

**PROFILES OF SUCCESSFUL B.COM. (FINANCE) STUDENTS
ENTERING A SOUTH AFRICAN UNIVERSITY BEFORE AND AFTER
THE INTRODUCTION OF THE NATIONAL SENIOR CERTIFICATE**

by

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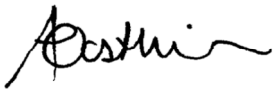
July 2014

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DECLARATION

I hereby declare that the work that is submitted here is the result of my own independent investigation. Where help was sought, it was acknowledged. I further declare that the work is submitted for the first time at the University of the Free State towards the *Philosophiae Doctor* degree in Higher Education Studies and that it has never been submitted to any other university for the purpose of obtaining a degree.

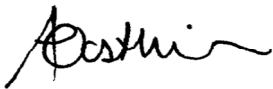


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DEDICATION

Dedicated with love to:

Johann Oosthuizen and our three sons,

Robert, Herman and Johann Jr.

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Annelie Oosthuizen

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LIST OF ACRONYMS AND ABBREVIATIONS

ACC	Accounting
AL	Academic Literacy
ANC	African National Congress
APS	Admission Point Score
BECO	Business Economics
BCF	B.Com. (Finance)
C2005	Curriculum 2005
CAPS	Curriculum Assessment Policy Statement
CFA	Chartered Financial Analyst
CHE	Council on Higher Education
CIMA	Chartered Institute of Management Accountants
DFIM	Department of Finance and Investment Management
DoE	Department of Education
DoHET	Department of Higher Education and Training
ECO	Economics
EMS	Economic and Management Sciences
FEFS	Faculty of Economic and Financial Sciences
FET	Further Education and Training
FPI	Financial Planning Institute of Southern Africa
GAAP	Generally Accepted Accounting Principles
HE	Higher Education
HEI	Higher Education Institution

HEIs	Higher Education Institutions
HEMIS	Higher Education Management Information System
HESA	Higher Education South Africa
HG	Higher Grade
IPC	International Pre-University College
ITS	Integrated Tertiary System
LO	Life Orientation
MATHS	Mathematics
MAX	Maximum
MIN	Minimum
M-score	Matriculation score
NATED 550	Previous senior certificate (phased out in 2007)
NBTP	National Benchmark Tests Project
NC	National Certificate
NCHE	National Commission on Higher Education
NCS	National Curriculum Statement
NQF	National Qualifications Framework
NSC	National Senior Certificate
OBE	Outcomes-Based Education
P-value	Probability value
QL	Quantitative Literacy
RSA	Republic of South Africa
SA	South Africa

SAQA	South African Qualifications Authority
SAS	Statistical Analysis Software Package
SAS Freq	Statistical Analysis Software Package for Frequency Distribution
SASSE	South African Survey of Student Engagement
SC	Senior Certificate
SD	Standard Deviation
SG	Standard Grade
SPSS	Statistical Package for the Social Sciences
SS	Secondary School
STATCON	Statistical Consultation Services Division
UFS	University of the Free State
UJ	University of Johannesburg
UMALUSI	Council for Quality Assurance in General and Further Education and Training

ABSTRACT

Since 1994, the South African national school curriculum, from the foundation phase through to the further education and training phase, has been and still is in the process of being redesigned for the post-apartheid era. One of the major events in the national process of curriculum reform was the replacement of the Senior Certificate (NATED 550) with the National Senior Certificate, awarded for the first time in 2008. The Grade 12s of 2008 were variously described as 'guinea pigs' or 'pioneers'. Questions have arisen as to whether the National Senior Certificate curriculum adequately equips learners to achieve academic success at university, and whether the higher education institutions have adapted to the 'products' of the National Senior Certificate, who entered their academic programmes for the first time in 2009.

Some of the challenges related to the changes in the national school curriculum, that the South African higher education sector is faced with include poor academic performance and high drop-out rates. These occurrences are of concern to South African higher education in general, and also particularly to the institution where this investigation was conducted. From an institutional perspective, it is important to be aware of the biographical factors and academic achievement characteristics included in the profiles of successful students. Moreover, skills form part of a holistic approach to curriculum construction.

The main purpose of this research study was to determine the profiles of successful B.Com. (Finance) students entering a South African university *before* and *after* the introduction of the National Senior Certificate. In order to do so, factors associated with the students' transition from secondary school to higher education and factors contributing to undergraduate student success at university were identified through a literature study.

An empirical study was conducted on two cohorts of students entering the B.Com. (Finance) programme at a South African university. The first group entered the university in the year immediately *before* the introduction of the National Senior Certificate and the second group entered the same university in the year immediately *after* the introduction of the National Senior Certificate. This research study

investigated the differences and similarities between successful and unsuccessful students in both of the cohorts. Biographic variables (age, gender, ethnicity) and academic variables (secondary school leaving results and subject choices as well as undergraduate academic performance at university) were investigated. For the purposes of this study, the operational definition of a *successful student* is a student who has succeeded in meeting all of the graduation requirements for the B.Com. (Finance) degree within the minimum time, namely three consecutive years. Descriptive statistics revealed that the success rates of students included in this investigation have decreased from 29.0% in the 2008 cohort to 15.8% in the 2009 cohort.

The study also investigated the opinions and perceptions of the first cohort of students who entered higher education with the National Senior Certificate as a school-leaving qualification, regarding the skills that they *required* for the successful completion of the B.Com. (Finance) programme and the skills that they *acquired* during their secondary school education. To this effect, participants completed the B.Com. (Finance) first-year opinion survey and participated in focus-group discussions. The results of this investigation indicate that these students felt that they *lacked* some of the critical skills required for academic success at university. The skills most frequently considered being *required* for university success in commerce- and finance-related studies, which were reportedly not *acquired* by the target population at secondary school, are economic reasoning ability, the ability to practically implement learning content, critical thinking skills, analytical thinking skills, the ability to interpret financial information and time management skills. These findings have implications on the way in which secondary school learners and university students are taught.

The target population's biographic and academic achievement data were obtained from the Integrated Tertiary System (ITS). The primary objective of the statistical analysis was to identify profiles of successful students in two cohorts of students. A further objective of the statistical analysis was to assess the association between student success as a binary dependent variable, and the following independent variables: age, gender, ethnicity, Grade 12 Mathematics mark, exposure in secondary school to Accounting, Business Economics and Economics, the average of the first semester university mark of five compulsory modules, the matriculation

score (M-score) of the 2008 cohort and the admission point score (APS) of the 2009 cohort. The data for each cohort was analysed using descriptive, univariate and multivariate analyses. The logistic regression model for student success initially contained eight independent variables. The likelihood ratio chi-square statistics and associated p-values were calculated for each variable in the model. Stepwise model selection was applied by removing, one at a time, the variable among the independent variables which is found to be least significantly associated with student success. Logistic regression revealed that when success in B.Com. (Finance) is analysed by means of a multiple logistic regression, the most significant predictors of student success in the 2009 cohort were the Mathematics mark obtained in the National Senior Certificate and Business Economics taken at secondary school. The most significant predictors of student success in the 2008 cohort were the matriculation score (M-score), age and Accounting taken at secondary school.

The findings of this study create a platform for continued debate on admission requirements and the importance of specific skills required for success in commerce- and finance-related degrees at university. The findings culminated in recommendations for higher education institutions, educators and those embarking on future research relating to the theme in question.

OPSOMMING

Die Suid-Afrikaanse nasionale skoolkurrikulum word sedert 1994 vanaf die grondslagfase tot by die verdere onderwys- en opleidingsfase herontwerp vir die postapartheidera. Die proses duur steeds voort. Een van die groot gebeurtenisse in die nasionale proses van kurrikulumhervorming, was die vervanging van die Senior Sertifikaat (NATED 550) met die Nasionale Senior Sertifikaat wat die eerste keer in 2008 toegeken is. Die Graad 12's van 2008 is afwisselend beskryf as 'proefkonyne' of 'pioniers'. Vrae het ontstaan oor of die kurrikulum van die Nasionale Senior Sertifikaat leerders voldoende toegerus het om akademiese sukses op universiteit te behaal en ook of die hoërondwysinstellings aangepas het by die 'produkte' van die Nasionale Senior Sertifikaat wat in 2009 vir die eerste keer met die akademiese programme begin het.

Van die uitdagings wat verband hou met die veranderinge in die nasionale skoolkurrikulum en wat die Suid-Afrikaanse hoërondwyssektor in die gesig staar, sluit swak akademiese prestasie en 'n hoë uitvalsyfer in. Die verskynsels is van belang vir die Suid-Afrikaanse hoërondwys oor die algemeen, en ook in die besonder vir die instelling waar hierdie ondersoek onderneem is. Vanuit 'n institusionele perspektief, is dit belangrik om bewus te wees van die biografiese faktore en die akademiese prestasie-eienskappe wat deel vorm van die profiele van suksesvolle studente. Voorts vorm vaardighede deel van 'n holistiese benadering tot kurrikulumkonstruksie.

Die hoofdoel van hierdie studie was om die profiele van suksesvolle B.Com. (Finansies)-studente wat 'n Suid-Afrikaanse universiteit betree, *voor* en *ná* die bekendstelling van die Nasionale Senior Sertifikaat, te bepaal. Ten einde dit te doen, is faktore wat verband hou met die studente se oorgang van hoërskool tot hoërondwys en die voorspellers van die voorgraadse sukses van studente op universiteit deur middel van 'n literatuurondersoek geïdentifiseer.

'n Empiriese studie is onderneem met twee kohorte studente wat met die B.Com. (Finansies)-program by 'n Suid-Afrikaanse universiteit begin het. Die eerste groep het die universiteit betree die jaar direk *voor* die bekendstelling van die Nasionale Senior Sertifikaat en die tweede groep het dieselfde universiteit betree in die jaar

direk *ná* die bekendstelling van die Nasionale Senior Sertifikaat. Hierdie studie ondersoek die verskille en ooreenkomste tussen suksesvolle en onsuksesvolle studente in altwee kohorte. Biografiese veranderlikes (ouderdom, geslag, etnisiteit) en akademiese veranderlikes (hoërskoolverlatingspunte en vakkeuses asook voorgraadse akademiese prestasie op universiteit) is ondersoek. Vir die doeleindes van die navorsing, is die werksdefinisie van 'n *sukcesvolle student*, 'n student wat daarin geslaag het om al die graueringsvereistes vir die B.Com. (Finansies)-graad in die minimumtydperk te bereik, naamlik drie opeenvolgende jare. Beskrywende statistiek het getoon dat die sukseskoers van studente wat in die ondersoek ingesluit is, van 29.0% in die 2008-kohort tot 15.8% in die 2009-kohort gedaal het.

Die studie ondersoek ook die opinies en persepsies van die eerste kohort studente wat hoëronderwys ingegaan het met die Nasionale Senior Sertifikaat as skoolverlatingskwalifikasie, rakende die vaardighede wat hulle *benodig* het vir die suksesvolle afhandeling van die B.Com. (Finansies)-program en die vaardighede wat hulle *verkry* het tydens hulle hoërskoolopleiding. Met dit ten doel het deelnemers die B.Com. (Finansies)-eerstejaarsmeningsopname voltooi en deelgeneem aan fokusgroepbesprekings. Die resultate van die ondersoek dui daarop dat die studente gevoel het dat hulle sekere kritiese vaardighede *kortgekom* het wat vereis word vir akademiese sukses op universiteit. Die vaardighede wat mees algemeen as *nodig* vir universiteitsukses in handels- en finansiesverwante programme beskou word, maar wat gerapporteer is as nie op hoërskool *verkry* deur die teikenpopulasie nie, is ekonomiese redenasievermoë, die vermoë om leerinhoud prakties te implementeer, kritiese denkvaardighede, analitiese denkvaardighede, die vermoë om finansiële inligting te interpreteer en tydbestuursvaardighede. Hierdie bevindinge het implikasies vir die wyse waarop hoërskoolleerders en universiteitstudente onderrig word.

Die teikenpopulasie se biografiese en akademiese prestasie is verkry deur die Geïntegreerde Tersiêre Stelsel (ITS). Die primêre doel van die statistiese analise was om die profiele van die suksesvolle studente in die twee kohorte te identifiseer. 'n Verdere oogmerk van die statistiese analise was om die verband tussen studentesukses as 'n binêre, afhanklike veranderlike en die volgende onafhanklike veranderlikes te assesseer: ouderdom, geslag, etnisiteit, Graad 12 Wiskundepunt, blootstelling op hoërskool aan Rekeningkunde, Bedryfseconomie en Ekonomie, die

gemiddeld van die eerstesemesteruniversiteitspunt oor vyf verpligte modules, matrikulasetelling (M-telling) van die 2008-kohort en toelatingspunttelling (TPT) van die 2009-kohort. Die data vir elke kohort is geanaliseer deur gebruik te maak van 'n beskrywende, een- en meervoudige variante-analise. Die logistiese regressiemodel vir studentesukses het aanvanklik agt onafhanklike veranderlikes bevat. Die waarskynlikheidsratio chi-kwadraatstatistiek en die verbandhoudende p-waardes is bereken vir elke veranderlike in die model. Stapsgewyse modelseleksie is toegepas deur een op 'n slag dié veranderlike tussen die onafhanklike veranderlikes te verwyder wat bevind is as die mins beduidende wat betref studentesukses. Logistiese regressie het getoon dat wanneer sukses in B.Com. (Finansies) deur middel van veelvoudige logistiese regressie geanaliseer word, die mees beduidende voorspellers van sukses vir die 2009-kohort die wiskundepunt is wat in die Nasionale Senior Sertifikaat behaal is en Bedryfsekomomie as hoërskoolvak geneem. Die mees beduidende voorspellers van sukses vir die 2008-kohort was die matrikulasetelling (M-telling), ouderdom en Rekeningkunde as hoërskoolvak geneem.

Die bevindings van die studie skep 'n platform vir volgehoue debat oor toelatingsvereistes en die belangrikheid van spesifieke vaardighede wat nodig is vir sukses in handels- en finansiële-gerelateerde grade op universiteit. Die bevindings kulmineer in aanbevelings vir hoërsonderwysinstellings, opvoeders en diene wat verdere navorsing oor die bepaalde vraagstuk wil onderneem.

LIST OF KEY CONCEPTS

- Academic achievement
- Academic success
- Commerce degree studies
- Critical skills
- Finance degree studies
- First-year performance
- Higher education
- Individual differences
- National Senior Certificate
- Predictors of student success
- Student admission
- Student profiles
- Transition from secondary school to higher education
- Undergraduate (student) success

CHAPTER 1 OVERVIEW OF THE STUDY

“Yet the purpose of all research is ultimately to teach.” A. Brew (2002:112)

1.1 INTRODUCTION

This study sets out to investigate the profiles of successful B.Com. (Finance) students entering a South African university *before* and *after* the introduction of the National Senior Certificate. This chapter serves as an introduction to the research problem, research questions, main aim and research objectives of the study. This chapter also includes an exposition of the main theoretical underpinnings of the study and clarifications of key concepts, which will be elaborated upon in Chapters 2 and 3. Furthermore, an overview of the research design, methods and processes, which will be elaborated upon in Chapter 4, are provided.

1.2 BACKGROUND AND ORIENTATION OF THE STUDY

Since the abolition of apartheid in 1994, the entire educational system in South Africa (SA) has been redesigned. One of the major events in this process was the replacement of the *previous* Senior Certificate (NATED 550) with the *revised* National Senior Certificate (NSC), awarded for the first time in 2008. The beginning of the academic year of 2009, when the first group of students who completed the NSC as a secondary-school-leaving qualification entered into SA universities, is remembered as an historic event. The associated ‘*shocks*’ experienced in higher education institutions (HEIs), from 2009, have been widely described by academic researchers and in the popular press (*Beeld*, 20 August 2009; Bitzer, 2009(b):225; Bloch, 2009:3,15; *Die Burger*, 20 August 2009; *Mail & Guardian*, 25 June 2009; *Rapport*, 9 August 2009; Yeld, 2014:1).

Not surprisingly, the Grade 12s of 2008 have been described as the ‘*guinea pigs*’ or the ‘*pioneers*’ of the new education system (Bloch, 2009:2). This cohort of learners started their school careers by entering into Grade 1 in 1997, when outcomes-based education was first introduced into South African Schools. Questions have been

raised as to whether the NSC curriculum adequately prepares learners for success in university studies and whether HEIs can adapt to the under-preparedness of the 'products' of the NSC (Bitzer, 2009(b):226; Baard, Steenkamp, Frick & Kidd, 2010:129; Yeld, 2014:2).

In this study, the researcher investigates the biographic and academic profiles of successful B.Com. (Finance) (hereafter BCF) students who entered into a single SA university, namely the University of Johannesburg (UJ), for the first time in 2008 or in 2009. *Firstly*, informed by a literature review, the significance of a number of factors influencing students' ability to succeed academically at university are statistically tested to determine the possible correlation between specific factors and students' academic achievement. *Secondly*, the simultaneous effect of these factors is determined by means of a multivariate technique to derive the profiles of successful BCF students.

As a result of this study, further knowledge is gained regarding the preparedness of students studying towards commerce- and finance-related degrees. The research findings inform university authorities on the effectiveness of the *new* admission system, the Admission Points Score (APS). Recommendations are made regarding the admission of students into the BCF degree programme and support strategies that HEIs can implement to assist first-year students in their transition from secondary school (SS) into higher education (HE) are suggested.

1.3 THEORETICAL FRAMEWORK

This study was founded in a theoretical framework informed by a critical review of relevant literature (reported on in Chapters 2 and 3), which includes three main aspects:

- *Firstly*, a detailed description of the students' transition from SS into HE in SA, including the principles and outcomes of the Further Education and Training (FET) phase curriculum, outcomes and content, will be provided. Furthermore, a comparison between the NATED 550 and the NSC curriculums will be made. A critical review of literature on the current challenges experienced in the SA SS and HE sector related to the changes in the NSC curriculum,

including educational experts' opinions and recommendations towards possible solutions for these challenges, will be conducted and reported on. The students' transition from SS into university will be described, including details of the university admission requirements.

- *Secondly*, a description of the SA HE landscape and SA HEIs, in general and with particular reference to the UJ, will be provided. A detailed explanation of the BCF programme, including this degree programme's admission requirements, outcomes, curriculum content and graduation requirements.
- *Thirdly*, literature and research findings on undergraduate student success will be explored and reported on. Details regarding definitions and factors contributing to student success, as well as profiles of successful students in general, and particularly in commerce- and finance-related university programmes, will be provided.

1.4 CONCEPT CLARIFICATION

Since the following concepts are critical to an understanding of the discourse of this study, brief clarifications are provided below. It is acknowledged that some of these concepts can be defined and interpreted in a variety of ways. In this section the concepts are described in terms of their operational definitions as they apply to this study. Furthermore, an elaboration of the explanations of these concepts will be provided in Chapters 2, 3 and 4 of this thesis. The following concepts are introduced in a logical sequence as they appear in this thesis.

1.4.1 Higher education (HE)

This term refers to the post-secondary or tertiary education sector. The Higher Education Act (RSA, 1997:1) defines *HE* as "all learning programmes leading to qualifications higher than Grade 12 or its equivalent in terms of the National Qualifications Framework, and it includes tertiary education as contemplated in Schedule 4 of the Constitution".

Furthermore, HE is a field of study and research (Bitzer, 2009a:386). Teichler, an authority in the field of HE research, has suggested a classification of HE research

which gives a useful indication of the nature and extent of the field. Teichler (2005:447) proposes four broad categories or spheres of knowledge in HE and he suggests four typical areas of research for each sphere and relates them to the disciplinary settings of those undertaking research, namely:

- Quantitative-structural aspects such as access, admission, types of institutions and graduation, employment and job opportunities (often informed by economists and sociologists).
- Knowledge- and subject-related aspects relating to disciplinarily, academic/professional, skills and competences, quality, research on teaching-curricula relationships (mainly informed by education, sociology and history).
- Person- and process-related aspects, including teaching and learning, communication, counselling and assessment of academic staff and students (with education, psychology and sociology involved).
- Organisation and governance related to administration, planning, management, funding and decision making (mainly from the angle of law, political science and public or business administration).

Seen from a SA perspective, it is not always clear within which of the widely-accepted Teichler areas or “spheres of knowledge” this important aspect (HE and society) should be grouped. For current purposes of a national categorisation which may serve as a SA map of HE studies and research, (Bitzer, 2009a:387) regard Tight’s more detailed categorisation of themes or issues in HE as a valuable and very practical starting point. Tight (2003:7) identified six major themes and sub-themes or issues, namely:

- Teaching and learning – including approaches to studying, learning styles and pedagogical styles.
- Course design – including assessment, competencies, the HE curriculum, learning technologies, portfolios reflection and writing and writing post-graduate study.
- The student experience – including access, counselling, motivation, diversity, success and non-completion, employment and evaluation.

- Quality – including course evaluation, grading and outcomes, national monitoring practices and system standards.
- System policy – including economics of scale, funding, national policies, policy studies, globalisation, massification and returns on investment.
- Institutional management – including autonomy, departments, institutional leadership and governance, institutional development and history, institutional structure, mergers, marketisation and relationships between HE, industry and community.

1.4.2 Higher education institution (HEI)

This term refers to institutions in the post-secondary or tertiary education sector, such as universities. The Higher Education Act (RSA, 1997:2) defines the term *HEI* as “any public or private institution that provides higher education on a full-time, part-time or distance basis”. For the purpose of this study, the term *university* will be used interchangeably with *HEI*.

1.4.3 Student profile

For the purposes of this study, a *student profile* comprises two major components, namely biographical factors and academic achievements. More specifically, the biographical factors include details of the students’ ages, genders and ethnic groups. Furthermore, information pertaining to the students’ academic achievements is indicated firstly by their SS-leaving results, expressed in the form of their M-scores or APS, their SS Mathematics marks, and their exposure to each of the following subjects: SS Accounting, SS Economics and SS Business Studies. Secondly, achievement is also indicated by students’ university results in the form of the average mark obtained by each student for the five compulsory modules taken in the first semester of the first year in the BCF degree programme (See: *Appendix 4 - Statistical Analysis Plan*). Another element of the student profile investigated in this study are the students’ perceptions and opinions of skills *required* for success in the BCF degree programme and skills *acquired* at SS level, as described in Chapter 5.

1.4.4 Successful student

In this study the operational definition of a *successful student* is a student of either of the target populations of 2009 and 2008 first-year intakes at UJ, who has succeeded in meeting all of the graduation requirements for the BCF degree within the minimum time, namely three consecutive years (UJ Fact Book, 2009b:18). It is acknowledged that, as from 2010, all SA universities have implemented extended programmes for students who need additional support and in which case the minimum duration of study for a successful student has been extended to four consecutive years.

1.4.5 Unsuccessful student

In this study the operational definition of an *unsuccessful student* is a student of either of the target populations of 2009 and 2008 first-year intakes at UJ, who has not completed the BCF degree within three consecutive years because of 'dropout', non-completion, or extension of study time owing to the failure and repeating of modules (UJ Fact Book, 2009b:18).

1.4.6 National Senior Certificate (NSC)

The term *NSC* refers to the national SS-leaving qualification, which was assessed and awarded in SA secondary schools for the first time at the end of 2008 (RSA DoE, 2008:2). Details regarding the NSC's outcomes, curriculum content, assessment standards and criteria will be explained and compared to similar elements of the previous NATED 550 qualification in Chapter 2.

