18.2	-	2.90	0.700	19
Students employed at our organisation have high levels of innovation	-	27.3	63.6	9.1	-	2.82	0.603	20
Students employed at our organisation understand the impact of economic influences on the organisation	-	45.5	45.5	-	9.0	2.73	0.904	21
The students employed at our organisation independently plan their time at work	-	54.5	27.3	18.2	-	2.64	0.809	22
The students employed at our organisation have good leadership skills at work	9.1	27.3	54.5	9.1	-	2.63	0.809	23
Students employed at our organisation demonstrate a good balance of theoretical, practical and experiential knowledge	18.2	27.3	45.5	9.1	-	2.45	0.934	24
Only graduates with quantity surveying diplomas are employed at our organisation	36.4	36.4	18.2	9.0	-	2.00	1.000	25
Only graduates with quantity surveying degrees are employed at our organisation	40.0	40.0	10.0	10.0	-	1.90	0.944	26

DESCRIPTIVE SPSS V24 DATA ANALYSIS – EMPLOYERS VIEWS ON THE SKILLS AND COMPETENCIES OF GRADUATES

Statement	1 %	2 %	3 %	Mean	SD	Rank
Research Methodologies and Techniques	36.3	18.2	45.5	2.09	0.943	1
Property Law	27.2	45.5	27.3	2.00	0.774	2
Facilities Management	27.2	45.5	27.3	2.00	0.774	3
Dispute Resolution and Associated Procedures	36.3	27.3	36.4	2.00	0.894	4
Marketing	27.3	54.5	18.2	1.90	0.700	5
Insolvency and Insurances	40.0	30.0	30.0	1.90	0.875	6
Construction Economics	45.5	18.2	36.3	1.90	0.943	7
Construction Technology and Environmental Services	36.4	45.5	18.1	1.81	0.750	8
Site Surveying	45.5	36.4	18.1	1.72	0.786	9
Construction Law	54.5	27.3	18.2	1.63	0.809	10
Project Management	54.5	27.3	18.2	1.63	0.809	11
Health and Safety Acts and Procedures	63.6	9.1	27.3	1.63	0.924	12
Interpretation of Data, Information and Information Technology	54.5	36.4	9.1	1.54	0.687	13
Drawing Interpretation (Architectural)	54.5	36.4	9.1	1.54	0.687	14
Drawing Interpretation (Structural)	54.5	36.4	9.1	1.54	0.687	15
Procurement and Financial Management	63.6	27.3	9.1	1.45	0.687	16
Construction Contract Practice (JBCC/GCC)	72.7	18.2	9.1	1.36	0.674	17
Leadership and Management Skills	72.7	18.2	9.1	1.36	0.674	18
Professional Practice and Ethics	72.7	18.2	9.1	1.36	0.674	19
Financial Reporting	81.8	-	18.2	1.36	0.809	20
Ethics	81.8	9.1	9.1	1.27	0.646	21

Accounting	81.8	-	18.2	1.18	0.404	22
Design Appraisal and Measurement (Quantity Surveying)	90.9	-	9.1	1.18	0.603	23
Project Valuation and Payments	90.9	-	9.1	1.18	0.603	24
Personal and Interpersonal Skills	90.9	9.1	-	1.09	0.305	25

DESCRIPTIVE SPSS V24 DATA ANALYSIS – GRADUATE SURVEY

		Age	Gender	Employed	Is the position directly related to your degree?	Have you worked before?
N	Valid	42	42	42	43	42
	Missing	1	1	1	0	1
Mean		29.9048	1.2619	1.0000	1.0233	1.2143
Median		28.0000	1.0000	1.0000	1.0000	1.0000
Std. Deviation		6.56231	.44500	.00000	.15250	.41530

		Type of Organisation where you are currently working:	Contractor	Consultant	Other	Name of institution where you obtained your degree?
N	Valid	0	22	30	11	42
	Missing	43	21	13	32	1
Mean			1.5000	1.0333	1.6364	2.6667
Median			1.5000	1.0000	2.0000	3.0000
Std. Deviation			.51177	.18257	.50452	1.81681

		Was the quantity surveying program accredited?	Degree	Year completed	After graduation I was well-prepared to work as a quantity surveyor	The modules in the curriculum that I had to take had a good balance of theoretical, practical and experiential knowledge and skills
N	Valid	40	38	43	43	43
	Missing	3	5	0	0	0
Mean		1.0750	3.0263	2010.1395	3.2326	3.4651
Median		1.0000	3.0000	2012.0000	3.0000	4.0000
Std. Deviation		.34991	1.49751	4.94051	1.01974	.79728

		During my period of study at university a descriptive understanding of the quantity surveying industry was promoted	The mode of instruction used in my classes catered for my own particular learning needs	The material I received from the university to recruit me as a potential student more than adequately informed me about the quantity surveying programme at the university accurately and sufficiently	The large number of students in my classes did not hinder me from attaining a level of good quality quantity surveying education	The academic staff for the quantity surveying program at the university had relevant academic qualifications, skills and knowledge to conduct lectures
N	Valid	43	43	42	43	43
	Missing	0	0	1	0	0
Mean		3.4419	3.5116	3.0714	3.8605	4.0465
Median		4.0000	3.0000	3.0000	4.0000	4.0000
Std. Deviation		.95873	.70279	1.15596	.70984	.84384

		The academic staff for the quantity surveying program at the university were suitably qualified and experienced to teach my classes	There was enough academic staff to teach all the required modules in the program.	There were enough academic and support staff in the quantity surveying program	The academic and support staff were competent and had sufficient appropriate experience	I found that the program promoted both practical and vocational teaching methods
N	Valid	43	43	43	43	43
	Missing	0	0	0	0	0
Mean		4.0233	3.3256	3.2093	3.6047	3.4419
Median		4.0000	4.0000	3.0000	4.0000	4.0000
Std. Deviation		.91257	1.34024	1.12458	1.00332	.98325

		My academic progress was monitored efficiently	I was given regular feedback on my progress	Many different evaluation methods were used to measure and monitor my progress	The tests and examinations were conducted efficiently	The projects and assignments were challenging but helped me grasp the knowledge and skills I needed
N	Valid	43	43	43	43	42
	Missing	0	0	0	0	1
Mean		3.2558	3.2093	3.1860	3.9302	3.8571
Median		3.0000	3.0000	3.0000	4.0000	4.0000
Std. Deviation		.84777	1.01320	1.00607	.82794	.75131

		I was given feedback on my performance reasonably quickly	I found the feedback very useful	The university had suitable and sufficient IT infrastructure and facilities that I could use	The computer laboratories were available for my use whenever I needed to use them	There were sufficient computers in the labs
N	Valid	43	43	43	43	42
	Missing	0	0	0	0	1
Mean		3.4186	3.4186	3.5581	3.2093	2.9524
Median		4.0000	3.0000	4.0000	3.0000	3.0000
Std. Deviation		.95699	.87919	1.16092	1.28282	1.20876

		The software was up-to-date and the latest versions	The university teaching or instructional spaces were well-equipped with working technology	The labs always had someone available to help me when I had problems with the computers	There were adequate printing facilities available	The program was very well managed
N	Valid	43	42	43	43	43
	Missing	0	1	0	0	0
Mean		2.9535	3.2619	2.8605	2.9767	3.5349
Median		3.0000	3.0000	3.0000	3.0000	4.0000
Std. Deviation		1.27155	1.03734	1.03697	1.18499	.95988

		Information about the program curricula was clearly communicated to me	In my honors year I was very aware of the roles and responsibilities of my immediate supervisors	I was also aware of my own roles and responsibilities as an honors student	I had many opportunities to give input into the program	My input was taken seriously
N	Valid	42	36	34	40	41
	Missing	1	7	9	3	2
Mean		3.6667	3.3333	3.4412	2.6000	2.6829
Median		4.0000	4.0000	4.0000	2.5000	3.0000
Std. Deviation		.92833	1.43427	1.43951	1.17233	1.19246

		The program had an industry advisory board	I found the academic staff to be adequately qualified and experienced	I was satisfied with the level of foundational skills that I gained while studying in the program	Academic staff took an interest in my academic development	Academic staff arranged regular counselling sessions with me to ensure that I was coping academically
N	Valid	40	42	42	42	41
	Missing	3	1	1	1	2
Mean		2.8500	3.8571	3.7143	3.3333	2.5610
Median		3.0000	4.0000	4.0000	3.0000	2.0000
Std. Deviation		.97534	.87154	.89131	1.00406	1.26587

		Academic staff provided me with adequate guidance of the program	The program curricula were taught to me within the stipulated time frame of the qualification	I was assessed systematically and purposefully	Feedback from the assessments were efficiently reported back to me	I found that the program took appropriate measures to ensure the reliability, rigour and security of the assessments were maintained
N	Valid	42	42	42	42	42
	Missing	1	1	1	1	1
Mean		3.4048	4.9048	3.5952	3.5238	3.3810
Median		3.5000	4.0000	4.0000	4.0000	3.0000
Std. Deviation		.98920	6.69841	.85709	.99359	.88214

		The appeals process to the faculty were clearly explained to me and ensured its explicitly and fairness	I found that work based learning was implemented effectively within the program	In the absence of work based learning, a mentoring system was implemented effectively within the program	Work based learning promoted a higher understanding of the quantity surveying program and industry practices	Through work based learning I was able to recognise my strengths and weaknesses
N	Valid	42	42	38	41	41
	Missing	1	1	5	2	2
Mean		3.0000	3.0238	2.6316	3.3659	3.4146
Median		3.0000	3.0000	3.0000	4.0000	4.0000
Std. Deviation		1.05922	1.29705	.97040	1.21976	1.18270

		Work based learning allowed me to develop existing and new abilities	In my honors year I was able to develop research competence	There was sufficient contact with my supervisor and other instructors	The program did everything possible to retain me as a student even when I was struggling academically	The program student throughput rate was quite high/satisfactory
N	Valid	39	35	34	39	40
	Missing	4	8	9	4	3
Mean		3.4103	3.3714	3.2941	3.0769	3.2500
Median		4.0000	4.0000	4.0000	3.0000	3.0000
Std. Deviation		1.11728	1.41600	1.42551	1.06090	1.00639

		I found that the program actively promoted diversity with regards to race and gender equity within my classes	The program contributed to enhancing my opportunities of employability	My input was requested via numerous surveys, reviews and impact studies that measured the effectiveness of the program	I regularly completed the QPA questionnaires	Having work based learning experience helped me to get a job
N	Valid	41	41	41	41	43
	Missing	2	2	2	2	0
Mean		3.6829	3.7561	3.1951	3.2439	3.7442
Median		4.0000	4.0000	3.0000	3.0000	4.0000
Std. Deviation		.96018	.91598	1.07749	1.11311	1.15662

		Only graduates with quantity surveying degrees are employed	Only graduates with quantity surveying diplomas are employed	I am expected to have high levels of self-discipline at work	I am expected to have good leadership skills	When I started to work I was able to use physical resources; computer/printer, effectively in an organisation
N	Valid	43	43	43	43	43
	Missing	0	0	0	0	0
Mean		2.5116	2.5814	4.4419	4.1395	4.0465
Median		2.0000	2.0000	4.0000	4.0000	4.0000
Std. Deviation		1.20262	1.17984	.54782	.83328	.95002

		When I started to work I was expected to independently plan my time at work	I was able to function effectively in a team when I started working	I am expected to have excellent oral communication skills	I am expected to have excellent written communication skills	I must be able to adapt to changing circumstances
N	Valid	43	43	42	43	43
	Missing	0	0	1	0	0
Mean		4.0000	4.0698	4.3095	4.3256	4.2558
Median		4.0000	4.0000	4.0000	4.0000	4.0000
Std. Deviation		.87287	.59343	.60438	.56572	.69327

		My success is driven by my own efforts and self-motivation	I am expected to have high levels of innovation	I am expected to show commitment towards my work and towards tasks given to me	I am expected to have high levels of self-confidence	I am expected to develop and maintain effective relationships with colleagues and superiors
N	Valid	43	43	43	43	43
	Missing	0	0	0	0	0
Mean		4.3721	4.1395	4.4884	4.3023	4.3488
Median		4.0000	4.0000	5.0000	4.0000	4.0000
Std. Deviation		.69087	.74263	.59250	.77259	.75226

		When I started to work I was required to use quantity surveying computer software to execute daily tasks	I am expected to show effective problem solving skills	I am expected to be effective with my decision making skills	I am expected to have advanced numeracy skills to execute my tasks effectively	I am expected to understand the impact of economic influences on the organisation
N	Valid	43	43	42	43	43
	Missing	0	0	1	0	0
Mean		3.7907	4.1628	4.1667	4.3256	3.7907
Median		4.0000	4.0000	4.0000	4.0000	4.0000
Std. Deviation		1.05916	.61452	.65951	.56572	.94006

		When I started to work I had efficient listening skills	When I started to work I was able to effectively manage interpersonal conflict	When I started to work I could effectively manage my time	Personal and Interpersonal Skills	Leadership and Management Skills
N	Valid	43	43	43	43	42
	Missing	0	0	0	0	1
Mean		4.1628	3.6047	3.6279	1.3023	1.4286
Median		4.0000	4.0000	4.0000	1.0000	1.0000
Std. Deviation		.61452	.95468	1.00055	.55784	.63025

		Interpretation of Data, Information and Information Technology	Drawing Interpretation (Architectural)	Drawing Interpretation (Structural)	Professional Practice and Ethics	Property Law
N	Valid	43	43	43	42	43
	Missing	0	0	0	1	0
Mean		1.1860	1.2093	1.2558	1.2143	1.6744
Median		1.0000	1.0000	1.0000	1.0000	2.0000
Std. Deviation		.50028	.55883	.58117	.51965	.56572

		Construction Law	Design Appraisal and Measurement (Quantity Surveying)	Construction Economics	Construction Contract Practice (JBCC/GCC)	Construction Technology and Environmental Services
N	Valid	43	43	42	43	43
	Missing	0	0	1	0	0
Mean		1.3023	1.2093	1.6429	1.2326	1.4651
Median		1.0000	1.0000	2.0000	1.0000	1.0000
Std. Deviation		.55784	.59993	.65598	.57060	.70200

		Project Management	Procurement and Financial Management	Facilities Management	Project Valuation and Payments	Health and Safety Acts and Procedures
N	Valid	43	43	42	42	43
	Missing	0	0	1	1	0
Mean		1.6512	1.5349	2.0714	1.2857	1.5814
Median		2.0000	1.0000	2.0000	1.0000	1.0000
Std. Deviation		.61271	.66722	.60052	.63575	.79380

		Dispute Resolution and Associated Procedures	Insolvency and Insurances	Marketing	Research Methodologies and Techniques	Site Surveying
N	Valid	42	43	43	42	43
	Missing	1	0	0	1	0
Mean		1.7381	1.9070	2.0698	2.0238	1.8140
Median		2.0000	2.0000	2.0000	2.0000	2.0000
Std. Deviation		.66478	.75005	.63228	.78050	.76394

		Ethics	Accounting	Financial reporting
N	Valid	43	43	43
	Missing	0	0	0
Mean		1.2558	1.5116	1.3488
Median		1.0000	1.0000	1.0000
Std. Deviation		.58117	.66805	.68604

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	23.00	3	7.0	7.1	7.1
	24.00	2	4.7	4.8	11.9
	25.00	6	14.0	14.3	26.2
	26.00	4	9.3	9.5	35.7
	27.00	4	9.3	9.5	45.2
	28.00	6	14.0	14.3	59.5
	29.00	1	2.3	2.4	61.9
	30.00	2	4.7	4.8	66.7
	31.00	2	4.7	4.8	71.4
	32.00	3	7.0	7.1	78.6
	34.00	1	2.3	2.4	81.0
	35.00	1	2.3	2.4	83.3
	36.00	1	2.3	2.4	85.7
	37.00	1	2.3	2.4	88.1
	38.00	1	2.3	2.4	90.5
	39.00	1	2.3	2.4	92.9
	43.00	1	2.3	2.4	95.2
	47.00	1	2.3	2.4	97.6
	53.00	1	2.3	2.4	100.0
	Total	42	97.7	100.0	
Missing	99.00	1	2.3		
Total		43	100.0		

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	31	72.1	73.8	73.8
	Female	11	25.6	26.2	100.0
	Total	42	97.7	100.0	
Missing	99.00	1	2.3		
Total		43	100.0		

Employed

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	42	97.7	100.0	100.0
Missing	99.00	1	2.3		
Total		43	100.0		

Is the position directly related to your degree?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	42	97.7	97.7	97.7
	No	1	2.3	2.3	100.0
	Total	43	100.0	100.0	

Have you worked before?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	33	76.7	78.6	78.6
	No	9	20.9	21.4	100.0
	Total	42	97.7	100.0	
Missing	99.00	1	2.3		
Total		43	100.0		

Type of Organisation where you are currently working:

		Frequency	Percent
Missing	System	43	100.0

Contractor

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	11	25.6	50.0	50.0
	No	11	25.6	50.0	100.0
	Total	22	51.2	100.0	
Missing	99.00	21	48.8		
Total		43	100.0		

Consultant

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	29	67.4	96.7	96.7
	No	1	2.3	3.3	100.0
	Total	30	69.8	100.0	
Missing	99.00	13	30.2		
Total		43	100.0		

Other

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	4	9.3	36.4	36.4
	No	7	16.3	63.6	100.0
	Total	11	25.6	100.0	
Missing	99.00	32	74.4		
Total		43	100.0		

Name of institution where you obtained your degree?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	UKZN	17	39.5	40.5	40.5
	DUT	18	41.9	42.9	83.3
	MUT	2	4.7	4.8	88.1
	Technikon Natal	1	2.3	2.4	90.5
	NMMU	1	2.3	2.4	92.9
	UCT	2	4.7	4.8	97.6
	M.L Sultan	1	2.3	2.4	100.0
	Total	42	97.7	100.0	
Missing	99.00	1	2.3		
Total		43	100.0		

Was the quantity surveying program accredited?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	38	88.4	95.0	95.0
	No	1	2.3	2.5	97.5
	3.00	1	2.3	2.5	100.0
	Total	40	93.0	100.0	
Missing	99.00	3	7.0		
Total		43	100.0		

Degree

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Nation Diploma Building	9	20.9	23.7	23.7
	BSc Quantity Surveying	4	9.3	10.5	34.2
	BTECH Quantity Surveying	12	27.9	31.6	65.8
	BSc Hons Property Development	3	7.0	7.9	73.7
	BSc Hons Quantity Surveying	10	23.3	26.3	100.0
	Total	38	88.4	100.0	
Missing	99.00	5	11.6		
Total		43	100.0		

Year completed

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1996.00	1	2.3	2.3	2.3
	1997.00	1	2.3	2.3	4.7
	2000.00	1	2.3	2.3	7.0
	2001.00	1	2.3	2.3	9.3
	2002.00	2	4.7	4.7	14.0
	2005.00	1	2.3	2.3	16.3
	2006.00	1	2.3	2.3	18.6
	2007.00	1	2.3	2.3	20.9
	2009.00	4	9.3	9.3	30.2
	2010.00	3	7.0	7.0	37.2
	2011.00	2	4.7	4.7	41.9
	2012.00	7	16.3	16.3	58.1
	2013.00	8	18.6	18.6	76.7
	2014.00	6	14.0	14.0	90.7
	2015.00	4	9.3	9.3	100.0
Total		43	100.0	100.0	

After graduation I was well-prepared to work as a quantity surveyor

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	3	7.0	7.0	7.0
	Disagree	6	14.0	14.0	20.9
	Neutral	15	34.9	34.9	55.8
	Agree	16	37.2	37.2	93.0
	Strongly agree	3	7.0	7.0	100.0
	Total		43	100.0	100.0

The modules in the curriculum that I had to take had a good balance of theoretical, practical and experiential knowledge and skills

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	5	11.6	11.6	11.6
	Neutral	16	37.2	37.2	48.8
	Agree	19	44.2	44.2	93.0
	Strongly agree	3	7.0	7.0	100.0
	Total		43	100.0	100.0

During my period of study at university a descriptive understanding of the quantity surveying industry was promoted

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	2	4.7	4.7	4.7
	Disagree	5	11.6	11.6	16.3
	Neutral	11	25.6	25.6	41.9
	Agree	22	51.2	51.2	93.0
	Strongly agree	3	7.0	7.0	100.0
	Total	43	100.0	100.0	

The mode of instruction used in my classes catered for my own particular learning needs

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	4.7	4.7	4.7
	Neutral	20	46.5	46.5	51.2
	Agree	18	41.9	41.9	93.0
	Strongly agree	3	7.0	7.0	100.0
	Total	43	100.0	100.0	

The material I received from the university to recruit me as a potential student more than adequately informed me about the quantity surveying programme at the university accurately and sufficiently

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	3	7.0	7.1	7.1
	Disagree	13	30.2	31.0	38.1
	Neutral	8	18.6	19.0	57.1
	Agree	14	32.6	33.3	90.5
	Strongly agree	4	9.3	9.5	100.0
	Total	42	97.7	100.0	
Missing	99.00	1	2.3		
Total		43	100.0		

The large number of students in my classes did not hinder me from attaining a level of good quality quantity surveying education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	4.7	4.7	4.7
	Neutral	8	18.6	18.6	23.3
	Agree	27	62.8	62.8	86.0
	Strongly agree	6	14.0	14.0	100.0
	Total	43	100.0	100.0	

The academic staff for the quantity surveying program at the university had relevant academic qualifications, skills and knowledge to conduct lectures

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	2.3	2.3	2.3
	Disagree	1	2.3	2.3	4.7
	Neutral	5	11.6	11.6	16.3
	Agree	24	55.8	55.8	72.1
	Strongly agree	12	27.9	27.9	100.0
	Total	43	100.0	100.0	

The academic staff for the quantity surveying program at the university were suitably qualified and experienced to teach my classes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	2.3	2.3	2.3
	Disagree	1	2.3	2.3	4.7
	Neutral	8	18.6	18.6	23.3
	Agree	19	44.2	44.2	67.4
	Strongly agree	14	32.6	32.6	100.0
	Total	43	100.0	100.0	

There was enough academic staff to teach all the required modules in the program.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	5	11.6	11.6	11.6
	Disagree	8	18.6	18.6	30.2
	Neutral	8	18.6	18.6	48.8
	Agree	12	27.9	27.9	76.7
	Strongly agree	10	23.3	23.3	100.0
	Total	43	100.0	100.0	

There were enough academic and support staff in the quantity surveying program

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	2	4.7	4.7	4.7
	Disagree	12	27.9	27.9	32.6
	Neutral	9	20.9	20.9	53.5
	Agree	15	34.9	34.9	88.4
	Strongly agree	5	11.6	11.6	100.0
	Total	43	100.0	100.0	

The academic and support staff were competent and had sufficient appropriate experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	2.3	2.3	2.3
	Disagree	5	11.6	11.6	14.0
	Neutral	12	27.9	27.9	41.9
	Agree	17	39.5	39.5	81.4
	Strongly agree	8	18.6	18.6	100.0
	Total	43	100.0	100.0	

I found that the program promoted both practical and vocational teaching methods

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	2.3	2.3	2.3
	Disagree	7	16.3	16.3	18.6
	Neutral	12	27.9	27.9	46.5
	Agree	18	41.9	41.9	88.4
	Strongly agree	5	11.6	11.6	100.0
Total		43	100.0	100.0	

My academic progress was monitored efficiently

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	9	20.9	20.9	20.9
	Neutral	16	37.2	37.2	58.1
	Agree	16	37.2	37.2	95.3
	Strongly agree	2	4.7	4.7	100.0
Total		43	100.0	100.0	

I was given regular feedback on my progress

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	14	32.6	32.6	32.6
	Neutral	10	23.3	23.3	55.8
	Agree	15	34.9	34.9	90.7
	Strongly agree	4	9.3	9.3	100.0
Total		43	100.0	100.0	