1.4.7 NATED 550

The term *NATED 550* refers to the SA SS-leaving qualification, which was assessed and awarded in SA secondary schools for the last time at the end of the year 2007, and which was replaced by the NSC in 2008 (RSA DoE, 2008:2). Details regarding the NATED 550's aims and objectives, curriculum content, assessment standards and criteria will be explained and compared to similar elements of the new NSC qualification in Chapter 2.

1.4.8 Admission points score (APS)

After the introduction of the NSC, the university admission requirements have been aligned to convert NSC results into the APS metric (UJ, 2011b:3). This system was applied by SA universities for the first time in 2009. Details regarding the calculation of the APS will be explained in Chapter 2.

1.4.9 Matriculation score (M-score)

Before the introduction of the NSC, the university admission requirements were aligned to convert NATED 550 results into the M-score (UJ, 2009c:4). Details regarding the calculation of the M-score will be explained in Chapter 2.

1.4.10 Grade 12

The Higher Education Act (RSA, 1997:2) states that the term *Grade 12* means “the highest grade in which education is provided by a school” as defined in the South African Schools Act (Act 84 of 1996). For the purpose of this study, the term *Grade 12* will be used interchangeably with *matriculation* (referring to the school year or level).

1.4.11 Academic achievement

In this study the term *academic achievement* refers to the final (end-of-semester and/or end-of-year) result of a student published by the DoE or an HEI after the completion of all assessments required for the completion of a particular module (e.g. Accounting 1A) or subject (e.g. NSC Mathematics) and expressed as a percentage (%), a symbol (e.g. A, B, C), or a number (e.g. 7, 6 or 5), each representing a particular level of academic performance (UJ, 2011b:8).

1.4.12 Integrated tertiary system (ITS)

The concept *ITS* refers to a software application system used to manage student and staff data in HEIs and FET institutions throughout Africa and in other countries, for example Ireland and New Zealand. Data is first captured on the ITS before it is used in any other way, and therefore the ITS is the fundamental data store from which all

the other reporting systems then draw their basic data. It is the source for applications such as the Higher Education Management Information System (UJ, 2011(b):1). For the purposes of this study, the term *ITS* will be used when referred to the *central university student data-base* from which student data is extracted.

1.4.13 Higher education management information system (HEMIS)

The *HEMIS* reporting system was set up by the HE Branch of the National Department of Education (now the Department of Higher Education and Training) in order to capture information about the HE system in SA, which it has to manage in a uniform and consistent manner (UJ, 2011(b):1).

1.4.14 Module or course

In this study the term *module* is referred to as a component within a programme of study for a qualification. Similarly, in the HEMIS reference is made to a *course*. A module or course has the following characteristics:

- It is an identifiable teaching and/or learning component that is undertaken in a year or a semester.
- Student academic achievement in the component is assessed and recorded in the central record system.
- The component has a unique identifying course code, which is assigned to it in the institution's central record system (UJ, 2011(b):3).

1.4.15 Passing or failing a module or course

The requirements for a student *to pass* a module or a course at UJ is to achieve a minimum achievement of 50% as a final result in a particular module or course at the end of the academic semester or year (UJ, 2011(b):3). A student who achieves less than 50% as a final result in a particular module or course at the end of the academic semester or year would *fail* the module or course.

1.4.16 Couplet modules

Couplet modules are defined as “two modules in a specified year, whereby the second module builds upon the first module” (UJ, 2011(a):21). The pass mark for

each module is 50%, but a student who did not obtain the required 50% in the first module but obtained a minimum final mark of 40% is granted entry to the second module. To obtain credit for both modules, an average of 50% for both modules must be obtained.

1.4.17 Outcome

The term *outcome* is loosely used to refer to the result, product or output of some type of process (Malan, 1997:15). A process is not a once-off event but a series of events. A process is something that takes place in steps, or stages, with each stage forming the basis and providing the input for the next stage. The outcome or end result of the education process would directly or indirectly be the composite result of the effective interaction of all the inputs, outcomes and mini-processes comprising education as a whole (Malan, 1997:16).

1.4.18 Skill

For the purpose of this study, the concept *skill* refers to “the ability to do something” (Jacobs & Gawe, 1998:201). A skill is related to a particular context thus, applying a skill without proper understanding of its context will result in meaningless activities.

1.4.19 First-time entering student

A first-time entering student is a student who is registering for the first time for an undergraduate qualification and has not been effectively registered at this level in any HEI (UJ, 2011(b):2).

1.4.20 Registrations or enrolments

Registrations are defined as the number of students who have formally registered or enrolled for study within a specific calendar year. This count can be done on the module or qualification level (UJ, 2011(b):2), e.g. in the BCF degree programme.

1.4.21 Student dropout

In this study the concept *student dropout* refers to the phenomenon of students who terminate their studies without completing (i.e. passing) the module, semester or

programme. The reasons for student dropout could be poor performance (failing), financial problems or personal reasons (Jacobs, 2010:11).

1.5 PROBLEM STATEMENT AND RESEARCH QUESTIONS

1.5.1 Problem statement

Since 2009, the phenomena of high failure and dropout rates among first-year university students as well as non-completion of undergraduate degree studies (UJ, 2009(a):8) have emphasised the fact that for many students entering HE in SA, a knowledge and skills gap exists between the demands of the HE curriculum and their competencies acquired through the NSC at SS. In view of the claims that the 2008 NSC school-leaving qualification is of a lower standard than the previous matriculation qualification, the position of the first cohort of students entering into HE in 2009 has been under scrutiny since the beginning of 2009 (Bitzer, 2009b:225; Bloch, 2009:6; Frith, 2011:725; Scott, Yeld & Henry, 2007:273). The inclusion of skills development forms part of a holistic approach to curriculum construction. However, the most common criticism of the SS curriculum is that it fails to prepare learners for HE, and that, by the time that learners have completed SS, they have not acquired all of the essential knowledge and skills required for success at university (Bitzer, 2005:585).

At the beginning of 2012, when the Grade 12 results of the fourth group of learners who matriculated with the NSC were published and these students entered HEIs, educational experts, *inter alia*, Prof. Jonathan Jansen (*Saturday Star*, 7 January 2012) and Dr. Junita Kloppers-Lourens (*Die Burger*, 19 January 2012) were still reported to be concerned about the poor standards achieved in major NSC subjects, for example, NSC Mathematics, and also about the high dropout rate among first-year students.

This study aims to make a contribution towards a better understanding of the differences and similarities in profiles of successful BCF students who entered into a SA university *before* and *after* the introduction of the NSC, and to make recommendations regarding university admission and selection requirements in

commerce- and finance-related programmes and support strategies for first-year students in their transition from SS into HE.

For the purpose of this study, the primary target population is the BCF students who entered the UJ for the first time in 2009, after being the first group of learners who matriculated with the NSC school-leaving qualification in 2008. The primary target population completed survey questionnaires and participated in focus group discussions, the results of which are reported on in Chapter 5. Each student in the primary target population's biographic and academic information were extracted from the university data base (ITS system) and statistically analysed as reported on in Chapter 6.

For the purpose of this study, the secondary target population (or control group) is the BCF students who entered the UJ for the first time in 2008, after being the last group learners who have matriculated with the NATED 550 school-leaving qualification in 2007. The secondary target population did not complete survey questionnaires and did not participate in focus group discussions, but their biographic and academic information were also extracted from the ITS system and statistically analysed as reported on in Chapter 6.

1.5.2 Research questions

The **primary research question** addressed is as follows:

What differences and similarities occur in the profiles of successful BCF students entering a SA university before and after the introduction of the NSC respectively?

The **four secondary questions** that emerged from the primary research question are as follows:

Secondary research question A (SQ-A)

What are the opinions and perceptions of first-year BCF students regarding the skills that they *required* for the successful completion of the BCF programme and the skills that they *acquired* during their NSC education?

Secondary research question B (SQ-B)

What are the differences and similarities between the profiles of successful and unsuccessful BCF students entering a SA university *after* the introduction of the NSC?

Secondary research question C (SQ-C)

What are the differences and similarities between the profiles of successful and unsuccessful BCF students entering a SA university *before* the introduction of the NSC (i.e. with the NATED 550 qualification)?

Secondary research question D (SQ-D)

What are the differences and similarities between the profiles of successful BCF students entering a SA university with the NSC and those entering with the NATED 550?

1.6 HYPOTHESES

For the purpose of this study, the following hypotheses were tested:

Null hypothesis (H_0): The profiles of successful BCF students entering a SA university *before* and *after* the introduction of the NSC are the *same*.

Research hypothesis (H_1): The profiles of successful BCF students entering a SA university *before* and *after* the introduction of the NSC *differ*.

1.7 AIM AND OBJECTIVES

In the following paragraphs the aim and objectives of this study are stated.

1.7.1 Aim

The aim of this study is to determine and compare the profiles of successful BCF students entering a SA university *before* and *after* the introduction of the NSC.

1.7.2 Objectives

Based on the aim, the four objectives are as follows:

Objective A:

To determine the opinions and perceptions of first-year BCF students, at a SA university, regarding the skills that they *required* for the successful completion of the BCF programme and the skills that they *acquired* during their NSC education.

Objective B:

To determine the differences and similarities between the profiles of successful and unsuccessful BCF students entering a SA university *after* the introduction of the NSC.

Objective C:

To determine the differences and similarities between the profiles of successful and unsuccessful BCF students entering a SA university *before* the introduction of the NSC (i.e. with the NATED 550).

Objective D:

To determine the differences and similarities between the profiles of successful BCF students entering a SA university with the NSC and successful BCF students entering the same university with the NATED 550.

1.8 IDENTIFYING THE VARIABLES

Fraenkel and Wallen (2008:40) define a variable as: “A characteristic that can assume any one of several values”. The different forms of variables used in this study will be discussed below:

1.8.1 The dependent variable

Fraenkel and Wallen (2008:42) state that “... the dependent variable ‘depends on’ what the independent variable does to it, how it affects it”. In this study the dependent variable is categorical, namely successfulness, which is defined as the BCF student being *successful* or *unsuccessful*.

In other words, the dependent variable is derived from the answer to the question:

“Is the BCF student successful or unsuccessful?”

This question will be answered by the researcher through an analysis of the data obtained from the ITS system. Note that, for the purposes of this study, a *successful student* is a student who has completed the BCF degree in the minimum time of three years and an *unsuccessful student* is a student who has not completed the BCF degree in three years, irrespective of the reasons for non-completion in the minimum time. The dependent variable is expanded on in Chapter 4, paragraph 4.5.1.

1.8.2 The independent variables

Fraenkel and Wallen (2008: 42) state that "... an independent variable is presumed to affect (at least partly cause) or somehow influence at least one other variable". The independent variables are as follows:

a) Biographical information

- Gender;
- Age; and
- Ethnic group.

b) Academic achievement

- APS and M-scores (for the first-year students of 2009 and 2008 respectively);
- Final SS-leaving results in Mathematics;
- Exposure to SS Accounting, SS Economics and SS Business Studies; and
- Average marks for the five compulsory modules in the first semester of the first year of BCF university studies.

The independent variables are expanded on in Chapter 4, paragraph 4.5.2.

1.8.3 The confounding variables

Confounding variables or extraneous independent variables (also known as the *third variable*) are variables that may influence research results but which are not a part of the particular study or are not what the researcher is interested in (Kerlinger 1986:299). The academic achievement of undergraduate students is influenced by a great variety of factors. Confounding variables could include a host of cognitive and non-cognitive variables, for example:

- Cognitive factors such as intelligence, learning styles, learning approaches, language proficiency and historical perspective.
- Non-cognitive factors such as financial resources, personality, personal circumstances, type of SS, self-esteem, motivation, locus of control, health, participation in extra-mural activities, means of transport and type of accommodation. (Bartlett, Peel & Pendlebury, 1993:115; Buckless, Eiselen, 2006:31-58; Joubert, 2010:29-89; Lipe & Ravenscroft, 1991:251-255).

The effect of these variables on the dependent variable is not measured or controlled in this study because of the impossibility of doing so. The confounding variables are expanded on in Chapter 4, paragraph 4.5.3.

Therefore, at a quantitative level this study investigates a cross-section of biographic factors and academic history that are co-variants or factors contributing to academic achievement at HE level.

1.9 RESEARCH DESIGN AND METHODS

This study comprises three phases, namely a developmental phase, an implementation phase and an analysis/validation phase.

Firstly, the *developmental phase* of the study, which is discussed in more detail in Chapter 4, paragraph 4.6.1, involves operationalising the constructs to be addressed in this study in an attempt to answer the primary and secondary research questions. In other words, determining profiles of successful BCF students entering a SA university *before* and *after* the introduction of the NSC, with particular reference to their biographic information and their academic achievement. In particular, the developmental phase involves the development of a survey questionnaire, focus-group discussion questions and the identification of the target population from information extracted from the ITS, all of which will be utilised during the implementation and analysis/validation phases of this study. The procedures followed during the development of the measuring instruments are introduced in Section 1.9.3 and are elaborated upon in Chapter 4.

Secondly, the *implementation phase* of the study, which is discussed in more detail in Chapter 4, paragraph 4.6.2, involves the collection of data to be utilised in this study. The implementation phase involves two stages, namely:

- The administering of two measuring instruments developed/adapted in the development stage for the collection of *primary data*; and
- The collection of data pertaining to students' biographic information and academic achievement from the ITS, i.e. the collection of *secondary data*.

The methodology adopted in the implementation phase will be discussed in Chapter 4. The implications of the adopted methodology, i.e. the limitations of the empirical part of this study, are addressed in Chapter 4.

During the third and final phase, i.e. the *analysis/validation phase* of the study, which is discussed in more detail in Chapter 4, paragraph 4.6.3, data collected during the two implementation stages will be analysed statistically in an attempt to answer the primary and secondary research questions. In addition, the integrity of the survey questionnaire and focus discussion questions developed during the development phase will be established by considering the validity and reliability of these measuring instruments. The statistical methodology to be adopted during the analysis/validation phase is addressed in Chapter 4.

1.9.1 Population and sampling

The *primary* target population of this study is all the first-time entering students who registered at UJ for the three-year, full-time BCF degree qualification at the beginning of 2009. Furthermore, only students who gained access to university based on their NSC SS-leaving results, obtained at a SA public or private school at the end of 2008, were included in the *primary* target population.

In addition to the *primary* target population, the *secondary* target population of this study is all first-time entering students who registered at UJ for the three-year, full-time BCF degree qualification at the beginning of 2008. Furthermore, only students who gained university entrance based on their NATED 550 SS-leaving results,

obtained at a SA public or private school at the end of 2007, were included in the secondary target population.

The *primary* target population represents the *first* year-group of students who have entered into the BCF programme at a SA university with the NSC as a SS-leaving qualification and the *secondary* target population represents the *last* year-group of students entering into the BCF programme at a SA university with the NATED 550 as a SS-leaving qualification. In this study, the entire primary and secondary target populations were included for the purposes of data collection, data analysis and reporting of research findings. These aspects of the study are expanded on in Chapter 4, paragraph 4.6.1.2.

1.9.2 Research strategy and data collection procedures

A cohort study was conducted on the primary and secondary target population for a period of three years per target population, starting from the time when their SS-leaving results were published to the end of their third year spent at university. Saunders, Lewis & Thornhill (2009:262-263) are of the opinion that cohort studies are relatively rare, owing to the difficulty of maintaining contact with members of the cohort from year to year.

For the primary population, an exploratory, mixed-method approach was used, namely qualitative focus-group discussions and a quantitative survey. According to Saunders *et al.* (2009:152-153) a mixed methods approach is the general term for when both quantitative and qualitative data collection techniques and analysis procedures are used in a research design. It is subdivided into two types, namely mixed method research and mixed-model research. The differences between these two types of research designs will be discussed in further details in Chapter 4, paragraph 4.6.3.3. For the purpose of this study, the mixed method research was used.

In addition, secondary quantitative information was obtained regarding students' academic achievement in Grade 12 and in the first three years of their BCF degree studies, for both of the primary and the secondary target populations. Saunders *et al.* (2009:153) state that one of the advantages of using a mixed-method approach is

that it enables triangulation. Triangulation involves the way that various data collection techniques within one study are used to verify the validity of the results obtained (Henning, Van Rensburg & Smit, 2004:103; Saunders *et al.* 2009:595-602). An explanation of how triangulation was done in this study, will be discussed in Chapter 4, paragraph 4.6.3.3.

The philosophical perspective that was adopted in this study is pragmatism, which, according to Saunders *et al.* (2009:598) is “a position that argues that the most important determinant of the research philosophy adopted is the research question, arguing that it is possible to work within both positivist and interpretivist position[s]”. Interpretivism is the epistemological position that advocates “the necessity to understand differences between humans in their role as social actors” while positivism is the epistemological position that advocates “working with an observable social reality” (Saunders *et al.* 2009:593). The emphasis of pragmatism is on highly structured methodology in order to facilitate replication and generalisation (Saunders *et al.* 2009:598). Pragmatism thus represents a practical and integrated approach to data collection and interpretation.

Furthermore, Creswell (2003:7) states that post-positivism refers to “the thinking after positivism”, which challenges the traditional notion of the absolute truth of knowledge and recognises that researchers cannot always be ‘positive’ about their claims of knowledge when studying the behaviour and actions of humans. According to Creswell (2003:7), post-positivism reflects a deterministic philosophy in which causes probably determine effects or outcomes. The problems studied by post-positivists thus reflect a need to examine causes that influence outcomes. This philosophy is also reductionistic in that the intent is to reduce the ideas into a small, discrete set of ideas to test, such as the variables that constitute hypotheses and research questions in this study. The knowledge that develops through a post-positivistic approach is based on careful observation and measurement of the objective reality that exists in practice. Creswell (2003:7) is of the opinion that developing numeric measures of observations and studying the behaviour of individuals become paramount concerns for a post-positivist.

1.9.3 Measuring instruments

Three measuring instruments are utilised for the collection of data in this study, namely:

1.9.3.1 *The B. Com. (Finance) first-year student opinion survey of 2009*

A survey (using a single, structured, opinion-related, and paper-based questionnaire) is used for the collection of quantitative data from the primary target population in their first year at university. Information regarding skills perceived to be *required* for successful completion of the BCF programme and skills *acquired* during respondents' NSC education is collected (See: *Appendix 1 - BCF first-year opinion survey of 2009*). The researcher designed the survey, which is informed by a review of literature on the skills and outcomes of the NSC and BCF curriculums.

In the second week of the second semester of 2009 (i.e. from 27 to 31 July 2009), after prior arrangement with the relevant lecturers, the researcher handed out copies of the survey questionnaires during the Financial Management 1B lectures in all five class groups at UJ. The respondents were requested to voluntarily and individually complete the questionnaires in class. The researcher was present in all of these classes and she collected the completed questionnaires and delivered them to the UJ Statistical Consultation Services Division (STATCON), where all responses were captured on Excel spread-sheets for analysis with the Statistical Package for the Social Sciences (SPSS).

In the final section of the questionnaire, the respondents were requested to indicate whether they were willing to participate in a focus-group discussion, and upon agreement, to write down their names and contact details on the last page of the questionnaire.

1.9.3.2 *Focus-group discussions*

Focus-group discussions, using open-ended questions, were conducted with the primary target population (in their first year at university) to collect qualitative data regarding the skills perceived to be *required* for successful completion of the BCF

programme and skills *acquired* during their NSC education (See: *Appendix 3 - Focus-group Discussion Questions*).

Within six weeks of the collection of the completed questionnaires, the researcher contacted all the respondents who indicated that they were willing to participate in the discussions via email and/or telephone and invited them to voluntarily participate in one of four 60-minute discussions, scheduled for 10, 11, 17 and 18 September 2009. The random grouping technique was applied to participants' schedules and preferences. The researcher facilitated the interactive discussions in groups of a maximum of eight participants. A total of 26 students voluntarily participated in the focus-group discussions. At the beginning of each discussion, the researcher explained the procedures and aims of the discussions, after which each participant completed a written consent form. The participants' written consent confirmed that the information they provided could be used for research purposes (See: *Appendix 2 - Consent Form*). The discussions were tape-recorded, transcribed and analysed by the researcher.

1.9.3.3 Information from the integrated tertiary system (ITS)

The following forms of secondary data were collected with permission from the ITS for both the primary and secondary target populations at the end of each semester in each of the first three years of their BCF university studies:

- a) Biographical information, including age, gender, and ethnic group; and
- b) Academic achievement, including Grade 12 results and BCF results in the first three years of their university studies.

This data was displayed in Excel spread-sheets for analysis with the Statistical Analysis Software Package (SAS) by the Statistical Consultation Services Division of the University of the Free State (UFS).

1.9.4 Data analysis and reporting

An exploratory data analysis approach is applied in this study. This approach emphasises the use of diagrams to explore and understand data, emphasising the

importance of using data to guide the researcher's choice of analysis techniques. Saunders *et al.* (2009:428) emphasise that it is important to keep the research questions and objectives in mind when exploring the data.

The researcher completed a critical analysis of the qualitative data collected during the focus-group discussions by categorising and summarising all of the responses. STATCON (UJ) and the Statistical Consultation Services Division (UFS) completed analyses of the quantitative data collected during the survey and extracted from the ITS. These statistical analyses include descriptions of the dependent and independent variables using descriptive statistics and graphs, as well as proposition testing to ascertain statistically significant differences between successful and unsuccessful students. Finally, multivariate statistical analysis, namely stepwise logistic regression, is used to determine the profiles of successful students entering the BCF programme at UJ with the NSC and the NATED 550 SS-leaving qualifications respectively. Reporting and interpretation of the research findings are done by the researcher. The research principles of reliability and validity are adhered to during the processes of designing the measuring instruments, data collection, data analysis and reporting, and these will be elaborated upon in Chapter 4, paragraph 4.6.3.3.

1.10 ETHICAL CONSIDERATIONS

This study was conducted in collaboration with the Department of Finance and Investment Management (DFIM) in the Faculty of Economic and Financial Sciences (FEFS) at UJ. Permission to conduct the research and to publish the findings was obtained from the FEFS Ethics Committee in 2009. Students in the primary target population were invited to voluntarily participate in both the survey (See: *Appendix 1 - BCF first-year opinion survey of 2009*) and the focus-group discussions (See: *Appendix 3 - Focus-group Discussion Questions*). Respondents (to the survey) and participants (in the focus-group discussions) gave their informed, written consent (See: *Appendix 2 - Consent Form*) and they were assured, in writing, of their anonymity (in the survey) and the confidentiality of information they provided in both the survey and the focus-group discussions. Furthermore, approval by UJ's

governance officer was obtained to extract the relevant student information from the ITS. The data was analysed using valid statistical techniques and research findings were reported in an accurate and scientifically accountable manner.

1.11 DEMARCATION OF THE STUDY

This study was conducted within the domain of HE Studies. Bitzer (2009a:369) motivates that studies in the field of HE, in its variety of forms, contributes to social and economic development through at least four major missions, namely:

- The formation of human capital (primarily through teaching).
- Building knowledge bases (primarily through research and knowledge development).
- The dissemination and use of knowledge (by interacting with the users of knowledge).
- The maintenance of knowledge (inter-generational storage and transmission of knowledge).

Consequently, this study was conducted in order to make a humble contribution to the fulfilment of the above mission statement. As mentioned earlier in this Chapter, in paragraph 1.4.1, when the concept of HE was clarified, Tight (2003:7) identified six major themes and sub-themes or issues in this study field. This study was conducted in the HE area of the student experience, which includes, *inter alia*, themes such as access, counselling, motivation, diversity, success and non-completion, employment and evaluation.

The research was limited to a single SA university, namely UJ. Furthermore, it was limited to the cohort of students entering into the BCF programme one year *before* and one year *after* the introduction of the NSC. The academic achievement of the target population of students who registered for university studies at the beginning of 2008 and 2009 respectively were investigated over three years (per year-group). The motivation for using this particular group of students stems from the fact that they represent students studying towards a qualification that is considered to be leading towards the acquisition of scarce skills, namely commerce- and finance-related skills.

The results of this study cannot necessarily be generalised to students studying towards other degrees, or to other universities. This study is limited to those variables that can be used by the university to admit or select students, namely academic achievement. It is acknowledged that there are various other factors that may have an influence on academic achievement, such as social integration, study habits, learning styles, personal circumstances, means of transport, type of accommodation, and finance available for studies. The effect of these factors on undergraduate student success is not investigated in this study.

1.12 SIGNIFICANCE OF THE RESEARCH

This study aims to provide the institution where the study is conducted, i.e. UJ, with a better understanding of and insight into the profiles of successful BCF students entering this HEI *before* and *after* the introduction of the NSC, which is crucial information to apply in preparation of successful transition of SS learners to HE. This aim has been highlighted in the Strategic Plan for Higher Education (RSA DoE, 2010-2015:23) for example where “poor performance of the schooling system is a major systemic constraint to success in the university system”. In addition, this plan states that “Access to programmes with specialised entry requirements is a major concern to universities, as is the under-preparedness of students and the consequent high drop-out and poor completion rates” (RSA DoE. 2010-2015:23). This results in inefficient utilization of private and institutional resources and energies. This study could be described as an institutional response to increase the internal efficiency of schools and universities, namely: Successful profiles of BCF students is essential for effective learning (for the purposes of this study and all HEIs) and productive living becoming a lifelong learner paving the way towards HE, especially since poor retention and success rates are evident in the SA HE context.

The significance of the primary and secondary target populations of this study is that they comprise the two cohorts of students who have entered a SA university for the first time in the year immediately preceding and the year immediately following the introduction of the NSC respectively. The research findings of this study should fill the gap in the current knowledge regarding the extent to which an association can be made between students’ NSC results and their undergraduate academic

achievement. The investigation provides answers to the questions of whether the *new* NSC is of a lower standard than the *previous* NATED 550 and whether the students were equipped at SS with the necessary skills to achieve academic success in the BCF degree programme at university. These research findings indicate some deficiencies in the SA SS system.

This study further aims to provide the institution with guidelines in areas where first-year student intervention strategies may be required. As such, it should inform university administrators, managers, career counsellors and lecturers as well as SS educators, prospective university students and their parents on selection and/or admission criteria of successful students in commerce- and finance-related degree programmes. Recommendations emanating from this study could assist in the review of selection and/or admission requirements for students entering into the BCF programme at UJ.

Although the results obtained in this study cannot readily be generalised to other HEIs owing to their temporal and localised nature, they will provide other HEIs with guidelines in terms of factors associated with success in commerce- and finance-related programmes. The research findings should inform further research as they provide a basis of comparison or benchmark for other HEIs.

1.13 OUTLINE OF THE STUDY

In Chapter 2 and 3 a comprehensive literature review of factors that are believed to be and have shown to be related to student success, both before and after the introduction of the NSC in SA, will be provided. In addition, the theoretical rationale behind each of the identified factors will be discussed. The research methodology adopted in this study is discussed in Chapter 4. The focus in Chapter 4 will furthermore be on the development of the research instruments and procedures of collection of primary and secondary research data.

In Chapter 5 and 6 a description of the results obtained in this study, i.e. a description of profiles of successful BCF students entering a SA university before and after the introduction of the NSC will be provided. The primary research question and secondary research questions A, B, C and D, are addressed in Chapter 4, 5 and 6.

Conclusions and recommendations of this study will be discussed and suggestions for future research will be made in Chapter 7. The layout of Chapters 2 to 7 is summarised in Table 1.1:

Table 1.1: Thesis Layout

CHAPTER	HEADING	SUBHEADINGS
2	Students' transition from secondary school to higher education in South Africa	2.1 Introduction and overview of this chapter 2.2 Theoretical exposition of the research problem 2.3 The South African national secondary school curriculum 2.4 Challenges related to the transition from secondary school to higher education 2.5 The South African higher education landscape 2.6 The South African university admission requirements 2.7 The B.Com. (Finance) programme at the University of Johannesburg 2.8 Summary and review of this chapter
3	Undergraduate student success at university	3.1 Introduction and overview of this chapter 3.2 Theoretical exposition of the research problem 3.3 Definitions and importance of student success 3.4 Factors contributing to student success in undergraduate university studies (in general) 3.5 Factors contributing to student success particular to undergraduate commerce- and finance-related university studies 3.6 Discussion of research findings 3.7 Summary and review of this chapter

CHAPTER	HEADING	SUBHEADINGS
4	Research design and methods	4.1 Introduction and overview of this chapter 4.2 Statement of the research questions 4.3 Hypotheses 4.4 Aim and objectives 4.5 Identifying the variables 4.6 Research methodology 4.7 Ethical considerations 4.8 Summary and review of this chapter
5	Discussion and interpretation of research results on the investigation of opinions and perceptions of first-year B.Com. (Finance) students	5.1 Introduction and overview of this chapter 5.2 Descriptive statistics: The sample of students participating in the survey 5.3 Discussion of key findings of survey and focus-group discussions 5.4 Discussion and synthesis 5.5 Summary and review of this chapter
6	Discussion and interpretation of research results towards determining profiles of successful B.Com. (Finance) students	6.1 Introduction and overview of this chapter 6.2 Descriptive statistics of the dependent variable 6.3 Descriptive statistics of the independent variables and success 6.4 Discussion and interpretation of descriptive statistics 6.5 Logistic regression 6.6 Summary and review of this chapter
7	Conclusions, implications and recommendations of the study	7.1 Introduction and overview of this chapter 7.2 Conclusions 7.3 Critical reflection 7.4 Implications of this study 7.5 Recommendations and final conclusion

1.14 SUMMARY AND REVIEW OF THIS CHAPTER

In this chapter, the background and orientation to the study were dealt with by providing an overview of the study. Furthermore, an overview of introductory literature as well as clarifications of some of the core concepts of this study were provided, followed by the problem statement, research questions, research aims and objectives. An exposition of the scope of research, the research design, methods and processes of this study were introduced. The significance, value and perceived contributions of the study were also explained. Finally, a brief overview of the chapters in this thesis was provided in tabular form. The following chapter focuses on the students' transition from secondary school to HE in SA.

CHAPTER 2 STUDENTS' TRANSITION FROM SECONDARY SCHOOL TO HIGHER EDUCATION IN SOUTH AFRICA

“Education is the most powerful weapon which you can use to change the world.” Nelson Mandela

2.1 INTRODUCTION AND OVERVIEW OF THIS CHAPTER

The purpose served by this chapter is to provide the theoretical framework behind the academic focus of this study. This is done through a critical review of national and international curriculum-related literature. A detailed description of the students' transition from SS to HE in SA, including the principles and outcomes of the previous and current FET-phase curriculums will be provided. Furthermore, the current challenges related to the students' transition from SS to HE will be discussed. Characteristics of SA HEIs in general, and more specifically, their admission requirements and an explanation of the BCF programme at UJ, including this programme's curriculum, outcomes, admission requirements and graduation requirements, will be provided. An illustrative overview of this chapter is provided in Figure 2.1.

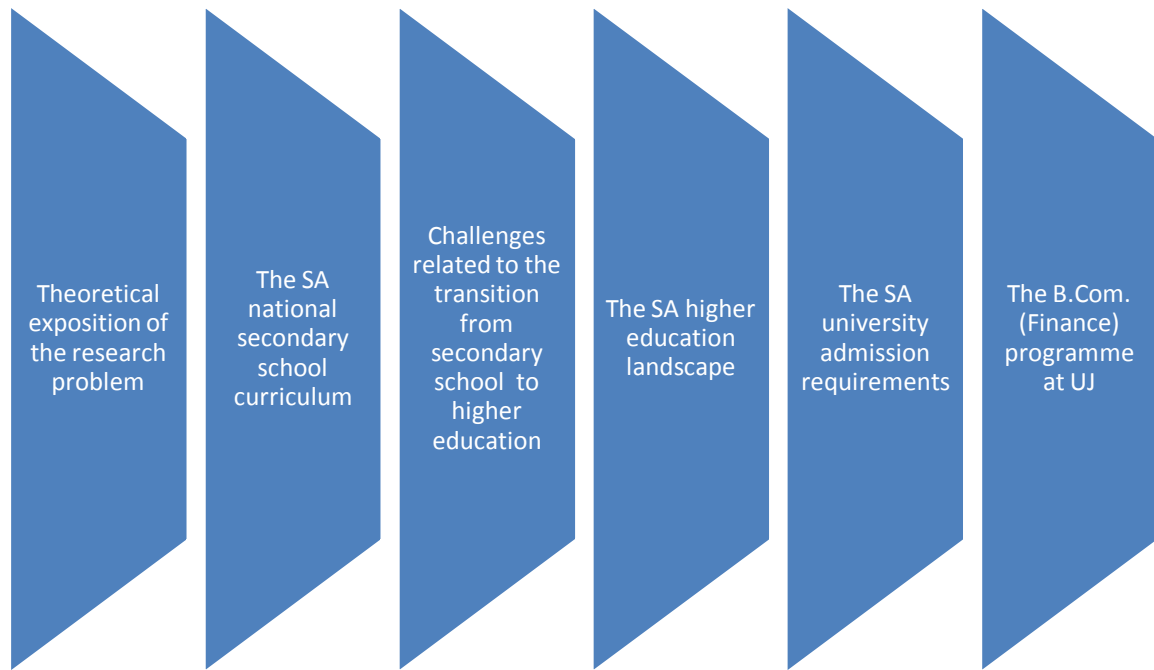


Figure 2.1: Illustrative overview of Chapter 2

2.2 THEORETICAL EXPOSITION OF THE RESEARCH PROBLEM

Since 1994, the South African national school curriculum, from the foundation phase through to the further education and training phase, has been and still is in the process of being redesigned for the post-apartheid era. The introduction of the Revised National Curriculum Statement in 2002 replaced the outcomes-based-education-rooted Curriculum 2005 (C2005). One of the major events in the national process of curriculum reform was the replacement of the Senior Certificate (NATED 550) with the NSC, awarded for the first time in 2008. The Grade 12s of 2008 were variously described as ‘guinea pigs’ or ‘pioneers’ as they were the first cohort of students who completed 12 year of schooling under the NSC curriculum. Questions arose as to whether the NSC curriculum adequately equips learners to achieve academic success at university, and whether the higher education institutions have adapted to the ‘products’ of the NSC, who entered their academic programmes for the first time in 2009 (Bitzer, 2009b:225; Bloch, 2009:103; Frith, 2011:725; Yeld, 2014:2).

Yeld (2014:1) states that the SA education system at all levels is under severe stress and that adopting the time-honoured approach that attack is the best form of defence, each level or phase blames the one below. So business, industry and the professions complain about the competencies of graduates, HE bewails the educational under-preparedness of SS leavers, SS blame primary schools, and they in turn pass the buck to the erratic provision and quality of preschool education. Yeld (2014:1) argues that although this practice of blame is understandable, it is not helpful. She recommends that the major variable, namely the educational process within each phase, should be controlled responsibly. Some of the challenges related to the changes in the national school curriculum that the SA HE sector are faced with include poor academic performance and high dropout rates. These occurrences are of particular concern to SA HE in general, and also at the institution where this investigation was conducted, namely UJ. From an institutional perspective, it is important to be able to be aware of the biographical factors and academic achievement characteristics included in the profiles of successful students. Moreover, skills form part of a holistic approach to curriculum construction.

The replacement of the NATED 550 by the NSC, awarded for the first time in 2008, has raised the question: *Does the NSC curriculum adequately equip learners to achieve success in university studies?* (Bloch, 2009:103).

The first students schooled under the OBE system, which was implemented in all SA schools in 1998 (Malan 1997:1; Malan 2001:82) and which culminated in the awarding of an NSC, entered HEIs in 2009. Over the last few years, more observers have used the term *crisis* to comment on and describe the SA school system (Bloch 2009:68). Universities need to be aware of the factors contributing to success in undergraduate studies, and apply these factors in their admission criteria in order to ensure that the desired throughput rates are achieved and the maximum subsidies are earned. This will ensure the long-term sustainability of universities as universities receive subsidies from government for every enrolment and every graduate produced.

For many students entering higher education in SA there is an articulation gap between the demands of the HE curriculum and their NSC competencies. The

position of the first-year students of 2009 has been under scrutiny since the beginning of the year (*Die Burger*, 20 August 2009), in view of claims that the 2008 NSC school-leaving qualification is of a lower standard than the previous school-leaving qualification. Skills form part of a holistic approach to curriculum construction, and the most common criticisms of the new SS curriculum are that it fails to prepare young people for HE studies and for the world of work, and that the learners fail to develop essential values, respect for themselves and others, social skills and life skills. Still, there are many things that can be done immediately that would make a difference.

In order to be successful in studying at a university, certain skills are required – skills that should be acquired mainly at SS. In January 2009, most of the first-time university entrants at SA HEIs gained access by means of the new NSC. In comparison to the SS-leavers of previous years, a greater percentage of the Grade 12s of 2008 satisfied the admission requirements of SA HEIs. Consequently, the first-year student intake of 2009 exceeded the numbers of previous years (UJ Fact Book, 2009(a)). Furthermore, it was noticeable that by the end of the first semester (in June 2009), more first-year students (i.e. first-time entrants) had terminated their studies or dropped out of SA HEIs than in previous years (Bitzer, 2009(b):225).

These cases of students failing and dropping out of university led to questions being raised as to whether the NSC curriculum equipped the secondary school learners with the necessary skills to achieve academic success at university. One of the most prominent differences between the *new* NSC and the *previous* NATED 550 (SA's school-leaving qualification prior to 2008) is the fact that the NSC no longer differentiates between higher grade and standard grade levels of assessment. Furthermore, the NSC system requires a portfolio, consisting of evidence of continuous assessment in each subject, which carries a 25% weight in the calculation of the final SS-leaving result in each subject (RSA DoE, 2004:14).

In view of the effect of OBE and the revised Curriculum 2005, as well as the current unacceptable throughput rate, it has become important to determine the profiles of successful students before and after the introduction of the NSC. Since the end of 2008, Grade 12 learners have completed their SS education under the *new*

curriculum. This particular event will historically be remembered as a turning point in both the SA SS and HE landscapes. This implies that the 2008 first-year intake was the last group of students who matriculated (in 2007) with the previous school-leaving certificate, namely the NATED 550, and furthermore, that the 2009 first-year intake was the first group of students who matriculated (in 2008) with the *revised* NSC.

2.3 THE SOUTH AFRICAN NATIONAL SECONDARY SCHOOL CURRICULUM

In the following paragraphs, the major events associated with curriculum reform in SA, as well as a description of the major differences and similarities of the revised NSC and the NATED 550 curriculums will be provided.

2.3.1 Curriculum reform in South Africa

In the “Foreword by the Minister of Basic Education” in the *Curriculum Assessment Policy Statement (CAPS)* (RSA DoE, 2011:1), the minister, Angie Motshekga, stated that “our national curriculum is the culmination of our efforts over a period of seventeen years to transform the curriculum bequeathed to us by apartheid. From the start of democracy we have built our curriculum on the values that inspired our Constitution (Act 108 of 1996)”.

The preamble to the Constitution states that the aims of the Constitution are to:

- Heal the divisions of the past and establish a society based on democratic values, social justice and fundamental human rights;
- Improve the quality of life of all citizens and free the potential of each person;
- Lay the foundation for a democratic and open society in which government is based on the will of the people and every citizen is equally protected by law; and
- Build a united and democratic SA able to take its rightful place as a sovereign state in the family of nations (RSA DoE, 2011:1).

According to Angie Motshekga, SA Minister of Basic Education, education and the curriculum have an important role to play in realising the above-mentioned aims (RSA DoE, 2011:1). In 1997, the SA DoE introduced outcomes-based education to overcome the curricular divisions of the past, but the experience of its implementation prompted a review. This led to the first curriculum revision: the *Revised National Curriculum Statement Grades R to 9* (in 2000) and the *National Curriculum Statement Grades 10 to 12* (in 2002). Ongoing implementation challenges resulted in another review (in 2009), and the SA DoE revised the *Revised National Curriculum Statement of 2002* to produce the *Curriculum Assessment Policy Statement (CAPS)* document. Since 2012, the two have been combined into a single document, known as the *National Curriculum Statement Grades R to 12*. This document builds on the previous curriculum, but also updates it and aims to provide clearer specification regarding what is to be taught and learnt on a term-by-term basis (RSA DoE, 2011:1).

In the article, “Knowledge, Knowers and Knowing: Curriculum Reform in South Africa”, Ursula Hoadley (2011:143-158) reports on a critical analysis of curriculum reform in SA, which she performed by referring to the changes that took place in three major areas, namely in knowledge (what should be taught), knowers (learners) and knowing (learning). Hoadley (2011:143-158) also reflects upon historical events and states that the first curriculum reform emphasises a shift away from the theoretical approach and towards everyday knowledge, and that a conflation of the curriculum and pedagogy took place. The next two reforms revised this curriculum by moving back to an emphasis on subject-based knowledge. In the following paragraphs, the changes that occurred during the three identifiable reforms, and how each of the reforms impacted on learning, will be discussed.

Since the African National Congress (ANC) came into power in South Africa in 1994, a strong curriculum policy has been implemented, resulting in four major reforms in just 19 years. Hoadley (2011:143-158) focuses on the first three reforms.

The first reform was the implementation of the new curriculum, known as Curriculum 2005, in 1998. The first reform was implemented under the leadership of Sibusiso Bengu, SA Minister of Education from 1994 to 1999. The second reform was the

revision of Curriculum 2005, resulting in the National Curriculum Statement (NCS) for Grades R to 9, in 2002. The second reform was implemented under the leadership of Prof. Kader Asmal, SA Minister of Education from 1999 to 2004. The third curriculum reform was a revision of the NCS, in 2009, which included Grades 10 to 12. The third reform was implemented under the leadership of Naledi Pandor, SA Minister of Education from 2004 to 2009. On 10 May 2009, the portfolio of the minister of education was split into two roles, namely the Minister of Basic Education (responsible for overseeing primary and secondary education), and the Minister of Higher Education and Training (responsible for overseeing the Higher Education sector). Since 2009 Angie Motshekga is the SA Minister of Basic Education and Blade Nzimande is the SA Minister of Higher Education (RSA DoE, 2013).

The goal with these reforms was to rectify the inequalities caused by the apartheid government through creating a new national curriculum that valued human rights, democracy and equality. The curriculum that was implemented during the apartheid government's rule was one characterised by the separation of each race, namely African, White, Coloured and Asian, each having their own Department of Education and their own curriculum. The Whites created the core curriculum, with the other races often getting a 'watered down' version (Hoadley, 2011:146). This core curriculum emphasised a strong knowledge base and followed a fundamentalist pedagogy where learners were viewed as ignorant and undisciplined and thus required the guidance of the educator. This curriculum emphasised rote memorisation and no critical and analytical thought.

The first reform was described by Hoadley (2011:147) as the "knowers and the conflation of curriculum and pedagogy", which emphasises the shift from theoretical knowledge to every-day knowledge. During this phase of reform, the curriculum emphasised integrated learning and learning areas as an initiative to challenge the previous, traditional apartheid curriculum. Furthermore, the first reformed curriculum emphasised different sites of learning and prescribed standardised content for all learners, irrespective of race. Examples of the integrated subjects were evident in the introduction of the subject Life Orientation.

These changes caused great shifts by weakening the boundaries between education and training, between everyday and theoretical knowledge, as well as between the different subjects and subject disciplines. Some of the major goals of the first reform curriculum were to be learner centred, to emphasise the inclusion of every day knowledge and to challenge the traditional curriculum by emphasising the application of the effective learning methods of each discipline (*i.e. how it is taught*), rather than the specific content knowledge (*i.e. what is taught*).

The second reform was described by Hoadley (2011:152) as moving “towards knowledge projects”. Hoadley (2011:153) states that criticisms of Curriculum 2005 (C2005) are that it was driven by policies rather than by pedagogical principles, and that there is limited evidence of the effective implementation of C2005 in schools. According to Jansen (2003:4), this policy was a symbol of the political and ideological principles underpinning the curriculum and that the political principles of C2005 were clear, but not the pedagogical principles. Educators did not possess a sound conceptual framework and did not understand this new curriculum, which was to be implemented in their classrooms.

The goal of the reform was to strengthen implementation, but according to Muller (2000:181), there were conceptual flaws stemming from the fact that the reason for integration was not clear in terms of the pedagogy. The biggest problem with this curriculum is that teachers had to decide on the content that should be taught, and which, according to Bourdieu (1976:120), could lead to teachers using content relevant to their middle-class life, advantaging the middle-class learners and disadvantaging those from the working class. Bernstein (2000:158) also stated that the boundaries are often blurred between theoretical and every-day knowledge, the working-class learners learned every-day knowledge at school, and did not in essence attain the subject knowledge needed to increase their skills in more intellectually challenging contents. This concern was to be taken into account and this reform decided that they had to move towards a more subject-based curriculum.

The third reform was described by Hoadley (2011:156) as “knowing subduing”, which criticised OBE for the fact that the learners were performing poorly on national and standardised tests. The third reform was aimed at once again strengthening

implementation, but also asking teachers exactly what part of the implementation they struggled with. It was agreed that a strong subject-based curriculum plan had to be set in order to communicate clearly specified content and methods. According to Young (2010:24), an un-specified curriculum has social implications where this curriculum type further advantages the already advantaged learners.

It was thus clear that Bernstein's three-message system, which included curriculum, pedagogy and assessment, was needed as the framework of a solid curriculum (Bernstein, 2000:160). The three-message system is translated as clear subject knowledge, skill standards and effective assessment policies. This reform moved away from the vagaries of OBE towards a knowledge society based on specific knowledge structures. This approach to curriculum supports Bernstein's view of the classification and frame of a curriculum (Bernstein, 2000:163), resulting in strong boundaries between subjects and further resolving the problem of the conflation of curriculum and pedagogy.

It can be concluded that it is evident that Curriculum 2005 emphasised a basis in every-day knowledge, whereas the NCS 2002 and 2009 focused on a curriculum that emphasised the notion of subject-based knowledge more clearly. It is clear that the *how* of the curriculum (i.e. methodology) cannot replace the *what* of the curriculum (i.e. content). According to Hoadley (2011:157), there needs to be a clear distinction between knowledge, learning and learners, but that each of these components of the curriculum must interact with one another in order to form a curriculum where specific knowledge is clearly transferred to learners in a manner that they will understand and find worthwhile. However, Hoadley (2011:158) concludes that the curriculum has come full circle, firstly moving away from a subject-based approach during apartheid, and then returning to indulging a subject-based curriculum. An illustrative overview of the four major curriculum reforms in the SA SS curriculum is provided in Figure 2.2.