Many different evaluation methods were used to measure and monitor my progress

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	14	32.6	32.6	32.6
	Neutral	11	25.6	25.6	58.1
	Agree	14	32.6	32.6	90.7
	Strongly agree	4	9.3	9.3	100.0
Total		43	100.0	100.0	

The tests and examinations were conducted efficiently

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	3	7.0	7.0	7.0
	Neutral	7	16.3	16.3	23.3
	Agree	23	53.5	53.5	76.7
	Strongly agree	10	23.3	23.3	100.0
	Total	43	100.0	100.0	

The projects and assignments were challenging but helped me grasp the knowledge and skills I needed

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	4.7	4.8	4.8
	Neutral	9	20.9	21.4	26.2
	Agree	24	55.8	57.1	83.3
	Strongly agree	7	16.3	16.7	100.0
	Total	42	97.7	100.0	
Missing	99.00	1	2.3		
Total		43	100.0		

I was given feedback on my performance reasonably quickly

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	2.3	2.3	2.3
	Disagree	7	16.3	16.3	18.6
	Neutral	12	27.9	27.9	46.5
	Agree	19	44.2	44.2	90.7
	Strongly agree	4	9.3	9.3	100.0
	Total	43	100.0	100.0	

I found the feedback very useful

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	7	16.3	16.3	16.3
	Neutral	15	34.9	34.9	51.2
	Agree	17	39.5	39.5	90.7
	Strongly agree	4	9.3	9.3	100.0
	Total	43	100.0	100.0	

The university had suitable and sufficient IT infrastructure and facilities that I could use

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	2	4.7	4.7	4.7
	Disagree	7	16.3	16.3	20.9
	Neutral	9	20.9	20.9	41.9
	Agree	15	34.9	34.9	76.7
	Strongly agree	10	23.3	23.3	100.0
Total		43	100.0	100.0	

The computer laboratories were available for my use whenever I needed to use them

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	4	9.3	9.3	9.3
	Disagree	11	25.6	25.6	34.9
	Neutral	8	18.6	18.6	53.5
	Agree	12	27.9	27.9	81.4
	Strongly agree	8	18.6	18.6	100.0
Total		43	100.0	100.0	

There were sufficient computers in the labs

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	3	7.0	7.1	7.1
	Disagree	16	37.2	38.1	45.2
	Neutral	9	20.9	21.4	66.7
	Agree	8	18.6	19.0	85.7
	Strongly agree	6	14.0	14.3	100.0
Total		42	97.7	100.0	
Missing	99.00	1	2.3		
Total		43	100.0		

The software was up-to-date and the latest versions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	5	11.6	11.6	11.6
	Disagree	14	32.6	32.6	44.2
	Neutral	8	18.6	18.6	62.8
	Agree	10	23.3	23.3	86.0
	Strongly agree	6	14.0	14.0	100.0
	Total	43	100.0	100.0	

The university teaching or instructional spaces were well-equipped with working technology

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	13	30.2	31.0	31.0
	Neutral	10	23.3	23.8	54.8
	Agree	14	32.6	33.3	88.1
	Strongly agree	5	11.6	11.9	100.0
	Total	42	97.7	100.0	
Missing	99.00	1	2.3		
Total		43	100.0		

The labs always had someone available to help me when I had problems with the computers

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	4	9.3	9.3	9.3
	Disagree	12	27.9	27.9	37.2
	Neutral	15	34.9	34.9	72.1
	Agree	10	23.3	23.3	95.3
	Strongly agree	2	4.7	4.7	100.0
	Total	43	100.0	100.0	

There were adequate printing facilities available

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	6	14.0	14.0	14.0
	Disagree	10	23.3	23.3	37.2
	Neutral	8	18.6	18.6	55.8
	Agree	17	39.5	39.5	95.3
	Strongly agree	2	4.7	4.7	100.0
Total		43	100.0	100.0	

The program was very well managed

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	2	4.7	4.7	4.7
	Disagree	2	4.7	4.7	9.3
	Neutral	16	37.2	37.2	46.5
	Agree	17	39.5	39.5	86.0
	Strongly agree	6	14.0	14.0	100.0
Total		43	100.0	100.0	

Information about the program curricula was clearly communicated to me

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	6	14.0	14.3	14.3
	Neutral	9	20.9	21.4	35.7
	Agree	20	46.5	47.6	83.3
	Strongly agree	7	16.3	16.7	100.0
Total		42	97.7	100.0	
Missing	99.00	1	2.3		
Total		43	100.0		

In my honors year I was very aware of the roles and responsibilities of my immediate supervisors

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	2	4.7	5.6	5.6
	Strongly disagree	4	9.3	11.1	16.7
	Disagree	3	7.0	8.3	25.0
	Neutral	3	7.0	8.3	33.3
	Agree	19	44.2	52.8	86.1
	Strongly agree	5	11.6	13.9	100.0
	Total	36	83.7	100.0	
Missing	99.00	7	16.3		
Total		43	100.0		

I was also aware of my own roles and responsibilities as an honors student

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	2	4.7	5.9	5.9
	Strongly disagree	4	9.3	11.8	17.6
	Neutral	5	11.8	14.7	32.4
	Agree	17	39.5	50.0	82.4
	Strongly agree	6	14.0	17.6	100.0
	Total	34	79.1	100.0	
Missing	99.00	9	20.9		
Total		43	100.0		

I had many opportunities to give input into the program

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	8	18.6	20.0	20.0
	Disagree	12	27.9	30.0	50.0
	Neutral	10	23.3	25.0	75.0
	Agree	8	18.6	20.0	95.0
	Strongly agree	2	4.7	5.0	100.0
	Total	40	93.0	100.0	
Missing	99.00	3	7.0		
Total		43	100.0		

My input was taken seriously

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	8	18.6	19.5	19.5
	Disagree	10	23.3	24.4	43.9
	Neutral	13	30.2	31.7	75.6
	Agree	7	16.3	17.1	92.7
	Strongly agree	3	7.0	7.3	100.0
	Total	41	95.3	100.0	
Missing	99.00	2	4.7		
Total		43	100.0		

The program had an industry advisory board

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	4	9.3	10.0	10.0
	Disagree	8	18.6	20.0	30.0
	Neutral	20	46.5	50.0	80.0
	Agree	6	14.0	15.0	95.0
	Strongly agree	2	4.7	5.0	100.0
	Total	40	93.0	100.0	
Missing	99.00	3	7.0		
Total		43	100.0		

I found the academic staff to be adequately qualified and experienced

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	2.3	2.4	2.4
	Disagree	1	2.3	2.4	4.8
	Neutral	10	23.3	23.8	28.6
	Agree	21	48.8	50.0	78.6
	Strongly agree	9	20.9	21.4	100.0
	Total	42	97.7	100.0	
Missing	99.00	1	2.3		
Total		43	100.0		

I was satisfied with the level of foundational skills that I gained while studying in the program

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	4	9.3	9.5	9.5
	Neutral	12	27.9	28.6	38.1
	Agree	18	41.9	42.9	81.0
	Strongly agree	8	18.6	19.0	100.0
	Total	42	97.7	100.0	
Missing	99.00	1	2.3		
Total		43	100.0		

Academic staff took an interest in my academic development

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	2.3	2.4	2.4
	Disagree	7	16.3	16.7	19.0
	Neutral	17	39.5	40.5	59.5
	Agree	11	25.6	26.2	85.7
	Strongly agree	6	14.0	14.3	100.0
	Total	42	97.7	100.0	
Missing	99.00	1	2.3		
Total		43	100.0		

Academic staff arranged regular counselling sessions with me to ensure that I was coping academically

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	10	23.3	24.4	24.4
	Disagree	11	25.6	26.8	51.2
	Neutral	11	25.6	26.8	78.0
	Agree	5	11.6	12.2	90.2
	Strongly agree	4	9.3	9.8	100.0
	Total	41	95.3	100.0	
Missing	99.00	2	4.7		
Total		43	100.0		

Academic staff provided me with adequate guidance of the program

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	2.3	2.4	2.4
	Disagree	7	16.3	16.7	19.0
	Neutral	13	30.2	31.0	50.0
	Agree	16	37.2	38.1	88.1
	Strongly agree	5	11.6	11.9	100.0
	Total	42	97.7	100.0	
Missing	99.00	1	2.3		
Total		43	100.0		

The program curricula were taught to me within the stipulated time frame of the qualification

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	4.7	4.8	4.8
	Neutral	9	20.9	21.4	26.2
	Agree	22	51.2	52.4	78.6
	Strongly agree	8	18.6	19.0	97.6
	47.00	1	2.3	2.4	100.0
	Total	42	97.7	100.0	
Missing	99.00	1	2.3		
Total		43	100.0		

I was assessed systematically and purposefully

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	5	11.6	11.9	11.9
	Neutral	12	27.9	28.6	40.5
	Agree	20	46.5	47.6	88.1
	Strongly agree	5	11.6	11.9	100.0
	Total	42	97.7	100.0	
Missing	99.00	1	2.3		
Total		43	100.0		

Feedback from the assessments were efficiently reported back to me

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	8	18.6	19.0	19.0
	Neutral	11	25.6	26.2	45.2
	Agree	16	37.2	38.1	83.3
	Strongly agree	7	16.3	16.7	100.0
	Total	42	97.7	100.0	
Missing	99.00	1	2.3		
Total		43	100.0		

I found that the program took appropriate measures to ensure the reliability, rigour and security of the assessments were maintained

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	7	16.3	16.7	16.7
	Neutral	16	37.2	38.1	54.8
	Agree	15	34.9	35.7	90.5
	Strongly agree	4	9.3	9.5	100.0
	Total	42	97.7	100.0	
Missing	99.00	1	2.3		
Total		43	100.0		

The appeals process to the faculty were clearly explained to me and ensured its explicitly and fairness

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	3	7.0	7.1	7.1
	Disagree	12	27.9	28.6	35.7
	Neutral	11	25.6	26.2	61.9
	Agree	14	32.6	33.3	95.2
	Strongly agree	2	4.7	4.8	100.0
	Total	42	97.7	100.0	
Missing	99.00	1	2.3		
Total		43	100.0		

I found that work based learning was implemented effectively within the program

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	6	14.0	14.3	14.3
	Disagree	10	23.3	23.8	38.1
	Neutral	9	20.9	21.4	59.5
	Agree	11	25.6	26.2	85.7
	Strongly agree	6	14.0	14.3	100.0
	Total	42	97.7	100.0	
Missing	99.00	1	2.3		
Total		43	100.0		

In the absence of work based learning, a mentoring system was implemented effectively within the program

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	4	9.3	10.5	10.5
	Disagree	14	32.6	36.8	47.4
	Neutral	13	30.2	34.2	81.6
	Agree	6	14.0	15.8	97.4
	Strongly agree	1	2.3	2.6	100.0
	Total	38	88.4	100.0	
Missing	99.00	5	11.6		
Total		43	100.0		

Work based learning promoted a higher understanding of the quantity surveying program and industry practices

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	1	2.3	2.4	2.4
	Strongly disagree	3	7.0	7.3	9.8
	Disagree	4	9.3	9.8	19.5
	Neutral	11	25.6	26.8	46.3
	Agree	16	37.2	39.0	85.4
	Strongly agree	6	14.0	14.6	100.0
	Total	41	95.3	100.0	
Missing	99.00	2	4.7		
Total		43	100.0		

Through work based learning I was able to recognise my strengths and weaknesses

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	1	2.3	2.4	2.4
	Strongly disagree	2	4.7	4.9	7.3
	Disagree	5	11.6	12.2	19.5
	Neutral	10	23.3	24.4	43.9
	Agree	17	39.5	41.5	85.4
	Strongly agree	6	14.0	14.6	100.0
	Total	41	95.3	100.0	
Missing	99.00	2	4.7		
Total		43	100.0		

Work based learning allowed me to develop existing and new abilities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	1	2.3	2.6	2.6
	Strongly disagree	1	2.3	2.6	5.1
	Disagree	5	11.6	12.8	17.9
	Neutral	11	25.6	28.2	46.2
	Agree	18	37.2	41.0	87.2
	Strongly agree	5	11.6	12.8	100.0
	Total	39	90.7	100.0	
Missing	99.00	4	9.3		
Total		43	100.0		

In my honors year I was able to develop research competence

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	2	4.7	5.7	5.7
	Strongly disagree	3	7.0	8.6	14.3
	Disagree	2	4.7	5.7	20.0
	Neutral	8	18.6	22.9	42.9
	Agree	13	30.2	37.1	80.0
	Strongly agree	7	16.3	20.0	100.0
	Total	35	81.4	100.0	
Missing	99.00	8	18.6		
Total		43	100.0		

There was sufficient contact with my supervisor and other instructors

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	2	4.7	5.9	5.9
	Strongly disagree	3	7.0	8.8	14.7
	Disagree	3	7.0	8.8	23.5
	Neutral	7	16.3	20.6	44.1
	Agree	13	30.2	38.2	82.4
	Strongly agree	6	14.0	17.6	100.0
	Total	34	79.1	100.0	
Missing	99.00	9	20.9		
Total		43	100.0		

The program did everything possible to retain me as a student even when I was struggling academically

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	4	9.3	10.3	10.3
	Disagree	5	11.6	12.8	23.1
	Neutral	17	39.5	43.6	66.7
	Agree	10	23.3	25.6	92.3
	Strongly agree	3	7.0	7.7	100.0
	Total	39	90.7	100.0	
Missing	99.00	4	9.3		
Total		43	100.0		

The program student throughput rate was quite high/satisfactory

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	4	9.3	10.0	10.0
	Disagree	1	2.3	2.5	12.5
	Neutral	19	44.2	47.5	60.0
	Agree	13	30.2	32.5	92.5
	Strongly agree	3	7.0	7.5	100.0
	Total	40	93.0	100.0	
Missing	99.00	3	7.0		
Total		43	100.0		

I found that the program actively promoted diversity with regards to race and gender equity within my classes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	4	9.3	9.8	9.8
	Neutral	15	34.9	36.6	46.3
	Agree	12	27.9	29.3	75.6
	Strongly agree	10	23.3	24.4	100.0
	Total	41	95.3	100.0	
Missing	99.00	2	4.7		
Total		43	100.0		

The program contributed to enhancing my opportunities of employability

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	5	11.6	12.2	12.2
	Neutral	8	18.6	19.5	31.7
	Agree	20	46.5	48.8	80.5
	Strongly agree	8	18.6	19.5	100.0
	Total	41	95.3	100.0	
Missing	99.00	2	4.7		
Total		43	100.0		

My input was requested via numerous surveys, reviews and impact studies that measured the effectiveness of the program

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	1	2.3	2.4	2.4
	Disagree	10	23.3	24.4	26.8
	Neutral	13	30.2	31.7	58.5
	Agree	13	30.2	31.7	90.2
	Strongly agree	4	9.3	9.8	100.0
	Total	41	95.3	100.0	
Missing	99.00	2	4.7		
Total		43	100.0		

I regularly completed the QPA questionnaires

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	1	2.3	2.4	2.4
	Disagree	10	23.3	24.4	26.8
	Neutral	12	27.9	29.3	56.1
	Agree	13	30.2	31.7	87.8
	Strongly agree	5	11.6	12.2	100.0
	Total	41	95.3	100.0	
Missing	99.00	2	4.7		
Total		43	100.0		

Having work based learning experience helped me to get a job

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	2	4.7	4.7	4.7
	Disagree	4	9.3	9.3	14.0
	Neutral	11	25.6	25.6	39.5
	Agree	12	27.9	27.9	67.4
	Strongly agree	14	32.6	32.6	100.0
	Total	43	100.0	100.0	

Only graduates with quantity surveying degrees are employed

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	9	20.9	20.9	20.9
	Disagree	17	39.5	39.5	60.5
	Neutral	5	11.6	11.6	72.1
	Agree	10	23.3	23.3	95.3
	Strongly agree	2	4.7	4.7	100.0
	Total	43	100.0	100.0	

Only graduates with quantity surveying diplomas are employed

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	7	16.3	16.3	16.3
	Disagree	18	41.9	41.9	58.1
	Neutral	7	16.3	16.3	74.4
	Agree	8	18.6	18.6	93.0
	Strongly agree	3	7.0	7.0	100.0
	Total	43	100.0	100.0	

I am expected to have high levels of self-discipline at work

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	1	2.3	2.3	2.3
	Agree	22	51.2	51.2	53.5
	Strongly agree	20	46.5	46.5	100.0
	Total	43	100.0	100.0	

I am expected to have good leadership skills

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	2.3	2.3	2.3
	Neutral	9	20.9	20.9	23.3
	Agree	16	37.2	37.2	60.5
	Strongly agree	17	39.5	39.5	100.0
	Total	43	100.0	100.0	

When I started to work I was able to use physical resources; computer/printer, effectively in an organisation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	2.3	2.3	2.3
	Disagree	3	7.0	7.0	9.3
	Neutral	3	7.0	7.0	16.3
	Agree	22	51.2	51.2	67.4
	Strongly agree	14	32.6	32.6	100.0
	Total	43	100.0	100.0	

When I started to work I was expected to independently plan my time at work

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	4	9.3	9.3	9.3
	Neutral	4	9.3	9.3	18.6
	Agree	23	53.5	53.5	72.1
	Strongly agree	12	27.9	27.9	100.0
	Total	43	100.0	100.0	

I was able to function effectively in a team when I started working

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	6	14.0	14.0	14.0
	Agree	28	65.1	65.1	79.1
	Strongly agree	9	20.9	20.9	100.0
	Total	43	100.0	100.0	

I must be able to adapt to changing circumstances

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	6	14.0	14.0	14.0
	Agree	20	46.5	46.5	60.5
	Strongly agree	17	39.5	39.5	100.0
	Total	43	100.0	100.0	

My success is driven by my own efforts and self-motivation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	2.3	2.3	2.3
	Neutral	2	4.7	4.7	7.0
	Agree	20	46.5	46.5	53.5
	Strongly agree	20	46.5	46.5	100.0
	Total	43	100.0	100.0	

I am expected to have high levels of innovation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	2.3	2.3	2.3
	Neutral	6	14.0	14.0	16.3
	Agree	22	51.2	51.2	67.4
	Strongly agree	14	32.6	32.6	100.0
	Total	43	100.0	100.0	

I am expected to have excellent oral communication skills

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	3	7.0	7.1	7.1
	Agree	23	53.5	54.8	61.9
	Strongly agree	16	37.2	38.1	100.0
	Total	42	97.7	100.0	
Missing	99.00	1	2.3		
Total		43	100.0		

I am expected to have excellent written communication skills

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	2	4.7	4.7	4.7
	Agree	25	58.1	58.1	62.8
	Strongly agree	16	37.2	37.2	100.0
	Total	43	100.0	100.0	

I must be able to adapt to changing circumstances

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	6	14.0	14.0	14.0
	Agree	20	46.5	46.5	60.5
	Strongly agree	17	39.5	39.5	100.0
	Total	43	100.0	100.0	

My success is driven by my own efforts and self-motivation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	2.3	2.3	2.3
	Neutral	2	4.7	4.7	7.0
	Agree	20	46.5	46.5	53.5
	Strongly agree	20	46.5	46.5	100.0
	Total	43	100.0	100.0	

I am expected to have high levels of innovation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	2.3	2.3	2.3
	Neutral	6	14.0	14.0	16.3
	Agree	22	51.2	51.2	67.4
	Strongly agree	14	32.6	32.6	100.0
	Total	43	100.0	100.0	

I am expected to show commitment towards my work and towards tasks given to me

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	2	4.7	4.7	4.7
	Agree	18	41.9	41.9	46.5
	Strongly agree	23	53.5	53.5	100.0
	Total	43	100.0	100.0	

I am expected to have high levels of self-confidence

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	2.3	2.3	2.3
	Neutral	5	11.6	11.6	14.0
	Agree	17	39.5	39.5	53.5
	Strongly agree	20	46.5	46.5	100.0
	Total	43	100.0	100.0	

I am expected to develop and maintain effective relationships with colleagues and superiors

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	2.3	2.3	2.3
	Neutral	4	9.3	9.3	11.6
	Agree	17	39.5	39.5	51.2
	Strongly agree	21	48.8	48.8	100.0
	Total	43	100.0	100.0	

When I started to work I was required to use quantity surveying computer software to execute daily tasks

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	2.3	2.3	2.3
	Disagree	5	11.6	11.6	14.0
	Neutral	8	18.6	18.6	32.6
	Agree	17	39.5	39.5	72.1
	Strongly agree	12	27.9	27.9	100.0
	Total	43	100.0	100.0	

I am expected to show effective problem solving skills

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	2.3	2.3	2.3
	Neutral	2	4.7	4.7	7.0
	Agree	29	67.4	67.4	74.4
	Strongly agree	11	25.6	25.6	100.0
	Total	43	100.0	100.0	

I am expected to be effective with my decision making skills

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	2.3	2.4	2.4
	Neutral	3	7.0	7.1	9.5
	Agree	26	60.5	61.9	71.4
	Strongly agree	12	27.9	28.6	100.0
	Total	42	97.7	100.0	
Missing	99.00	1	2.3		
Total		43	100.0		

I am expected to have advanced numeracy skills to execute my tasks effectively

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	2	4.7	4.7	4.7
	Agree	25	58.1	58.1	62.8
	Strongly agree	16	37.2	37.2	100.0
	Total	43	100.0	100.0	

I am expected to understand the impact of economic influences on the organisation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	2.3	2.3	2.3
	Disagree	1	2.3	2.3	4.7
	Neutral	15	34.9	34.9	39.5
	Agree	15	34.9	34.9	74.4
	Strongly agree	11	25.6	25.6	100.0
	Total	43	100.0	100.0	

When I started to work I had efficient listening skills

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	5	11.6	11.6	11.6
	Agree	26	60.5	60.5	72.1
	Strongly agree	12	27.9	27.9	100.0
	Total	43	100.0	100.0	

When I started to work I was able to effectively manage interpersonal conflict

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	2.3	2.3	2.3
	Disagree	4	9.3	9.3	11.6
	Neutral	13	30.2	30.2	41.9
	Agree	18	41.9	41.9	83.7
	Strongly agree	7	16.3	16.3	100.0
	Total	43	100.0	100.0	

When I started to work I could effectively manage my time

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	2.3	2.3	2.3
	Disagree	5	11.6	11.6	14.0
	Neutral	11	25.6	25.6	39.5
	Agree	18	41.9	41.9	81.4
	Strongly agree	8	18.6	18.6	100.0
	Total	43	100.0	100.0	

Personal and Interpersonal Skills

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely important	32	74.4	74.4	74.4
	Moderately important	9	20.9	20.9	95.3
	Unimportant	2	4.7	4.7	100.0
	Total	43	100.0	100.0	

Leadership and Management Skills

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely important	27	62.8	64.3	64.3
	Moderately important	12	27.9	28.6	92.9
	Unimportant	3	7.0	7.1	100.0
	Total	42	97.7	100.0	
Missing	99.00	1	2.3		
Total		43	100.0		

Interpretation of Data, Information and Information Technology

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely important	37	86.0	86.0	86.0
	Moderately important	4	9.3	9.3	95.3
	Unimportant	2	4.7	4.7	100.0
	Total	43	100.0	100.0	

Drawing Interpretation (Architectural)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely important	37	86.0	86.0	86.0
	Moderately important	3	7.0	7.0	93.0
	Unimportant	3	7.0	7.0	100.0
	Total	43	100.0	100.0	

Drawing Interpretation (Structural)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely important	35	81.4	81.4	81.4
	Moderately important	5	11.6	11.6	93.0
	Unimportant	3	7.0	7.0	100.0
	Total	43	100.0	100.0	

Professional Practice and Ethics

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely important	35	81.4	83.3	83.3
	Moderately important	5	11.6	11.9	95.2
	Unimportant	2	4.7	4.8	100.0
	Total	42	97.7	100.0	
Missing	99.00	1	2.3		
Total		43	100.0		

Property Law

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely important	16	37.2	37.2	37.2
	Moderately important	25	58.1	58.1	95.3
	Unimportant	2	4.7	4.7	100.0
	Total	43	100.0	100.0	