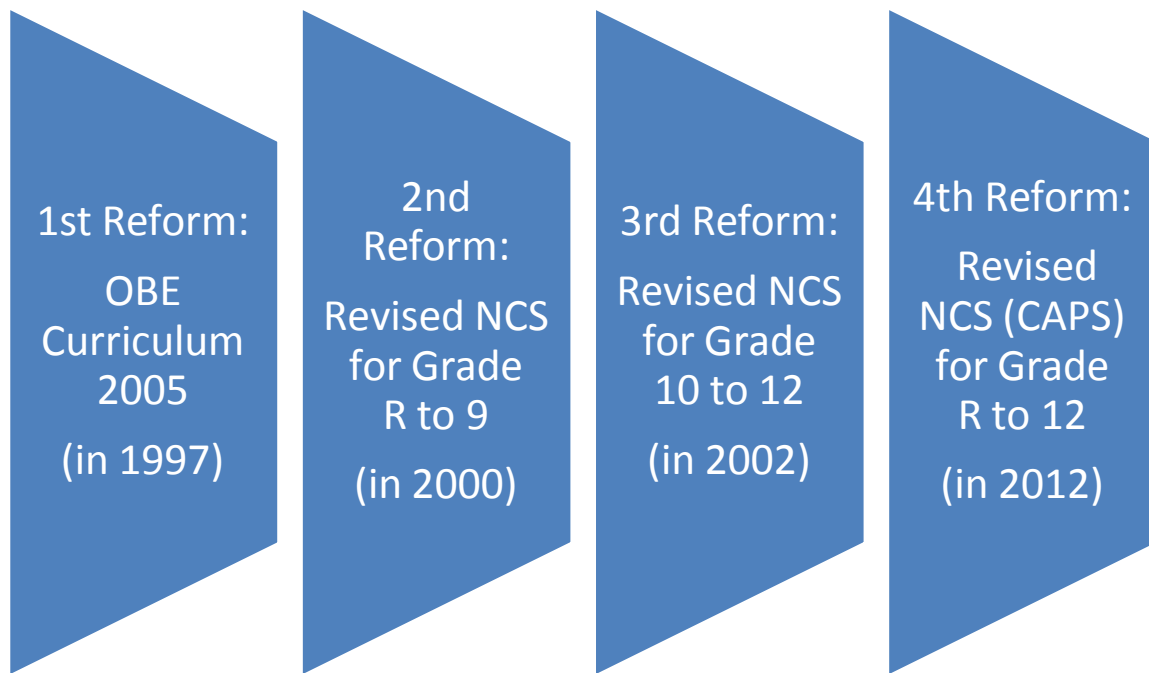


Figure 2.2: The four major reforms in the South African school curriculum

Source: CAPS – RSA DoE, 2011a,b,c,d:1

2.3.2 Description of the revised National Curriculum (since 2008) – NSC

SA’s OBE curriculum was implemented in all SA schools in 1998 (Malan, 1997:1). The RSA DoE (2004:21) announced that the NSC would be awarded for the first time in 2008. The RSA DoE (2004:22) defines a qualification as “a planned combination of exit-level learning outcomes and assessment standards, which has a defined purpose and that is intended to provide learners with applied competence and a basis for further learning”. The NSC is a new certificate to be issued at the final exit point for school learners, namely at the end of Grade 12. It will be issued for the first time in 2008 when it replaces the existing Senior Certificate (RSA DoE, 2009).

Learners who have successfully completed Grades 10 to 12 (General) under the new modernised and internationally comparable NCS will be issued with a NSC that is registered at Level 4 on the National Qualifications Framework (NQF) (RSA DoE, 2008).

In addressing the question of whether the NSC curriculum is succeeding in adequately preparing SA learners for university studies, the purpose and outcomes of this curriculum statement should be borne in mind. The RSA DoE (2008:6) defines the NSC qualification as “a planned combination of exit-level learning outcomes and assessment standards, which has a defined purpose and that is intended to provide learners with applied competence and a basis for further learning”.

The *Norms and Standards for Educators* (RSA DoE 2000, Glossary) define an outcome as “the contextually demonstrated end products of the learning process”. This is broadly aligned with Spady’s (1994:1) definition of outcomes as “high quality, culminating demonstrations of significant learning in context”. However, this raises the question of whether demonstrating learning in context is the same thing as demonstrating competence. The important point here is that both definitions emphasise that learners must *demonstrate* their ability to *apply* the things that they have learnt at school. Spady (1994:1) uses outcomes as the defining element of OBE in stating that “outcomes-based education means clearly focusing and organising everything in an educational system around what is essential for all students to be able to do successfully at the end of their learning experiences. This means starting with a clear picture of what is important for students to be able to do, then organizing the curriculum, instruction, and assessment to make sure this learning ultimately happens”.

Three categories of outcomes are distinguished in the outcomes-based curriculum (Malan, 1997:40):

- Academic outcomes are those outcomes which require learners to demonstrate their ability to think within every discipline, to understand each of the disciplines and to be self-directed within each discipline.
- Process outcomes relate to skills or abilities, for example learners’ ability to work in groups, to be accountable for their work, to make decisions, to solve problems and to communicate.
- Attitude outcomes require that learners should demonstrate a love for learning, concern for others and self-esteem.

The assessment of the NSC is based on the SA Qualifications Authority's (SAQA's) seven critical cross-field outcomes, namely:

- The *ability to identify and solve problems* with responsible decisions shown to be the result of critical and creative thinking;
- The *ability to work effectively with others* as a member of a team, group, organisation and community;
- The *ability to organise and manage oneself* and one's activities responsibly and effectively;
- The *ability to collect, analyse, organise* and critically evaluate information;
- The *ability to communicate effectively*, using visual, mathematical and/or language skills in oral and/or written presentation;
- The *ability to use science and technology* effectively and critically, showing responsibility towards the environment and health of others; and
- The *ability to demonstrate an understanding* of the world as a set of related systems by recognising that problem-solving contexts do not exist in isolation.

Furthermore, the RSA DoE (2000:18) recommends that all NSC programmes of learning and all teaching and learning practices make students aware of the importance of:

- *Reflecting on and exploring* a variety of strategies to learn more effectively;
- *Participating as responsible citizens* in the life of local, national and global communities;
- *Being culturally and aesthetically sensitive* across a range of social contexts; and
- *Exploring education and career opportunities* and developing entrepreneurial opportunities.

All of these outcomes refer to abilities and skills to be acquired by learners, and in this study one of the research aims is to investigate whether the NSC equipped the learners with these skills.

2.3.3 Contrasting the NATED 550 with the NSC

Since the introduction and implementation of OBE and the institution of C2005 in 1997, the South African school curriculum has moved towards a more learner-centred approach. This means that teachers have to facilitate learning and learners have to participate in the process of learning actively in order to develop a range of skills. The main purpose of the implementation of C2005 was to address the inequalities in education that came to exist during South Africa's apartheid era and to bridge the gap between historically advantaged and disadvantaged schools. To address the shortcomings of C2005, the Revised National Curriculum was implemented for Grades R to 9 in 2004, and for Grades 10 to 12 in 2006 (Chisholm, 2005:193). Although the main aim of the new curriculum was to address the aforementioned inequalities in education between the historically advantaged and disadvantaged schools, Harley & Wedekind (2003:25-46) cite a number of studies that indicate that the gap between historically advantaged and disadvantaged schools has in fact widened, because formerly disadvantaged schools do not have the resources and infrastructure to apply OBE effectively (Chisholm, 2005:208). The result is that first-year students who entered university from 2009 onwards are students who obtained their NSC under the Revised National Curriculum. This implies that the gap in the academic backgrounds of students from previously disadvantaged schools and first-year students from formerly advantaged schools is now even bigger than it was between students who matriculated from the 'apartheid' school curriculum.

In order to be successful in studying at a university, certain skills are required – skills that should be acquired mainly at secondary school level. In January 2009, most of the first-time university entrants at SA HEIs gained access by means of the *new* NSC, awarded for the first time at the end of 2008. In comparison to the secondary school leavers of previous years, a greater percentage of the Grade 12s of 2008 satisfied the admission requirements of SA HEIs. Consequently, the first-year student intake of 2009 exceeded the numbers of previous years (UJ Fact Book, 2009a). Furthermore, it was noticeable that by the end of the first semester (in June 2009), more first-year students (i.e. first-time entrants) terminated their studies or dropped

out of SA HEIs than in previous years (Bitzer, 2009(b):225). These occurrences have led to questions being raised as to whether the NSC curriculum equipped the secondary school learners with the necessary skills to achieve academic success at university. Bloch (2009:103) observed that the position of the first-year students has been under scrutiny since the beginning of 2009, in view of claims that the 2008 NSC school-leaving qualification is of a lower standard than the previous matriculation qualification.

One of the most obvious differences between the *new* NSC and the *old* NATED 550 (SA's school-leaving qualification prior to 2008) is the fact that the NSC no longer differentiates between higher grade and standard levels of assessment. Furthermore, the NSC system requires a portfolio, consisting of evidence of continuous assessment in each subject, which carries a 25% weight in the calculation of the final school-leaving result in each subject (RSA DoE, 2004:14).

The Council for Quality Assurance in General and Further Education and Training (UMALUSI) was established in terms of the General and Further Education and Training Quality Assurance Act, 2001 (Act No. 58 of 2001) (RSA DoE, 2004:16; UMALUSI, 2009). In 2009, UMALUSI needed to review its examination systems and published a research report entitled *From NATED 550 to the new National Curriculum: Maintaining Standards in 2008*. The main reason for the UMALUSI project was that the first cohort of learners following the new curriculum for the NSC qualification had reached Grade 12 level. The UMALUSI research project was specifically designed to provide information on the comparability of the old NATED 550 and the new NSC, and on the comparative difficulty of the examinations associated with each (UMALUSI, 2009). The idea was that this information would be used to adjudicate the standard of the new NSC exams of 2008, in relation to the standard of the previous Senior Certificate exams.

The major differences between the NATED 550 and the NSC curriculums are:

- In the NSC no distinction is made between higher grade and standard grade.
- The NSC reporting system no longer indicates symbols, but numerical scores between 1 and 7.

- The NSC requires learners to do seven subjects. Four subjects are compulsory which include two languages, either Mathematics or Mathematical Literacy, and Life Orientation (Dlomo, Jansen, Moses & Yu, 2011:697).
- Eight learning areas were implemented in the NSC, each with their own specific learning outcomes, namely:
 1. Languages, Literacy and Communication – Learners must show a critical awareness of language usage.
 2. Human and Social Sciences – Learners must demonstrate a critical understanding of how South African society has changed and developed.
 3. Technology – Learners must apply a range of technological knowledge and skills ethically and responsibly.
 4. Mathematical Literacy, Mathematics and Mathematical Sciences – Learners must use mathematical language to communicate mathematical ideas, concepts, generalisations and thought processes.
 5. Natural Sciences – Learners must be able to apply scientific knowledge and skills in innovative ways.
 6. Arts and Culture – Learners must reflect on and engage critically with arts experience and works.
 7. Economic and Management Sciences (which comprises Accounting, Business Economics and Economics) – Learners must demonstrate managerial expertise and administrative proficiency.
 8. Life Orientation – Learners must understand and accept themselves as unique and worthwhile human beings.

In the following section of this chapter, challenges related to the transition from SS to HE will be discussed.

2.4 CHALLENGES RELATED TO THE TRANSITION FROM SECONDARY SCHOOL TO HIGHER EDUCATION

The first cohort of learners wrote the NSC as SS-leaving qualification in November 2008. The following challenges related to the changes in the national SS curriculum were identified through a review of national and international literature.

2.4.1 Challenges created by differences between secondary school and higher education

According to Cook (2011) the following are major challenges in the transition from secondary school to university:

- Almost all of the *rules of the game* that students have so carefully learned and mastered over the preceding 12 years of schooling are either discarded or modified drastically, for example, the strictly controlled, daily operational routine in the school system which is mainly driven by external motivation of learners by educators versus academic and social independence experienced at HEIs.
- The learner-educator relationship changes dramatically, as do expectations for engagement, independent work, motivation and intellectual development.
- All of this occurs at a time when many young people are experiencing significant independence from family and from the role of the child for the first time.

In her profession as SS-educator and HE-lecturer, the researcher regularly presents talks on guidelines of *how to prepare oneself for success at university* to groups of SS learners and first-year university students. These presentations introduce the fact that, in order for SS learners to prepare themselves for success at university, they need to take cognisance of what the *major differences between SS and university* are (Oosthuizen, 2014:1-2). According to the researcher these differences include:

- SS-classes are relatively small and learners enjoy personal attention from their teachers, whereas at university, there are up to as many as 500 students in

one class and lecturers will not necessarily get to know students personally (McIlroy, 2003:14).

- SS-learners are often motivated by fear of punishment or by nagging of teachers to submit homework and assignments, whereas successful university students are known to be self-motivated and driven to perform (McIlroy, 2003:14; McKenzie & Schweitzer, 2001:24).
- The work-load increases at university and students entering university would need some essential life skills to cope with these challenges e.g. time management and study skills (McIlroy, 2003:15).
- University-students experience more independence than at SS. Students entering university for the first time need to realise that with independence comes responsibility for them to make the correct choices and to be accountable for their own actions and progress (McIlroy, 2003:15; McKenzie & Schweitzer, 2001:28).
- The SS-curriculum is based on general formative value of a variety of subjects and the university curriculums are faculty-based and directed towards preparation of specific careers i.e. the *learning-to-be* principle (UJ, 2009b:11).

2.4.2 Challenges in the higher education sector

The SA SS-system is struggling to provide the HE sector with enough quality students who have the appropriate knowledge and skills to be academically successful (Bunting, 2004:22). The current generation of learners in SA schools, however, seems to be underperforming to an even greater degree than the previous generations (Masitsha, 2004:214). Reasons for this underperformance include the fact that the medium of instruction is often a learner's second or third language, as well as overcrowded classes, truancy, a shortage of textbooks, the low socio-economic status of parents, and the increase in adult fatalities owing to HIV and AIDS resulting in more child-headed households (Masitsha, 2004:220-236; C2005 and OBE, 2009).

The academic problems students often encounter are exacerbated at some institutions when students are enrolled for courses that do not suit them well. These students often dropout because they find it very difficult to cope with the academic

demands of the courses they have enrolled for (Bunting, 2004:22). Under-prepared students frequently struggle to succeed at university and some have argued that they simply are not good enough to succeed (Tinto, 1993:44). The HE sector is thus faced with a situation where top learners from schools are struggling to cope with the high academic level encountered in university courses (*Cape Times*, 7 July 2009; Tinto, 1998:168).

According to Van Zyl (2010:46), the diversity of the SA society and the country's unique history have given rise to particularly complex challenges that involve the whole society, including the HE sector. These challenges include persistently high levels of social and economic inequality among the student population, the fact that the education system was historically, and is still to some extent, divided along racial lines, and that success in HE is biased towards specific demographic groups within society (Nkoane, 2006:243). As the demographic makeup of the student population has changed, many non-traditional and first generation entrants have become part of the HE system. These groups often find the transition into HE even more difficult than more traditional university entrants. Nkoane (2006:244) summarises the situation as follows: "These challenges include demands for institutions to respond to societal needs, to ensure access, equity and support for increasingly diverse student and staff populations, and to respond to fiscal constraints coupled with expectations for accountability, effectiveness, and quality."

The student retention and success rates in SA's current HE system are very poor. The effect of these poor student success rates on the SA labour market has been devastating (Eiselen & Geysler, 2003:118). While SA is a developing economy with a great need for university graduates to lead and fuel economic growth (Scott *et al.*, 2007:5), up to 12 000 students are lost annually because of their not achieving academic success and consequently dropping out of HEIs. (MacGregor, 2001:1). The HE sector has a very important role to play by contributing to economic growth, the deepening of democracy in SA society and assisting SA to become a modern industrialised nation (Bawa, 2001:10; Stumpf, 2001:223).

As a result of the need of HE to adapt to the first cohort of students entering into universities after the introduction of the NSC, the admission and selection

requirements were adapted for the 2009 student intake. The change in the university admission system will be discussed in paragraph 2.6 of this chapter.

One of the major challenges for HEI is that they were required to set admission requirements for the 2009 student intake without examination exemplars available during 2008 and without the promised pilot that would have provided an idea of the metric that would be used in the NSC given that HG and SG had fallen away. As things turned out higher marks are generally obtained on the NSC in comparison to the NATED 550. Consequently most universities set their admission requirements too low for the 2009-intake resulting in more at risk students being admitted (Jacobs, 2010:33).

Higher Education South Africa (HESA) commissioned the National Benchmark Tests Project (NBTP) to be conducted in seven SA HEIs. One of the aims of the NBTP was to identify skills and knowledge gaps in students' academic literacy (AL), quantitative literacy (QL) and mathematical skills. Often a mismatch in the type, level and standard of skills and capabilities, which are required for university success, and the skills and capabilities that were acquired at SS, particularly critical in the area of quantitative literacy (mathematical literacy and numeracy), exists (Scott *et al.*, 2007:6). In comparison with the rest of the world, South Africa scores relatively low in terms of the literacy, numeracy and mathematical skills of secondary school-leavers (Griesel, 2006; Scott *et al.*, 2007; Van Schalkwyk, 2008:48).

Preliminary NBTP results based on the February 2009 pilot raised questions about the validity of the NSC results (Scott *et al.*, 2007:3). One of the conclusions drawn from the findings of the NBTP is that the high dropout rate experienced at universities is rooted in poor schooling. The perceptions are that increased access to HEIs should lead to improved success and graduation rates. Contrary to expectation, a decrease in the HEIs' retention rates and an increase in dropout rates were noted since 2002. According to Bloch (2009:114), OBE had never intended to stop the proper learning of basic skills. Learners should be equipped with the necessary skills, knowledge and attitude to achieve success in life after the senior secondary school phase.

There is a gap between students' NSC skills, competencies, knowledge, attitude and the demands of the HE curriculum. According to Bloch (2009:29), there are still many things that can be done immediately that would make a difference to the academic achievement of university students. "Even though there is no quick fix, if we do not start now, with urgency, with unity, we will never achieve anything in the long term either. Without a sense of urgency, our country will surely end in serious trouble, and the loss of our human potential will be unforgiveable" (Bloch 2009:29).

2.5 THE SOUTH AFRICAN HIGHER EDUCATION LANDSCAPE

Since 1994, the HE system in SA has undergone significant changes as part of the broader transformation processes linked to the democratic project promoting open access to HE in SA (RSA DoE, 2013:2). The changes have been informed by a plethora of policy processes and interventions ranging from the NCHE and the White Paper on HE in the 1990s and the National Plan for HE and its associated institutional restructuring framework to the introduction of a new funding formula and the establishment of an external quality assurance system in the early 2000s. More recently, the Green Paper on Post-School Education and the National Development Plan have revisited and highlighted the ongoing challenges that have an impact on the role and contribution of HE in the SA context (Bitzer, 2009(a)).

In 2003, the minister of education announced drastic changes to the HE landscape in SA. The mergers and rationalisation plans prescribed by the state have included, among other things, the merging of various HEIs (universities and technikons) and, as a result, the total number of institutions of higher learning has been reduced from 36 to 21 (Jansen, 2003:29). One of the significant mergers in the HE field is the merger between the Rand Afrikaans University, Vista University Soweto and East Rand campuses, and the Technikon Witwatersrand to form the University of Johannesburg.

Blade Nzimande's promotion of the idea of open access and free education for all has led to large numbers of prospective students flocking to universities since the beginning of 2009. Demand has increase to such an extent that there was a

stampede and one fatality at the UJ gates in January 2012. Yeld (2014:1) states that the sheer size and pervasiveness of the admission to HE challenge are daunting. Even though the HE participation rate (i.e. the age-appropriate proportion of citizens accessing HE) is low for a country, of SA's size and developmental status, attrition rates are high. Only about one in four students in contact institutions complete their undergraduate curricula within the intended time, and only half of the students who were admitted into undergraduate programmes, graduate (Yeld, 2014:1).

2.6 THE SOUTH AFRICAN UNIVERSITY ADMISSION REQUIREMENTS

The expansion envisaged in the National Development Plan and the recently released white paper may involve the admission of students who are even less well prepared for HE, because the HE sector currently absorbs a very high proportion of those who are eligible for admission. In the following paragraphs the SA university admission requirements and scores associated with the NATED 550 and NSC curriculums will be described and compared.

2.6.1 M-scores used in the calculation of university admission scores with the NATED 550 results

An M-score system is used, according to which points are awarded for the six best symbols (taking faculty- and programme-specific requirements into account) on the *final* Grade 12 report according to the scale below (Dockweiler & Willis, 1984:496; Nair, 2002:101). A maximum of six subjects is used to calculate the M-score, with a maximum M-score of 30. (UJ, 2009(b):14). The Senior Certificate Grade 12 results are converted into M-scores, calculated by awarding values according to Table 2.1.

Table 2.1: M-score values awarded to symbols achieved in the Senior Certificate (NATED 550)

Percentage achieved	Subject symbol	Higher grade	Standard grade
80 to 100	A	5	4
70 to 79	B	4	3
60 to 69	C	3	2
50 to 59	D	2	1
40 to 49	E	1	0

Source: FEFS Yearbook (2009(c):14)

2.6.2 APS used in the calculation of university admission scores with the NSC results

In reaction to the changes in the secondary school curriculum, South African universities changed from using the M-score system, which was used for the last student intake in 2008, to the revised APS system, which was used for the first student intake in 2009.

The NSC, for which students are schooled under the OBE system, was awarded for the first time in 2008. As a result, previous university admission requirements were revised for the 2009 enrolment. A new seven-point APS was implemented at UJ for NSC results based on the achievement rating for each subject. A prospective student's APS is the sum of his/her achievement ratings for the seven school subjects, keeping in mind that the performance rating achieved for Life Orientation is divided by two. A minimum APS of 28 is required in order for a student to be considered for admission into the three-year B.Com. (Finance) degree at UJ. Four compulsory NSC subjects, namely: Mathematics (and *not* Mathematical Literacy), Life Orientation as well as a Home Language and a First Additional Language (where *one* of the NSC languages is the same as the student's tuition language at university

i.e. English or Afrikaans), are required. Furthermore, a minimum of three electives from the designated 20-credit NSC subject list e.g. Accounting, Economics, Business Studies, Physical Science, Geography, History, should be included (UJ 2011a:30).

The admission requirements of the UJ are similar to those of other HEIs in SA and are in line with the recommendations made by Killen, Marias & Loedolff (2003: 147-148), who stated that when universities admit students they need to be reasonably confident that those students will be capable of successfully completing the course in which they are permitted to enrol. Koh & Koh (1999:13) mention that it seems obvious that the more that is known about what can affect student performance, or what can predict academic success, the better educators and policy makers will be able to make informed decisions on curriculum, selection criteria and admission qualifications.

The new APS has been developed for NSC based on the Achievement Rating for each subject. The APS is basically the sum of the achievement ratings for the seven school subjects, keeping in mind that the performance rating achieved for Life Orientation must be divided by two. If an applicant included more than the minimum of three electives in his/her NSC, the four compulsory subjects and the three *best* of the electives are used in the calculation of the APS (UJ Faculty of Economic and Financial Sciences Yearbook, 2009(b):15).

The NSC Grade 12 results are converted into APS, calculated by awarding the values indicated in Table 2.2.

Table 2.2: APS values awarded to symbols achieved in the NSC

Percentage Achieved	NSC achievement Rating	APS achievement rating
80 to 100	7	7
70 to 79	6	6
60 to 69	5	5
50 to 59	4	4
40 to 49	3	3
33 to 39	2	2
25 to 32	1	1

Source: UJ FEFS Yearbook (2009b:15)

2.6.3 Contrasting of M-scores against the APS

One of the most evident differences between the NSC and the old NATED 550 is the fact that the NSC (new system) no longer differentiates between higher grade and standard grade levels of assessment. Furthermore, the NSC system requires a portfolio, comprised of evidence of continuous assessment in each subject. The learner's portfolio mark carries a 25 % weight in the calculation of the final school-leaving result (RSA DoE, 2004:13).

University admission requirements were revised for the 2009 enrolment. The change from the previous M-score to the new APS system was necessary to accommodate the new national secondary school curriculum.

General admission requirements for undergraduate programmes at UJ include scholastic achievements – indicated by an M-score derived from a Senior Certificate obtained prior to 2008 or APS derived from a NSC obtained from 2008, language requirements and faculty and qualification/module requirements.

Jacobs (2010:188) explains that universities admit first-year students on the basis of a certified copy of their SS-leaving results prior to registration at the institution. The symbol statement of the Senior Certificate (until 2007) and the NSC (from 2008) are the official documents issued by the DoE on completion of the final SS examination.

The university converts the individual Grade 12 subject results to a value between 0.5 and 5 to calculate a total M-score (matriculation score). The M-score applies to all Grade 12 learners who wrote the NATED 550. The first group of students with a NSC entered higher education institutions in 2009 and the APS is calculated with values ranging from 1 to 7. The maximum value for the M-score is 30 (i.e. 6 subjects x 5 points) and for the APS it is 49 (7 subjects x 7 points). Note that institutions do not uniformly apply the same weights to all subjects. For instance, at some universities, Life Orientation is included when calculating the APS, whereas at other institutions it is excluded. Table 2.3 provides the conversion scheme.

Table 2.3 Grade 12 results converted to M-score and APS

Percentage achieved	Symbol achieved	M-score (NATED 550 scale of achievement)		APS (NSC scale of achievement)
		Matriculants prior to 2008		Matriculants as from 2008
		Higher grade	Standard grade	
80 to 100	A	5	4	7
70 to 79	B	4	3	6
60 to 69	C	3	2	5
50 to 59	D	2	1	4
40 to 49	E	1	0	3
33 to 39	F	0.5	0	2
25 to 32	G	0	0	1

Source: Jacobs (2010:189)

2.7 THE B.COM. (FINANCE) PROGRAMME AT THE UNIVERSITY OF JOHANNESBURG

2.7.1 The programme

The BCF programme is offered in the DFIM in the FEFS at UJ. The primary purpose of this qualification is to prepare students for careers in financial management, financial planning, investment management, property valuation and management, and accounting as well as to provide a basis for further study (UJ FEFS Yearbook, 2009b:34).

2.7.2 The curriculum

It is a fundamental requirement that in order for any degree in finance to be relevant to the workplace, the outcomes and curriculum of such a degree should be aligned with the requirements of the financial and business world. According to Macfarlane and Ottewill (2001:187), the purpose of a financial management curriculum is often conceived in terms of providing students with the skills and knowledge required to participate in some form of financial activity. Liyanage and Poon (2003:1) argue that finance studies are not only about theoretical constructs, but also about practical resolutions and problem solving in the real business world. This view is supported by Elliott and Glaser (1998:2), who suggest that finance courses should emphasise both theory and practice, but that the real focus should be on catering for the needs of industry and business. The UJ's BCF curriculum includes all generic requirements for all B.Com. undergraduate programmes, as identified by Erasmus and Loedolff (2005:271), namely financial management, business planning, integration, strategic management, general management and multifunctional skills.

Note that the curriculum of the BCF programme did not change from 2008 to 2009. The composition of the BCF curriculum over three years is illustrated in Table 2.4.

Table 2.4: B.Com. (Finance) curriculum at the University of Johannesburg

FIRST-YEAR CURRICULUM	
SEMESTER 1:	SEMESTER 2:
<ol style="list-style-type: none"> 1. Accounting 1A 2. Analytical Techniques A 3. Business Management 1A 4. Commercial Law 1A 5. Economics 1A 	<ol style="list-style-type: none"> 1. Accounting 1B 2. Financial Management 1B 3. Business Management 1C 4. Commercial Law 1B 5. Economics 1B
SECOND-YEAR CURRICULUM	
SEMESTER 1:	SEMESTER 2:
<ol style="list-style-type: none"> 1. Accounting 2A 2. Business Information Systems 2A 3. Investment Management 2A 4. Taxation Planning 2A 5. Economics 2A <i>or</i> Property Valuation and Management 2A 	<ol style="list-style-type: none"> 1. Accounting 2B 2. Financial Management 2B 3. Investment Management 2B 4. Taxation Planning 2B 5. Economics 2D <i>or</i> Property Valuation and Management 2B
THIRD-YEAR CURRICULUM	
SEMESTER 1:	SEMESTER 2:
<ol style="list-style-type: none"> 1. Financial Management 3A 2. Financial Planning 3A 3. Investment Management 3A 4. Accounting 3A <i>or</i> Property Valuation and Management 3A 	<ol style="list-style-type: none"> 1. Financial Management 3B 2. Financial Planning 3B 3. Investment Management 3B 4. Accounting 3B <i>or</i> Property Valuation and Management 3B

Source: UJ FEFS Yearbook (2009b:34)

The following observations are made from Table 2.4:

Compulsory modules in the BCF curriculum are:

- First year – Semester 1: Accounting 1A, Analytical Techniques A, Business Management 1A, Commercial Law 1A, and Economics 1A.
- First year – Semester 2: Accounting 1B, Financial Management 1B, Business Management 1C, Commercial Law 1B, and Economics 1B.
- Second year – Semester 1: Accounting 2A, Business Information Systems 2A, Investment Management 2A, and Taxation Planning 2A.
- Second year – Semester 2: Accounting 2B, Financial Management 2B, Investment Management 2B, and Taxation Planning 2B.
- Third year – Semester 1: Financial Management 3A, Financial Planning 3A, and Investment Management 3A.
- Third year – Semester 2: Financial Management 3B, Financial Planning 3B, and Investment Management 3B.

Elective modules in the BCF curriculum are:

- First year – Semester 1: No elective modules.
- First year – Semester 2: No elective modules.
- Second year – Semester 1: Economics 2A *or* Property Valuation and Management 2A.
- Second year – Semester 2: Economics 2D *or* Property Valuation and Management 2B.
- Third year – Semester 1: Accounting 3A *or* Property Valuation and Management 3A. It should be noted that Accounting 3A is a prerequisite for application to the B.Com. Honours in Financial Management.
- Third year – Semester 2: Accounting 3B *or* Property Valuation and Management 3B. It should be noted that Accounting 3B is a prerequisite for application to the B.Com. Honours in Financial Management.

2.7.3 The outcomes

Students graduating in the BCF programme would have acquired theoretical knowledge and practical skills in:

- Cost and management accounting, capital investment decisions, risk and return, working capital management, business valuations, sources of finance, and leasing and dividend decisions.
- The financial planning environment, regulatory environment, financial planning products and services, and performing basic financial planning for clients;
- Equity analysis, interest-bearing investments, foreign exchange management, derivative instruments, wealth maximisation, and portfolio management for individuals and institutions;
- Valuing different types of properties, and property management;
- Generally Accepted Accounting Principles (GAAP), completing, analysing and interpreting of financial and group statements; and
- Business taxation rules and requirements affecting companies (UJ FEFS Yearbook, 2009b:34).

2.7.3.1 General outcomes of the programme

Career opportunities associated with B.Com. (Finance) graduates are as follows: financial manager, stockbroker, financial planner, financial analyst, portfolio manager, financial consultant, investment advisor, accountant, cost and management accountant, securities dealer, and property valuer (UJ FEFS Yearbook, 2009b:36).

The BCF curriculum, as illustrated in Table 2.4 in paragraph 2.7.2 above, is recommended for students who intend on completing the Honours degrees, and subsequently, the professional designations, accredited by each of the professional bodies, as illustrated in Table 2.5.

Table 2.5: Postgraduate studies, professional designations and professional bodies associated with the B.Com. (Finance) qualification

HONOURS DEGREE	PROFESSIONAL DESIGNATION	PROFESSIONAL BODY
B.Com. Honours in Financial Management	Chartered Management Accountant	Chartered Institute of Management Accountants (CIMA)
B.Com. Honours in Financial Planning	Certified Financial Planner	Financial Planning Institute of Southern Africa (FPI)
B.Com. Honours in Investment Management	Certified Financial Analyst	Chartered Financial Analyst (CFA) Institute

Source: UJ FEFS Yearbook (2009b:34)

2.7.3.2 Purpose of the five compulsory modules of the first semester

In this research study, the average of the first-semester university mark of five compulsory modules is included as one of the independent variables. Each of the five compulsory modules is on NQF Level 5 and carries a weight of 16 credits in the BCF programme.

In the BCF programme offered at UJ, the compulsory modules of the first semester of the first year of study, each with their purpose (UJ Yearbook, 2009(b):100-122), are as follows:

- Accounting 1A – The purpose of this module is to cover the basic concepts of accounting, the recording of various elementary transactions and the accounting cycle. This module forms the basis for further modules in the analysis, interpretation and application of accounting.
- Analytical Techniques A – The purpose of this module is to define terms commonly used in statistics and to show how a set of data can be organised in a meaningful way and presented so as to reveal or enhance its fundamental

properties. The students will also learn how to describe and model linear relationships between two or more variables. A student credited with this module would have developed a basic ability to analyse a time series, and to implement the basic concepts of probability, probability distributions, sampling distributions and elementary matrix operations.

- Business Management 1A – The purpose of this module is to provide students with a global overview of Business Management as a science and to prepare them for challenges in the SA business environment in a multicultural context. Furthermore, it aims to equip the students with intellectual competencies and practical skills of the management principles in the functional management areas of Operational Management, Purchasing Management, Logistics Management, as well as an understanding of the Entrepreneurial process and Business Ethics.
- Commercial Law 1A – The purpose of this module is to equip students with knowledge and understanding of the basic concepts of the law of contract and its requirements of validity.
- Economics 1A – The purpose of this module is to introduce students to basic introductory economic concepts and basic knowledge of micro-economics.

2.7.4 The admission requirements

Faculty minimum requirements for degree programmes: National Senior Certificate (NSC) – 2008

The following are specific minimum admission requirements in respect of B.Com. degree studies in the Faculty of Economic and Financial Sciences.

NSC (Grade 12) with university exemption and an APS of at least 28, an APS of at least 4 in the language of teaching and learning, an APS of at least 4 in another recognised language, an APS of at least 3 for Mathematics, an APS of at least 4 for Life Orientation, and an APS of at least 4 for two other subjects and APS of at least 3 for the remaining subject (UJ FEFS Yearbook, 2009b:16).

The minimum admission requirement for a bachelor's degree is a NSC with a minimum of 30% in the language of learning and teaching of the HEI as certified by UMALUSI, coupled with an achievement rating of 4 or better in four subjects from the designated 20-credit subject list. (*Government Notice, No. 751, 11 July 2008*)

The following are specific minimum admission requirements in respect of B.Com. degree studies in the Faculty of Economic and Financial Sciences.

Senior Certificate (NATED 550 Grade 12) with university exemption and an M-score of at least 15, a B-symbol for Mathematics SG or an E-symbol for Mathematics HG, a D-symbol for English first language HG or a C-symbol for English second language (UJ FEFS Yearbook, 2009b:16).

Admission requirements for candidates who completed the Senior Certificate:

- Senior Certificate with matriculation endorsement;
- Mathematics: Higher grade at least 40 % (E-symbol) or standard grade at least 70 % (B-symbol);
- Language requirements: English (first language) higher grade at least 50% (D-symbol) or English (second language) higher grade at least 60% (C-symbol); and
- M-score of 15.

Selection criteria: Selection is based on academic merit and availability of places. (UJ FEFS Yearbook, 2009b:30-31).

Table 2.6: Admission requirements for the B Com (Finance) degree at the University of Johannesburg

M-SCORES (Matriculants prior to 2008)	APS SYSTEM (Matriculants from 2008)
15	28
Mathematics HG Mathematics SG	Mathematics = 3 (Mathematical Literacy not considered)
English	English (language of university tuition) = 4 Another language = 4

Source: UJ FEFS Yearbook (2009b:20)

2.7.5 The graduation requirements

The minimum duration of study for the BCF degree programme is three years of full-time studies. In order to graduate, all of the 28 modules (as illustrated in Table 2.4) must be passed with a minimum of 50% per module (UJ FEFS Yearbook, 2009b:34).

2.8 SUMMARY AND REVIEW OF THIS CHAPTER

This chapter provided the theoretical framework behind the *academic focus* of this study. This was done through a critical review of national and international *curriculum-related* literature. A detailed description of students' transition from SS to HE in SA, including the principles and outcomes of the previous and current FET-phase curriculum, were provided. Furthermore, the current challenges related to the students' transition from SS to HE were discussed. Characteristics of SA HEIs in general and more specifically the admission requirements and an explanation of the BCF programme at UJ, including this programme's curriculum, outcomes, admission requirements and graduation requirements, were provided. One of the major challenges for HEI is that they were required to set admission requirements for the 2009 student intake without examination exemplars available during 2008 and without the promised pilot that would have provided an idea of the metric that would be used in the NSC given that HG and SG had fallen away. As things turned out higher marks are generally obtained on the NSC in comparison to the NATED 550. Consequently most universities set their admission requirements too low for the 2009-intake resulting in more at risk students being admitted. In the following chapter, a critical review of literature on undergraduate student success at university will be provided.

CHAPTER 3 UNDERGRADUATE STUDENT SUCCESS AT UNIVERSITY

“Success is the sum of small efforts, repeated day in and day out.”

Robert Collier

3.1 INTRODUCTION AND OVERVIEW OF THIS CHAPTER

As reported in Chapter 2, paragraph 2.4.2, the retention and success of university students are major focuses of concern and are among the key challenges for universities worldwide. The purpose to be served by this chapter is to report on existing research findings through a critical review of international and national literature on undergraduate student success at university. Details regarding definitions and importance of undergraduate student success, factors contributing to student success, profiles of successful students in general, and particularly in commerce- and finance-related university programmes, are investigated and will be reported on in this chapter.

An illustrative overview of this chapter is provided in Figure 3.1.

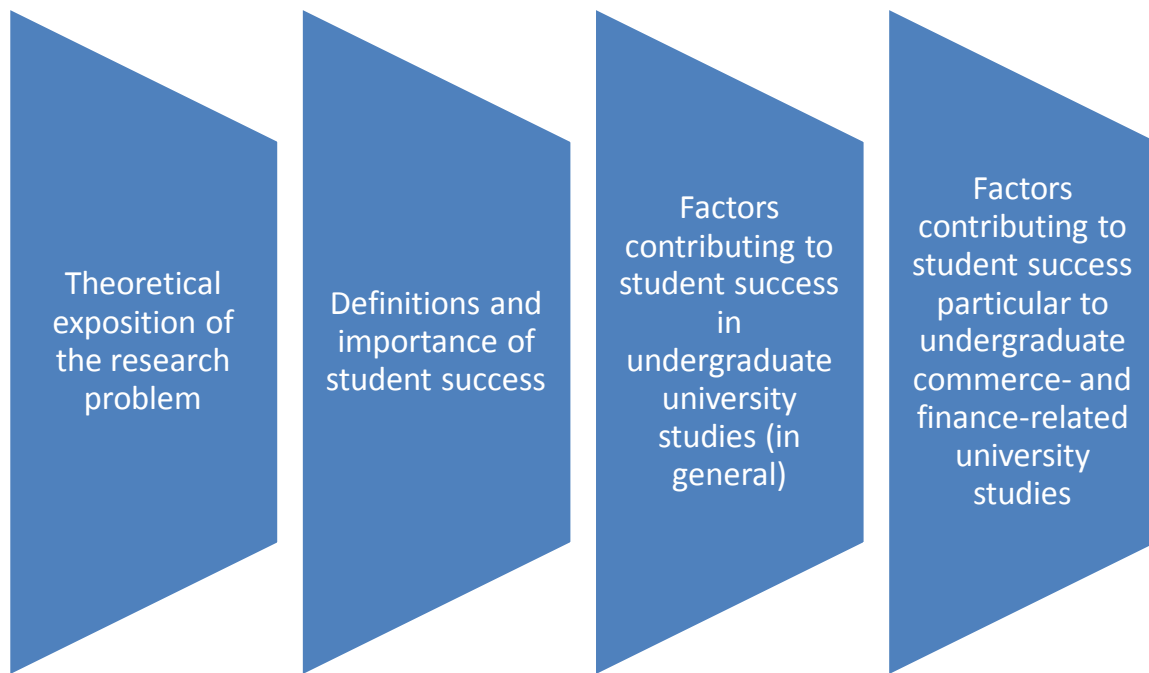


Figure 3.1: Illustrative overview of Chapter 3

3.2 THEORETICAL EXPOSITION OF THE RESEARCH PROBLEM

National and international research findings indicate a problem with student success and non-completion of HE studies in general, and more specifically with commerce-related studies, at university level (Doran, Bouillon & Smith, 1991:74; Frick, 2008:31; Lourens & Smit, 2003:169; Steenkamp, Baard & Frick, 2009:113; Yorke & Longden, 2004:4). Joubert (2010:194) found that non-completion rates are generally the highest among first year university students.

Kantanis (2006:31) is of the opinion that HEIs are bound not only to investigate the reasons for voluntary student departure pertinent to their individual local context but to accept the responsibility of addressing the identified issues as well. Initiatives to improve institutional retention need to be predicated on a sound understanding of the causal relationship between students' university experience and student departure. Killen *et al.* (2003:147) recommended that HEIs should be proactive in attempting to improve the success rates of their students at the same time as they strive to maintain or improve their academic standards. Indeed, both students and lecturers have a joint responsibility towards student success, and the first stage in accepting

this responsibility is for both students and lecturers to gain a thorough understanding of the complex processes that influence student success and failure (Killen *et al.* 2003:157).

Eiselen, Strauss and Jonck (2007:40) state that the investigation of factors associated with both success and failure at university is of particular importance to SA HEIs because of the fact that, at school level, an OBE system has been introduced and the curriculums of each of the compulsory and elective subjects have changed. The first students schooled under the OBE system, implemented in all schools in 1998 (Malan 1997:1; Malan 2001:82), and which culminated in the awarding of an NSC, entered SA HEIs in 2009.

Furthermore, the changing SA educational and economic landscapes require change in the supply of graduates with particular, scarce skills. HEIs have an obligation to provide graduates with the necessary knowledge and skills required for success in the world of work in the 21st century. Furthermore, it is expected of graduates to be able to contribute effectively to the economic development of the country.

At the 20th World Economic Forum held in Dar es Salaam in May 2010, Ebrahim Patel, SA Minister of Economic Development, said that it is important to equip learners with skills which are in demand, namely finance, business, management and engineering. Furthermore, Patel said that if SA's education system does not succeed in equipping learners with the appropriate skills in future, this country's (and this continent's) international competitiveness and unemployment rate will not improve (*Die Burger*, 6 May 2010).

Although there is currently a decreasing demand for employees in sectors that were in demand a decade or more ago, such as the agricultural and mining sectors, there is currently an increasing demand for employees in the financial services sector. The economic reality of this situation is a non-sustainable supply of skills in SA's economy. The current state of affairs is that an insufficient number of graduates with commerce- and finance-related skills are provided by the educational system.

Educational outcomes of the NSC, as described in Chapter 2, paragraph 2.3.3, refer to abilities and skills to be acquired by learners. For the purposes of this study, the

concept *skill* refers to “the ability to do something” (Jacobs & Gawe, 1998:201). A skill is related to a particular context: applying a skill without proper understanding of its context will result in meaningless activities.

In the context of HEIs, Mwamwenda’s (1995:89) description of cognitive development, which entails “the development of a person’s mental capacity to engage in thinking, reasoning, interpretation, understanding, knowledge acquisition, remembering, organising information, analysis and problem-solving”, applies. Bloom (1976:51) stated that various general factors form part of learnt skills that are necessary to successfully complete learning tasks. Some of these general factors are: the ability to give attention to a task, study techniques, the ability to use a library and effective utilisation of time. Under specific factors Bloom (1976:33) indicates the necessity of previously acquired knowledge for the completion of a specific learning task. This he calls the “existing structure of knowledge at the time of learning” (Bloom, 1976:33). Previously acquired concepts, skills, attitudes and appreciations need to be integrated with new learning. Upcraft, Gardner and Associates (1989:193) state that fostering student success and achievement in the first year of study also requires placing first-year students in courses appropriate to their skill level. When underprepared students are given the tools to succeed in first-year courses, they develop an early pattern of successful academic behaviour. Picklesimer, Hooper and Ginter (1998:272-274) are of the opinion that life skills are necessary to meet the demands placed on young people, thereby implying that increased life skills can be seen as a factor that contributes toward career maturity. UJ’s “learning-to-be” initiative emphasises the importance of acquiring career-specific skills during undergraduate and postgraduate studies (UJ FEFS Yearbook, 2009:44). This institutional goal addresses the critical cross-field outcome of “*exploring education and career opportunities, and developing entrepreneurial opportunities*” (RSA DoE, 2000:18), mentioned in Chapter 2, paragraph 2.3.2.

Before the introduction of the NSC, numerous studies were undertaken locally and internationally regarding the prediction of success at the undergraduate level of HE. Dawes, Yeld and Smith (1999), Hou (1998), Huysamen (2001; 1999), McKenzie and Schweitzer (2001), Smith, Edminster and Sullivan (2001), and Ting and Robinson

(1998) are only a few of those who have published on this topic. However, not many researchers investigated the prediction of success based on the NSC school-leaving results in SA.

Owing to the fact that no significant research has been done on the profile of successful BCF students and with the purpose of performing a comparison between the profiles of students entering university *before* and *after* the introduction of the NSC, the researcher decided to focus on the *profiles of successful B.Com. (Finance) students entering a South African university before and after the introduction of the National Senior Certificate*.

3.3 DEFINITIONS AND IMPORTANCE OF STUDENT SUCCESS

3.3.1 Definitions of student success

Student success is a highly complex matter and a holistic model of student learning can best explain this complexity. In the *Collins Shorter English Thesaurus* (1993:655), the meaning of the term *success* is described as: “arrive, do all right for one-self, do the trick, flourish, gain, one’s end, get to the top, prosper, thrive, triumph, and turn out well”. A narrow definition of student success would include the elements of successfully completing the academic courses the student is enrolled for and persisting to graduation (Upcraft, Gardner & Barefoot, 2005:8).

In this study, the term *academic achievement* refers to the final (end-of-semester and/or end-of-year) result of a student published by the DoE or an HEI after the completion of all assessments required for the completion of a particular module (e.g. Accounting 1A) or subject (e.g. NSC Mathematics) and expressed as a percentage (%), a symbol (e.g. A, B, C), or a number (e.g. 7, 6 or 5), each representing a particular level of academic performance. For the purposes of this study, student success is measured in terms of the student’s academic achievement.