Construction Law

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely important	32	74.4	74.4	74.4
	Moderately important	9	20.9	20.9	95.3
	Unimportant	2	4.7	4.7	100.0
	Total	43	100.0	100.0	

Design Appraisal and Measurement (Quantity Surveying)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely important	38	88.4	88.4	88.4
	Moderately important	1	2.3	2.3	90.7
	Unimportant	4	9.3	9.3	100.0
	Total	43	100.0	100.0	

Construction Economics

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely important	19	44.2	45.2	45.2
	Moderately important	19	44.2	45.2	90.5
	Unimportant	4	9.3	9.5	100.0
	Total	42	97.7	100.0	
Missing	99.00	1	2.3		
Total		43	100.0		

Construction Contract Practice (JBCC/GCC)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely important	36	83.7	83.7	83.7
	Moderately important	4	9.3	9.3	93.0
	Unimportant	3	7.0	7.0	100.0
	Total	43	100.0	100.0	

Construction Technology and Environmental Services

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely important	28	65.1	65.1	65.1
	Moderately important	10	23.3	23.3	88.4
	Unimportant	5	11.6	11.6	100.0
	Total	43	100.0	100.0	

Project Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely important	18	41.9	41.9	41.9
	Moderately important	22	51.2	51.2	93.0
	Unimportant	3	7.0	7.0	100.0
	Total	43	100.0	100.0	

Procurement and Financial Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely important	24	55.8	55.8	55.8
	Moderately important	15	34.9	34.9	90.7
	Unimportant	4	9.3	9.3	100.0
	Total	43	100.0	100.0	

Facilities Management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely important	6	14.0	14.3	14.3
	Moderately important	27	62.8	64.3	78.6
	Unimportant	9	20.9	21.4	100.0
	Total	42	97.7	100.0	
Missing	99.00	1	2.3		
Total		43	100.0		

Project Valuation and Payments

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely important	34	79.1	81.0	81.0
	Moderately important	4	9.3	9.5	90.5
	Unimportant	4	9.3	9.5	100.0
	Total	42	97.7	100.0	
Missing	99.00	1	2.3		
Total		43	100.0		

Health and Safety Acts and Procedures

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely important	26	60.5	60.5	60.5
	Moderately important	9	20.9	20.9	81.4
	Unimportant	8	18.6	18.6	100.0
	Total	43	100.0	100.0	

Dispute Resolution and Associated Procedures

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely important	16	37.2	38.1	38.1
	Moderately important	21	48.8	50.0	88.1
	Unimportant	5	11.6	11.9	100.0
	Total	42	97.7	100.0	
Missing	99.00	1	2.3		
Total		43	100.0		

Insolvency and Insurances

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely important	14	32.6	32.6	32.6
	Moderately important	19	44.2	44.2	76.7
	Unimportant	10	23.3	23.3	100.0
	Total	43	100.0	100.0	

Marketing

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely important	7	16.3	16.3	16.3
	Moderately important	26	60.5	60.5	76.7
	Unimportant	10	23.3	23.3	100.0
	Total	43	100.0	100.0	

Research Methodologies and Techniques

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely important	12	27.9	28.6	28.6
	Moderately important	17	39.5	40.5	69.0
	Unimportant	13	30.2	31.0	100.0
	Total	42	97.7	100.0	
Missing	99.00	1	2.3		
Total		43	100.0		

Site Surveying

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely important	17	39.5	39.5	39.5
	Moderately important	17	39.5	39.5	79.1
	Unimportant	9	20.9	20.9	100.0
	Total	43	100.0	100.0	

Case Processing Summary

		N	%
Cases	Valid	38	88.4
	Excluded ^a	5	11.6
	Total	43	100.0

Reliability Statistics

Cronbach's Alpha	N of Items
.926	25

Ethics

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely important	35	81.4	81.4	81.4
	Moderately important	5	11.6	11.6	93.0
	Unimportant	3	7.0	7.0	100.0
	Total	43	100.0	100.0	

Accounting

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely important	25	58.1	58.1	58.1
	Moderately important	14	32.6	32.6	90.7
	Unimportant	4	9.3	9.3	100.0
	Total	43	100.0	100.0	

Financial reporting

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely important	33	76.7	76.7	76.7
	Moderately important	5	11.6	11.6	88.4
	Unimportant	5	11.6	11.6	100.0
	Total	43	100.0	100.0	

Case Processing Summary

		N	%
Cases	Valid	26	60.5
	Excluded ^a	17	39.5
	Total	43	100.0

Reliability Statistics

Cronbach's Alpha	N of Items
.895	56

Case Processing Summary

		N	%
Cases	Valid	41	95.3
	Excluded ^a	2	4.7
	Total	43	100.0

Reliability Statistics

Cronbach's Alpha	N of Items
.857	24

DESCRIPTIVE SPSS V24 DATA ANALYSIS –

GRADUATES VIEWS ON THEIR WORK-READINESS

Statement	1 %	2 %	3 %	4 %	5 %	Mean	SD	Rank
I am expected to show commitment towards my work and towards tasks given to me	-	-	4.7	41.9	53.5	4.48	0.592	1
I am expected to have high levels of self-discipline at work	-	-	2.3	51.2	46.5	4.44	0.547	2
My success is driven by my own efforts and self-motivation	-	2.3	4.7	46.5	46.5	4.37	0.690	3
I am expected to develop and maintain effective relationships with colleagues and superiors	-	2.3	9.3	39.5	48.8	4.34	0.752	4
I am expected to have excellent written communication skills	-	-	4.7	58.1	37.2	4.32	0.565	5
I am expected to have advanced numeracy skills to execute my tasks effectively	-	-	4.7	58.1	37.2	4.32	0.565	6
I am expected to have excellent oral communication skills	-	-	7.1	54.8	38.1	4.30	0.604	7
I am expected to have high levels of self-confidence	-	2.3	11.6	39.5	46.5	4.30	0.772	8
I must be able to adapt to changing circumstances	-	-	14.0	46.5	39.5	4.25	0.693	9
I am expected to show effective problem solving skills	-	2.3	4.7	67.4	25.6	4.16	0.614	10
I am expected to be effective with my decision-making skills	-	2.4	7.1	61.9	28.6	4.16	0.659	11
When I started to work, I had efficient listening skills	-	-	11.6	60.5	27.9	4.16	0.614	12
I am expected to have good leadership skills	-	2.3	20.9	37.2	39.5	4.13	0.833	13
I am expected to have high levels of innovation	-	2.3	14.0	51.2	32.6	4.13	0.742	14
I was able to function effectively in a team when I started working	-	-	14.0	65.1	20.9	4.06	0.593	15
When I started to work, I was able to use physical resources; computer/printer, effectively in an organisation	2.3	7.0	7.0	51.2	32.6	4.04	0.950	16
When I started to work, I was expected to independently plan my time at work	-	9.3	9.3	53.5	27.9	4.00	0.872	17
When I started to work, I was required to use quantity surveying computer software to execute daily tasks	2.3	11.6	18.6	39.5	27.9	3.79	1.059	18

I am expected to understand the impact of economic influences on the organisation	2.3	2.3	34.9	34.9	25.6	3.79	0.940	19
Having work based learning experience helped me to get a job	4.7	9.3	25.6	27.9	32.6	3.74	1.156	20
When I started to work, I could effectively manage my time	2.3	11.6	25.6	41.9	18.6	3.62	1.000	21
When I started to work, I was able to effectively manage interpersonal conflict	2.3	9.3	30.2	41.9	16.3	3.60	0.954	22
Only graduates with quantity surveying diplomas are employed	16.3	41.9	16.3	18.6	7.0	2.58	1.179	23
Only graduates with quantity surveying degrees are employed	20.9	39.5	11.6	23.3	4.7	2.51	1.202	24

DESCRIPTIVE SPSS V24 DATA ANALYSIS –

GRADUATES VIEWS ON THEIR SKILLS AND COMPETENCIES

Skills and Competencies	1 %	2 %	3 %	Mean	SD	Rank
Interpretation of Data, Information and Information Technology	86.0	9.3	4.7	1.18	0.500	1
Drawing Interpretation (Architectural)	86.0	7.0	7.0	1.20	0.558	2
Design Appraisal and Measurement (Quantity Surveying)	88.4	2.3	9.3	1.20	0.599	3
Professional Practice and Ethics	83.3	11.9	4.8	1.21	0.519	4
Construction Contract Practice (JBCC/GCC)	83.7	9.3	7.0	1.23	0.570	5
Drawing Interpretation (Structural)	81.4	11.6	7.0	1.25	0.581	6
Ethics	81.4	11.6	7.0	1.25	0.581	7
Project Valuation and Payments	81.0	9.5	9.5	1.28	0.635	8
Personal and Interpersonal Skills	74.4	20.9	4.7	1.30	0.557	9
Construction Law	74.4	20.9	4.7	1.30	0.557	10
Financial Reporting	96.7	11.6	11.6	1.34	0.686	11
Leadership and Management Skills	64.3	28.6	7.1	1.42	0.630	12
Construction Technology and Environmental Services	65.1	23.3	11.6	1.46	0.702	13
Accounting	58.1	32.6	9.3	1.51	0.668	14
Procurement and Financial Management	55.8	34.9	9.3	1.53	0.667	15
Health and Safety Acts and Procedures	60.5	20.9	18.6	1.58	0.793	16
Construction Economics	45.2	45.2	9.5	1.64	0.655	17
Project Management	41.9	51.2	7.0	1.65	0.612	18
Property Law	37.2	58.1	4.7	1.67	0.565	19
Dispute Resolution and Associated Procedures	38.1	50.0	11.9	1.73	0.664	20
Site Surveying	39.5	39.5	20.9	1.81	0.763	21
Insolvency and Insurances	32.6	44.2	23.3	1.90	0.750	22
Research Methodologies and Techniques	28.6	40.5	31.0	2.02	0.780	23
Marketing	16.3	60.5	23.3	2.06	0.632	24
Facilities Management	14.3	64.3	21.4	2.07	0.600	25

DESCRIPTIVE SPSS V24 DATA ANALYSIS – PROGRAMME CRITERION

PROGRAMDESIGN

N	Valid	43
	Missing	0
Mean		3.4729
Median		3.6667
Std. Deviation		.61392

TEACHINGLEARNING

N	Valid	43
	Missing	0
Mean		3.3023
Median		3.3333
Std. Deviation		.80938

PROGRAMADMINSERVICES

N	Valid	43
	Missing	0
Mean		3.5930
Median		3.5000
Std. Deviation		.78873

STUDENTRECRUITMENT

N	Valid	43
	Missing	0
Mean		3.4535
Median		3.5000
Std. Deviation		.75446

SUPPORTSTAFFING

N	Valid	43
	Missing	0
Mean		3.4070
Median		3.5000
Std. Deviation		.89480

STUDENTASSESSMENTPRAC

N	Valid	42
	Missing	1
Mean		3.5595
Median		3.5000
Std. Deviation		.88485

PROGRAMCOORDINATION

N	Valid	41
	Missing	2
Mean		2.6911
Median		2.6667
Std. Deviation		1.00662

STUDENTASSESSMENTPOLICIES

N	Valid	43
	Missing	0
Mean		3.5535
Median		3.6000
Std. Deviation		.70756

ACADEMICSTAFFING

N	Valid	43
	Missing	0
Mean		3.7984
Median		3.6667
Std. Deviation		.81695

POSTGRADPOLICIESANDPROCEDURES

N	Valid	36
	Missing	7
Mean		3.4167
Median		4.0000
Std. Deviation		1.40662

ACADEMICDEVFORSTUDENTSUCCESS

N	Valid	42
	Missing	1
Mean		3.3730
Median		3.2500
Std. Deviation		.83338

TEACHINGANDLEARNING

N	Valid	42
	Missing	1
Mean		4.1548
Median		4.0000
Std. Deviation		3.38124

ASSESSMENTSYSYSTEM

N	Valid	42
	Missing	1
Mean		3.1905
Median		3.0000
Std. Deviation		.87619

COORDINATIONOFWBL

N	Valid	42
	Missing	1
Mean		3.1595
Median		3.4000
Std. Deviation		1.04504

DELIVERYOFPOSTGRADPROG

N	Valid	35
	Missing	8
Mean		3.3286
Median		4.0000
Std. Deviation		1.39296

STUDENTRETENTIONANDTHROUGHPUTRATES

N	Valid	41
	Missing	2
Mean		3.3211
Median		3.3333
Std. Deviation		.83366

EMPLOYABILITY

N	Valid	41
	Missing	2
Mean		3.7561
Median		4.0000
Std. Deviation		.91598

PROGRAMEFFECTIVENESS

N	Valid	41
	Missing	2
Mean		3.2195
Median		3.5000
Std. Deviation		1.00653

INFRASTRUCTUREANDLIBRARY

N	Valid	43
	Missing	0
Mean		3.1102
Median		3.1429
Std. Deviation		.94103

DESCRIPTIVE SPSS V24 DATA ANALYSIS – ACADEMIC PROGRAMME ASSESSMENT

Statement	1 %	2 %	3 %	4 %	5 %	Mean	SD	Rank
Criteria One: Programme Design						3.47	0.613	
The mode of instruction used in my classes catered for my own particular learning needs	-	4.7	46.5	41.9	7.0	3.51	0.702	1
The modules in the curriculum that I had to take had a good balance of theoretical, practical and experiential knowledge and skills	-	11.6	37.2	44.2	7.0	3.46	0.797	2
During my period of study at university a descriptive understanding of the quantity surveying industry was promoted	4.7	11.6	25.6	51.2	7.0	3.44	0.958	3
Criteria Two: Student Recruitment, Admission and Selection						3.45	0.754	
The large number of students in my classes did not hinder me from attaining a level of good quality quantity surveying education	-	4.7	18.6	62.8	14.0	3.86	0.709	1
The material I received from the university to recruit me as a potential student more than adequately informed me about the quantity surveying programme at the university accurately and sufficiently	7.1	31.0	19.0	33.3	9.5	3.07	1.155	2
Criteria Three: Academic Staffing						3.79	0.816	
The academic staff for the quantity surveying programme at the university	2.3	2.3	11.6	55.8	27.9	4.04	0.843	1

had relevant academic qualifications, skills and knowledge to conduct lectures								
The academic staff for the quantity surveying programme at the university were suitably qualified and experienced to teach my classes	2.3	2.3	18.6	44.2	32.6	4.02	0.912	2
There was enough academic staff to teach all the required modules in the programme	11.6	18.6	18.6	27.9	23.3	3.32	1.340	3
Criteria Four: Support Staffing						3.40	0.894	
The academic and support staff were competent and had sufficient appropriate experience	2.3	11.6	27.9	39.5	18.6	3.60	1.003	1
There were enough academic and support staff in the quantity surveying programme	4.7	27.9	20.9	34.9	11.6	3.20	1.12	2
Criteria Five: Teaching and Learning Strategy						3.30	0.809	
I found that the program promoted both practical and vocational teaching methods	2.3	16.3	27.9	41.9	11.6	3.44	0.983	1
My academic progress was monitored efficiently	-	20.9	37.2	37.2	4.7	3.25	0.847	2
I was given regular feedback on my progress	-	32.6	23.3	34.9	9.3	3.20	1.013	3
Criteria Six: Student Assessment Policies and Procedures						3.55	0.707	
The tests and examinations were conducted efficiently	-	7.0	16.3	53.5	23.3	3.93	0.827	1
The projects and assignments were challenging but helped me grasp the knowledge and skills I needed	-	4.8	21.4	57.1	16.7	3.85	0.751	2
I was given feedback on my performance reasonably quickly	2.3	16.3	27.9	44.2	9.3	3.41	0.956	3
I found the feedback very useful	-	16.3	34.9	39.5	9.3	3.41	0.879	4
Many different evaluation methods were used to measure and monitor my progress	-	32.6	25.6	32.6	9.3	3.18	1.006	5
Criteria Seven: Infrastructure and Library Resources						3.11	0.941	
The university had suitable and sufficient IT infrastructure and facilities that I could use	4.7	16.3	20.9	34.9	23.3	3.55	1.160	1
The university teaching or instructional spaces were well-equipped with working technology	-	31.0	23.8	33.3	11.9	3.26	1.037	2
The computer laboratories were available for my use whenever I needed to use them	9.3	25.6	18.6	27.9	18.6	3.20	1.282	3
There were adequate printing facilities available	14.0	23.3	18.6	39.5	4.7	2.97	1.184	4

The software was up-to-date and the latest versions	11.6	32.6	18.6	23.3	14.0	2.95	1.271	5
There were sufficient computers in the labs	7.1	38.1	21.4	19.0	14.3	2.95	1.208	6
The labs always had someone available to help me when I had problems with the computers	9.3	27.9	34.9	23.3	4.7	2.86	1.036	7
Criteria Eight: Programme Administrative Services						3.59	0.788	
Information about the programme curricula was clearly communicated to me	-	14.3	21.4	47.6	16.7	3.66	0.928	1
The programme was very well managed	4.7	4.7	37.2	39.5	14.0	3.53	0.959	2
Criteria Nine: Postgraduate Policies, Procedures and Regulations						3.41	1.406	
I was also aware of my own roles and responsibilities as an honours student	17.7	11.8	14.7	50.0	17.6	3.44	1.439	1
In my honours year I was very aware of the roles and responsibilities of my immediate supervisors	16.7	8.3	8.3	52.8	13.9	3.33	1.434	2
Criteria Ten: Programme Co-ordination						2.69	1.006	
The programme had an industry advisory board	10.0	20.0	50.0	15.0	5.0	2.85	0.975	1
My input was taken seriously	19.5	24.4	31.7	17.1	7.3	2.68	1.192	2
I had many opportunities to give input into the programme	20.0	30.0	25.0	20.0	5.0	2.60	1.172	3
Criteria Eleven: Academic Development for Student Success						3.37	0.833	
I found the academic staff to be adequately qualified and experienced	2.4	2.4	23.8	50.0	21.4	3.85	0.871	1
I was satisfied with the level of foundational skills that I gained while studying in the programme	-	9.5	28.6	42.9	19.0	3.71	0.891	2
Academic staff took an interest in my academic development	2.4	16.7	40.5	26.2	14.3	3.33	1.004	3
Academic staff arranged regular counselling sessions with me to ensure that I was coping academically	24.4	26.8	26.8	12.2	9.8	2.56	1.265	4
Criteria Twelve: Teaching and learning interactions						4.15	3.381	
The programme curricula were taught to me within the stipulated time frame of the qualification	-	4.8	21.4	52.4	21.4	4.90	6.698	1
Academic staff provided me with adequate guidance of the programme	2.4	16.7	31.0	38.1	11.9	3.40	0.989	2
Criteria Thirteen: Student Assessment Practices						3.55	0.884	
I was assessed systematically and purposefully	-	11.9	28.6	47.6	11.9	3.59	0.857	1
Feedback from the assessments were efficiently reported back to me	-	19.0	26.2	38.1	16.7	3.52	0.993	2

Criteria Fourteen: The Assessment System						3.19	0.876	
I found that the programme took appropriate measures to ensure the reliability, rigour and security of the assessments were maintained	-	16.7	38.1	35.7	9.5	3.38	0.882	1
The appeals process to the faculty were clearly explained to me and ensured its explicitly and fairness	7.1	28.6	26.2	33.3	4.8	3.00	1.059	2
Criteria Fifteen: Co-ordination of Work-Based Learning						3.15	1.045	
Through work based learning I was able to recognise my strengths and weaknesses	7.3	12.2	24.4	41.5	14.6	3.41	1.182	1
Work based learning allowed me to develop existing and new abilities	5.2	12.8	28.2	41.0	12.8	3.41	1.117	2
Work based learning promoted a higher understanding of the quantity surveying programme and industry practices	9.7	9.8	26.8	39.0	14.6	3.36	1.219	3
I found that work based learning was implemented effectively within the programme	14.3	23.8	21.4	26.2	14.3	3.02	1.297	4
In the absence of work based learning, a mentoring system was implemented effectively within the programme	10.5	36.8	34.2	15.8	2.6	2.63	0.970	5
Criteria Sixteen: Delivery of Postgraduate Programmes						3.32	1.392	
In my honours year I was able to develop research competence	14.3	5.7	229	37.1	20.0	3.37	1.416	1
There was sufficient contact with my supervisor and other instructors	14.7	8.8	20.6	38.2	17.6	3.29	1.425	2
Criteria Seventeen: Student Retention and Throughput Rates						3.32	0.833	
I found that the programme actively promoted diversity with regards to race and gender equity within my classes	-	9.8	36.6	29.3	24.4	3.68	0.960	1
The programme student throughput rate was quite high/satisfactory	10.0	2.5	47.5	32.5	7.5	3.25	1.006	2
The programme did everything possible to retain me as a student even when I was struggling academically	10.3	12.8	43.6	25.6	7.7	3.07	1.060	3
Criteria Eighteen: Employability						3.75	0.915	
The programme contributed to enhancing my opportunities of employability	-	12.2	19.5	48.8	19.5	3.75	0.915	1
Criteria Nineteen: Programme Effectiveness						3.21	1.006	
I regularly completed the QPA questionnaires	-	26.8	29.3	31.7	12.2	3.24	1.113	1
My input was requested via numerous surveys, reviews and impact studies	-	26.8	31.7	31.7	9.8	3.19	1.077	2

that measured the effectiveness of the programme

DESCRIPTIVE SPSS V24 DATA ANALYSIS – EMPLOYER AND GRADUATE QUESTIONNAIRE (OVERALL MEAN)

WorkReadiness

N	Valid	11
	Missing	0
Mean		3.1761
Median		3.2308
Std. Deviation		.27415

SkillsCompetencies

N	Valid	11
	Missing	0
Mean		1.5867
Median		1.4400
Std. Deviation		.53996

WorkReadiness

N	Valid	43
	Missing	0
Mean		3.9874
Median		4.0000
Std. Deviation		.39015

SkillsCompetencies

N	Valid	43
	Missing	0
Mean		1.5159
Median		1.4400
Std. Deviation		.37085

ProgrammeCriteria

N	Valid	43
	Missing	0
Mean		3.3677
Median		3.3273
Std. Deviation		.57018

DESCRIPTIVE SPSS V24 DATA ANALYSIS – GRADUATE QUESTIONNAIRE (TRADITIONAL UNIVERSITIES)

		PROGRAMDE SIGN	STUDENTREC RUITMENT	ACADEMICST AFFING	SUPPORTSTA FFING	TEACHINGLEA RNING
N	Valid	17	17	17	17	17
	Missing	0	0	0	0	0
Mean		3.3137	3.3235	3.3725	3.0882	2.7843
Std. Deviation		.60634	.70581	.94929	.98798	.79005

		STUDENTASS ESSMENTPOLI CIES	INFRASTRUCT UREANDLIBRA RY	PROGRAMAD MINSERVICES	POSTGRADPO LICIESANDPR OCEDURES	PROGRAMCO ORDINATION
N	Valid	17	17	17	16	17
	Missing	0	0	0	1	0
Mean		3.2588	2.9916	3.3235	3.6563	2.5098
Std. Deviation		.75751	.88995	.90037	1.20718	1.09999

		ACADEMICDE VFORSTUDEN TSUCCESS	TEACHINGAN DLEARNING	STUDENTASS ESSMENTPRA C	ASSESSMENT SYSTEM	COORDINATIO NOFWBL
N	Valid	17	17	17	17	17
	Missing	0	0	0	0	0
Mean		3.1324	4.6765	3.2059	3.0294	2.4824
Std. Deviation		.83440	5.28246	.88492	.87447	.92211

		DELIVERYOFF OSTGRADPRO G	STUDENTRET ENTIONANDT HROUGHPUTR ATES	EMPLOYABILI TY	PROGRAMEFF ECTIVENESS	WorkReadiness
N	Valid	16	17	17	17	17
	Missing	1	0	0	0	0
Mean		3.5625	3.1961	3.6471	3.2059	3.9241
Std. Deviation		1.15289	.70768	.86177	.86709	.38697