In an article in the *Mail and Guardian* (2011:3) the following observations were made regarding successful undergraduate students in the 21st century:

- Successful students become very engaged when they are at the university, i.e. with the curriculum and with the opportunities for research and with social aspects of the institution;
- Successful students work together;
- They look at different points of view;
- They look at different parts of a problem;
- They think about problems in new ways;
- There is a sense of creativity about the way they think;
- They really dive into their subject matter;
- They understand how to interact in the world we live in today;
- Their primary emphasis is on the analysis of the content, putting together content from various disciplines and being expressive about the content and being able to communicate it; and
- They have a sense of not just having content mastery but being able to analyse, being able to look at a text critically, being able to make connections between subjects and being able to write effectively.

In a presentation delivered to school principals by Prof. Jonathan Jansen, Rector and Vice-Chancellor of the University of the Free State, at the International Pre-University College on 20 November 2013, the presenter emphasised the fact that educators and parents can inspire students towards success by *thinking and talking differently about time, talent and trust*. These three principles are embedded in the foundation of effective motivation towards success.

In this study the operational definition of a *successful student* is a student who has succeeded in meeting all of the graduation requirements for the BCF degree within the minimum time, namely three consecutive years. Similarly, in this study the operational definition of an *unsuccessful student* is a student who has not completed the BCF degree within three consecutive years because of dropout, non-completion or extension of study time owing to the failure and repetition of modules.

3.3.2 Importance of student success in higher education

According to Kuh (2006:2) as cited in Van Zyl (2010:17) student academic success and graduation can rigidly be called the *key outcomes* envisioned by the different parties involved in HE. The wide-spread occurrence of poor student academic performance and low retention is widely recognised as can be seen in terms used to describe the issue including, a *worldwide phenomenon*, a *national issue* within HE in the USA and a *long standing and nettlesome issue* (Van Zyl, 2010:17-18).

The following quote from Scott, Yeld and Hendry (2007:7) illustrates the seriousness of the problem in SA context:

“It has become widely accepted that, in the context of globalisation and the knowledge economy, HE is vital for national development, not least in terms of the need for an appropriate number and mix of graduates of good quality. The extent to which the graduate output of SA’s HE sector is meeting national needs is therefore a key concern, highlighted recently by government’s emphasis on economic development and the setting of a 6% growth-rate target. Prima facie indicators, such as shortages of high-level skills and the concurrent incidence of graduate unemployment, suggest that there is a significant mismatch between the output of the sector and the needs of the economy. In addition, data produced recently by the DoE, in the form of national cohort studies, show some disturbingly low levels of performance in the sector.”

One of the reasons why student success and retention have received so much research attention is that poor student performance and retention have a number of negative effects on the society as a whole and specifically on the direct stakeholders in HE. According to Van Zyl (2010:19-20) the direct stakeholders in student success include the students themselves, their families, HE institutions and government. The direct stakeholders all have specific reasons for being involved in HE and a set of expectations of the possible outcomes that might be achieved. The importance of student success to a specific group of stakeholders is usually strongly linked to the specific interests of the group of stakeholders. As such, the interests of students and their families are of direct and personal nature because the individual student’s

success in achieving a degree, results in providing vital social and financial support to his/her family. Student success and retention is especially important to HE institutions because students are the main products that the HEI produce and students also form part of the client base of the HEI (Yorke & Longden, 2004:8). For most HEIs, the issues of student success, retention, economic sustainability and ensuring the long term viability of the academic programmes are interlinked (Van Zyl, 2010:19). When HEIs allocate resources to students who do not complete their studies, it results in financial wastage. Furthermore, government's interest in student success is related to the fact that governments spend large sums of public money to fund HEIs. When students fail or leave without attaining a qualification, a lot of this money is lost (Yorke & Longden, 2004:9-10). HE also plays a crucial role in the country's economies and social well-being of the population because graduates tend to be socially influential people who often make above average contributions to the societies they live in (Yorke & Longden, 2004:9-10).

Before the introduction of the NSC, various studies focused on the success of students entering the HE system in general (Baard *et al.* 2010; Eskew & Faley 1988; Mji 2002; Myburgh 2005; Schroeder 1986) and on the first-year success of finance students, particularly at various SA universities (Baard *et al.* 2010; Du Plessis, Müller & Prinsloo 2005; Moore 2005; Müller, Prinsloo & Du Plessis 2007; Steenkamp *et al.* 2009). In the following paragraphs, factors found to be associated with university success in general will firstly be discussed, and secondly, factors specifically associated with success in finance-related courses will be explored.

3.4 FACTORS CONTRIBUTING TO STUDENT SUCCESS IN UNDERGRADUATE UNIVERSITY STUDIES (IN GENERAL)

Factors found to be associated with university success in general include:

- **Cognitive factors:** for example, academic background, cognitive ability, communication skills, language proficiency, performance in mathematics, reading ability and comprehension skills (Auyeung & Sands, 1994; Baard *et al.*, 2010; Bartlett, Peel & Pendlebury, 1993; Bergin, 1983; Bohlmann & Pretorius, 2002; Du Plessis *et al.*, 2005; Eiselen *et al.*, 2007; Eiselen & Geysler, 2003; Eskew & Faley, 1988; Gul & Fong, 1993; Halabi, Tuovinen & Farley, 2005; Killen *et al.*, 2003; Koch & Kriel, 2005; Koh & Koh, 1999; McKenna, 2004; Moses, 1987; Oosthuizen & Eiselen, 2011; Oosthuizen & Eiselen, 2012; Pretorius & Bohlmann, 2003; Steenkamp *et al.*, 2009).
- **Personal or behavioural characteristics of students:** for example, approaches to learning (such as deep and surface learning), class attendance, learning styles, study habits and time management (Baard *et al.*, 2010; Booth, Lockett & Mladenovic, 1999; Du Plessis *et al.*, 2005; Eiselen & Geysler, 2003; Jones & Fields, 2001; Killen *et al.*, 2003; Mji, 2002; Müller *et al.*, 2007; Oosthuizen & Eiselen, 2011; Oosthuizen & Eiselen, 2012; Steenkamp *et al.*, 2009; Stout & Ruble, 1991).
- **Biographic and demographic factors:** for example, age, gender, race and part-time work by students (Auyeung & Sands, 1994; Baard *et al.*, 2010; Bartlett *et al.*, 1993; Buckless, Lipe & Ravenscroft, 1991; Carpenter, Friar & Lipe, 1993; Doran, Bouillon & Smith, 1991; Du Plessis *et al.*, 2005; Koh & Koh, 1999; Lipe, 1989; Müller *et al.*, 2007; Oosthuizen & Eiselen, 2012).
- **Affective factors:** for example, students' motivation to complete the degree programme, self-concept, self-confidence and success expectations (Carpenter *et al.*, 1993; Eskew & Faley, 1988; Gul & Fong, 1993; Harrell, Caldwell & Doty, 1985; Kantanis, 2006; Killen *et al.*, 2003; Müller *et al.*, 2007; Myburgh, 2005; Oosthuizen & Eiselen, 2012; Steenkamp *et al.*, 2009).
- **Factors external to the students:** for example, instructional efficiency and the type of learning institution, e.g. residential or distance-learning institution (Halabi

et al., 2005; Jones & Fields, 2001; Kantanis, 2006; Killen *et al.*, 2003; Oosthuizen & Eiselen, 2012).

HE research indicates that the best factors contributing to whether or not a student will graduate are academic preparation and motivation (Pascarella & Terenzini, 2005). Unfortunately, the strategy most frequently used to influence control over the effects of academic preparation and motivation of students is to have more stringent selection policies. However, this strategy is not a viable alternative in the South African context. A decade of research into effective HEIs in the United States of America points to a third factor that has the potential to exercise a positive impact on student success, namely student engagement (Kuh, Kinzie, Schuh & White, 2005:21).

Reports of the South African Survey of Student Engagement (SASSE) (2010:33; 2009:36) state that student engagement is defined by two key components. "Firstly, the amount of time and effort students spent on academic and other activities that lead to the experiences and outcomes that constitute student success; and secondly, the ways in which institutions allocate resources and organisation of learning opportunities and services to encourage students to participate in and benefit from such activities." The SASSE which was developed to measure student engagement, identifies five benchmarks for effective educational practice, namely: level of academic challenge, active and collaborative learning, student-staff interaction, enriching educational experiences and supportive campus environment. Data on these SASSE benchmarks can support an increased focus on improving teaching and learning practices in SA HE as proposed by the Council of Higher Education (CHE) (Scott *et al.*, 2007:4).

In a study conducted by Paulsen and Feldman (2007:353-401) it was found that students with more sophisticated beliefs about the nature of knowledge and learning were more likely than their peers to use educationally productive cognitive and behavioural strategies in their learning. Beliefs about one's ability to learn had the most significant and substantial effects, and the structure of knowledge had the second most significant and substantial effects on students' use of self-regulated

cognitive and behavioural learning strategies, associated with undergraduate success.

McIlroy (2003:1-2) states that it is expected of university students to be able to apply a number of skills, capabilities, attitudes and qualities intelligently and in ways that will benefit them in their studies and future employment. Students are therefore required not only to be literate, numerate and have computer competency, but to acquire and exhibit capabilities, attitudes and qualities necessary for inclusion in the modern world. In Table 3.1 standard expectation of graduates are listed in four categories namely, skills, capabilities, attitudes and qualities.

Table 3.1: Standard expectations of the graduate

Skills	Capabilities	Attitudes	Qualities
<ul style="list-style-type: none"> • Brevity and succinctness • Budget construction • Citation and attribution • Copy-editing • Decision making • Defining and classifying • Document design • Drafting and editing • Essay writing • Financial management • Indexing • Information finding • Innovation • Interpersonal communication • Letter and memo writing • Meeting deadlines • Negotiation • Networking • Non-verbal communication • Numeracy and statistics • Oral presentation • Political awareness • Position paper writing • Problem solving • Proposal writing 	<ul style="list-style-type: none"> • Synthetical thinking • Analytical thinking • Teaching and instructing • Facilitating • Argument analysis • Deductive and inductive reasoning • Effective thinking • Information needs evaluation • Evaluation techniques • Problem definition • Solution identification • Setting criterion • Managing change • Managing projects • Team working • Understanding group dynamics • Contextualising • Intuition and insightfulness • Understanding principles • Self-management • Concept mapping • Graphical presentation • Self-marketing 	<ul style="list-style-type: none"> • Proactive • Responsive • Ethical • Positive • Discretion • Trustworthy • Responsible • Persuasive • Self-awareness • Visionary • Cultural awareness • Reflective practitioner • Anthropological • Research orientation • Self-development • Self-control • Inter-disciplinary 	<ul style="list-style-type: none"> • Integrity • Objectivity • Honesty • Leadership • Self-confidence • Adaptability • Assertiveness • Openness • Determination • Finisher • Self-discipline • Sociability • Empathetic understanding • Motivator • Experimentation • Sociological understanding • Self-evaluative • Sense of humour • Playfulness • Story teller • Consistency

Skills (continued)	Capabilities (continued)		
<ul style="list-style-type: none"> • Record keeping • Report writing • Target setting • Time management • Use electronic communication • Use information and communication technology effectively • Write fluent and effective text 	<ul style="list-style-type: none"> • Stress recognition and management • Conflict resolution • Self-teaching • Understanding issues • Giving and receiving feedback • Consequence assessment • Concept application • Theory application • Model use and construction • Data management • Information process understanding • Information flow understanding 		

Source: McIlroy (2003:1-2)

From the review of relevant literature, the following skills have been found to be associated with successful academic behaviour at undergraduate level:

- *Decision-making skills:* The process of making choices, which is known as valuing, compels the learners to think critically about issues. The learners would have to weigh the advantages and disadvantages of a choice before they make a decision (Jacobs, 2010: 49,142; Jacobs & Gawe, 1998:45,73; Joubert, 2010:18). The capacity to reason inevitably leads to an urge to do things one's own way, to question reality, to express one's own point of view and to propose changes – in other words, to apply critical thinking (Kealey,

Holland & Watson, 2005:34). This urge is of immense value to a community because it enables people to continuously invent new solutions to problems that endanger the survival of the community. However, critical thinking skills are sometimes suppressed (in children as well as in adults) because some people feel threatened when their actions or powers are questioned.

- *Ability to practically implement learning content:* Learners should be engaged in meaningful learning, which needs to be worthwhile to them, useful to their own lives and of lasting value. Rote memorisation contrasts sharply with meaningful learning. In the participative approach, the practice of rote memorisation is strongly discouraged (Jacobs & Gawe, 1998:76). A main concern of participative educators is the tendency of learners to cram vast amounts of useless information into their minds, pretending that they understand the material, only to forget it again shortly after the examination. Meaningful learning is closely related to perception, which is regarded as the mental action that occurs in learners' minds immediately after they have observed something that is potentially meaningful.
- *Critical thinking skills:* Jacobs and Gawe (1998:72) define critical thinking as a general term which includes "reasoning (to reach conclusions through connected thought), independent thinking (the ability to have an opinion which does not depend on another person's opinion) and creative thinking (thought which is inventive and imaginative)". Critical thinking promotes the ability of learners to think for themselves, to use their imaginations and to be assertive. Through critical thinking, learners learn to participate fully in life and not to stand on the sidelines while others tell them what to think and do (Jacobs, 2010:159,163; Joubert, 2010:83,101). Unless educators promote critical thinking, they may be guilty of what Paulo Freire (1970) has called the "banking system of education". The danger of a banking type of education is that educators 'deposit' and 'transfer' knowledge into the 'empty minds' of their learners. Knowledge is treated like an object – a commodity that can be exchanged – instead of something that people create. Most learners are not given the opportunity to think for themselves or to discover things for themselves. They do not develop a critical awareness of the world. All of this

shapes their view of the world and what they can – or can't – do to change things.

- *The ability to reflect on a variety of strategies to learn more effectively:* Jacobs and Gawe (1998:14) describe learning as small-scale research. Cekiso (2011:1299) argues that successful learning is possible only if learners search for, and discover, the knowledge that makes them operate confidently in their life-world.
- *Self-confidence and positive self-concept:* The learners are empowered by a positive self-concept. According to Jacobs and Gawe (1998:18,22) a learner with a positive self-concept understands his/her own potential, strengths and weaknesses. Furthermore, learners with self confidence and positive self-concept are learning to accept themselves and striving to become the best they can ever be in view of their natural endowments.
- *Responsible citizenship:* Another major task of education is to develop responsible citizens. Responsibility goes hand in hand with discipline. Discipline leads learners towards self-control and personal accountability. Learners who assume full responsibility for their learning accept that they will perform well only if they apply themselves diligently to their work (Jacobs, 2010:59; Jacobs & Gawe, 1998:38).
- *Problem-solving skills,* for example, allow students to discover things for themselves and to engage in solving problems (Jacobs & Gawe, 1998:35,232). Students learn through self-activity and the development of these skills contributes to the development of a healthy and productive person and allows students to organise, use and derive meaning from the wealth of information at their disposal. Co-operative methods are particularly recommended for problem-solving or when creativity or divergent thinking is called for. Students will firstly develop an elementary set of thinking skills and as they gain confidence in working in groups they may progress to higher, complex levels of thinking (Jacobs, 2010:141; Joubert, 2010:26).

Besides previous achievement, various cognitive factors such as ability, aptitude, cognitive drive and cognitive development, as well as non-cognitive factors such as motivation, self-esteem, interest, attitude, goal-setting and study habits were

identified as possible factors contributing to academic success and failure. From this research it is evident that academic performance is influenced by a broad spectrum of factors that constitute a complex interdependent unit. It is also clear that predicting performance in HE expresses only probabilities, in the sense that no matter how accurate and reliable earlier measures are, they do not account for later changes in a student's interests, attitudes, career aspirations and social settings.

From a study conducted by Hendrich and Schepers (2004:250–264) it was concluded that non-cognitive variables, particularly students' attitudes towards their studies, play a significant contributory role towards academic success.

Cekiso (2011:1298–1309) states that widening access to HE has meant an increasing need for flexibility in instruction and course design to accommodate students who utilise a wide *range of learning-style preferences*. Knowledge of students' learning style preferences can aid HEIs in lecture preparation, designing lecture delivery methods, choosing appropriate technologies and developing sensitivity to different student learning-style preferences within the institution.

Optimism is considered to be a self-generating, self-fulfilling prophecy as it sustains hope for future success, and it is likely to enhance motivation, persistence, activity level, and thus positive performance (Assor & Connell, 1992; Taylor & Brown, 1988). Research has shown that high expectations for success are positively related to various types of subsequent achievement (Geiger & Cooper, 1995; House, 1995; Moore, 2005; Oliver, 1995; Pintrich & Schrauben, 1992; Pringle, 1995; Vollmer, 1986). For example, Vollmer (1986) found that expectancies for success predicted subsequent academic performance after controlling for other variables, such as past achievements, self-confidence and goals. Indeed, a number of major cognitive theories (such as locus of control, attribution theory, expectancy-value theory, self-concept theories, efficacy theory and self-worth theory) suggest that unsuccessful students may be handicapped by being pessimistic, that is by believing that they have little ability and by not expecting to be successful. If this is so, the performance of such students could perhaps be improved by helping them to gain more positive expectations and self-perceptions, which will encourage subsequent effort, perseverance and motivation, and thus ultimately improve their performance.

International retention studies have shown that the quality of student experiences in HEIs is one of the key determinants in retention. As Tinto (1998:167), a prominent researcher on retention, has stated: “a student who is integrated into the institution both academically and socially will, other things being equal, be more likely to persist with study than a student whose academic and/or social integration is less well developed”. In the SA context, where black students, many of whom came from working class backgrounds, were enrolling at historically white institutions with Afrikaans or English as the medium of instruction, the impact of the institutional environment was likely to be even greater. Pringle (1995:252) suggests that once students are in the HE system, HE performance becomes a better predictor of subsequent performance than school marks.

In a study conducted by Favish (2005:282–286) it was discovered that the factors perceived by students to impact favourably on student performance at a SA university are as follows:

- The student’s satisfaction with the language of tuition;
- The student’s happiness with the social environment;
- The student’s happiness with the level of support provided;
- The institution’s accommodation of different cultural experiences; and
- The institution’s acceptance of the student into the programme of his/her choice.

Research done by Jordaan (2009:98-112) revealed that a good, respected lecturer makes a significant difference in the whole student academic environment, not only to improve the lecture attendance, but also to increase the students’ understanding of the subject matter. It was observed that there is a positive association between a positive lecturer evaluation and lecture attendance and success by students.

The above-mentioned skills, attitudes and characteristics, identified as factors indicative of undergraduate student success, informed the design of the research instruments of this study, namely the BCF First-year opinion survey of July 2009 (See: Appendix 1) and the BCF First-year focus-group discussions of September 2009 (See: Appendix 2).

3.5 FACTORS CONTRIBUTING TO STUDENT SUCCESS PARTICULAR TO UNDERGRADUATE COMMERCE- AND FINANCE-RELATED UNIVERSITY STUDIES

In terms of skills required, Oosthuizen and Eiselen (2011:34-35) found that decision-making skills, the ability to practically implement learning content, critical thinking skills, the ability to reflect on a variety of strategies to learn more effectively, self-confidence and a positive self-concept contribute to the success of students studying towards a BCF degree. Focusing on skills required for success in finance in particular, Booth *et al.* (1999:277) are of the opinion that the aim of the educational process in finance is to achieve high quality learning outcomes. These outcomes have been argued to include not only strong technical competencies, but also a broad understanding of the discipline, the ability to think critically, and to apply ideas and concepts to problems, and the possession of good communication skills and other related skills.

Engberg (2007:288-289) argues that students often choose academic environments (e.g. academic department or major) that are congruent with their personality types and these environments in turn place a premium on different patterns of student abilities and interests. His research on the undergraduate experience, for instance, uncovered a number of important differences in students' attitudes and self-rated skills across academic majors and concluded that the student peer group is one of the most potent sources of influence on growth and development during the undergraduate years. Intergroup learning produced a positive direct effect on students' undergraduate performance.

Jones and Fields (2001: 532) stated that the technical demands of finance have often led to discouragement, failure and poor overall student perceptions of the finance profession and curriculum. According to Steenkamp *et al.* (2009:127), some factors hampering success in first-year finance include:

- A lack of motivation;
- Lack of self-discipline, concentration and interest in the subject;
- Not asking for help;

- Not perceiving the subject to be important;
- Having a mental block or negative attitude;
- Transport issues; and
- Making unnecessary errors.

As far as cognitive skills are concerned, the results of the study by Eiselen and Geyser (2003:128) indicate that achievers in finance have, on average, better cognitive skills and obtained higher school marks than students who are at risk of failing. Similarly, Eskew and Faley (1988), Koh and Koh (1999), and Mitchell, Fridjhon and Haupt (1997) found that prior academic performance is a determinant of future academic performance. However, Bartlett *et al.* (1993) and Gist, Goedde and Ward (1996) found no significant association between academic aptitude (measured by pre-university performance) and performance in university accountancy examinations. Once students are in the HE system, HE performance becomes a better predictor of subsequent performance than school marks (Joubert, 2010:43). For example, first year performance could be a better predictor of second year performance than school marks and thus findings related to first year performance could be used to guide HEIs in their decisions as to who needs support and the nature of such support required during subsequent years of study. These facts served as motivation for the researcher to include variable of *“the BCF students’ average mark achieved in the five compulsory subjects taken during their first term at university”* into the empirical analysis of data for both the primary and secondary target groups of this study.

Furthermore, the conclusion that the skill to perform well in Mathematics is logically associated with success in finance has been made by various researchers. The following examples are reported: Eskew and Faley (1988), Gul and Fong (1993) and Koh and Koh (1999) found evidence that prior performance in Mathematics significantly explained the variance in student performance in finance degree programmes, and Amernic and Beechy (1984:13) and Wong and Chia (1996:188) found a significant interaction effect of Mathematics and English (language) on finance performance among university students.

Previous studies produced mixed results concerning the effects of finance study at secondary school on performance in the first-year university finance course. Koh and Koh (1999:15) stated that, intuitively, those with prior finance knowledge should perform better than those without such knowledge. However, results of studies in various HEIs and countries to date have not conclusively supported this presumption. Bartlett *et al.* (1993), Eskew and Faley (1988), Gist *et al.* (1996) and Gul and Fong (1993) reported significantly better performance by students with a finance background, particularly in the first or introductory finance course. Doran *et al.* (1991) supported Baldwin and Howe (1982) and Bergin (1983), by arguing that students with prior finance knowledge did better early in the course, but worse subsequently. Thus, the role of prior finance knowledge is not as clear-cut as one would have expected.

Various other skills, depending on the study field, have also been shown to be associated with academic performance. *Economic reasoning ability and the ability to interpret financial information* are viewed as critical skills in finance-related study fields (which is the focus of this study). Swart (1994:2) defines financial literacy as “the ability to read information with a financial bearing, to analyse, to evaluate, to identify (and sometimes quantify) those factors that may influence a person’s financial situation and future in a positive or negative way”. *Numerical, reading and comprehension skills* are amongst the factors contributing to success in B.Com studies, as indicated by Du Plessis *et al.* (2005:685).