		SkillsCompeten cies	ProgrammeCrit eria
N	Valid	17	17
	Missing	0	0
Mean		3.1619	3.1619
Std. Deviation		.63096	.63096

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
PROGRAMDESIGN	17	3.3137	.60634	.14706
STUDENTRECRUITMENT	17	3.3235	.70581	.17118
ACADEMICSTAFFING	17	3.3725	.94929	.23024
SUPPORTSTAFFING	17	3.0882	.98798	.23962
TEACHINGLEARNING	17	2.7843	.79005	.19162
STUDENTASSESSMENTPOLICIES	17	3.2588	.75751	.18372
INFRASTRUCTUREANDLIBRARY	17	2.9916	.88995	.21585
PROGRAMADMINSERVICES	17	3.3235	.90037	.21837
POSTGRADPOLICIESANDPROCEDURES	16	3.6563	1.20718	.30180
PROGRAMCOORDINATION	17	2.5098	1.09999	.26679
ACADEMICDEVFORSTUDENTSUCCESS	17	3.1324	.83440	.20237
TEACHINGANDLEARNING	17	4.6765	5.28246	1.28119
STUDENTASSESSMENTPRACTICE	17	3.2059	.88492	.21463
ASSESSMENTSYSTEM	17	3.0294	.87447	.21209
COORDINATIONOFWBL	17	2.4824	.92211	.22365
DELIVERYOFPOSTGRADPROG	16	3.5625	1.15289	.28822
STUDENTRETENTIONANDTHROUGHPUTRATES	17	3.1961	.70768	.17164
EMPLOYABILITY	17	3.6471	.86177	.20901
PROGRAMEFFECTIVENESS	17	3.2059	.86709	.21030
WorkReadiness	17	3.9241	.38697	.09385
SkillsCompetencies	17	3.1619	.63096	.15303
ProgrammeCriteria	17	3.1619	.63096	.15303

	Test Value = 0				
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence ... Lower
PROGRAMDESIGN	22.533	16	.000	3.31373	3.0020
STUDENTRECRUITMENT	19.415	16	.000	3.32353	2.9606
ACADEMICSTAFFING	14.648	16	.000	3.37255	2.8845
SUPPORTSTAFFING	12.888	16	.000	3.08824	2.5803
TEACHINGLEARNING	14.531	16	.000	2.78431	2.3781
STUDENTASSESSMENTPOLICIES	17.738	16	.000	3.25882	2.8693
INFRASTRUCTUREANDLIBRARY	13.860	16	.000	2.99160	2.5340
PROGRAMADMINSERVICES	15.220	16	.000	3.32353	2.8606
POSTGRADPOLICIESANDPROCEDURES	12.115	15	.000	3.65625	3.0130
PROGRAMCOORDINATION	9.408	16	.000	2.50980	1.9442
ACADEMICDEVELOPMENTSTUDENTSUCCESS	15.478	16	.000	3.13235	2.7033
TEACHINGANDLEARNING	3.650	16	.002	4.67647	1.9605
STUDENTASSESSMENTPRACTICE	14.937	16	.000	3.20588	2.7509
ASSESSMENTSYSYSTEM	14.284	16	.000	3.02941	2.5798
COORDINATIONOFWBL	11.099	16	.000	2.48235	2.0082
DELIVERYOFPOSTGRADPROGRAM	12.360	15	.000	3.56250	2.9482
STUDENTRETENTIONANDTHROUGHPUTRATES	18.621	16	.000	3.19608	2.8322
EMPLOYABILITY	17.449	16	.000	3.64706	3.2040
PROGRAMEFFECTIVENESS	15.244	16	.000	3.20588	2.7601
WorkReadiness	41.811	16	.000	3.92413	3.7252
SkillsCompetencies	20.662	16	.000	3.16185	2.8374
ProgrammeCriteria	20.662	16	.000	3.16185	2.8374

	Test Value = 0 95% Confidence Interval of the ... Upper
PROGRAMDESIGN	3.6255
STUDENTRECRUITMENT	3.6864
ACADEMICSTAFFING	3.8606
SUPPORTSTAFFING	3.5962
TEACHINGLEARNING	3.1905
STUDENTASSESSMENTPOLICIES	3.6483
INFRASTRUCTUREANDLIBRARY	3.4492
PROGRAMADMINSERVICES	3.7865
POSTGRADPOLICIESANDPROCEDURES	4.2995
PROGRAMCOORDINATION	3.0754
ACADEMICDEVFORSTUDENTSUCCESS	3.5614
TEACHINGANDLEARNING	7.3925
STUDENTASSESSMENTPRACTICE	3.6609
ASSESSMENTSYSTEM	3.4790
COORDINATIONOFWBL	2.9565
DELIVERYOFPOSTGRADPROG	4.1768
STUDENTRETENTIONANDTHROUGHPUTRATES	3.5599
EMPLOYABILITY	4.0901
PROGRAMEFFECTIVENESS	3.6517
WorkReadiness	4.1231
SkillsCompetencies	3.4863
ProgrammeCriteria	3.4863

DESCRIPTIVE SPSS V24 DATA ANALYSIS – GRADUATE QUESTIONNAIRE
(UNIVERSITIES OF TECHNOLOGY)

		PROGRAMDE SIGN	STUDENTREC RUITMENT	ACADEMICST AFFING	SUPPORTSTA FFING	TEACHINGLEA ARNING
N	Valid	22	22	22	22	22
	Missing	0	0	0	0	0
Mean		3.5152	3.5000	4.0152	3.4773	3.5909
Std. Deviation		.62342	.69007	.57714	.73156	.62515

		STUDENTASS ESSMENTPOLI CIES	INFRASTRUCT UREANDLIBRA RY	PROGRAMAD MINSERVICES	POSTGRADPO LICIESANDPR OCEDURES	PROGRAMCO ORDINATION
N	Valid	22	22	22	16	20
	Missing	0	0	0	6	2
Mean		3.6455	2.9513	3.6591	3.0000	2.6833
Std. Deviation		.60767	.84670	.56456	1.62275	.95804

		ACADEMICDE VFORSTUDEN TSUCCESS	TEACHINGAN DLEARNING	STUDENTASS ESSMENTPRA C	ASSESSMENT SYSTEM	COORDINATIO NOFWBL
N	Valid	21	21	21	21	21
	Missing	1	1	1	1	1
Mean		3.5079	3.6667	3.6667	3.1667	3.7214
Std. Deviation		.81858	.76376	.79582	.82664	.71947

		DELIVERYOFF OSTGRADPRO G	STUDENTRET ENTIONANDT HROUGHPUTR ATES	EMPLOYABILI TY	PROGRAMEFF ECTIVENESS	WorkReadiness
N	Valid	15	20	20	20	22
	Missing	7	2	2	2	0
Mean		2.8667	3.3083	3.8500	3.1250	3.9962
Std. Deviation		1.54072	.83118	.93330	1.07453	.38830

		SkillsCompeten cies	ProgrammeCrit eria
N	Valid	22	22
	Missing	0	0
Mean		3.4089	3.4089
Std. Deviation		.42666	.42666

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
PROGRAMDESIGN	22	3.5152	.62342	.13291
STUDENTRECRUITMENT	22	3.5000	.69007	.14712
ACADEMICSTAFFING	22	4.0152	.57714	.12305
SUPPORTSTAFFING	22	3.4773	.73156	.15597
TEACHINGLEARNING	22	3.5909	.62515	.13328
STUDENTASSESSMENTPOLICIES	22	3.6455	.60767	.12956
INFRASTRUCTUREANDLIBRARY	22	2.9513	.84670	.18052
PROGRAMADMINSERVICES	22	3.6591	.56456	.12036
POSTGRADPOLICIESANDPROCEDURES	16	3.0000	1.62275	.40569
PROGRAMCOORDINATION	20	2.6833	.95804	.21422
ACADEMICDEVFORSTUDENTSUCCESS	21	3.5079	.81858	.17863
TEACHINGANDLEARNING	21	3.6667	.76376	.16667
STUDENTASSESSMENTPRACTICE	21	3.6667	.79582	.17366
ASSESSMENTSYSTEM	21	3.1667	.82664	.18039
COORDINATIONOFWBL	21	3.7214	.71947	.15700
DELIVERYOFPOSTGRADPROG	15	2.8667	1.54072	.39781
STUDENTRETENTIONANDTHROUGHPUTRATES	20	3.3083	.83118	.18586
EMPLOYABILITY	20	3.8500	.93330	.20869
PROGRAMEFFECTIVENESS	20	3.1250	1.07453	.24027
WorkReadiness	22	3.9962	.38830	.08279
SkillsCompetencies	22	3.4089	.42666	.09096
ProgrammeCriteria	22	3.4089	.42666	.09096

	t	df	Test Value = 0		95% Confidence ...
			Sig. (2-tailed)	Mean Difference	Lower
PROGRAMDESIGN	26.447	21	.000	3.51515	3.2387
STUDENTRECRUITMENT	23.790	21	.000	3.50000	3.1940
ACADEMICSTAFFING	32.631	21	.000	4.01515	3.7593
SUPPORTSTAFFING	22.295	21	.000	3.47727	3.1529
TEACHINGLEARNING	26.942	21	.000	3.59091	3.3137
STUDENTASSESSMENTPOLICIES	28.138	21	.000	3.64545	3.3760
INFRASTRUCTUREANDLIBRARY	16.349	21	.000	2.95130	2.5759
PROGRAMADMINSERVICES	30.400	21	.000	3.65909	3.4088
POSTGRADPOLICIESANDPROCEDURES	7.395	15	.000	3.00000	2.1353
PROGRAMCOORDINATION	12.526	19	.000	2.68333	2.2350
ACADEMICDEVFORSTUDENTSUCCESS	19.638	20	.000	3.50794	3.1353
TEACHINGANDLEARNING	22.000	20	.000	3.66667	3.3190
STUDENTASSESSMENTPRACTICE	21.114	20	.000	3.66667	3.3044
ASSESSMENTSYSTEM	17.555	20	.000	3.16667	2.7904
COORDINATIONOFWBL	23.703	20	.000	3.72143	3.3939
DELIVERYOFPOSTGRADPROGRAM	7.206	14	.000	2.86667	2.0134
STUDENTRETENTIONANDTHROUGHPUTRATES	17.800	19	.000	3.30833	2.9193
EMPLOYABILITY	18.448	19	.000	3.85000	3.4132
PROGRAMEFFECTIVENESS	13.006	19	.000	3.12500	2.6221
WorkReadiness	48.271	21	.000	3.99621	3.8240
SkillsCompetencies	37.475	21	.000	3.40885	3.2197
ProgrammeCriteria	37.475	21	.000	3.40885	3.2197

Test Value = 0
 95% Confidence
 Interval of the ...
 Upper

	Upper
PROGRAMDESIGN	3.7916
STUDENTRECRUITMENT	3.8060
ACADEMICSTAFFING	4.2710
SUPPORTSTAFFING	3.8016
TEACHINGLEARNING	3.8681
STUDENTASSESSMENTPOLICIES	3.9149
INFRASTRUCTUREANDLIBRARY	3.3267
PROGRAMADMINSERVICES	3.9094
POSTGRADPOLICIESANDPROCEDURES	3.8647
PROGRAMCOORDINATION	3.1317
ACADEMICDEVFORSTUDENTSUCCESS	3.8805
TEACHINGANDLEARNING	4.0143
STUDENTASSESSMENTPRACTICE	4.0289
ASSESSMENTSYSTEM	3.5429
COORDINATIONOFWBL	4.0489
DELIVERYOFPOSTGRADPROGRAM	3.7199
STUDENTRETENTIONANDTHROUGHPUTRATES	3.6973
EMPLOYABILITY	4.2868
PROGRAMEFFECTIVENESS	3.6279
WorkReadiness	4.1684
SkillsCompetencies	3.5980
ProgrammeCriteria	3.5980

DESCRIPTIVE SPSS V24 DATA ANALYSIS –

GRADUATE QUESTIONNAIRE (MALE RESPONSES)

		PROGRAMDESIGN	STUDENTRECRUITMENT	ACADEMICSTAFFING	SUPPORTSTAFFING	TEACHINGLEARNING
N	Valid	31	31	31	31	31
	Missing	0	0	0	0	0
Mean		3.5591	3.5645	3.7527	3.4194	3.2473
Std. Deviation		.59247	.76094	.82087	.97551	.81180

		STUDENTASSESSMENTPOLICIES	INFRASTRUCTUREANDLIBRARY	PROGRAMADMINISTRATIVE SERVICES	POSTGRADUOLICIESANDPROCEDURES	PROGRAMCOORDINATION
N	Valid	31	31	31	27	30
	Missing	0	0	0	4	1
Mean		3.5742	3.2243	3.6935	3.4259	2.7000
Std. Deviation		.72063	1.03588	.73799	1.32072	.98007

		ACADEMICDEVELOPMENTFORSTUDENTSUCCESS	TEACHINGANDLEARNING	STUDENTASSESSMENTPRACTICE	ASSESSMENTSYSTEM	COORDINATIONOFFWBL
N	Valid	31	31	31	31	31
	Missing	0	0	0	0	0
Mean		3.5054	4.4677	3.5645	3.1129	3.1968
Std. Deviation		.79639	3.88144	.92864	.93728	1.07525

		DELIVERYOFFPOSTGRADUATEPROGRAM	STUDENTRETENTIONANDTHROUGHPUTRATES	EMPLOYABILITY	PROGRAMEFFECTIVENESS	WorkReadiness
N	Valid	26	30	30	30	31
	Missing	5	1	1	1	0
Mean		3.4231	3.3333	3.7667	3.0667	4.0151
Std. Deviation		1.33186	.82583	.97143	1.02329	.39280

		SkillsCompetencies	ProgrammeCriteria
N	Valid	31	31
	Missing	0	0
Mean		3.4078	3.4078
Std. Deviation		.59180	.59180

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
PROGRAMDESIGN	31	3.5591	.59247	.10641
STUDENTRECRUITMENT	31	3.5645	.76094	.13667
ACADEMICSTAFFING	31	3.7527	.82087	.14743
SUPPORTSTAFFING	31	3.4194	.97551	.17521
TEACHINGLEARNING	31	3.2473	.81180	.14580
STUDENTASSESSMENTPOLICIES	31	3.5742	.72063	.12943
INFRASTRUCTUREANDLIBRARY	31	3.2243	1.03588	.18605
PROGRAMADMINSERVICES	31	3.6935	.73799	.13255
POSTGRADPOLICIESANDPROCEDURES	27	3.4259	1.32072	.25417
PROGRAMCOORDINATION	30	2.7000	.98007	.17894
ACADEMICDEVFORSTUDENTSUCCESS	31	3.5054	.79639	.14304
TEACHINGANDLEARNING	31	4.4677	3.88144	.69713
STUDENTASSESSMENTPRACTICE	31	3.5645	.92864	.16679
ASSESSMENTSYSYSTEM	31	3.1129	.93728	.16834
COORDINATIONOFWBL	31	3.1968	1.07525	.19312
DELIVERYOFPOSTGRADPROGRAM	26	3.4231	1.33186	.26120
STUDENTRETENTIONANDTHROUGHPUTRATES	30	3.3333	.82583	.15077
EMPLOYABILITY	30	3.7667	.97143	.17736
PROGRAMEFFECTIVENESS	30	3.0667	1.02329	.18683
WorkReadiness	31	4.0151	.39280	.07055
SkillsCompetencies	31	3.4078	.59180	.10629
ProgrammeCriteria	31	3.4078	.59180	.10629

	t	df	Test Value = 0		95% Confidence ...
			Sig. (2-tailed)	Mean Difference	Lower
PROGRAMDESIGN	33.447	30	.000	3.55914	3.3418
STUDENTRECRUITMENT	26.081	30	.000	3.56452	3.2854
ACADEMICSTAFFING	25.453	30	.000	3.75269	3.4516
SUPPORTSTAFFING	19.516	30	.000	3.41935	3.0615
TEACHINGLEARNING	22.272	30	.000	3.24731	2.9495
STUDENTASSESSMENTPOLICIES	27.615	30	.000	3.57419	3.3099
INFRASTRUCTUREANDLIBRARY	17.330	30	.000	3.22427	2.8443
PROGRAMADMINSERVICES	27.866	30	.000	3.69355	3.4229
POSTGRADPOLICIESANDPROCEDURES	13.479	26	.000	3.42593	2.9035
PROGRAMCOORDINATION	15.089	29	.000	2.70000	2.3340
ACADEMICDEVELOPMENTFORSTUDENTSUCCESS	24.507	30	.000	3.50538	3.2133
TEACHINGANDLEARNING	6.409	30	.000	4.46774	3.0440
STUDENTASSESSMENTPRACTICE	21.372	30	.000	3.56452	3.2239
ASSESSMENTSYSTEM	18.492	30	.000	3.11290	2.7691
COORDINATIONOFWBL	16.553	30	.000	3.19677	2.8024
DELIVERYOFPOSTGRADPROGRAM	13.105	25	.000	3.42308	2.8851
STUDENTRETENTIONANDTHROUGHPUTRATES	22.108	29	.000	3.33333	3.0250
EMPLOYABILITY	21.238	29	.000	3.76667	3.4039
PROGRAMEFFECTIVENESS	16.414	29	.000	3.06667	2.6846
WorkReadiness	56.913	30	.000	4.01514	3.8711
SkillsCompetencies	32.062	30	.000	3.40784	3.1908
ProgrammeCriteria	32.062	30	.000	3.40784	3.1908

Test Value = 0
 95% Confidence
 Interval of the ...

	Upper
PROGRAMDESIGN	3.7765
STUDENTRECRUITMENT	3.8436
ACADEMICSTAFFING	4.0538
SUPPORTSTAFFING	3.7772
TEACHINGLEARNING	3.5451
STUDENTASSESSMENTPOLICIES	3.8385
INFRASTRUCTUREANDLIBRARY	3.6042
PROGRAMADMINSERVICES	3.9642
POSTGRADPOLICIESANDPROCEDURES	3.9484
PROGRAMCOORDINATION	3.0660
ACADEMICDEVFORSTUDENTSUCCESS	3.7975
TEACHINGANDLEARNING	5.8915
STUDENTASSESSMENTPRACTICE	3.9051
ASSESSMENTSYSTEM	3.4567
COORDINATIONOFWBL	3.5912
DELIVERYOFPOSTGRADPROG	3.9610
STUDENTRETENTIONANDTHROUGHPUTRATES	3.6417
EMPLOYABILITY	4.1294
PROGRAMEFFECTIVENESS	3.4488
WorkReadiness	4.1592
SkillsCompetencies	3.6249
ProgrammeCriteria	3.6249

DESCRIPTIVE SPSS V24 DATA ANALYSIS –

GRADUATE QUESTIONNAIRE (FEMALE RESPONSES)

		PROGRAMDESIGN	STUDENTRECRUITMENT	ACADEMICSTAFFING	SUPPORTSTAFFING	TEACHINGLEARNING
N	Valid	11	11	11	11	11
	Missing	0	0	0	0	0
Mean		3.1818	3.2273	3.9091	3.4091	3.5455
Std. Deviation		.62118	.68424	.87039	.70065	.77850

		STUDENTASSESSMENTPOLICIES	INFRASTRUCTUREANDLIBRARY	PROGRAMADMINISTRATIVE SERVICES	POSTGRADUATEPOLICIESANDPROCEDURES	PROGRAMCOORDINATION
N	Valid	11	11	11	9	10
	Missing	0	0	0	2	1
Mean		3.4909	2.9156	3.4091	3.3889	2.6667
Std. Deviation		.73410	.47253	.88933	1.72804	1.18634

		ACADEMICDEVELOPMENTFORSTUDENTSUCCESS	TEACHINGANDLEARNING	STUDENTASSESSMENTPRACTICE	ASSESSMENTSYSTEM	COORDINATIONOFWBL
N	Valid	10	10	10	10	10
	Missing	1	1	1	1	1
Mean		3.0250	3.3000	3.5000	3.3500	2.9600
Std. Deviation		.90100	.75277	.81650	.66875	.99688

		DELIVERYOFPOSTGRADUATEPROGRAMS	STUDENTRETENTIONANDTHROUGHPUTRATES	EMPLOYABILITY	PROGRAMEFFECTIVENESS	WorkReadiness
N	Valid	9	10	10	10	11
	Missing	2	1	1	1	0
Mean		3.0556	3.4167	3.7000	3.8000	3.9764
Std. Deviation		1.60943	.82869	.82327	.71492	.34578

		SkillsCompetencies	ProgrammeCriteria
N	Valid	11	11
	Missing	0	0
Mean		3.2899	3.2899
Std. Deviation		.53675	.53675

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
PROGRAMDESIGN	11	3.1818	.62118	.18729
STUDENTRECRUITMENT	11	3.2273	.68424	.20631
ACADEMICSTAFFING	11	3.9091	.87039	.26243
SUPPORTSTAFFING	11	3.4091	.70065	.21125
TEACHINGLEARNING	11	3.5455	.77850	.23473
STUDENTASSESSMENTPOLICIES	11	3.4909	.73410	.22134
INFRASTRUCTUREANDLIBRARY	11	2.9156	.47253	.14247
PROGRAMADMINSERVICES	11	3.4091	.88933	.26814
POSTGRADPOLICIESANDPROCEDURES	9	3.3889	1.72804	.57601
PROGRAMCOORDINATION	10	2.6667	1.18634	.37515
ACADEMICDEVFORSTUDENTSUCCESS	10	3.0250	.90100	.28492
TEACHINGANDLEARNING	10	3.3000	.75277	.23805
STUDENTASSESSMENTPRACTICE	10	3.5000	.81650	.25820
ASSESSMENTSYSTEM	10	3.3500	.66875	.21148
COORDINATIONOFWBL	10	2.9600	.99688	.31524
DELIVERYOFPOSTGRADPROG	9	3.0556	1.60943	.53648
STUDENTRETENTIONANDTHROUGHPUTRATES	10	3.4167	.82869	.26206
EMPLOYABILITY	10	3.7000	.82327	.26034
PROGRAMEFFECTIVENESS	10	3.8000	.71492	.22608
WorkReadiness	11	3.9764	.34578	.10426
SkillsCompetencies	11	3.2899	.53675	.16184
ProgrammeCriteria	11	3.2899	.53675	.16184

	Test Value = 0				
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence ... Lower
PROGRAMDESIGN	16.989	10	.000	3.18182	2.7645
STUDENTRECRUITMENT	15.643	10	.000	3.22727	2.7676
ACADEMICSTAFFING	14.896	10	.000	3.90909	3.3244
SUPPORTSTAFFING	16.137	10	.000	3.40909	2.9384
TEACHINGLEARNING	15.105	10	.000	3.54545	3.0225
STUDENTASSESSMENTPOLICIES	15.772	10	.000	3.49091	2.9977
INFRASTRUCTUREANDLIBRARY	20.464	10	.000	2.91558	2.5981
PROGRAMADMINSERVICES	12.714	10	.000	3.40909	2.8116
POSTGRADPOLICIESANDPROCEDURES	5.883	8	.000	3.38889	2.0606
PROGRAMCOORDINATION	7.108	9	.000	2.66667	1.8180
ACADEMICDEVFORSTUDENTSUCCESS	10.617	9	.000	3.02500	2.3805
TEACHINGANDLEARNING	13.863	9	.000	3.30000	2.7615
STUDENTASSESSMENTPRACTICE	13.555	9	.000	3.50000	2.9159
ASSESSMENTSYSYSTEM	15.841	9	.000	3.35000	2.8716
COORDINATIONOFWBL	9.390	9	.000	2.96000	2.2469
DELIVERYOFPOSTGRADPROGRAM	5.696	8	.000	3.05556	1.8184
STUDENTRETENTIONANDTHROUGHPUTRATES	13.038	9	.000	3.41667	2.8239
EMPLOYABILITY	14.212	9	.000	3.70000	3.1111
PROGRAMEFFECTIVENESS	16.808	9	.000	3.80000	3.2886
WorkReadiness	38.140	10	.000	3.97645	3.7441
SkillsCompetencies	20.328	10	.000	3.28988	2.9293
ProgrammeCriteria	20.328	10	.000	3.28988	2.9293

Test Value = 0
95% Confidence
Interval of the ...

	Upper
PROGRAMDESIGN	3.5991
STUDENTRECRUITMENT	3.6870
ACADEMICSTAFFING	4.4938
SUPPORTSTAFFING	3.8798
TEACHINGLEARNING	4.0685
STUDENTASSESSMENTPOLICIES	3.9841
INFRASTRUCTUREANDLIBRARY	3.2330
PROGRAMADMINSERVICES	4.0066
POSTGRADPOLICIESANDPROCEDURES	4.7172
PROGRAMCOORDINATION	3.5153
ACADEMICDEVFORSTUDENTSUCCESS	3.6695
TEACHINGANDLEARNING	3.8385
STUDENTASSESSMENTPRACTICE	4.0841
ASSESSMENTSYSYSTEM	3.8284
COORDINATIONOFWBL	3.6731
DELIVERYOFPOSTGRADPROG	4.2927
STUDENTRETENTIONANDTHROUGHPUTRATES	4.0095
EMPLOYABILITY	4.2889
PROGRAMEFFECTIVENESS	4.3114
WorkReadiness	4.2088
SkillsCompetencies	3.6505
ProgrammeCriteria	3.6505

DESCRIPTIVE SPSS V24 DATA ANALYSIS –
GRADUATE QUESTIONNAIRE (DEPENDENT T-TEST)

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Male	.7381	42	.44500	.06867
	Female	.2619	42	.44500	.06867

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Male & Female	42	-1.000	.000

Paired Samples Test

		Paired Differences				
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference	
					Lower	Upper
Pair 1	Male - Female	.47619	.89000	.13733	.19885	.75353

Paired Samples Test

		t	df	Sig. (2-tailed)
Pair 1	Male - Female	3.467	41	.001

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	TraditionalUniversity	.4048	42	.49680	.07666
	UniversityOfTechnology	.5238	42	.50549	.07800

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	TraditionalUniversity & UniversityOfTechnology	42	-.865	.000

		Paired Differences			95% Confidence ...
		Mean	Std. Deviation	Std. Error Mean	Lower
Pair 1	TraditionalUniversity - UniversityOfTechnology	-.11905	.96783	.14934	-.42065

Paired Samples Test

		Paired ...			
		95% Confidence Interval of the ...			
		Upper	t	df	Sig. (2-tailed)
Pair 1	TraditionalUniversity - UniversityOfTechnology	.18255	-.797	41	.430

APPENDIX G - COUNCIL FOR THE BUILT ENVIRONMENT ACT



REPUBLIC OF SOUTH AFRICA

GOVERNMENT GAZETTE

STAATSKOERANT

VAN DIE REPUBLIEK VAN SUID-AFRIKA

Registered at the Post Office as a Newspaper

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Vol. 426	CAPE TOWN, 1 DECEMBER 2000 KAAPSTAD, 1 DESEMBER 2000	No. 21818
THE PRESIDENCY	DIE PRESIDENSIE	
No. 1301. 1 December 2000 It is hereby notified that the President has assented to the following Act which is hereby published for general information:— No. 43 of 2000: Council for the Built Environment Act, 2000.	No. 1301. 1 Desember 2000 Hierby word bekend gemaak dat die Presidensie goedgekeur het aan die onderstaande Wet wat algemeen inligting gepubliseer word:— No. 43 van 2000: Wet op die Raad vir die Bou-omgewing, 2000.	iber 2000 sy goed- hierby ter

*(English text signed by the President.)
(Assented to 26 November 2000.)*

ACT

To provide for the establishment of a juristic person to be known as the Council for the Built Environment; to provide for the composition, functions, powers, assets, rights, duties and financing of such a council; and to provide for matters connected therewith.

BE IT ENACTED by the Parliament of the Republic of South Africa as follows:—

Definitions

1. In this Act, unless the context otherwise indicates—

- (i) “built environment” means the field within which the registered persons practise; 5
- (ii) “built environment professions” means the professions regulated by the professions’ Acts;
- (iii) “council” means the Council for the Built Environment contemplated in section 2; 10
- (iv) “councils for the professions” means the—
 - (a) South African Council for the Architectural Profession, established by the Architectural Profession Act, 2000;
 - (b) South African Council for the Project and Construction Management Professions, established by the Project and Construction Management Professions Act, 2000; 15
 - (c) Engineering Council of South Africa, established by the Engineering Profession Act, 2000;
 - (d) South African Council for the Landscape Architectural Profession, established by the Landscape Architectural Profession Act, 2000; 20
 - (e) South African Council for the Property Valuers Profession, established by the Property Valuers Profession Act, 2000; and
 - (f) South African Council for the Quantity Surveying Profession, established by the Quantity Surveying Profession Act, 2000;
- (v) “department” means the national department responsible for public works; 25
- (vi) “Director-General” means the director-general of the national department responsible for public works;
- (vii) “Minister” means the Minister responsible for public works;
- (viii) “prescribed” means prescribed by regulation;
- (ix) “professional” means a person who is registered as such in terms of any of the 30 professions’ Acts;
- (x) “professions’ Acts” means the—
 - (a) Architectural Profession Act, 2000;
 - (b) Project and Construction Management Professions Act, 2000;
 - (c) Engineering Profession Act, 2000; 35
 - (d) Landscape Architectural Profession Act, 2000;
 - (e) Property Valuers Profession Act, 2000; and
 - (f) Quantity Surveying Profession Act, 2000;
- (xi) “registered person” means a person registered in terms of any of the 40 professions’ Acts;

- (xii) "registrar" means a person appointed as registrar under section 15(1)(a);
- (xiii) "relevant Minister" means any Minister, except the Minister responsible for public works, whose portfolio is affected by this Act;
- (xiv) "this Act" includes the regulations; and
- (xv) "voluntary association for the built environment professions" means any voluntary association recognised as such by the councils for the professions in terms of any of the professions' Acts.

Establishment of Council for the Built Environment

2. The Minister must, by notice in the *Gazette* and with effect from a date specified in such notice, establish a juristic person to be known as the Council for the Built Environment.

Objects of council

3. The objects of the council are to-
- (a) promote and protect the interests of the public in the built environment;
 - (b) promote and maintain a sustainable built environment and natural environment;
 - (c) promote ongoing human resource development in the built environment;
 - (d) facilitate participation by the built environment professions in integrated development in the context of national goals;
 - (e) promote appropriate standards of health, safety and environmental protection within the built environment;
 - (f) promote sound governance of the built environment professions;
 - (s) promote liaison in the built environment in the field of training, both in the Republic and elsewhere, and to promote the standards of such training in the Republic;
 - (h) serve as a forum where the representatives of the built environment professions may discuss the relevant—
 - (i) required qualifications;
 - (ii) standards of education;
 - (iii) training and competence;
 - (iv) promotion of professional status; and
 - (v) legislation impacting on the built environment; and
 - (i) ensure the uniform application of norms and guidelines set by the councils for the professions throughout the built environment.

Functions, powers and duties of council

4. The council may—
- (a) advise government on any matter falling within the scope of the built environment, including resource utilisation, socio-economic development, public health and safety and the environment, and for this purpose carry out such investigations as it or the relevant Minister deems necessary;
 - (b) communicate to the Minister information on matters of public importance acquired by the council in the course of the performance of its functions under this Act;
 - (c) make recommendations to the Minister on the composition, functions, assets, rights, employees or financing of the council;
 - (d) advise the Minister with regard to the amendment of this Act, if necessary, in order to support the norms and values of the built environment professions;
 - (e) facilitate interministerial co-operation concerning issues relating to the built environment;

- (f) provide advice and consultation on national policy that could impact on the built environment, human resource development in relation to the built environment professions, and the recognition of new professions;
- (g) comment, if necessary, on all proposed legislation impacting on health and safety in the built environment; 5
- (h) direct communication from the Minister or the relevant Minister to the councils for the professions;
- (i) advise the councils for the professions on matters of national importance where the needs of State, as communicated [o the council through the relevant Minister, require joint and co-ordinated action by the built environment 10 professions;
- (j) coordinate the establishment of mechanisms for professionals to gain international recognition;
- (k) ensure the consistent application of policy by the councils for the professions with regard te- 15
- (i) accreditation;
 - (ii) the registration of different categories of registered persons;
 - (iii) key elements of competence testing of registered persons;
 - (iv) codes of conduct to be prescribed by the councils for the professions;
 - (v) the principles upon which the councils for the professions must base the 20 determination of fees which registered persons are entitled to charge in terms of any of the professions' Acts, and in accordance with any legislation relating to the promotion of competition;
 - (vi) standards of health, safety and environmental protection within the built environment; 25
 - (vii) the recognition of voluntary associations for the built environment professions, by approving the framework for that recognition submitted by the councils for the professions, taking due cognizance of the characteristics of each built environment 30 profession;
- (l) investigate or initiate investigations into matters pertaining to its functions and policies with regard to the built environment and, if necessary, recommend legislation in this regard;
- (in) act as an appeal body with regard to matters referred to it in terms of the law regulating the built environment professions; 35
- (n) in consultation with councils for the professions, obtain recognition for the councils for the professions as bodies responsible for the establishment of education and training standards in terms of the South African Qualifications Authority Act, 1995 (Act No. 58 of 1995);
- (o) ensure the consistent application of policy throughout the built environment 40 by encouraging coordination between the councils for the professions;
- (p) promote coordination between the Council on Higher Education and the councils for the professions in relation to the accreditation of education institutions;
- (q) liaise with the Competition Commission, established in terms of the 45 Competition Act, 1998 (Act No. 89 of 1998), on behalf of the councils for the professions regarding the identification of work for the built environment professions;
- (r) review fees published by the councils for the professions to ensure the consistent application of the principles regarding such fees; 50
- (s) charge—
- (i) membership fees in the prescribed manner from the councils for the professions, calculated pro rata to the number of persons registered with that council;
 - (ii) fees payable for appeals in terms of section 21; and 55
 - (iii) any other fee it considers necessary.
- (t) institute legal proceedings to recover all outstanding membership fees payable under this Act;
- (u) consider proposals from the councils for the professions with regard to the determination of policy contemplated in paragraph (k); 60
- (v) receive and assimilate the annual reports of the councils for the professions and submit a summary to the Minister;

- (w) purchase, hire or otherwise acquire or dispose of property, borrow money on the security of the assets of the council or accept and administer any trust or donation;
- (x) subject to this Act, approve standing orders for the regulation of its proceedings and of all other matters relating to the management, powers and duties of the council; 5
- (y) perform such functions as may be prescribed; and
- (z) generally, do all such things as the council deems necessary or expedient to achieve the objectives of this Act.

Composition of council 10

5. (1) The Minister must appoint the members of the council.

(2) The council consists of the following members, taking into account, among other things, the principles of transparency and representivity:

- (a) One representative from the department.
- (b) Not more than three persons nominated, from the nominations contemplated in section 6(2)(u) by state departments within whose functional areas the professions are also practised, taking due cognizance of provincial participation. 15
- (c) Two representatives nominated by each council for the professions, which representatives may be members of a council for the professions, a voluntary association for the built environment professions or any other person with appropriate expertise. 20
- (d) Not more than four persons nominated, from the nominations contemplated in section 6(2)(b) by the public through an open process of public participation.

(3) (a) If a profession which is involved and active in the built environment establishes a council in terms of legislation similar to the professions' Acts, that council may make a request to the Minister to be represented on the council. 25

(b) On receipt of a request contemplated in paragraph (a), the Minister may appoint representatives to the council in accordance with this section for the remainder of the term of office of the council. 30

Appointment of members of council

6. (1) For the purposes of the first term of office of the council—

- (a) the councils for the professions must, within 30 days from the date of the publication of the notice of establishment of the council in the *Gazette*, submit in writing to the Director-General the names of the persons nominated by them for purposes of section 5(2)(c); 35
- (b) the Minister must, for the purposes of section 5(2)(d), on the date of publication of the notice of establishment of the council in the *Gazette*, invite nominations for representatives from the general public;
- (c) the invitation referred to in paragraph (b), must be published in the *Gazette* and in any newspaper generally circulated throughout the Republic. 40

(2) For purposes of subsequent terms of office of the council—

- (a) when nominations in terms of section 5(2)(a), (b) or (c) become necessary, the council must invite the department, state departments referred to in section 5(2)(b) and councils for the professions, respectively, to nominate within the period specified, persons who qualify for nomination in terms of section 5(2)(a), (b), or (c), respectively; 45
- (b) when nominations in terms of section 5(2)(d) become necessary, the council must invite the public by notice in the *Gazette* and any newspaper generally circulated throughout the Republic, to nominate persons for appointment to the council within the period specified in the notice from the date of the notice; 50
- (c) the period referred to in the invitation and the notice must be at least 60 days;
- (d) on receipt of any nomination the council must, within 30 days from the expiry date specified in the invitation and the notice, submit its recommendations to the Minister. 55

(3) (a) If no nominations are submitted as contemplated in subsection (1) or (2), or if a council for the profession or referred to in subsection (1) fails to submit the names of nominated persons to the Director-General under subsection (1), the Director-General must immediately inform the Minister of such failure in writing.

(b) In the case of failure as contemplated in paragraph (a), the Minister must appoint the required number of persons who qualify to be appointed in terms of this Act, as members of the council. 5

(4) The Minister must, as soon as possible after the appointment of the members of the council, publish the names of the members of the council and the date of commencement of their period of office in the *Gazette*. 10

(5) The members of the council hold office for a period of four years calculated from the date contemplated in subsection (4).

Removal from office

7. The Minister may remove a member of the council from office on account of misconduct or inability to perform his or her duties efficiently after due inquiry. 15

Disqualification, vacation of office and filling of vacancies

8. (1) A person may not be appointed as a member of the council if that person—

(a) is not a South African citizen and ordinarily resident in the Republic;

(b) is an unrehabilitated insolvent;

(c) has been convicted of an offence in the Republic, other than an offence committed prior to 27 April 1994 associated with political objectives, and was sentenced to imprisonment without an option of a fine, or, in the case of fraud, to a fine or imprisonment or both. 20

(d) subject to subsection (3), has been convicted of an offence in a foreign country and was sentenced to imprisonment without an option of a fine, or, in the case of fraud, to a fine or imprisonment or both. 25

(e) has, as a result of improper conduct, been removed from an office of trust;

(f) has in terms of this Act been found guilty by the council of improper conduct; or

(g) in the case of persons referred to in section 5(2)(c) is not a registered person. 30

(2) A member of the council must vacate his or her office if he or she—

(a) becomes disqualified in terms of subsection (1) from being appointed as a member of the council;

(b) resigns by written notice addressed to the registrar;

(c) is declared by the High Court to be of unsound mind or mentally disordered or is detained under the Mental Health Act, 1973 (Act No. 18 of 1973); 35

(d) has, without leave of the council, been absent from more than two consecutive meetings of the council;

(e) is appointed in terms of section 5(2)(c) and ceases to be associated with the council or voluntary association for the built environment profession that nominated him or her; 40

(f) is appointed in terms of section 5(2)(b) and ceases to be employed by the State;

(g) ceases to be permanently resident in the Republic; or

(h) is removed from office in terms of section 7. 45

(3) For the purposes of subsection (1)(d), the Minister must take cognizance of the prevailing circumstances in a foreign country relating to a conviction.

(4) If a member of the council dies or vacates his or her office before the expiration of his or her term of office, the Minister must, within 60 days from the date on which the vacancy occurred, appoint the person nominated by the council subject to section 5, to fill the vacancy for the unexpired portion of the period for which that member was appointed. 50

Chairperson and deputy chairperson

9.(1) The Minister must, in the prescribed manner, appoint a chairperson and a deputy chairperson for every newly constituted council.

(2) The chairperson and deputy chairperson hold office for the period of four years from the date of their appointment. 5

(3) The deputy chairperson must, if the chairperson is for any reason unable to act as chairperson, perform all the functions of the chairperson and may exercise all the powers of the chairperson.

(4) (a) If both the chairperson and the deputy chairperson are for any reason unable to preside at a council meeting, the members present must elect one of the members to preside at that meeting. 10

(b) The person elected may, during that meeting, perform all the functions and exercise all the powers of the chairperson.

(5) If the office of the chairperson or the deputy chairperson becomes vacant, the Minister must, in the prescribed manner, appoint one of the members as chairperson or deputy chairperson, as the case may be, and the member so appointed holds office for the unexpired portion of the period for which his or her predecessor was appointed. 15

(6) A chairperson or deputy chairperson may vacate office as such, and such vacation does not terminate his or her membership of the council.

Meetings of council 20

10. (1) (a) The Minister must, within 30 days from the date of the appointment of the council, determine the time and place of the first meeting of the council.

(b) The council must determine the time and place of any future meeting.

(2) The council must hold at least two meetings in a year, but may hold more meetings if necessary. 25

(3) (u) The chairperson may at any time convene a special meeting of the council, to be held on a date and at a place as determined by him or her.

(b) The chairperson must, on written request by the Minister or a written request signed by at least six members, convene a special meeting.

(c) A special meeting contemplated in paragraph (b) must be held within 30 days from the date of receipt of the request, on a date and at a place determined by the chairperson. 30

(d) The written request contemplated in paragraph (b) must clearly state the purpose for which the meeting is to be convened.

(4) Subject to the approval of the council, any person who is not a member of the council may attend or take part, but may not vote, in a meeting of the council. 35

Quorum and decisions

11. (1) The majority of the members of the council constitute a quorum at any meeting of the council.

(2) (a) A decision of the majority of the members of the council present at any meeting constitutes a decision of the council. 40

(b) In the event of an equality of votes the chairperson has a casting vote in addition to his or her deliberative vote.

(3) If the requisite majority of the members who are entitled to sit as members at a meeting of the council, make a decision or authorise an act at that meeting, the decision made or act performed under that authorization, is valid despite the fact that at that meeting a member who had become disqualified in terms of section 8(2) but had not vacated his or her office, sat as a member. 45

Executive committee

12. (1) (a) The council must have an executive committee consisting of the chairperson of the council and not more than three other members elected by the council. 50

(b) The council may appoint alternate members to the executive committee.

(2) A majority of the total number of members of an executive committee constitutes a quorum.

(3) (a) A member--

- (i) serves on the executive committee for a period of one year;
- (ii) may be re-elected; and
- (iii) remains in office until his or her successor is elected.

(b) Upon expiry of the term of office of any member of the executive committee, the 5 vacancy must be filled by the council at its next ordinary meeting or, failing which, at a special meeting convened for that purpose by the chairperson of the council within 21 days from the date of that ordinary meeting.

(c) A vacancy on the executive committee occurs if a member resigns as a member of the executive committee, or if he or she ceases to be a member of the council as 10 contemplated in section 8.

(d) (i) If a vacancy occurs in the executive committee the vacancy must be filled by the council at its next ordinary meeting or, failing which, at a special meeting convened for that purpose by the chairperson of the council within 21 days from the date of that ordinary meeting. 15

(ii) The member elected serves for the unexpired portion of the term of office of his or her predecessor.

(4) The executive committee must hold a meeting as and when necessary, but at least four times per year.

(5) A special meeting of the executive committee— 20

- (a) may, at any time, be convened by the chairperson; and
- (b) must be convened by the chairperson if he or she is requested thereto in writing by a majority of the members of the executive committee.

Powers of executive committee**13. The executive committee has the power to— 25**

- (a) ensure that the resolutions of the council are carried out;
- (b) consider any matter delegated to it by the council in terms of any law, and to advise the council in connection therewith;
- (c) prepare estimates of revenue and expenditure of the council;
- (d) control the expenditure of moneys voted by the council in its approved 30 estimates and all other moneys or funds made available by the council;
- (e) exercise "or perform any power, duty or function delegated to it by the council under section 16; and
- (f) report at every ordinary meeting of the council on the activities of the 35 committee.

Committees of council**14. (1) The council—**

- (a) may establish any committee to—
 - (i) assist it in the performance of its functions; or
 - (ii) investigate and make recommendations on matters relating to any of its 40 functions;
- (b) must designate a chairperson for any such committee, and determine the quorum for meetings.

(2) The council must determine the terms of reference of the committees.

(3) Section 10 applies with the necessary changes in respect of a committee of the 45 council.

Appointment of registrar and staff**15. (1) The council—**

- (a) must appoint a registrar; and
- (b) may employ such staff as it may deem necessary for the carrying out of its 50 functions,

on such conditions, including the payment of remuneration and allowances, as it may determine, and may dismiss any person so appointed.

(2) The registrar must enter into a performance agreement, as prescribed, with the council on acceptance of his or her appointment.

(3) The registrar must perform, in addition to such functions as may otherwise be assigned to him or her by or under this Act, such functions as may from time to time be assigned to him or her by the council.

Delegation of powers

16. (1) The council may, subject to subsection (2), delegate any power, duty or function conferred or imposed on it by this Act to-

- (a) a committee established under section 14;
- (b) the executive committee elected under section 12;
- (c) the chairperson of the council or any member of the council; or
- (d) any officer of the council.

(2) The council may not delegate the power to appropriate funds or appoint committees.

(3) The council may amend, ratify or repeal any decision made in relation to any power, duty or function delegated by the council in terms of subsection (1).

(4) Any delegation under subsection (1) does not prohibit the exercise of the power or the performance of the duty or function in question by the council.

Financing of council

17. (1) The funds of the council consist of any money received in terms of this Act, and all other monies accrued to the council from any other legal source, including—

- (a) membership fees payable by the councils for the professions to the council;
- (b) donations, contributions or grants received from any person, institute or government; and
- (c) interest on investments.

(2) The council must use its funds to defray expenses in connection with the performance of its functions and generally to pursue the objects of the council.

(3) The council—

- (a) (i) may invest any unspent portion of the funds of the council at the end of a financial year; and
- (ii) must carry over any surplus to the next financial year and such surplus may be used to defray expenses incurred by the council during that financial year;

(b) must, during each financial year, submit an estimated income and expenditure statement of the council for the following financial year to the councils for the professions for comment.

(4) The Minister may, with the concurrence of the Minister of Finance—

- (a) advance or grant to the council money, from the money appropriated by Parliament, to enable the council to carry out its functions; and
- (b) determine the conditions to, and repayment of, the advance.

(5) The council must apply due care and diligence when investing such money or incurring any expenditure from the funds of the council.

Accounting and accountability

18. (1) The registrar is the accounting officer of the council and must—

- (a) cause proper records to be kept of all transactions, assets and liabilities of the council; and
- (b) as soon as possible after the end of each financial year, cause to be prepared

a—

- (i) statement of the income and expenditure of the council for that financial year; and
- (ii) balance sheet of its assets and liabilities as at the end of that financial year.

(2) The records, statement and balance sheet referred to in subsection (1) must be audited by an independent auditor appointed by the council. 5

(3) The financial year of the council is the period from 1 April in any year to 31 March of the following year.

Reporting

19. (1) The council must— 10

- (a) furnish the Minister with such information and particulars as he or she may from time to time require in connection with the affairs and financial position of the council; and
- (b) annually, within six months from the end of the financial year, submit to the Minister a report with regard to the functions, affairs and financial position of the council in respect of that financial year. 15

(2) Without derogating from the generality of subsection (1)(b), the annual report referred to in that subsection must include—

- (a) an audited balance sheet and statement of income and expenditure, including any notes and documents containing the relevant information; 20
- (b) particulars of any donations, contributions or grants received under section 17(1)(b);
- (c) the report on the audit referred to in section 18(2);
- (d) a report regarding the execution of the functions of the council;
- (e) a report regarding the envisaged strategies of the council; and 25
- (f) such other information as the Minister may from time to time determine.

(3) The Minister may cause the council to be investigated if he or she suspects that there are any irregularities with regard to the functions of the council.