Quantitative literacy is defined by Frith and Prince (2006:30) as “the ability to manage situations or solve problems in practice, and involves responding to quantitative (mathematical and statistical) information that may be presented verbally, graphically, in tabular or symbolic form; it requires the activation of a range of enabling knowledge, behaviours and processes and it can be observed when it is expressed in the form of a communication, in written, oral or visual mode”. This definition emphasises that communication of quantitative ideas using different modes is an essential component of quantitatively literate practice. The use of *quantitative literacy* (also known as *numeracy*) in people’s work, education and daily lives has assumed increasing importance in the last few decades, as most areas of society have become imbued with numbers and quantitative approaches to problems (Steen,

2006). In SA universities, many students entering HE are unprepared to meet the quantitative literacy demands inherent in university curricula (Pretorius & Bohlmann 2003:228). For many students entering undergraduate commerce- and finance-related programmes in HE in SA there is an articulation gap between the demands of the curriculum and their competencies. This mismatch is particularly critical in the area of quantitative literacy (mathematical literacy, numeracy), and if not addressed, has negative consequences for student success.

Many other success factors in commerce-related programmes have been researched, and in some cases, contradictory findings have been reported. These factors include age, gender, ethnicity, SS-leaving results, prior knowledge of mathematics, exposure to accounting, business studies and economics, language proficiency and pedagogical techniques (Bargate, 1999; Barnes, 2006; Bonner, 1999; Du Plessis *et al.*, 2005; Gammie, Paver, Gammie & Duncan, 2003; Gracia & Jenkins, 2003; Gist *et al.*, 1996; Joubert, 2010; Keef, 1992; Koh & Koh, 1999; Levy & Murray, 2005; Lipe, 1989; Moses, 1987).

3.6 DISCUSSION OF RESEARCH FINDINGS

Controversial findings were made in the critical review of literature of undergraduate student success. The researcher found that there are some discrepancies in the research findings of different researchers, namely whether taking Accounting at SS is a factor contributing to success in commerce- and finance-related university studies, and therefore a clearly defined profile of a successful BCF student does not exist. The reasons for the discrepancies in finding of various researchers include, *inter alia*:

- The use of a variety of samples. Research samples of various researchers differ in size, composition and factors included.
- The use of different research designs by various researchers. Research designs could include quantitative methods, qualitative methods or mixed methods.

In the researcher's experience as SS-educator and HE-lecturer it is evident that students who have taken one or more of the subjects in the EMS study field at SS,

have a better understanding and foundation to build their HE knowledge base in commerce- or finance-related programmes. This viewpoint is confirmed by Du Plessis *et al.* (2005:686) and Joubert (2010:41).

For the purpose of this study the following factors, as discovered in the literature review to be indicative of student success, will be investigated:

- biographical factors namely students' age, gender and ethnicity;
- students' academic achievements namely SS-leaving results expressed in either APS (for the 2009 cohort) or M-Scores (for the 2008 cohort), SS-leaving Mathematics marks (expressed in percentage), exposure to SS Accounting, Economics and/or Business Economics, and the average mark achieved for the five compulsory subjects taken in the first semester of BCF studies at university; and
- students' opinions and perceptions of skills which they required for success in BCF studies en skills which they have required during the SS studies.

3.7 SUMMARY AND REVIEW OF THIS CHAPTER

The purpose served by this chapter was to report on existing research findings through a critical review of international and national literature on undergraduate student success at university, which informed the design of the research instruments, namely the opinion survey and the focus-group discussions. Details regarding definitions and importance of student success, factors contributing to student success, profiles of successful students in general, and particularly in commerce- and finance-related university programmes, were investigated and reported on in this chapter. The literature review provides a basis for the consistent, independent, critical interpretation of and reflection in order to make valid conclusions and formulating appropriate recommendations in Chapters 5, 6 and 7 of this study. Existing knowledge about factors contributing to BCF student success is limited, and therefore this knowledge gap will be addressed in this research investigation. In the next chapter, the research design and methods adopted in this study will be described in detail.

CHAPTER 4 RESEARCH DESIGN AND METHODS

“Research is formalized curiosity. It is poking and prying with a purpose.”

Zora Neale Hurston

4.1 INTRODUCTION AND OVERVIEW OF THIS CHAPTER

In this chapter the research questions, hypotheses, aims, objectives and variables used in the study are provided. In addition to the aforementioned items, the research design and methods, including the population and sampling, research strategy and data collection procedures used in undertaking the research, as well as the measuring instruments and the methods used to do the statistical data analysis are discussed. This chapter concludes with an explanation of the reliability and validity of the measuring instruments and the ethical considerations of this study.

4.2 STATEMENT OF THE RESEARCH QUESTIONS

The **primary research question** addressed in this study is:

What differences and similarities occur in the profiles of successful BCF students entering a SA university before and after the introduction of the NSC respectively?

The **four secondary questions** that emerged from the primary research question are as follows:

Secondary research question A (SQ-A)

What are the opinions and perceptions of first-year BCF students regarding the skills that they *required* for the successful completion of the BCF programme and the skills that they *acquired* during their NSC education?

Secondary research question B (SQ-B)

What are the differences and similarities between the profiles of successful and unsuccessful BCF students entering a SA university *after* the introduction of the NSC?

Secondary research question C (SQ-C)

What are the differences and similarities between the profiles of successful and unsuccessful BCF students entering a SA university *before* the introduction of the NSC (i.e. with the NATED 550 qualification)?

Secondary research question D (SQ-D)

What are the differences and similarities between the profiles of successful BCF students entering a SA university with the NSC and those entering with the NATED 550?

4.3 HYPOTHESES

For the purpose of this study, the following hypotheses were tested:

Null hypothesis (H_0): The profiles of successful BCF students entering a SA university *before* and *after* the introduction of the NSC are the same.

Research hypothesis (H_1): The profiles of successful BCF students entering a SA university *before* and *after* the introduction of the NSC differ.

4.4 AIM AND OBJECTIVES

In the following paragraphs the aim and objectives of this study are stated.

4.4.1 Aim

The aim of this study is to determine and compare the profiles of successful BCF students entering a SA university *before* and *after* the introduction of the NSC.

4.4.2 Objectives

Based on the aim, the four objectives are as follows:

Objective A:

To determine the opinions and perceptions of first-year BCF students, at a SA university, regarding the skills that they *required* for the successful completion of the BCF programme and the skills that they *acquired* during their NSC education.

Objective B:

To determine the differences and similarities between the profiles of successful and unsuccessful BCF students entering a SA university *after* the introduction of the NSC.

Objective C:

To determine the differences and similarities between the profiles of successful and unsuccessful BCF students entering a SA university *before* the introduction of the NSC (i.e. with the NATED 550).

Objective D:

To determine the differences and similarities between the profiles of successful BCF students entering a SA university with the NSC and successful BCF students entering the same university with the NATED 550.

4.5 IDENTIFYING THE VARIABLES

Fraenkel and Wallen (2008:40) define a variable as: "A characteristic that can assume any one of several values". The different forms of variables used in this study will be discussed below:

4.5.1 The dependent variable

Fraenkel and Wallen (2008:42) state that "... the dependent variable 'depends on' what the independent variable does to it, how it affects it". In this study the dependent variable is the answer to the question: *Is the BCF student successful or*

unsuccessful? This question will be answered by the researcher from an analysis of the data obtained from the ITS system. The dependent variable is categorical, namely successfulness, which is defined as being successful or unsuccessful. For the purposes of this study, and as described in paragraph 1.8, a *successful student* is a student who has completed the BCF degree in the minimum time of three years and an *unsuccessful student* is a student who has not completed the BCF degree in three years, irrespective of the reasons for non-completion in the minimum time.

4.5.2 The independent variables

Fraenkel and Wallen (2008: 42) state that "... an independent variable is presumed to affect (at least partly cause) or somehow influence at least one other variable".

The independent variables of this study are as follows:

a) Independent variables of biographical information

- Gender – categorical variable
- Age of student when first entering university studies – quantitative (continuous) variable
- Ethnic group – categorical variable

b) Independent variables of academic achievement

- APS (2009 cohort) and M-scores (2008 cohort) – categorical variables
- Final SS-leaving results in Mathematics – quantitative (continuous) variables
- Exposure to each of SS Accounting, SS Economics and SS Business Studies – binary categorical variables
- Average marks for the five compulsory modules in the first semester of the first year of BCF university studies – quantitative (continuous) variables

4.5.3 The confounding variables

Confounding variables or extraneous independent variables (also known as the *third variable*) are variables that may influence research results but which are not a part of the particular study or are not what the researcher is interested in (Kerlinger 1986:299). Academic achievement is influenced by a host of cognitive and non-cognitive variables. For the purposes of this study the confounding variables include

students' personal characteristics and circumstances, such as learning styles, type of SS, participation in extra-mural activities, means of transport, type of accommodation, and finances. The effect of these variables on the dependent variable was not ascertained in this study.

4.6 RESEARCH METHODOLOGY

As mentioned in Chapter 1, paragraph 1.9, this study comprises three phases, namely a developmental phase, an implementation phase and an analysis/validation phase. A schematic representation of the research design of this study is provided in Figure 4.1.

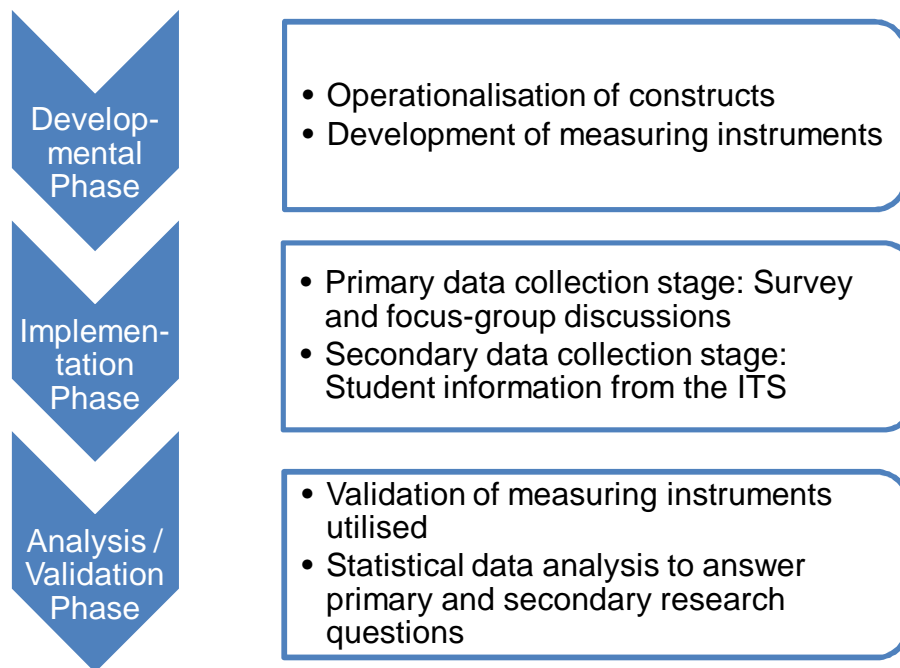


Figure 4.1: Outline of research methodology

Source: Eiselen (2006:103)

4.6.1 Development phase

The *developmental phase* of the study involves operationalising the constructs to be addressed in this study in an attempt to answer the primary and secondary research questions. In other words, determining profiles of successful BCF students entering a

SA university *before* and *after* the introduction of the NSC, with particular reference to their biographic information and their academic achievement. In particular, the developmental phase involves the identification of the target population from information extracted from the ITS, the development of a survey questionnaire and focus-group discussion questions, which will all be utilised during the implementation and analysis/validation phases of this study.

4.6.1.1 Research strategy and data collection procedures

The philosophical perspective adopted in this study is pragmatism, which, according to Saunders *et al.* (2009:598), is “a position that argues that the most important determinant of the research philosophy adopted is the research question, arguing that it is possible to work within both positivist and interpretivist position[s]”. Interpretivism is the epistemological position that advocates “the necessity to understand differences between humans in their role as social actors”, while positivism is the epistemological position that advocates “working with an observable social reality” (Saunders *et al.* 2009:593). The emphasis in pragmatism is on highly structured methodology to facilitate replication and generalisation (Saunders *et al.* 2009:598). Pragmatism thus represents a practical and integrated approach to data collection and interpretation (Vockell, 1983:98).

After a critical review of relevant literature was done (as reported on in Chapters 2 and 3), a cohort study (defined by Saunders *et al.* [2009:262] as a study that collects data from the same cases over time using a series of ‘snapshots’) was conducted on the primary and secondary target populations for a period of three years per target population, starting from the time when their SS-leaving results were published at the beginning of their first-year to the end of their third calendar year spent at university. Saunders *et al.* (2009:263) and Burgess, Sieminski and Arthur (2006:44) are of the opinion that cohort studies are relatively rare, owing to the difficulty of maintaining contact with members of the cohort from year to year.

For the primary population, a mixed-method design was used, namely *qualitative* focus-group discussions and a *quantitative* survey. In addition, secondary quantitative information was obtained regarding students’ academic achievement in

Grade 12 and in the first three years of their BCF studies, for both the primary and secondary target populations. One of the advantages of a mixed-method approach is that it enables triangulation to take place, because of the fact that various data collection techniques are used within one study to verify the validity of the results obtained (Henning *et al.* 2004:103; Mouton & Marais 1990:40; Saunders *et al.* 2009:595-602). The features and application of the measuring instruments are discussed in further detail in sections 4.6.1.3 and 4.6.1.4 below.

For the purpose of this study, the primary target population is the BCF students who entered the UJ for the first time in 2009, after being the first group of learners who matriculated with the NSC school-leaving qualification in 2008. The primary target population completed survey questionnaires and participated in focus group discussions, the results of which are reported on in Chapter 5. Each student in the primary target population's biographic and academic information were extracted from the university data base (ITS system) and statistically analysed as reported on in Chapter 6.

For the purpose of this study, the secondary target population (or control group) is the BCF students who entered the UJ for the first time in 2008, after being the last group learners who have matriculated with the NATED 550 school-leaving qualification in 2007. The secondary target population did not complete survey questionnaires and did not participate in focus group discussions, but their biographic and academic information were also extracted from the ITS system and statistically analysed as reported on in Chapter 6.

The timelines of the cohort study and intervals of data collection for the primary and secondary target population are illustrated in Figure 4.2 and Figure 4.3 respectively.

Primary Target Population:
First-time entering B.Com. (Finance) students in 2009 at the University of Johannesburg

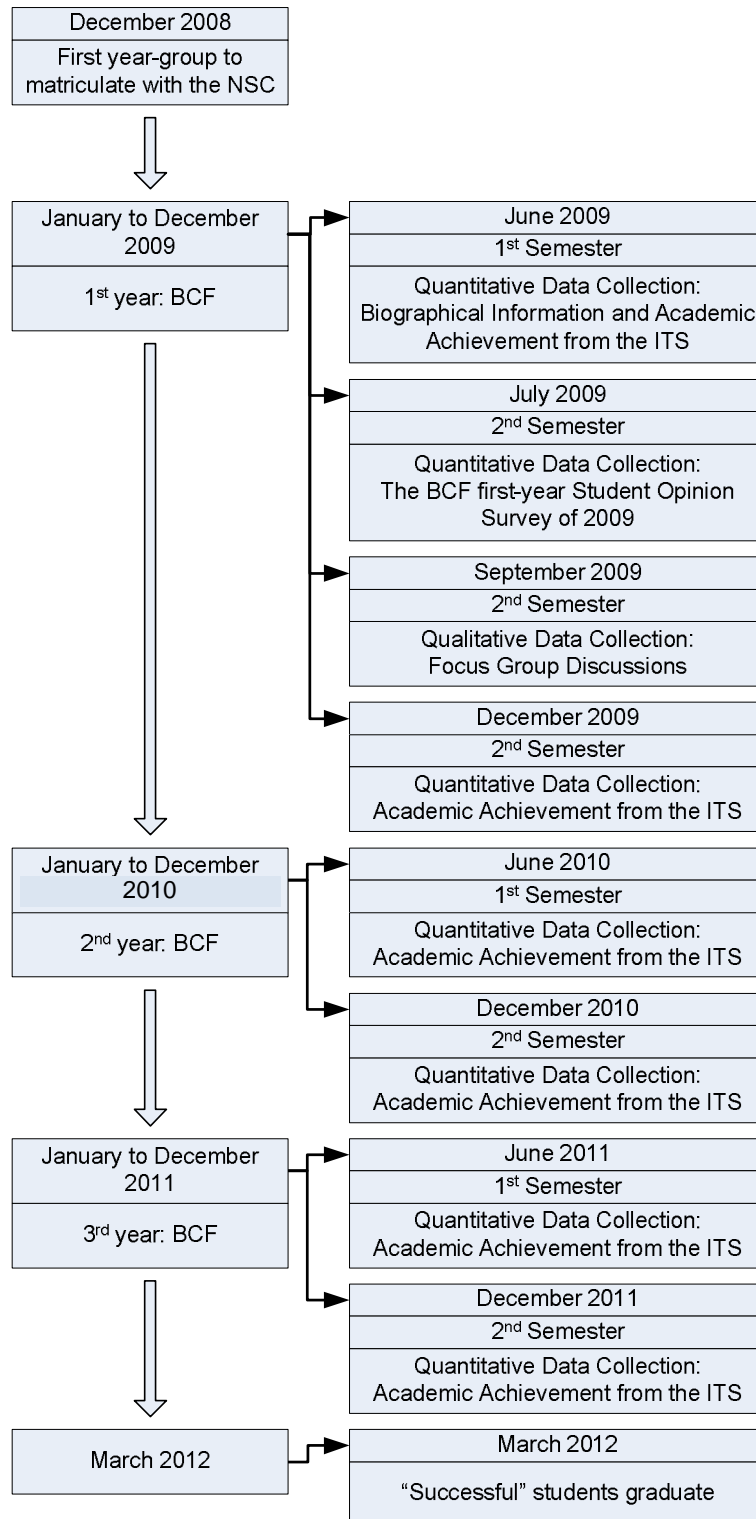
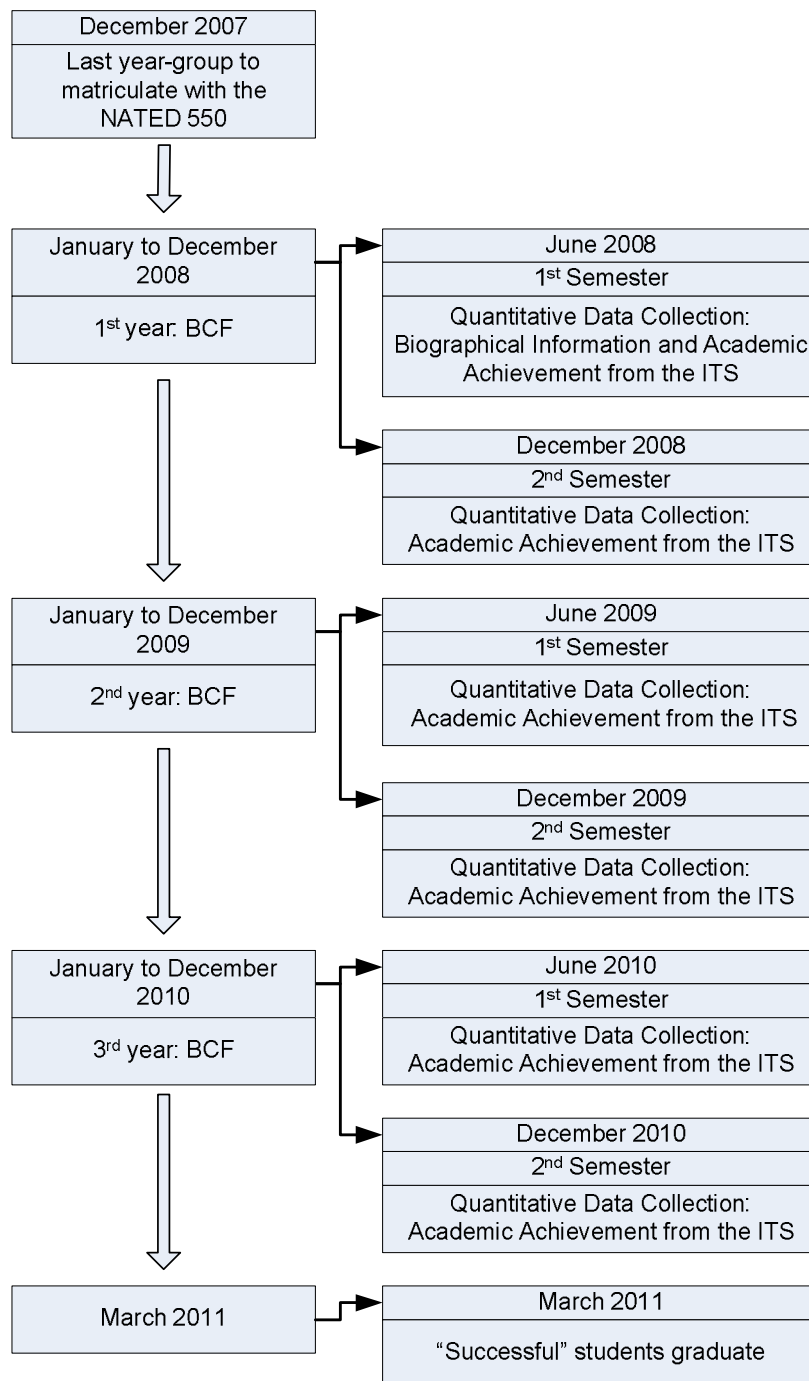


Figure 4.2: Timeline of the cohort study and intervals of data collection: Primary target population

**Secondary Target Population:
First-time entering B.Com. (Finance) students in 2008 at the University of Johannesburg**



**Figure 4.3: Timeline of the cohort study and intervals of data collection:
Secondary target population**

4.6.1.2 Population and sampling

The *primary* target population of this study is all the first-time entering students who registered at UJ for the three-year, full-time BCF degree qualification at the beginning of 2009. Furthermore, only students who gained university access based on their NSC SS-leaving results, obtained at a SA public or private school at the end of 2008, were included in the primary target population. The entire *primary* target population was included in this study. Cooper & Schindler (2008:33) refers to this phenomenon where the whole population was used, as census sampling.

In addition to the *primary* target population, the *secondary* target population of this study is all first-time entering students who registered at UJ for the three-year, full-time BCF degree qualification at the beginning of 2008. Furthermore, only students who gained university access based on their NATED 550 SS-leaving results, obtained at a SA public or private school at the end of 2007, are included in the secondary target population. The entire *secondary* target population was included in this study.

The *primary* target population represents the *first* year-group of students entering into the BCF programme at a SA university with the NSC as a SS-leaving qualification and the *secondary* target population represents the *last* year-group of students entering into the BCF programme at a SA university with the NATED 550 as a SS-leaving qualification. In this particular study, the *primary* target population comprises a total of 260 students and the *secondary* target population comprises a total of 157 students.