(4) The Minister must table the annual report referred to in this section and a summary of the reports referred to in section 4(v) in Parliament within 14 days after the receipt thereof if Parliament is then in ordinary session or, if Parliament is not then in ordinary session, within 14 days after the commencement of its following ordinary session. 30

Identification of work

20. (1) The council must, after receipt of the recommendations of the councils for the professions submitted to it in terms of the professions' Acts, and before liaising with the Competition Commission in terms of section 4(q)— 35

- (a) determine policy with regard to the identification of work for the different categories of registered persons;
- (b) consult with any person, body or industry that may be affected by the identification of work in terms of this section. 40

(2) The council must, after consultation with the Competition Commission, and in consultation with the councils for the professions, identify the scope of work for every category of registered persons.

Appeal

21. (1) Any person who is aggrieved by a decision of any of the councils for the professions may upon payment of the prescribed fee and, within 30 days from that person becoming aware of such decision, in writing appeal to the council, and the council must consider and decide the appeal. 45

(2) The appellant must submit a copy of the appeal against a decision of a council for the profession and any documents or records supporting such appeal, to that council for the profession and furnish proof of such submission for the information of the council 50

- (3) The council must appoint an appeal committee consisting of—
- (a) a professional who has appropriate experience;
 - (b) a person qualified in law and who has appropriate experience; and
 - (c) a person who specialises in the professional field concerning the appeal.
- (4) The appeal committee must conduct the appeal in accordance with section 33 of the Constitution. 5
- (5) The appeal committee must decide an appeal within 60 days from the date on which the appeal was lodged, and inform the appellant and the council concerned accordingly.

Regulations 10

22. The Minister may, after consultation with the council, make regulations with regard to—
- (i) any matter that is required or permitted to be prescribed in terms of this Act;
 - (ii) any other matter for the better execution of this Act; or
 - (iii) any power granted or duty imposed by this Act. 15

Short title

23. This Act is called the Council for the Built Environment Act, 2000, and commences on a date fixed by the President by proclamation in the *Gazette*.

**APPENDIX H - THE SOUTH AFRICAN COUNCIL FOR THE QUANTITY
SURVEYING PROFESSION ACT**

REPUBLIC OF SOUTH AFRICA

**QUANTITY SURVEYING
PROFESSION ACT**

REPUBLIEK VAN SUID-AFRIKA

**WET OP DIE
BOUREKENAARSPROFESSIE**

No , 2000

ACT

To provide for the establishment of a juristic person to be known as the South African Council for the Quantity Surveying Profession; to provide for the registration of professionals, candidates and specified categories in the quantity surveying profession; to provide for the regulation of the relationship between the South African Council for the Quantity Surveying Profession and the Council for the Built Environment; and to provide for matters connected therewith.

BE IT ENACTED by the Parliament of the Republic of South Africa as follows:—

Definitions

1. In this Act, unless the context otherwise indicates—
- (i) “accredit” means the process of evaluation and recognition by the council of education programmes offered by educational institutions relating to the quantity surveying profession, and “accreditation” has a corresponding meaning; 5
 - (ii) “actively practise” means to practise on an ongoing basis in one of the categories contemplated in section 18, and includes a person qualified in the quantity surveying profession employed by any sphere of government or an educational institution; 10
 - (iii) “candidate” means a person who is registered in terms of section 19(2)(b);
 - (iv) “CBE” means the Council for the Built Environment established by section 2 of the Council for the Built Environment Act, 2000; 15
 - (v) “committee” means a committee established in terms of section 17;
 - (vi) “council” means the South African Council for the Quantity Surveying Profession established by section 2;
 - (vii) “department” means the national department responsible for public works;
 - (viii) “disciplinary tribunal” means a tribunal appointed in terms of section 30; 20
 - (ix) “Minister” means the Minister responsible for public works;
 - (x) “prescribe” means prescribed by a rule made by the council under section 36, and “prescribed” has a corresponding meaning;
 - (xi) “professional” means a person who is registered in terms of section 19(2)(a);
 - (xii) “registered person” means a person registered under one of the categories referred to in section 18; 25
 - (xiii) “registrar” means the person appointed as registrar under section 8(1)(a);
 - (xiv) “registration” means the process—
 - (a) of assessment of competency of applicants for the purpose of registration under this Act; and 30
 - (b) of entering the names of the applicants who qualify into the register referred to in section 11(c);
 - (xv) “rule” means a rule made and in force under this Act;

- (xvi) “this Act” includes any notice, order or rule issued or made under this Act; and
- (xvii) “voluntary association” means any voluntary association recognised by the council in terms of section 25.

Establishment of South African Council for the Quantity Surveying Profession 5

2. There is hereby established a juristic person to be known as the South African Council for the Quantity Surveying Profession.

Composition of council

3. (1) The council consists of the following members, appointed by the Minister, taking into account, among other things, the principles of transparency and representivity— 10

- (a) nine registered persons, excluding candidates, of whom at least three must actively practise in the quantity surveying profession—
 - (i) who must be nominated by the voluntary associations and any registered person; and 15
 - (ii) who must represent the categories of registered persons contemplated in section 18, in the prescribed manner;
- (b) two professionals, who are professors or lecturers in quantity surveying at an accredited educational institution nominated by the educational institutions, voluntary associations or registered persons; 20
- (c) three professionals in the service of the State nominated by any sphere of government, of whom at least one must be nominated by the department; and
- (d) three members of the public nominated through an open process of public participation.

(2) A maximum of a third of the members of the South African Council for Quantity Surveyors, established in terms of the Quantity Surveyors’ Act, 1970 (Act No. 36 of 1970), who are nominated by that council bearing in mind the composition of the council determined in subsection (1), remain in office for the first term of the council. 25

Nomination procedure

4. (1) When any nomination in terms of section 3(1)(a), (b) or (c) becomes necessary, the council must invite registered persons, the voluntary associations, educational institutions and the State, respectively, in the prescribed manner, to nominate within a period of at least 60 days from the date of the invitation, persons who qualify for nomination in terms of subsection (1)(a), (b) or (c), respectively. 30

(2) When any nomination in terms of section 3(1)(d) becomes necessary, the council must invite the public, by notice in the *Gazette* and any newspaper the council considers necessary, but at least in a leading newspaper in each province, to nominate persons, in the prescribed manner, within a period of at least 60 days from the date of the notice. 35

(3) On receipt of any nomination, the council must, within 30 days from the expiry date specified in the invitation or the notice, make and submit its recommendations to the Minister. 40

(4) The Minister must, within 60 days from the date of the receipt of the nominations from the outgoing council, appoint the members of the council.

(5) If the council receives no or insufficient nominations within the period specified in the invitation or the notice, the Minister may, after consultation with the council, appoint the required number of persons who qualify to be appointed in terms of this Act. 45

(6) The Minister must, as soon as practicable after the appointment of the members of the council, by notice in the *Gazette*, publish—

- (a) the name of every person appointed as a member;
- (b) the date from which the appointment takes effect; and 50
- (c) the period for which the appointment is made.

(7) The Minister must, within 30 days from the date of the appointment of the council, determine the time and place of its first meeting, and, thereafter, the council must determine the time and place of any future meeting.

Term of office of members of council

5. (1) The term of office for members of the council is four years, but members continue in office until the succeeding council is duly constituted. 5

(2) Subject to section 42(11), a member of the council may not serve for more than two consecutive terms of office.

(3) Despite subsection (1), the Minister may, by notice in the *Gazette*, after consultation with the council, extend the period of office of all the members of the council for a period of six months, but he or she may only extend the period of office twice. 10

(4) Despite subsection (1), the Minister may, by notice in the *Gazette*, after consultation with the council, terminate the period of office of a member or all the members of the council. 15

(5) The Minister may only act in terms of subsection (4) if a new member or a new council has been appointed, on nominations invited by the Minister in the manner provided for in section 4, to take over the functions of the member or the council concerned.

Disqualification from membership of council and vacation of office 20

6. (1) A person may not be appointed as a member of the council if that person—

- (a) is not a South African citizen and ordinarily resident in the Republic;
- (b) is an unrehabilitated insolvent;
- (c) has been convicted of an offence in the Republic, other than an offence committed prior to 27 April 1994 associated with political objectives, and was sentenced to imprisonment without an option of a fine, or, in the case of fraud, to a fine or imprisonment or both; 25
- (d) subject to subsection (3), has been convicted of an offence in a foreign country and was sentenced to imprisonment without an option of a fine, or, in the case of fraud, to a fine or imprisonment or both; 30
- (e) has, as a result of improper conduct, been removed from an office of trust; or
- (f) has in terms of this Act been found guilty by a disciplinary tribunal or the council of improper conduct.

(2) A member of the council must vacate his or her office if he or she—

- (a) becomes disqualified in terms of subsection (1) from being appointed as a member of the council; 35
- (b) resigns by written notice addressed to the registrar;
- (c) is declared by the High Court to be of unsound mind or mentally disordered or is detained under the Mental Health Act, 1973 (Act No.18 of 1973);
- (d) has, without the leave of the council, been absent from more than two consecutive meetings of the council; 40
- (e) was appointed in terms of section 3(1)(a) and after that appointment a change in his or her circumstances arises that affects the ratio of the membership referred to in section 3(1);
- (f) was appointed in terms of section 3(1)(b) and ceases to be employed by an accredited educational institution; 45
- (g) was appointed in terms of section 3(1)(c) and ceases to be employed by the State; or
- (h) ceases to be permanently resident in the Republic.

(3) For the purposes of subsection (1)(d), the Minister must take cognisance of the prevailing circumstances in a foreign country relating to a conviction. 50

(4) (a) If a member of the council dies or vacates his or her office before the expiration of his or her term of office, the Minister may, after consultation with the council and subject to section 5(1), appoint a person to fill the vacancy for the unexpired portion of the period for which that member was appointed. 55

(b) If the Minister appoints a person to fill the vacant seat, the appointment must be made within 60 days from the date on which the vacancy occurred.

Election of president and vice-president of council

7. (1) (a) The members of the council must, at the first meeting of every newly constituted council elect a president and vice-president who must be registered persons and at least one must actively practise in the quantity surveying profession. 5
- (b) The president and vice-president hold office for a period of four years from the date of their appointment.
- (2) The vice-president must, if the president is for any reason unable to act as president, perform all the functions and may exercise all the powers of the president.
- (3) (a) If both the president and the vice-president are for any reason unable to preside at a council meeting, the members present must elect a person to preside at that meeting. 10
- (b) The person elected may, during that meeting and until the president or vice-president resumes his or her functions, perform all the functions and exercise all the powers of the president.

Appointment of registrar and other staff members of council

8. (1) The council— 15
- (a) must appoint a registrar; and
- (b) may employ such other staff members as it may deem necessary for carrying out its functions,
- on such conditions, including the payment of remuneration and allowances, as it may determine, and may dismiss any person so appointed. 20
- (2) The registrar must enter into a performance agreement, as prescribed, with the council on acceptance of his or her appointment.
- (3) The registrar must perform, in addition to such functions as may otherwise be assigned to him or her by or under this Act, such functions as may from time to time be assigned to him or her by the council. 25

Decisions of council

9. (1) A decision of the majority of the members of the council present at any meeting constitutes a decision of the council.
- (2) In the event of an equality of votes the person presiding at the meeting has a casting vote in addition to his or her deliberative vote. 30
- (3) If the requisite majority of the members who are entitled to sit as members at a meeting of the council, make a decision or authorise an act at that meeting, the decision made or act performed under that authorisation, is valid despite the fact that at that meeting a member who had become disqualified in terms of section 6(2) but had not vacated his or her office, sat as a member. 35

Administrative powers of council

10. The council may—
- (a) determine the remuneration and allowances payable to its members or the members of any committee of the council after consultation with the CBE;
- (b) arrange for the payment of pension and other benefits to any staff of the council or the registrar and to his or her dependants on the termination of the service of that staff member or the registrar; 40
- (c) determine where its head office must be situated;
- (d) determine the manner in which meetings of the council or any committee of the council must be convened, the procedure and quorum at such meetings and the manner in which the minutes of such meetings must be kept; and 45
- (e) print, circulate, sell and administer the publication of, and generally take any steps necessary to publish, any publication relating to the quantity surveying profession and related matters.

Powers of council with regard to registration

- 11.** The council may, subject to this Act—
- (a) consider and decide on any application for registration;
 - (b) prescribe the period of validity of the registration of a registered person;
 - (c) keep a register of registered persons and decide on— 5
 - (i) the form of certificates and the register to be kept;
 - (ii) the maintenance of the register or issuing of certificates; and
 - (iii) the reviewing of the register and the manner in which alterations thereto may be effected.

Powers of council with regard to fees and charges 10

- 12.** (1) The council may, with regard to fees and charges, which are payable to the council, determine—
- (a) application fees;
 - (b) registration fees;
 - (c) annual fees, or portion thereof, in respect of a part of a year; 15
 - (d) the date on which any fee or charge is payable;
 - (e) the fees, or portion thereof, payable in respect of any examination referred to in section 19, conducted by or on behalf of the council;
 - (f) any charge payable for the purposes of the education fund referred to in section 15(5); 20
 - (g) fees payable for a service referred to in section 14(c);
 - (h) the fees payable for an appeal in terms of section 24(1); or
 - (i) any other fee or charge it considers necessary.
- (2) The council may grant exemption from payment of application fees, registration fees, annual fees, charges, or a portion thereof referred to in subsection(1). 25

Powers of council with regard to education in quantity surveying

- 13.** The council may—
- (a) subject to sections 5 and 7 of the Higher Education Act, 1997 (Act No. 101 of 1997), conduct accreditation visits to any educational institution which has a department, school or faculty of quantity surveying, but must conduct at least one such visit during its term of office. If the council does not conduct an accreditation visit within that term of office, it must notify the Minister accordingly and provide him or her with reasons for the failure to do so; 30
 - (b) either conditionally or unconditionally grant, refuse or withdraw accreditation with regard to all educational institutions and its educational programmes with regard to quantity surveying; 35
 - (c) consult with the Council on Higher Education established in terms of the Higher Education Act, 1997, regarding matters relevant to education in quantity surveying;
 - (d) consult with the South African Qualifications Authority established by the South African Qualifications Authority Act, 1995 (Act No. 58 of 1995), or any body established by it and the voluntary associations, to determine competency standards for the purpose of registration; 40
 - (e) establish mechanisms for registered persons to gain recognition of their qualifications and professional status in other countries; 45
 - (f) liaise with the relevant National Standards Body established in terms of Chapter 3 of the regulations under the South African Qualifications Authority Act, 1995, with a view to the establishment of a standards generating body in terms of those regulations;
 - (g) recognise or withdraw the recognition of any examination contemplated in section 19; 50
 - (h) enter into an agreement with any person or body of persons, within or outside the Republic, with regard to the recognition of any examination or qualification for the purposes of this Act;

- (i) give advice or render assistance to any educational institution, voluntary association or examining body with regard to educational facilities for and the training and education of registered persons and prospective registered persons;
- (j) conduct any examination for the purposes of section 19; and 5
- (k) determine, after consultation with the voluntary associations and registered persons, conditions relating to and the nature and extent of continuing education and training.

General powers of council

- 14.** The council may, in addition to other powers in this Act— 10
- (a) acquire, hire, maintain, let, sell or otherwise dispose of movable or immovable property for the effective performance and exercise of its functions, duties or powers;
 - (b) decide upon the manner in which contracts must be entered into on behalf of the council; 15
 - (c) perform any service within its competence if it is requested by any person or body of persons, including the State;
 - (d) determine, subject to section 25, the requirements with which a voluntary association must comply to qualify for recognition by the council;
 - (e) advise the Minister, any other Minister or the CBE on any matter relating to the quantity surveying profession; 20
 - (f) encourage and itself undertake research into matters relating to the quantity surveying profession;
 - (g) take any steps it considers necessary for the protection of the public in their dealings with registered persons, for the maintenance of the integrity, and the enhancement of the status of the quantity surveying profession; 25
 - (h) take any steps it considers necessary for the improvement of the standards of services rendered by registered persons; and
 - (i) take any measures it considers necessary for the proper performance and exercise of its functions, duties or powers or to achieve the objectives of this Act. 30

Funds of council and keeping and auditing of accounts

- 15.** (1) The funds of the council consist of any money received in terms of this Act and all other monies which may accrue to the council from any other legal source, including fines and penalties imposed by the council. 35
- (2) The council may—
- (a) collect and invest funds of the council;
 - (b) raise money by way of loan for the purpose of effectively performing its functions;
 - (c) with a view to the promotion of any matter relating to the quantity surveying profession, lend money against such security as the council considers adequate; and 40
 - (d) mortgage any of its immovable property as security for a loan referred to in paragraph (b).
- (3) The council may remunerate its members and committee members from its funds. 45
- (4) The council may finance any publication referred to in section 10(e).
- (5) The council may establish and administer an education fund for the education, training and continuing education and training of registered persons and students in the quantity surveying profession.
- (6) The council must keep full and correct account of all monies received and expended by it. 50

- (7) (a) The council must annually prepare a statement of income and expenditure and a balance sheet showing its financial position as at the close of the financial year to which it relates.
- (b) The council must have the statement and balance sheet audited by an auditor registered in terms of the Public Accountants' and Auditors' Act, 1991 (Act No. 80 of 1991). 5
- (c) A copy of the audited statement and balance sheet must be open for inspection at the offices of the council.
- (8) The council must, within six months from the close of each financial year or such other period as may be agreed to by the Minister after a request by the council, submit the audited statement and balance sheet to the Minister and must provide a copy to the CBE. 10
- (9) The Minister may, with the concurrence of the Minister of Finance—
- (a) advance or grant to the council, out of money appropriated by Parliament, such amounts as he or she considers necessary in order to enable the council to carry out its functions; and 15
- (b) determine the conditions to and repayment of the advance.
- (10) The council must determine its financial year.
- (11) The council must apply due care and diligence when investing any money or incurring any expenditure from the funds of the council. 20

Reports to CBE

16. (1) The council must, within six months from the close of each financial year, provide the CBE with a report regarding its activities during that financial year, for the purpose of section 4 of the Council for the Built Environment Act, 2000.
- (2) A copy of the report and the register referred to in section 11(c) must be open for inspection at the offices of the council. 25
- (3) The council must, on request by the CBE, provide the CBE with any information regarding a registered person.

Committees of council

17. (1) (a) The council may establish any committee, including an investigating committee, to assist it in the performance of its functions and may appoint any person as a member of that committee. 30
- (b) If the council does not designate a chairperson for a committee, the committee may, at its first meeting, elect a chairperson from among its members.
- (c) The council may at any time dissolve or reconstitute a committee. 35
- (2) Section 9 may, with the necessary changes, apply in respect of a committee of the council.

Categories of registration

18. (1) The categories in which a person may register in the quantity surveying profession are— 40
- (a) Professional Quantity Surveyor;
- (b) Candidate Quantity Surveyor; or
- (c) specified categories prescribed by the council.
- (2) A person may not practise in any of the categories contemplated in subsection (1), unless he or she is registered in that category. 45
- (3) A person who is registered in the category of candidate must perform work in the quantity surveying profession only under the supervision and control of a professional of a category as prescribed.

Registration

19. (1) (a) A person must apply, in the prescribed application form, to the council for registration in a category referred to in section 18(1). 50

- (b) The application form referred to in paragraph (a) must be accompanied by the prescribed fee.
- (2) The council must register the applicant in the relevant category and issue a registration certificate to the successful applicant in the prescribed form if, after consideration of an application, the council is satisfied that the applicant— 5
- (a) in the case of a person applying for registration as a professional—
- (i) has demonstrated his or her competence as measured against standards determined by the council for the relevant category of registration; and
- (ii) has passed any additional examinations that may be determined by the council; 10
- (b) in the case of a person applying for registration as a candidate or a candidate in a specified category, has satisfied the relevant educational outcomes determined by the council for this purpose, by—
- (i) having passed accredited or recognised examinations at any educational institution offering educational programmes in quantity surveying; and 15
- (ii) having passed any other examination that may be determined by the council; or
- (iii) presenting evidence of prior learning in quantity surveying.
- (3) (a) Despite subsection (2), the council may refuse to register an applicant— 20
- (i) if the applicant has been removed from an office of trust on account of improper conduct;
- (ii) has been convicted of an offence in the Republic, other than an offence committed prior to 27 April 1994 associated with political objectives, and was sentenced to imprisonment without an option of a fine, or, in the case of fraud, to a fine or imprisonment or both; 25
- (iii) if the applicant has, subject to paragraph (b), been convicted of an offence in a foreign country and was sentenced to imprisonment without an option of a fine, or, in the case of fraud, to a fine or imprisonment or both;
- (iv) if the applicant is declared by the High Court to be of unsound mind or mentally disordered, or is detained under the Mental Health Act, 1973; 30
- (v) for as long as the applicant is disqualified from registration as a result of any punishment imposed on him or her under this Act;
- (vi) if the applicant is an unrehabilitated insolvent whose insolvency was caused by his or her negligence or incompetence in performing work falling within the scope of the category in respect of which he or she is applying for registration. 35
- (b) For the purposes of paragraph (a)(iii), the council must take cognisance of the prevailing circumstances in a foreign country relating to a conviction.
- (c) The council must provide the applicant with a notice of a refusal referred to in paragraph (a). 40
- (4) For the purposes of this section “prior learning” means the previous learning and experience of a learner, howsoever obtained, against the learning outcomes required for a specified qualification and the acceptance for the purposes of qualification of that which meets those requirements.

Cancellation of registration 45

20. (1) (a) The council may cancel the registration of a registered person if he or she—
- (i) becomes disqualified from registration as contemplated in section 19(3);
- (ii) has erroneously been registered, or has been registered on information subsequently proved to be false; or
- (iii) fails to pay the prescribed annual fee or portion thereof, within 60 days after it becoming due or within such further period as the council may, allow, either before or from expiry of the 60 days. 50
- (b) The council must provide the registered person with a notice of a cancellation referred to in paragraph (a).

(2) If a person who is registered as a candidate qualifies to be registered as a professional in terms of section 19(2)(a), the council must cancel his or her registration as a candidate.

(3) The council must at the written request of any registered person cancel his or her registration, but where an investigation into alleged improper conduct by that person is in progress or is to be held, the registration may not be cancelled until the investigation has been concluded. 5

(4) Despite the cancellation of the registration of a registered person in terms of this section, that person remains liable for any fee, arrears or penalty imposed by the council for the period that he or she was registered. 10

Authorised titles

21. (1) A person who is registered in any of the categories referred to in section 18(1) may describe himself or herself and use the title—

(a) Professional Quantity Surveyor; or

(b) Candidate Quantity Surveyor. 15

(2) A registered person may use a title prescribed by the council for the specified category.

(3) The council may determine abbreviations or acronyms for the titles referred to in subsection (1).

Renewal of registration

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22. (1) A registered person must, at least three months prior to the prescribed expiry date of his or her registration, apply in the prescribed manner to the council for the renewal of his or her registration.

(2) The council may determine conditions for the renewal of registration.

(3) Subject to section 19, the council must, on application, register a person who was previously registered and whose registration was cancelled in terms of section 20 (1)(a)(iii), if he or she has paid— 25

(a) the prescribed fee;

(b) any arrear annual fee or portion thereof;

(c) any expenses incurred by the council in connection with the recovery of any arrear fees; and 30

(d) any penalties imposed on him or her by the council.

Return of registration certificate

23. Any person whose registration has been cancelled in terms of this Act, must return his or her registration certificate to the registrar within 30 days from the date on which he or she is directed by the registrar in writing to do so. 35

Grievance procedure in relation to registration

24. (1) If an applicant is of the opinion that a committee, in its refusal to register him or her, or to cancel his or her registration, other than a cancellation in terms of section 20(1)(a)(iii) or 32(3)(a)(iv), did not comply with section 33 of the Constitution, that applicant may, on payment of the prescribed fees and within 30 days from the date on which the refusal or cancellation came to his or her knowledge, appeal to the council against that decision. 40

(2) The council must, at its first ensuing meeting, within 60 days from the date of the receipt of the appeal, decide on the appeal and provide the appellant with reasons for its decision. 45

(3) If an appeal is lodged against a refusal of a committee to renew the registration of a registered person, the registration of that person may not be cancelled until the appeal has been decided.

Recognition of voluntary associations

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25. (1) The council must, within 90 days from the date of its first meeting, submit the framework for the requirements for recognition of a voluntary association to the CBE for approval.

- (2) Any voluntary association may apply to the council to be recognised as such.
- (3) The council may, if the voluntary association complies with the requirements determined in terms of section 14(d), recognise that association and issue it with a certificate of recognition.
- (4) A certificate of recognition is valid for a period of five years from the date of issue. 5
- (5) A voluntary association must display its certificate of recognition in a prominent place at its head office.
- (6) The recognition of a voluntary association lapses—
- (a) if that association no longer complies with the requirements contemplated in section 14(d); or 10
- (b) at the expiry of the five-year period referred to in subsection (4).
- (7) A voluntary association must, at least three months prior to the expiry of its recognition, apply in the prescribed manner to the council for the renewal thereof.
- (8) A voluntary association whose recognition has lapsed must, within 30 days from the date on which it is so directed in writing by the council, return its certificate of 15 recognition.

Identification of work

26. (1) The council must consult with—
- (a) all voluntary associations; 20
- (b) any person;
- (c) any body; or
- (d) any industry,
- that may be affected by any laws regulating the built environment professions regarding the identification of the type of quantity surveying work which may be performed by persons registered in any of the categories referred to in section 18, including work 25 which may fall within the scope of any other profession regulated by the professions' Acts referred to in the Council for the Built Environment Act, 2000.
- (2) After the process of consultation the council must submit recommendations to the CBE regarding the work identified in terms of subsection (1), for its consideration and identification in terms of section 20 of the Council for the Built Environment Act, 2000. 30
- (3) A person who is not registered in terms of this Act, may not—
- (a) perform any kind of work identified for any category of registered persons;
- (b) pretend to be, or in any manner hold or allow himself or herself to be held out as a person registered in terms of this Act;
- (c) use the name of any registered person or any name or title referred to in 35 section 18 or 21; or
- (d) perform any act indicating, or calculated to lead persons to believe, that he or she is registered in terms of this Act.
- (4) Subsection (3)(a) may not be construed as prohibiting any person from performing work identified in terms of this section, if such work is performed in the 40 service of or by order of and under the direction, control, supervision of or in association with a registered person entitled to perform the work identified and who must assume responsibility for any work so performed.

Professional conduct

27. (1) The council must, in consultation with the CBE, voluntary associations and 45 registered persons, draw up a code of conduct for registered persons.
- (2) (a) The council is responsible for administering the code of conduct and must ensure that the code is available to all members of the public at all reasonable times.
- (b) The council must provide the CBE with a copy of the code of conduct.
- (3) All registered persons must comply with the code of conduct and failure to do so 50 constitutes improper conduct.

Investigation of charge of improper conduct

28. (1) The council must refer any matter brought against a registered person to an investigating committee contemplated in section 17 if—
- (a) the council has reasonable grounds to suspect that a registered person has committed an act which may render him or her guilty of improper conduct; or 5
 - (b) a complaint, charge or allegation of improper conduct has been brought against a registered person by any person.
- (2) At the request of the council, the investigating committee must—
- (a) investigate the matter; and
 - (b) obtain evidence to determine whether or not in its opinion the registered person concerned may be charged and, if so, recommend to the council the charge or charges that may be preferred against that registered person. 10
- (3) An investigating committee may not question the registered person concerned unless the investigating committee informs that registered person that he or she—
- (a) has the right to be assisted or represented by another person; and 15
 - (b) is not obliged to make any statement and that any statement so made may be used in evidence against the registered person.
- (4) The investigating committee must, after the conclusion of the investigation, submit a report making its recommendations to the council regarding any matter referred to it in terms of this section. 20

Charge of improper conduct

29. (1) The council must, after considering a report of the investigating committee in terms of section 28(2)(b) and (4), charge a registered person with improper conduct if the council is convinced that sufficient grounds exist for a charge to be preferred against such a registered person. 25
- (2) The council must furnish a charge sheet to the registered person concerned by hand or registered mail.
- (3) A charge sheet must inform the registered person charged—
- (a) of the details and nature of the charge;
 - (b) that he or she must, in writing, admit or deny the charge; 30
 - (c) that he or she may, together with the admission or denial, submit a written explanation regarding the improper conduct with which he or she is charged; and
 - (d) of the period, which must be reasonable, within which his or her plea in terms of paragraph (b) must be submitted to the council. 35
- (4) (a) If a registered person charged admits that he or she is guilty of the charge, he or she is considered to have been found guilty of improper conduct as charged, after he or she has explained his or her conduct.
- (b) The council may, subject to section 32(2), impose a penalty contemplated in section 32(3)(a) or (b), on a registered person who has admitted guilt in terms of paragraph (a). 40
- (5) The acquittal or the conviction of a registered person by a court of law on a criminal charge is not a bar to proceedings against him or her under this Act on a charge of improper conduct, even if the facts stated in the charge of improper conduct would, if proved, constitute the offence stated in the criminal charge on which he or she was acquitted or convicted or any other offence of which he or she might have been acquitted or convicted at his or her trial on the criminal charge. 45

Appointment of disciplinary tribunal

30. (1) The council must appoint a disciplinary tribunal to hear a charge of improper conduct if a person charged— 50
- (a) denies the charge; or
 - (b) fails to comply with section 29(3)(b).
- (2) The disciplinary tribunal must consist of at least—

- (a) a person who specialises in the professional field concerning the charge;
- (b) a professional who has appropriate experience; and
- (c) a person qualified in law and who has appropriate experience.

Disciplinary hearing

31. (1) The disciplinary hearing must be conducted by the disciplinary tribunal. 5
- (2) The disciplinary tribunal may, for the purposes of this section, appoint a person to assist it in the performance of its functions.
- (3) (a) The disciplinary tribunal may, for the purposes of a hearing, subpoena any person—
- (i) who in its opinion may be able to give material information concerning the subject of the hearing; or 10
 - (ii) who it suspects or believes has in his or her possession or custody or under his or her control any book, document or object which has any bearing on the subject of the hearing,
- to appear before the disciplinary tribunal at the time and place specified in the subpoena, 15
to be questioned or to produce a book, document or object.
- (b) A subpoena issued in terms of paragraph (a), must—
- (i) be in the prescribed form;
 - (ii) be signed by the chairperson of the disciplinary tribunal or, in his or her absence, any member of the disciplinary tribunal; and 20
 - (iii) be served on the registered person concerned personally or by sending it by registered mail.
- (4) The disciplinary tribunal may retain a book, document or object produced in terms of subsection (3) for the duration of the hearing.
- (5) The chairperson of the disciplinary tribunal may call upon and administer an oath 25
to, or take an affirmation from, any witness at the hearing who was subpoenaed in terms of subsection (3).
- (6) At a hearing the registered person charged—
- (a) (i) may personally be present at the hearing of the proceedings;
 - (ii) may be assisted or represented by another person in conducting the 30
proceedings;
 - (iii) has the right to be heard;
 - (iv) may call witnesses;
 - (v) may cross-examine any person called as a witness in support of the charge; and 35
 - (vi) may have access to documents produced in evidence;
 - (b) (i) may admit at any time before conviction that he or she is guilty of the charge despite the fact that he or she denied the charge or failed to react in terms of section 29(3)(b) or (c);
 - (ii) may, in the case where he or she makes an admission in terms of 40
subparagraph (i), be deemed to be guilty of improper conduct as charged.
- (7) The person referred to in subsection (2) may during a hearing—
- (a) lead evidence and advance arguments in support of the charge and cross-examine witnesses;
 - (b) question any person who was subpoenaed in terms of subsection (3); or 45
 - (c) call anyone to give evidence or to produce any book, document or object in his or her possession or custody or under his or her control which the person referred to in subsection (2) suspects or believes to have a bearing on the subject of the hearing.
- (8) (a) A witness who has been subpoenaed may not— 50
- (i) without sufficient cause, fail to attend the hearing at the time and place specified in the subpoena;
 - (ii) refuse to be sworn in or to be affirmed as a witness;
 - (iii) without sufficient cause, fail to answer fully and satisfactorily to the best of his or her knowledge to all questions lawfully put to him or her; or 55
 - (iv) fail to produce any book, document or object in his or her possession or custody or under his or her control which he or she has been required to produce.

- (b) A witness who has been subpoenaed must remain in attendance until excused by the chairperson of the disciplinary tribunal from further attendance.
- (c) A witness who has been subpoenaed may request that the names of the members of the disciplinary tribunal be made available to him or her.
- (d) The law relating to privilege, as applicable to a witness subpoenaed to give evidence or to produce a book, document or object in a civil trial before a court of law may, with the necessary changes, apply in relation to the examination of, or the production of any book, document or object to the disciplinary tribunal by, any person called in terms of this section as a witness. 5
- (e) A witness may not, after having been sworn in or having been affirmed as a witness, give a false statement on any matter, knowing that answer or statement to be false. 10
- (f) A person may not prevent another person from complying with a subpoena or from giving evidence or producing a book, document or object which he or she is in terms of this section required to give or produce. 15
- (9) The record of evidence which has a bearing on the charge before the disciplinary tribunal, and which was presented before any commission which investigated an event or conduct is admissible without further evidence being led if—
- (a) the record is accompanied by a certificate from the chairperson; and
- (b) the certificate certifies that the investigation was lawful, reasonable and procedurally fair. 20
- (10) If the improper conduct with which the registered person is charged amounts to an offence of which he or she has been convicted by a court of law, a certified copy of the record of his or her trial and conviction by that court is, on the identification of the registered person as the person referred to in the record, sufficient proof of the commission by him or her of that offence, unless the conviction has been set aside by a superior court. 25

Proceedings after hearing

32. (1) After the conclusion of the hearing the disciplinary tribunal must, within 30 days— 30
- (a) decide whether or not the registered person charged is guilty of improper conduct;
- (b) if the disciplinary tribunal finds that the registered person charged is guilty of improper conduct, take cognisance of any aggravating or mitigating circumstances; 35
- (c) inform the registered person charged and the council of the finding; and
- (d) inform the registered person of his or her right of appeal in terms of section 33.
- (2) A registered person found guilty of improper conduct in terms of this section may—
- (a) address the disciplinary tribunal in mitigation of sentence; and 40
- (b) call witnesses to give evidence on his or her behalf in mitigation of the sentence.
- (3) (a) If the registered person charged is found guilty of improper conduct, or if he or she admits that he or she is guilty of the charge, the disciplinary tribunal must either— 45
- (i) caution or reprimand the registered person;
- (ii) impose on him or her a fine not exceeding the amount calculated according to the ratio for one year imprisonment determined in terms of the Adjustment of Fines Act, 1991 (Act No. 101 of 1991);
- (iii) suspend the registration of the registered person concerned for a period not exceeding one year; or 50
- (iv) cancel the registration of the registered person concerned and remove his or her name from the register referred to in section 11(c).
- (b) The disciplinary tribunal may take decisions under more than one of the subparagraphs of paragraph (a).
- (4) At the conclusion of the hearing the disciplinary tribunal must notify the council of its finding. 55
- (5) The council must publish the finding and the sanction imposed in terms of subsection (3) in the *Gazette*.
- (6) The council must give effect to the decision of the disciplinary tribunal.

Appeal against decision of disciplinary tribunal

33. (1) (a) A registered person found guilty of improper conduct may appeal to the council against a finding of the disciplinary tribunal or against the sentence, or both.
- (b) The appeal must be lodged, within 30 days after the disciplinary tribunal has informed the registered person of its decision. 5
- (2) The council may—
- (a) dismiss the appeal against the decision of the disciplinary tribunal and confirm the finding or sentence or both; or
- (b) uphold the appeal against the decision of the disciplinary tribunal wholly or in part and set aside or vary the finding or sentence or both. 10
- (3) If an appeal is dismissed in terms of subsection (2)(a) the appellant may, within 30 days from the date of the dismissal of the appeal, appeal to the CBE.
- (4) If a registered person found guilty of improper conduct lodges an appeal in terms of subsection (1)—
- (a) the decision of the disciplinary tribunal under section 32(3); or 15
- (b) the publication by the council in terms of section 32(5),
- may not be put into effect before the council or the CBE, or both, has decided the appeal.
- (5) (a) The appellant whose appeal was dismissed by the CBE may appeal to the appropriate High Court.
- (b) A person referred to in paragraph (a) must, after giving notice to the CBE, lodge 20 a notice of appeal with the registrar of the appropriate High Court within one month from the date of the decision of the CBE.
- (6) (a) The council may appeal to the appropriate High Court against any decision of the CBE with regard to disciplinary matters.
- (b) The council must, from giving notice to the CBE, lodge a notice of appeal with the 25 registrar of the appropriate High Court within one month after the date of the decision of the CBE.

Professional fees

34. (1) The council must, in consultation with the voluntary associations, formulate recommendations with regard to the principles referred to in section 4(k)(v) of the 30 Council for the Built Environment Act, 2000.
- (2) The council must annually, after consultation with the voluntary associations, representatives of service providers and clients in the public and private sector, determine guideline professional fees and publish those fees in the *Gazette*.
- (3) The CBE may review the guideline professional fees published by the council, and 35 refer the fees back to the council for reconsideration.
- (4) If the council, after review by the CBE of the guideline professional fees, is aggrieved about that review, it may refer the matter to the Minister for a final decision.
- (5) Any person who is aggrieved by the guideline professional fees published in terms of subsection (2), may bring the matter to the attention of the CBE within 60 days from 40 the date of publication.

Appeal against certain decisions of council

35. (1) Any member of the public whose interests and rights are affected by a decision made by the council may—
- (a) within 30 days from that person becoming aware of the decision, request the 45 council in writing to furnish him or her in writing with its reasons for that decision;
- (b) within 90 days from the date on which the council furnished him or her with its reasons for that decision and after giving notice to the council, appeal to the CBE against that decision in terms of section 21 of the Council for the Built 50 Environment Act, 2000.
- (2) A person referred to in subsection (1) may, after giving notice to the council or the CBE, as the case may be, lodge a notice of appeal with the registrar of the appropriate High Court within one month from the date of the decision of the council or the CBE.

Rules

36. (1) The council may, by notice in the *Gazette*, make rules with regard to any matter that is required or permitted to be prescribed in terms of this Act and any other matter for the better execution of this Act or in relation to any power granted or duty imposed by this Act. 5

(2) (a) Before the council makes any rule under this section, it must publish a draft of the proposed rule in the *Gazette* together with a notice calling on interested persons to comment in writing within a period stated in the notice, but the period may not be less than 30 days from the date of publication of the notice.

(b) If the council alters the draft rules as a result of any comment it need not publish those alterations before making the rule. 10

(3) The council may, if circumstances necessitate the immediate publication of a rule, publish that rule without consultation as contemplated in subsection (2), provided that the CBE, any of the councils for the professions or any person who is aggrieved by the said rule may— 15

(a) comment after such publication; or

(b) appeal to the CBE or the appropriate High Court, as the case may be, against such a rule.

Procedure and evidence for evidential purposes

37. (1) The register referred to in section 11(c) serves as evidence of all matters which, in terms of this Act, are required or permitted to be noted therein. 20

(2) A certificate purporting to be signed by the registrar to the effect that an entry has or has not been made in the register or that any other function authorised by this Act to be performed, has or has not been performed, is evidence of the matters specified in that certificate. 25

(3) A copy of an entry in the register or of a document in the custody of the registrar or an extract from the register or from any such document, purporting to be certified by the registrar, may be admitted in evidence in all courts without further proof or production of the original.

Rectification of errors and exemptions 30

38. (1) When anything which according to this Act is required to be done or performed on or before a specified day or at a specified time or during a specified period, has not been done or performed, the Minister may, if satisfied that the failure was due to error or oversight, authorise it to be done or performed on or before another day, time, or during another period and anything done or performed in this regard is of full force and is deemed to have been lawfully done or performed in accordance with this Act. 35

(2) The Minister must, after consultation with the council, voluntary associations and any other person he or she considers necessary, make rules regarding exemptions from the provisions of this Act.

(3) (a) The Minister may, after consultation with the council, voluntary associations and any other person he or she considers necessary, exempt any person, council, voluntary association or industry from any provision of this Act for a period not exceeding two years. 40

(b) The exemption referred to in paragraph (a) must comply with the rules contemplated in subsection (2). 45

Liability

39. (1) The council, the registrar, or any member, committee or staff member of the council, is not liable for any act performed in good faith in terms of this Act.

(2) A registered person who, in the public interest—

(a) refuses to perform an act; 50

(b) omits to perform an act; or

(c) informs the council or other appropriate authority of an act or omission performed by any other person,

which act or omission endangers or is likely to endanger the safety or health of the public or fellow employees, is not liable for that refusal, omission or information.

(3) Any person who was registered in terms of this Act and whose registration was cancelled, is liable for any action taken by him or her while he or she was registered.

Delegation of powers

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40. (1) The Minister may delegate any of his or her powers in terms of this Act, excluding the power to appoint the members of the council, to the Director-General or any other member of the staff of the department.

(2) The council may delegate any of its powers in terms of this Act to a committee, an official or a member of the council or any other person or body of persons, excluding the power to hear an appeal in terms of sections 24(1) and 33(1). 10

(3) The registrar may delegate any of his or her powers in terms of this Act, to a member of the staff of the council.

(4) Any delegation under subsection (1), (2) or (3) does not prohibit the exercise of the power or the performance of the duty or function in question by the Minister, council or the registrar. 15

Offences and penalties

41. (1) A person contravening section 18(2), 23, 25(8), or 31(8)(a), (b), (e) or (f), is guilty of an offence.

(2) If the council wilfully or in a grossly negligent manner fails to comply with section 15(8) it is guilty of an offence and liable to a fine calculated according to the ratio determined for a period of five years' imprisonment in terms of the Adjustment of Fines Act, 1991. 20

(3) A person convicted of an offence in terms of section 18(2), may be liable to a fine equal to double the remuneration received by him or her for work done in contravention of section 18(2), or to a fine equal to the fine calculated according to the ratio determined for three years imprisonment in terms of the Adjustment of Fines Act, 1991. 25

(4) A person who is convicted of an offence in terms of section 23 or 25(8), may be liable to a fine calculated according to the ratio determined for a period of one month imprisonment in terms of the Adjustment of Fines Act, 1991. 30

(5) A person who is convicted of an offence in terms of section 31(8)(a), (b), (e) or (f), may be liable to a fine equal to the fine calculated according to the ratio determined for three years imprisonment in terms of the Adjustment of Fines Act, 1991.

Transitional provisions

42. (1) For the purposes of this section, "effective date" means the date of the first meeting of the council. 35

(2) The South African Council for Quantity Surveyors established by section 2 of the Quantity Surveyors' Act, 1970 (Act No. 36 of 1970), continues to exist and may exercise and perform its powers and functions after the commencement of this Act until the effective date. 40

(3) The South African Council for Quantity Surveyors must, within 30 days from the date of commencement of this Act, invite nominations for the first appointment of members in accordance with section 4.

(4) For the purpose of the nominations referred to in section 4 and for the first term of office of the council, the existing voluntary associations within the quantity surveying profession are deemed to be recognised in terms of section 25. 45

(5) From the effective date, all rights, obligations, assets and liabilities acquired or incurred by the South African Council for Quantity Surveyors in terms of the Quantity Surveyors' Act, 1970, vest in the council and the council is deemed to have acquired or incurred those rights, obligations, assets and liabilities in terms of this Act.

(6) Any act performed, decision taken, or rule made or purported to have been so performed, taken or made in terms of the Quantity Surveyors' Act, 1970, by the South African Council for Quantity Surveyors remains valid unless repealed under this Act. 5

(7) Any notice issued or exemption granted by the Minister in terms of the Quantity Surveyors' Act, 1970, remains valid unless repealed under this Act.

(8) Any person who at the commencement of this Act is registered in terms of the Quantity Surveyors' Act, 1970, is deemed to be registered in the corresponding category provided for in this Act. 10

(9) From the effective date, any register maintained in terms of the Quantity Surveyors' Act, 1970, is incorporated in and is considered to form part of a register to be maintained in terms of this Act. 15

(10) Any action taken in terms of section 24 of the Quantity Surveyors' Act, 1970, which is pending at the commencement date of this Act, must be finalised in terms of that Act.

(11) At the end of the first term of the council 50 per cent of the members of the council may not be reappointed by the Minister. 20

Repeal of laws

43. The laws mentioned in the second column of the Schedule are repealed to the extent indicated in the third column of that Schedule and in so far as the laws were in force in the various areas of the national territory indicated in the fourth column.

Act binding on State

44. This Act binds the State.

Short title and commencement

45. This Act is called the Quantity Surveying Profession Act, 2000, and commences on a date fixed by the President by proclamation in the *Gazette*.

SCHEDULE

(Section 43)

No. and year of Act	Short title	Extent of repeal	Area of national territory
Act No. 36 of 1970	Quantity Surveyors' Act, 1970	The whole	
Act No. 79 of 1979	Quantity Surveyors' Amendment Act, 1979	The whole	
Act No. 50 of 1982	Quantity Surveyors' Amendment Act, 1982	The whole	
Act No. 29 of 1981	Act to Regulate the Professions of Engineering, Architecture and Quantity Surveying, 1981	The whole	Bophuthatswana
Act No. 76 of 1987	Quantity Surveyors' Amendment Act, 1987	The whole	
Act No. 14 of 1995	Periods of Office of Members of Councils for Architects, Engineers, Quantity Surveyors and Valuers Act, 1995	The whole	

APPENDIX I – SACQSP PROGRAMME CRITERION

PROGRAMME ACCREDITATION CRITERIA

CRITERION 1: Programme design

The programme is consonant with the institution's mission, forms part of institutional planning and resource allocation, meets national requirements, the needs of students and other stakeholders, and is intellectually credible. It is designed coherently and articulates well with other relevant programmes, where possible.

In order to meet the criterion, the following is required at minimum:

- (i) The programme is consonant with the institution's mission and goals and was approved by the appropriate institutional structures, including Senate/equivalent structure. Provision is made for the programme in the institution's planning and resource allocation processes.
- (ii) The programme meets the national requirements pertaining to programmes which are at present being developed within the context of the NQF.
- (iii) Learning outcomes, degree of curriculum choice, teaching and learning methods, modes of delivery, learning materials and expected completion time cater for the learning needs of its target student intake. Competences expected of students who successfully complete the programme are made explicit.
- (iv) The design maintains an appropriate balance of theoretical, practical and experiential knowledge and skills. It has sufficient disciplinary content and theoretical depth, at the appropriate level, to serve its educational purposes.
- (v) The design offers students learning and career pathways with opportunities for articulation with other programmes within and across institutions, where possible.
- (vi) Modules and/or courses in the programme are coherently planned with regard to content, level, credits, purpose, outcomes, rules of combination, relative weight and delivery. Outsourcing of delivery is not permitted.
- (vii) There is a policy and/or procedures for developing and evaluating learning materials and ensuring their alignment with the programme goals and underpinning philosophy. Where necessary, members of the academic staff are trained to develop learning materials.
- (viii) Programme outcomes meet national and/or regional labour market, knowledge or other socio-cultural needs. The requirements of professional bodies are taken into consideration, where applicable. Relevant stakeholders, including academic peers from outside the institution, and employers and professional bodies where applicable, are involved in the development of the programme.
- (ix) The characteristics and needs of professional and vocational education are catered for in the design of the programme, where applicable. This includes the following, in addition to (i) – (vii) above:

- The programme promotes the students' understanding of the specific occupation for which they are being trained.
 - Students master techniques and skills required for a specific profession or occupation.
 - Work-based learning and placement in a work-based environment form an integral part of the curriculum, where possible.
- (x) In the case of institutions with service learning as part of their mission:
- Service learning programmes are integrated into institutional and academic planning, as part of the institution's mission and strategic goals.
 - Enabling mechanisms (which may include incentives) are in place to support the implementation of service learning, including staff and student capacity development.

CRITERION 2: Student recruitment, admission and selection

Recruitment documentation informs potential students of the programme accurately and sufficiently, and admission adheres to current legislation. Admission and selection of students are commensurate with the programme's academic requirements, within a framework of widened access and

equity. The number of students selected takes into account the programme's intended learning outcomes, its capacity to offer good quality education and the needs of the particular profession (in the case of professional and vocational programmes).

In order to meet the criterion, the following is required at minimum:

- (i) Advertising and promotional materials contain accurate and sufficient information about the programme with regard to admission policies, completion requirements and academic standards. Marketing and advertising are done according to DoE and SAQA regulations and accurate information is provided about the NQF level and the accreditation status of the programme.
- (ii) Admission, matriculation exemption, age exemption, etc. adhere to current legislation.
- (iii) The programme's admission criteria are in line with the National Plan for Higher Education's (NPHE's) goal of widening access to higher education. Equity targets are clearly stated, as are the plans for attaining them. Provision is made, where possible, for flexible entry routes, which includes RPL with regard to general admission requirements, as well as additional requirements for the programme, where applicable. Admission of students through an RPL route should not constitute more than 10 percent of the student intake for the programme.
- (iv) Admission requirements are in line with the degree of complexity of learning required in the programme, within the context of widening access and promoting equity.
- (v) Selection criteria are explicit and indicate how they contribute to institutional plans for diversity. The number of students selected for the programme does not exceed the capacity available for offering good quality education. The number of students is balanced against the intended learning outcomes of the programme and takes into account the mode(s) of delivery and the programme's components (modules/courses).

- (vi) In the case of professional and vocational programmes, the quality and number of students admitted takes into account the needs of the particular profession, consonant with the appropriate equity considerations.

CRITERION 3: Academic Staffing

Academic staff responsible for the programme are suitably qualified and have sufficient relevant experience and teaching competence, and their assessment competence and research profile are adequate for the nature and level of the programme. The institution and/or other recognised agencies contracted by the institution provide opportunities for academic staff to enhance their competences and to support their professional growth and development.

In order to meet the criterion, the following is required at minimum:

- (i) Academic staff for undergraduate programmes have relevant academic qualifications higher than the exit level of the programme, but at minimum a degree. Academic staff for postgraduate programmes have relevant academic qualifications at least on the same level as the exit level of the programme. At least 50 percent of the academic staff for postgraduate programmes have relevant academic qualifications higher than the exit level of the programme. The qualifications of academic staff were awarded by recognised higher education institutions.
- (ii) The majority of full-time academic staff has two or more years of teaching experience in a recognised higher education institution, and in areas pertinent to the programme. In the case of professional programmes, a sufficient number of academic staff members also have relevant professional experience. Qualified and experienced academic staff design the learning programme, although junior or part-time tutors may act as facilitators of learning.
- (iii) Academic staff are competent to apply the assessment policies of the institution. Some of the academic staff responsible for the programme have at least two years' experience of student assessment at the exit level of the programme. There is ongoing professional development and training of staff as assessors in line with SAQA requirements.
- (iv) Academic staff members have research experience through their own research and/or studies toward higher education qualifications. The research area(s) of some of the academic staff members are relevant to the subject areas of the programme. In the case of postgraduate programmes, the research profile of the staff includes recognised research outputs.
- (v) The institution and/or other recognised agencies contracted by the institution provide orientation and induction opportunities in which new academic staff members participate. Provision is made for regular staff development opportunities in which relevant academic staff participate.

CRITERION 4: Support Staffing

The academic and support staff complement is of sufficient size and seniority for the nature and field of the programme and the size of the student body to ensure that all activities related to the

programme can be carried out effectively. The ratio of full-time to part-time staff is appropriate. The recruitment and employment of staff follows relevant legislation and appropriate administrative procedures, including redress and equity considerations. Support staff are adequately qualified and their knowledge and skills are regularly updated.

In order to meet the criterion, the following is required at minimum:

- (i) The staff :student ratio expressed as full-time equivalents is suitable for the nature and field of the programme and number of enrolled students. Sufficient support staff dedicated to the programme are available, where appropriate.
- (ii) The programme has an appropriate full-time : part-time staff ratio to ensure working conditions conducive to teaching and learning and research. Part-time and junior staff and tutors are trained, where necessary, and monitored by full-time staff.
- (iii) Recruitment and employment of staff adhere to the stipulations of the Labour Relations Act and to conditions of service, and there are appropriate administrative procedures for the selection, appointment, induction and payment of staff members and tutors. Redress and equity considerations receive due attention in the appointment of staff.
- (iv) The academic staff complement is such that it ensures that students are exposed to a diversity of ideas, styles and approaches.
- (v) Contractual arrangements relating to the hours and workload of staff ensure that all programme quality assurance, teaching, research, learning support, materials development, assessment, monitoring of part-time staff (where applicable), counselling and administrative activities take place.
- (vi) Administrative, technical and academic development support staff are adequately qualified for their duties, and opportunities exist for staff development.
- (vii) For distance learning programmes, sufficient administrative and technical staff are employed to handle the specialised tasks of registry, dispatch, management of assignments, record-keeping, and other issues in relation to student needs.

CRITERION 5: Teaching and learning strategy

The institution gives recognition to the importance of promoting student learning. The teaching and learning strategy is appropriate for the institutional type (as reflected in its mission), mode(s) of delivery and student composition, contains mechanisms to ensure the appropriateness of teaching and learning methods, and makes provision for staff to upgrade their teaching methods. The strategy sets targets, plans for implementation, and mechanisms to monitor progress, evaluate impact and effect improvement.

In order to meet the criterion, the following is required at minimum:

- (i) Recognition of the importance of the promotion of student learning is reflected in the institution's central operating policies and procedures, including resource allocation, provision of support services, marketing, appointments and promotions.
- (ii) A teaching and learning strategy is in place which:

- Is appropriate for the institutional type as reflected in its mission (programme types, research, teaching), mode(s) of delivery (contact/distance/e-learning), and its student composition (age, full-time/part-time, advantaged/disadvantaged), etc.
- Has mechanisms to ensure that teaching and learning methods are appropriate for the design and use of learning materials and instructional and learning technology.
- Provides for staff development opportunities where staff can upgrade their teaching methods.
- Contains targets, plans for implementation, ways of monitoring progress and evaluating impact, and mechanisms for feedback and improvement.

CRITERION 6: Student assessment policies and procedures

The different modes of delivery of the programme have appropriate policies and procedures for internal assessment; internal and external moderation; monitoring of student progress; explicitness, validity and reliability of assessment practices; recording of assessment results; settling of disputes; the rigour and security of the assessment system; RPL; and for the development of staff competence in assessment.

In order to meet the criterion, the following is required at minimum:

- (i) The programme has appropriate policies and procedures in all modes of delivery for:
 - Internal assessment of student learning achievements by academic staff responsible for teaching a course/module of the programme in a system that includes internal moderation.
 - External moderation of students' learning achievements by appropriately qualified personnel. Moderators are appointed in terms of clear criteria and procedures and conduct their responsibilities in terms of clear guidelines.
 - Monitoring student progress in the course of the programme.
 - Ensuring the validity and reliability of assessment practices.
 - Secure and reliable recording of assessment results.
 - Settling of student disputes regarding assessment results.
 - Ensuring the security of the assessment system, especially with regard to plagiarism and other misdemeanours.
 - Development of staff competence in assessment.
- (ii) There are appropriate policies and procedures for RPL, including the identification, documentation, assessment, evaluation and transcription of prior learning against specified learning outcomes, so that it can articulate with current programmes and qualifications. Assessment instruments are designed for RPL in accordance with the institution's policies on fair and transparent assessment.

CRITERION 7: Infrastructure and library resources

Suitable and sufficient venues, IT infrastructure and library resources are available for students and staff in the programme. Policies ensure the proper management and maintenance of library resources, including support and access for students and staff. Staff development for library personnel takes place on a regular basis.

In order to meet the criterion, the following is required at minimum:

- (i) Suitable and sufficient venues are available at all official sites of learning where the programme is offered, including teaching and learning venues, laboratories and clinical facilities, where appropriate. There are codes for clinical conduct, laboratory practice and safety, where appropriate. Venue allocation and timetabling are carefully planned to accommodate the needs of students.
- (ii) Suitable and sufficient IT infrastructure, as determined by the nature of the programme, is available at all sites of learning. This includes functionally appropriate hardware (computers and printers), software (programmes) and databases. The infrastructure is properly maintained and continuously upgraded and adequate funds are available for this purpose. Students and staff are trained in the use of technology required for the programme.
- (iii) Suitable and sufficient library resources exist which:
 - Complement the curriculum.
 - Provide incentives for students to learn according to their own needs, capacity and pace.
 - Support appropriate professional and scholarly activities of students and staff involved in the programme.
- (iv) Policies exist for the proper management and maintenance of library resources, and for their continuous renewal and expansion. These policies are integrated into the institution's financial plan.
- (v) On- and off-campus students have adequate library support and adequate access to library research and computing facilities.
- (vi) Staff development takes place on a regular basis to update the library staff's knowledge and skills.

CRITERION 8: Programme administrative services

The programme has effective administrative services for providing information, managing the programme information system, dealing with a diverse student population, and ensuring the integrity of processes leading to certification of the qualification obtained through the programme.

In order to meet the criterion, the following is required at minimum:

- (i) The programme information system is managed effectively in order to provide reliable information on the following:

- Venues, timetables, access to library and IT facilities, availability of academic and support staff for student consultations, and student support services. Information and communication needs of students in remote (rural) areas receive due attention.
 - Records of the students in the programme, including admission, progression, grades/marks, fees and graduation.
 - Records of students in the programme for the National Learner Records Database (NLRD) of SAQA.
- (ii) Effective administrative systems are in place for:
- with the needs of a diverse student population.
- (iii) Clear and efficient arrangements are in place for ensuring that the integrity of certification processes for the qualification obtained through the programme is not compromised. These include:
- Effective mechanisms to quality assure the processing and issuing of certificates.
 - Effective security measures to prevent fraud or the illegal issuing of certificates.

CRITERION 9: Postgraduate policies, procedures and regulations

Postgraduate programmes have appropriate policies, procedures and regulations for the admission and selection of students, the selection and appointment of supervisors, and the definition of the roles and responsibilities of supervisors and students, etc.

In order to meet the criterion, the following is required at minimum:

- (i) Appropriate policies, procedures and regulations are in place for student admission, selection and assessment. These are communicated to all postgraduate students, and academic and administrative staff, and implemented consistently across the institution and programme.
- (ii) The selection and appointment criteria in place for postgraduate supervisors are acceptable to the research community in the area of study. These include the following:
- The supervisor has a qualification in a relevant field of study higher than, or at least at the same level as, the exit level of the postgraduate programme he/she is supervising.
 - The supervisor has an appropriate research track record, as well as experience, expertise and peer recognition in the field of study.
 - In the case of inexperienced or new supervisors, there is ongoing staff development and support, and joint supervision is explored as an option.
- (iii) Explicit guidelines exist on the roles and responsibilities of supervisors and students and other matters relevant to the performance of research. These include the following:
- The nature, format and expected turnaround time for work submitted to the supervisor.
 - Forms of assessment, and the communication of feedback to the student, which includes:
 - a. The periodicity of contact between student and supervisor, and the schedule for the submission of progress reports and written work.

- b. Research ethics, code of conduct, regulations on plagiarism and intellectual property rights.
- c. Examination and qualification requirements.

CRITERION 10: Programme Co-ordination

The programme is effectively coordinated in order to facilitate the attainment of its intended purposes and outcomes. In order to meet the criterion, the following is required at minimum:

- (i) An academic is identified as programme coordinator and operates within the framework of an agreed-upon mandate and defined procedures and responsibilities. This includes responsibility for:
 - Ensuring the academic coherence and integrity of the programme and that all conditions for the delivery of the programme are met.
 - Coordination of logistical and other issues regarding:
 - The day-to-day delivery of the programme.
 - All aspects of the programme quality management system, including the provision of resources.
 - The review of the programme and feedback with a view to improvement.
 - Monitoring of expenditure.
- (ii) Opportunities exist for student input and participation in relevant aspects of programme coordination.
- (iii) Policies for ensuring the integrity of certification processes for the qualification obtained through the programme are effectively implemented. These include:
 - Mechanisms for monitoring the eligibility of candidates for the award of certificates.
 - Mechanisms for quality assuring the processing and issuing of certificates.
 - Security measures for preventing fraud or the illegal issuing of certificates.

18

CRITERION 11: Academic development for student success

Academic development initiatives promote student, staff and curriculum development and offer academic support for students, where necessary.

In order to meet the criterion, the following is required at minimum:

- (i) Staff responsible for academic development are adequately qualified and experienced for their task, and their knowledge and skills are regularly updated.
- (ii) Student and staff development initiatives are responsive to the needs of the students and staff. This includes foundational and skills-oriented provision for students.

- (iii) Curriculum development at programme and course/module levels includes strategies for language skills development, numeracy and cognitive skills which enhance the use of disciplinary discourse and skills by students.
- (iv) Additional student academic support is offered where necessary.
- (v) The effectiveness of academic development initiatives is regularly monitored and feedback is used for improvement.

CRITERION 12: Teaching and learning interactions

Effective teaching and learning methods and suitable learning materials and learning opportunities facilitate the achievement of the purposes and outcomes of the programme.

In order to meet the criterion, the following is required at minimum:

- (i) Students are provided with guidance on how the different components of the programme (for example, subjects, courses and/or modules) contribute to the learning outcomes of the programme.
- (ii) There is an appropriate balance between, and mix of, different teaching and learning methods. Teaching and learning methods are appropriate to the design and use of the learning materials and instructional and learning technology.
- (iii) Suitable learning opportunities are provided to facilitate the acquisition of the knowledge and skills specified in the programme outcomes, and within the stipulated time.
- (iv) Students actively participate in the teaching and learning process.
- (v) The staff have opportunities to upgrade their teaching methods and there is facilitation of suitable learning opportunities.
- (vi) The effectiveness of teaching and learning interactions is regularly monitored and the results are used for improvement.

19

CRITERION 13: Student assessment practices

The programme has effective assessment practices which include internal (or external) assessment, as well as internal and external moderation.

In order to meet the criterion, the following is required at minimum:

- (i) Assessment is an integral part of the teaching and learning process and is systematically and purposefully used to generate data for grading, ranking, selecting and predicting, and for providing timely feedback to inform teaching and learning and to improve the curriculum.

- (ii) The learning achievements of students are internally assessed by the academic staff responsible for teaching a course/module in terms of a system that includes internal moderation. This includes:
- Academic staff who teach a course/module are responsible for designing, implementing and marking both formative and summative student assessments, for recording results and for feedback to students.
 - For summative assessment, especially where more than one marker is involved, internal moderation checks are undertaken to ensure the reliability of the assessment procedures.
 - Procedures are in place and are followed to receive, record, process, and turn around assignments within a time frame that allows students to benefit from feedback prior to the submission of further assessment tasks.
- (iii) The learning achievements of students on the exit level of a qualification are externally moderated by appropriately qualified people who have been appointed according to clear criteria and procedures and who conduct their responsibilities in terms of clear guidelines. External moderation includes the following:
- External moderators are recommended by the examining academic department, are independent experts in their fields, have qualifications at least on the same level as the qualification being examined, are changed regularly, are not appointed as part of reciprocal arrangements (where possible), and are approved by and responsible to Senate/equivalent body.
 - The institution provides information on the curriculum and on continuous assessment, and guidelines to assist external moderators in the completion of their reports.
 - External moderators mark fully at the exit level of the programme at least 10 percent of the examination scripts for each paper written and do random checks of at least 20 percent of examination scripts for each paper.
 - Completed external moderator reports are returned to the lecturer concerned and also to the programme coordinator or head of department/school. Problems are discussed with the lecturer concerned and the programme coordinator monitors the implementation of agreed improvements. External moderators approve the final marks list for the qualification concerned.
 - External moderators are expected to comment on the validity of the assessment instruments, the quality of student performance and the standard of student attainment, the reliability of the marking process, and any concerns or irregularities with respect to the observation of institutional/professional regulations.
- (iv) Assessment practices are effective and reliable in measuring and recording student attainment of the intended learning outcomes. This includes the following:
- Assessment criteria are commensurate with the level of the qualification, the requirements of SAQA and, where appropriate, professional bodies, and are made explicit to staff and students.

- Learning activities and the required assessment performances are both aligned with learning outcomes at the programme and modular level.
 - Learning outcomes for a programme/module and their link to assessment criteria and judgments are clearly stated and communicated to students. A range of appropriate assessment tasks is effective in measuring student attainment of the intended learning outcomes. There is at least one integrated assessment procedure for each qualification which is a valid test of the key purposes of the programme.
 - A system is in operation for maximising the accuracy, consistency and credibility of results, including consistency of marking and concurrence between assessors and external examiners on the nature and quality of the evidence which indicates achievement of learning outcomes.
 - Students' assessment records are reliable and secure. Assessment data is accessible to academic coordinators, administrators, teaching staff and students, as appropriate.
- (v) RPL is done in an effective, reliable and consistent manner.

CRITERION 14: The Assessment System

The programme has taken measures to ensure the reliability, rigour and security of the assessment system.

In order to meet the criterion, the following is required at minimum:

The assessment system is rigorous and secure. This includes:

- Institutional/faculty/professional rules governing assessment are published and clearly communicated to students and relevant stakeholders.
- Evidence is provided to demonstrate that these rules are widely adhered to.
- Breaches of assessment regulations are dealt with effectively and timeously.
- Students are provided with information and guidance on their rights and responsibilities regarding assessment processes (for example, definitions of and regulations on plagiarism, penalties, terms of appeal, supplementary examinations, etc.).
- Student appeals procedures are explicit, fair and effective.
- There are clear and consistent published guidelines/regulations for:
 - Marking and grading of results.
 - Aggregation of marks and grades.
 - Progression and final awards.
 - Credit allocation and articulation.

CRITERION 15: Coordination of work-based learning

The coordination of work-based learning is done effectively in all components of applicable programmes. This includes an adequate infrastructure, effective communication, recording of progress made, monitoring and mentoring.

In some professional programmes, work-based learning does not traditionally form part of the curriculum. Although strongly supported, it is recognized that work-based learning is not a mandatory requirement for quantity surveying tertiary programmes. However, for those programmes which do incorporate this learning approach, the requirements of this criteria should be adhered to.

In order to meet the criterion, the following is required at minimum:

- (i) Learning contracts or agreements are implemented through which the student, the higher education institution and the employer can negotiate, approve and assess the objectives and outcomes of the learning process. Various parties, i.e. the institution, students, mentors and employers, adhere to the contract or agreement on their roles and responsibilities.
- (ii) Regular and effective communication takes place between the institution, students, mentors and employers involved in work-based learning. Good working relations are maintained between the various parties involved.
- (iii) A system (both at the institution and at the place of employment) is in operation to record and monitor regularly and systematically the progress of the student's learning experience in the workplace.
- (iv) A mentoring system enables the student to recognise strengths and weaknesses in his/her work, to develop existing and new abilities, and to gain knowledge of work practices.

CRITERION 16: Delivery of postgraduate programmes

The postgraduate programme is managed properly, offers opportunities for students to develop research competence, and ensures that research is properly assessed. Policies for student admission and selection, criteria for the selection and appointment of supervisors, and guidelines on the roles and responsibilities of supervisors and students are effectively implemented.

In order to meet the criterion, the following is required at minimum:

- (i) The postgraduate programme is managed properly and offers students opportunities to develop research competence. This includes the following:
- A senior academic with research and postgraduate supervision experience:
 - Coordinates research programmes, monitors the progress of postgraduate students and oversees assessment procedures.
 - Coordinates structured master's and doctoral programmes, monitors the progress of postgraduate students and oversees assessment procedures.
 - Training is provided in research skills, including guidance on research design and methodology. Training is also provided in language, writing and numeracy skills, where required. Employment-related skills are developed, where appropriate.
 - Monitoring and review of the postgraduate system takes place regularly and includes student feedback on the quality of the learning experience, supervision and support infrastructure.
- (ii) Research is properly assessed, which includes the following (in addition to the requirements for assessment specified in Criterion 13)
- At least one examiner external to the institution is appointed per dissertation/thesis.
 - Without undermining the principle of assessment based on academic judgement, assessment decisions are made transparently and students are afforded reasonable access to information (e.g. examiners' reports).
 - There are opportunities for students to defend their theses (e.g. through an oral defense).
 - Higher degree committees or similar structures consider examiners' reports and make considered decisions about examination outcomes.
- (iii) Policies for student admission and selection are effectively implemented (see Criterion 8).
- (iv) Criteria for the selection and appointment of postgraduate supervisors are effectively implemented, as well as guidelines on the roles and responsibilities of supervisors and students (see Criterion 8).

Criteria for programme output and impact

These criteria pertain to what is delivered and attained by a programme. Programmes have to be effective with regard to student retention and throughput rates, especially in relation to race and gender equity. The programme should contribute to enhancing the employability of students and alleviating shortages of expertise in relevant fields, in cases where these are the desired outcomes of the programme.

CRITERION 17: Student Retention and Throughput

Student retention and throughput rates in the programme are monitored, especially in terms of race and gender equity, and remedial measures are taken, where necessary.

In order to meet the criterion, the following is required at minimum:

- (i) The programme coordinator has access to and monitors information on retention and throughput rates for the programme, also in terms of national benchmarks. Appropriate remedial action is taken where necessary.
- (ii) The race and gender profile of the qualifying class increasingly resembles that of the entering class.

CRITERION 18: Employability

The programme has taken steps to enhance the employability of students and to alleviate shortages of expertise in relevant fields, in cases where these are the desired outcomes of the programme.

In order to meet the criterion, the following is expected at minimum:

- (i) There is evidence that the programme attempted to have an impact on the employability of students, where these are the desired outcomes of the programme.
- (ii) Conscious efforts are made to get the programme acknowledged in the workplace/community and by other institutions. An improvement plan is put into operation, where necessary.

CRITERION 19: Programme Effectiveness

User surveys, reviews and impact studies on the effectiveness of the programme are undertaken at regular intervals. Results are used to improve the programme's design, delivery and resourcing, and for staff development and student support, where necessary.

In order to meet the criterion, the following is required at minimum:

- (i) User surveys are undertaken at regular intervals for feedback from academics involved in the programme, graduates, peers, external moderators, professional bodies and employers, where applicable, to ascertain whether the programme is attaining its intended outcomes.
- (ii) There are regular reviews of the effectiveness of benchmarking in the programme against equivalent national and international reference points, with a view to goal setting and continuous self-improvement in the programme.
- (iii) Student throughput and retention rates are regularly reviewed, also with regard to national requirements.
- (iv) Impact studies are regularly undertaken to measure and evaluate the impact of the programme and its graduates on the employability of students and in alleviating shortages of expertise in relevant fields, where these are the desired outcomes of the programme. Impact studies could also ascertain the degree of acknowledgement of the programme in the community, by other institutions, and in the workplace, where applicable.
- (v) Results of user surveys, reviews and impact studies are used in a regular evaluation of all programme aspects and to develop improvement plans.

BIOGRAPHICAL SKETCH

Zakheeya Armoed was born on May 29, 1990, in Durban, South Africa. In 2007 she matriculated with a Merit Exemption from Crossmoor Secondary School in the suburb of Chatsworth, Durban. She later went on to attend the University of Kwazulu-Natal where she completed a Bachelor of Science Honours degree in Quantity Surveying from the Department of Engineering, Agriculture and Science. In 2013, she was employed at the City of uMhlathuze where she currently works as a quantity surveyor. Currently she is a member of an on-site quantity surveying team who represents the Department of Health on the Dr. Pixley Ka Isaka Seme Memorial Hospital Project.

Zakheeya's research interests include construction education in South Africa, with her main focus on higher education institutes and their accredited quantity surveying programmes, as well as the professional preparedness of quantity surveying graduates. She aims to develop her academic career by publishing a journal paper and reading for a PhD in the new year.