4.6.1.3 Development and response format of the B.Com. (Finance) first-year opinion survey of 2009

A survey (using a single, structured, opinion-related, paper-based questionnaire) was used for the collection of quantitative data from the primary target population in their first year at university. A survey is a research strategy that involves the structured collection of data from a sizeable population (Saunders *et al.* 2009:601; Czaja & Blair 2005:18). Mouton (2001:152) explains that surveys are studies that are usually quantitative in nature and which aim to provide a broad overview of a representative

sample of a large population. Saunders *et al.* (2009:599) and Miller, Bender, Schuh and Associates (2005:34) describe a questionnaire as a general term including all data collection techniques in which each respondent is asked to respond to the same set of questions in a predetermined order. Response options are also predetermined. In this study, information regarding the skills perceived to be *required* for successful completion of the BCF programme and skills *acquired* during the respondents' NSC education was collected by means of the BCF first-year student opinion survey (See: *Appendix 1 - BCF first-year opinion survey of 2009*). The researcher designed the survey, which was informed by a literature review. The BCF first-year student opinion survey of 2009 comprised four sections, namely:

Section 1: Indicators of the students' personal and biographical details e.g. age, gender, ethnic group and home language.

Section 2: Indicators of the students' secondary school details, including province, location, type of school, tuition language and final school-leaving academic achievements recorded as their individual NSC results, per subject.

Section 3: Indicators of details regarding the students' university studies including tuition language, type of accommodation during the semester, part-time employment, participation in organised (competitive) sport, academic support services utilised and end-of-first-semester 2009 academic achievements in the five compulsory modules of the B. Com. (Finance) programme.

Section 4: Indicators of the students' perceptions regarding the skills required for success in BCF studies and the extent to which they acquired these skills during their NSC education.

The design of Section 4 of the survey was informed by a review of literature on the skills and outcomes of the NSC and BCF curriculums. UJ's FEFS Yearbook (2009(b):34) states the following outcome (or purpose) of the BCF programme: "The students should be able to reflect on their financial management, investment management, financial planning and accounting decisions and applications to assess the effect thereof in the holistic context of finance as a practice".

The formulation of the questions in Section 4 of the survey was informed by the critical cross-field outcomes of the NSC as described in Chapter 2, paragraph 2.3.2. The survey questionnaire consisted of four sections: a background section, sections on their academic performance at school and their performance during the first semester at university, as well as a section on their perceptions of skills required for success in their university studies and acquired in the NSC.

The focus of SQ–A pertains to skills required and acquired. Respondents were requested to indicate their individual perceptions regarding 35 skills identified from the literature, as discussed in Chapter 3, paragraph 3.4.

Respondents were required to indicate:

- The importance of each of the identified skills for success in their university studies on a four-point (ordinal) scale, namely
 - 1: Totally unimportant;
 - 2: Unimportant;
 - 3: Important; or
 - 4: Extremely important.

In other words, they were required to indicate to what extent each skill is *required* for success in B.Com. (Finance).

- The extent to which the NSC prepared them to acquire each particular skill on a four-point (ordinal) scale, namely
 - 1: Poorly;
 - 2: Moderately;
 - 3: Well; or
 - 4: Very well.

In other words, they were required to indicate the extent to which they *acquired* each skill in the NSC curriculum.

The administering of the BCF first-year student opinion survey (See: *Appendix 1 - BCF first-year opinion survey of 2009*) will be discussed in paragraph 4.6.2.1a).

4.6.1.4 Development and response format of the focus-group discussions

Jacobs and Gawe (1998:209) describe a focus-group discussion as “a co-operative discourse between two or more people with a definite purpose in view”. In this study, focus-group discussions using open-ended questions were facilitated by the researcher and conducted with the primary target population (in their first year at university) in order to collect qualitative data regarding skills perceived to be *required* for successful completion of the BCF programme and skills *acquired* during their NSC education.

According to Saunders *et al.* (2007:598), a focus-group discussion is a “group interview, composed of a small number of participants, facilitated by a ‘moderator’ (facilitator of focus-group interviews), in which the topic is defined clearly and precisely and there is a focus on enabling and recording interactive discussion between participants”. Both Jacobs and Gawe (1998:76) as well as Churchill and Sanders (2007) explain that open-ended questions are questions with more than one acceptable answer and which lend themselves to discussion in which personal opinion plays a very important role.

Within six weeks of the collection of the completed questionnaires, the researcher contacted all the respondents who indicated that they were willing to participate in the discussions (via email and/or telephone) and she invited them to voluntarily participate in one of four 60-minute discussions, in groups of a maximum of eight participants, scheduled for 10, 11, 17 and 18 September 2009. Based on the survey responses (indication of a willingness to participate in the focus-group discussions), a random grouping technique was applied to participants’ schedules and preferences.

The administering of the BCF first-year focus-group discussions (see *Appendix 1: BCF first-year focus-group discussion questions*) will be discussed in paragraph 4.6.2.1b).

4.6.1.5 Information extracted from the integrated tertiary system (ITS)

In the following paragraphs, details regarding information on both the primary and secondary target groups, extracted from the ITS, will be elaborated on.

(a) Information of the primary target group (2009 Cohort)

As illustrated in Figure 4.2, details of each of the students in the primary target group (2009 cohort), were extracted from the ITS at UJ over a period of three years from 2009 to 2011. The students' biographic information, school-leaving academic subject choices and achievements, as well as information on all academic achievements during the first semester at university, were extracted at the end of their first semester at university. Furthermore, the full academic records of each of the following semesters at university were extracted at the end of each academic semester during the first three years of the cohort's university studies. Information was displayed on a spread-sheet with the following column headings:

- Student number – to determine first date of university registration. At UJ, the first four digits of the student numbers indicate the year of first registration: e.g. 200912345.
- Gender – categorising students as either male or female.
- Date of birth – for the calculation of age in years, when first entering university.
- Ethnic group – categorising students as either African, Coloured, Indian or White.
- Subjects taken at SS – to determine whether students were exposed to Accounting, Business Economics and Economics.
- Final SS-leaving results in all subjects taken – for the extraction of APS and Mathematics marks.
- Final semester marks achieved in all modules taken during the first three years at university – for categorising students as either successful or unsuccessful and for calculation of the average of the five compulsory modules taken in the first semester at university.

(b) Information of the secondary target group (2008 Cohort)

As illustrated in Figure 4.3, details of each of the students in the secondary target group (2008 cohort) were extracted from the ITS at UJ over a period of three years from 2008 to 2010. The students' biographic information, school-leaving academic subject choices and achievements, as well as information on all academic achievements during the first semester at university, were extracted at the end of their first semester at university. Furthermore, the full academic records of each of the following semesters at university were extracted at the end of each academic semester during the first three years of the cohort's university studies. Information was displayed on a spread-sheet with the following column headings:

- Student number – to determine first date of university registration. At UJ the first four digits of the student numbers indicate the year of first registration: e.g. 200867890.
- Gender – categorising students as either male or female.
- Date of birth – for the calculation of age in years, when first entering university.
- Ethnic group – categorising students as either African, Coloured, Indian or White.
- Subjects taken at SS – to determine whether students were exposed to Accounting, Business Economics and Economics.
- Final SS-leaving results in all subjects taken – for the extraction of M-score and Mathematics marks.
- Final semester marks achieved in all modules taken during the first three years at university – for categorising of students as either successful or unsuccessful and for calculation of the average of the five compulsory modules taken in the first semester at university.

4.6.2 Implementation phase

The *implementation phase* involves the collection of data to be utilised in this study. The implementation phase involves two data collection stages, namely:

- Collection of *primary data*; and

- Collection of *secondary data*.

4.6.2.1 Collection of primary data

Two measuring instruments were administered, after having been developed in the development stage for the collection of *primary data*.

(a) Administering of the B.Com. (Finance) first-year student opinion survey of 2009 to the primary target population

The student opinion survey was distributed to students attending class on a pre-arranged date. A total of 215 respondents voluntarily completed the BCF first-year student opinion survey of 2009 (See: Appendix 1). The sample constitutes approximately 82.7% of those in the primary target population. Note that, at the time when the survey was conducted (i.e. July 2009), the students in the primary target population already had one semester of university experience. The reason for distributing the survey during July 2009 (and not later than this date) is that perceptions and opinions of first-year students who have matriculated with the NSC at the end of the previous year (i.e. 2008), regarding the SS experiences, were assumed still to be fresh in their memories at the end of their first semester at university. The sampled population thus only comprised students who had progressed to the second semester. The questionnaire was handed out to 260 first-year BCF students, that is, the total population was approached to participate. All of the students participating in the survey were also invited to participate in the subsequent focus-group discussions. In the final section of the questionnaire, the respondents were requested to indicate whether they were willing to participate in a focus-group discussion, and upon agreement, to write down their names and contact details on the last page of the questionnaire.

In the second week of the second semester of 2009 (i.e. from 27 to 31 July 2009), after prior arrangement with the relevant lecturers, the researcher handed out copies of the survey questionnaire during the Financial Management 1B lectures in all five class groups at UJ (See: Appendix 1 – BCF first-year student opinion survey of July 2009). The respondents were requested to voluntarily and individually complete the questionnaires in class, without talking to one-another. A covering letter on the

covering page of the survey questionnaire explained the purpose of the research project. The researcher was present in all of these classes and she collected the completed questionnaires and delivered them to the UJ STATCON, where all responses were captured on Excel spread-sheets for analysis with the SPSS statistical programme (Pallant, 2010).

(b) Administering of the focus-group discussion questions to the primary target population

At the beginning of each discussion session, the researcher (as facilitator) ensured a warm, friendly and relaxed environment by explaining the procedures and aims of the discussions, after which each participant completed a written consent form (See: *Appendix 2 – Consent form*). The participants' written consent confirmed that the information they provided could be used for research purposes.

Respondents indicated during the survey that they were willing to join the focus-group discussions. A total of 26 students voluntarily participated in the focus-group discussions. The sample constitutes 10% of those in the primary target population and 12.1% of those who have completed the survey.

The two questions posed to the participants of the focus-group discussions are as follows:

- Focus-group discussion question 1 (FGD-Q1), which was designed to probe the skills required reads as follows: *What are the most critical skills that will contribute towards success in B.Com. (Finance) studies at university?*
- Focus-group discussion question 2 (FGD-Q2), which was designed to probe the skills not yet acquired, reads as follows: *What are the most critical skills that you might have lacked when you started with your first-year university studies?*

These open-ended questions were used because they provided options for the respondents to explore and elaborate upon their answers (See: *Appendix 3 – Focus-group discussion questions*). The discussions were tape-recorded and transcribed and the participants validated the transcriptions. The researcher analysed and summarised the transcriptions of all four of the focus-group discussions. A detailed description of the analysis of qualitative data is given in paragraph 4.6.3.4.

4.6.2.2 Collection of secondary data

The following forms of *secondary data* were collected, with permission, from UJ student data-base (ITS) for both the primary and secondary target population, at the end of each semester in each of the first three years of their university studies.

(a) Collection of data pertaining to the primary and secondary target populations' biographic information

The following biographical information was collected for each student in the primary and secondary target groups:

- Gender;
- Date of birth; and
- Ethnic group.

(b) Collection of data pertaining to the primary and secondary target populations' academic achievements

The following information on each student's academic achievements was collected in the primary and secondary target groups:

- APS (2009 cohort) and M-scores (2008 cohort);
- Final SS-leaving results in Mathematics;
- Exposure to SS Accounting, SS Economics and SS Business Studies; and
- Average marks for the five compulsory modules in the first semester of the first year of BCF university studies.

4.6.3 Analysis/validation phase

During the *analysis/validation phase*, data collected during the two implementation stages was analysed statistically in an attempt to answer the secondary and primary research questions. The process that led to these answers is described in paragraphs 4.6.3.1 and 4.6.3.2. In addition, the integrity of the survey questionnaire and focus discussion questions developed during the development phase will be

established by considering the validity and reliability of these measuring instruments. The process that led to these considerations is described in paragraph 4.6.3.3.

4.6.3.1 Answering the four secondary research questions

(a) Answering SQ–A

The first secondary question is as follows: *What are the opinions and perceptions of first-year BCF students regarding the skills that they required for the successful completion of the BCF programme and the skills that they acquired during their NSC education?*

The first secondary research question is answered in Chapter 5 of this thesis. The researcher completed a critical analysis of the qualitative data collected during the focus-group discussions by categorising and summarising the responses. STATCON at UJ completed an analysis of the quantitative data collected during the survey and from the ITS, using the SPSS statistical software package. The reporting and interpretation of the research findings were done by the researcher.

(b) Answering SQ–B, SQ–C and SQ–D

The second secondary question is as follows: *What are the differences and similarities between the profiles of successful and unsuccessful BCF students entering a SA university after the introduction of the NSC?*

The third secondary question is as follows: *What are the differences and similarities between the profiles of successful and unsuccessful BCF students entering a SA university before the introduction of the NSC (i.e. with the NATED 550 qualification)?*

The fourth secondary question is as follows: *What are the differences and similarities between the profiles of successful BCF students entering a SA university with the NSC and those entering with the NATED 550?*

These three secondary research questions are answered in Chapter 6 of this thesis.

The primary objective of this statistical analysis (completed by the Statistical Consultation Services at UFS) was to identify the profiles of successful students in

two cohorts of students, namely the 2009 and 2008 intake. This would then lead to answering SQ–B, SQ–C and SQ–D (See: *Appendix 4 – Statistical Analysis Plan*). In particular, the objective of the statistical analysis was to assess the association between student success as binary dependent variable, and the following independent variables:

- **2009 cohort:** age (years), gender, ethnic group, APS, Grade 12 mathematics NSC mark (categorical), exposure in school to Accounting (binary), exposure in school to Economics (binary), exposure in school to Business Economics (binary); average of first semester mark of five compulsory modules (%).
- **2008 cohort:** age (years), gender, ethnic group, M-score, Grade 12 mathematics higher grade mark (categorical), exposure in school to Accounting (binary), exposure in school to Economics (binary), exposure in school to Business Economics (binary); average of first semester mark of five compulsory modules (%).

For the purpose of comparing the two cohorts, only those students who had taken mathematics on higher grade in Grade 12 are included in the analysis of the 2008 cohort. The reason for this decision is that the HG mathematics of the NATED 550 curriculum of the 2008 cohort is similar in level and standard of the NSC mathematics of the 2009 cohort. From the entire 2008 cohort of 151 students who entered into the BCF programme in 2008, 100 students took mathematics on higher grade (HG) in Grade 12 and 51 students took Mathematics on standard grade (SG) in Grade 12. With the change to the NSC in the 2009 cohort's secondary school curriculum, the differentiation between HG and SG is no longer applicable. 257 of the 260 students of the 2009 cohort took the subject Mathematics in Grade 12, and three students took Mathematical Literacy. From 2009, Mathematics as a subject in the NSC in Grade 12 is a recommendation for entry into the BCF programme at UJ.

4.6.3.2 Answering the primary research question

The primary research question addressed in this study is:

What differences and similarities occur in the profiles of successful BCF students entering a SA university before and after the introduction of the NSC respectively?

The primary research question is answered in Chapter 5, 6 and 7 of this thesis.

4.6.3.3 Reliability and validity of the measuring instruments

For the purposes of this study, the researcher critically examined the procedures for collecting data in order to assess to what extent the design is likely to be reliable and valid. The reliability of research depends on the reliability of the measuring instruments and the choice of the correct statistical procedure (Maas, 1998:25-26). According to Kerlinger (1986:405), “[r]eliability is the extent to which test scores are accurate, consistent or stable”, and to which an instrument “produces similar results under constant conditions on all occasions” (Bell, 2005:117). The consistency with which an instrument or item measures what it is supposed to measure is referred to as the *reliability* of that predictor (Bell, 2005:118). The consistent way in which all the data was processed and analysed by means of statistical packages in this study undoubtedly contributed to the reliability of the study.

Reliability thus refers to the extent to which certain data collection techniques or analysis procedures will yield consistent findings. It can be determined by posing the following three questions (Saunders *et al.* 2009:156):

- Will the measures yield the same results on other occasions?
- Will similar observations be reached by other observers?
- Is there transparency in how sense was made from the raw data?

Validity is concerned with whether the findings are really about what they appear to be about (Saunders *et al.* 2009:157). There are two types of validity, namely external validity and internal validity. External validity is synonym to generalisability, which this study will not claim, since randomisation of groups could be done. Internal validity claims that the results are due to the influence of the independent variable in the dependent variable. In this study, internal validity has been addressed by the process of triangulation.

As mentioned in Chapter 1, an exploratory, mixed-method approach was used for the primary population, namely qualitative focus-group discussions and a quantitative survey. According to Saunders *et al.* (2009:152-153) a mixed methods approach is

the general term for when both quantitative and qualitative data collection techniques and analysis procedures are used in a research design. It is subdivided into two types, namely mixed method research and mixed-model research. The differences between these two types of research designs are that the mixed method research uses quantitative and qualitative data collection techniques and analysis techniques either at the same time (parallel) or one after the other (sequential) but does not combine them. This means that, although mixed method research uses both quantitative and qualitative world views at the research methods stage, quantitative data are analysed quantitatively and qualitative data are analysed qualitatively. In addition, either quantitative or qualitative techniques and procedures predominate. In contrast, mixed-model research combines quantitative and qualitative data collection techniques and analysis procedures as well as combining quantitative and qualitative approaches at other phases of the research such as research question generation. For the purpose of this study, the mixed method research was used.

In addition, secondary quantitative information was obtained regarding students' academic achievement in Grade 12 and in the first three years of their BCF degree studies, for both the primary and the secondary target populations. Saunders *et al.* (2009:153) state that one of the advantages of using a mixed-method approach is that it enables triangulation to take place. Triangulation is enabled by the fact that various data collection techniques within one study are used to verify the validity of the results obtained (Henning *et al.*, 2004:103; Saunders *et al.* 2009:595-602). Triangulation was done for the 2009 cohort in terms of their perceptions and opinions on the skills required for success in undergraduate BCF and skills acquired in the NSC curriculum at SS.

The quantitative data extracted from the ITS is verified by comparing it to the details provided by the respondents in Sections 1, 2 and 3 of the survey (See Appendix 1: BCF first-year opinion survey of 2009). In cases where discrepancies were noted, the researcher verified the correctness of the data with the Head of the FEFS Student Administration Division. It must be noted that not all students in the primary target population completed the survey, and therefore the comparison of data could only be done for those students who had completed the voluntary survey.

The qualitative data collected during the focus-group discussions was verified by comparing it to the details provided by the respondents in Section 4 of the survey (See Appendix 1: BCF first-year opinion survey of 2009). It must again be noted that not all students in the primary target population completed the survey, and therefore the comparison of data could only be done for those students who had completed the voluntary survey and participated in the voluntary focus-group discussions (See Appendix 2: Consent Form). It is important to note that all of the participants of the focus-group discussions were also respondents of the survey.

4.6.3.4 Data analysis and reporting

An exploratory data analysis approach was applied in this study. This approach emphasises the use of diagrams to explore and understand data, emphasising the importance of using data to guide the researcher's choice of analysis techniques. Saunders *et al.* (2009:428) emphasise that it is important to keep the research questions and objectives in mind when exploring the data. The data was displayed in Excel spread-sheets for analysis with the SPSS statistical programme by STATCON of UJ and by the Statistical Consultation Services Division of UFS using the SAS statistical programme.

Saunders *et al.* (2009:590) describe data display and analysis as a process for the collection and analysis of qualitative data that involves three concurrent sub-processes of data reduction, data display, and drawing and verifying conclusions. Accordingly, the researcher completed a critical analysis of the qualitative data collected during the focus-group discussions, by categorising and summarising all of the responses captured during the transcriptions of the audio recordings of the four focus-group discussion sessions. After each session, the researcher transcribed the recordings, word-by-word, by typing out the responses of each question onto a Word document and printing it out on paper (see Appendix 3: BCF focus-group discussion questions). Similarities and differences in the participants' responses were identified and grouped together, where after it was summarised and reported on in chapter 5.

UJ's STATCON and the UFS's Statistical Consultation Services Division completed analyses of the quantitative data collected during the survey and extracted from the

ITS. Two statistical software packages were used: SPSS (at UJ) and SAS (at UFS). The statistical analysis conducted includes descriptions of the dependent and independent variables using descriptive statistics and graphs, as well as proposition testing to ascertain statistically significant differences between successful and unsuccessful students, as described and illustrated in chapter 6, paragraphs 6.2 and 6.3.

Finally, multivariate statistical analysis, namely stepwise logistic regression, was used to determine the profiles of successful students entering the BCF programme at UJ with the NSC and the NATED 550 SS-leaving qualifications respectively, as described and illustrated in chapter 6, paragraph 6.5. In stepwise logistic regression, the inclusion and removal of predictors from the equation are based solely on statistical criteria (Tabachnick & Fidell 2001:535). Thus, stepwise logistic regression is best seen as a screening or hypothesis-generating technique. Reporting and interpretation of the research findings were done by the researcher.

4.7 ETHICAL CONSIDERATIONS

This study was conducted in collaboration with the DFIM in the FEFS at UJ. Permission to conduct the research and to publish the findings was obtained from the FEFS Ethics Committee in 2009. Students in the primary target population were invited to voluntarily participate in both the survey and the focus-group discussions. Respondents (to the survey) and participants (in the focus-group discussions) gave their informed, written consent and they were assured, in writing, of their anonymity (in the survey) and the confidentiality of information they provided in both the survey and the focus-group discussions (See: Appendix 1 – The BCF first-year opinion survey of 2009; Appendix 2 – Consent form of BCF first-year focus-group discussions; and Appendix 3 – Questions of BCF first-year focus-group discussions). Furthermore, approval by UJ's governance officer was obtained to extract the relevant student information from the ITS (See: Appendix 5 – Ethical Clearance). The data was analysed using valid statistical techniques and research findings were reported in an accurate and scientifically accountable manner.

4.8 SUMMARY AND REVIEW OF THIS CHAPTER

In this study, the research problem centres on addressing profiles of successful BCF students entering a SA university *before* and *after* the introduction of the NSC. As such, Chapter 4 described the empirical investigation undertaken as a means of providing the necessary perspectives and understanding of the profiles of successful students. The chapter commenced with the primary research question, namely: *What differences and similarities occur in the profiles of successful BCF students entering a SA university before and after the introduction of the NSC respectively?* The empirical study, which is located within both the quantitative and qualitative paradigms, was conducted by means of a survey, focus-group discussions and information extracted from the ITS. In the remainder of the chapter, the research project was thoroughly discussed in terms of the following: the objectives of the instruments, justification for the modes of inquiry employed, population and sampling, the structure of the measuring instruments, data analysis and issues related to validity and reliability. In the next chapter, the discussion and interpretation of research results on the investigation of opinions and perceptions of first-year BCF students are presented and interpreted.

CHAPTER 5 DISCUSSION AND INTERPRETATION OF RESEARCH RESULTS ON THE INVESTIGATION OF OPINIONS AND PERCEPTIONS OF FIRST-YEAR B.COM. (FINANCE) STUDENTS

“Education is what remains after one has forgotten what one has learned in school.” Albert Einstein

5.1 INTRODUCTION AND OVERVIEW OF THIS CHAPTER

The purpose of the exploratory research reported on in this chapter was to investigate the opinions and perceptions of the skills acquired in the NSC by first-time entering students registered for the BCF degree during the 2009 academic year, as well as their perceptions of the skills required for them to succeed in their university studies. The research was conducted in the FEFS at UJ. The respondents completed a survey and participated in focus-group discussions.

The primary research question addressed in this study was:

What differences and similarities occur in the profiles of successful BCF students entering a SA university before and after the introduction of the NSC respectively?

The first secondary research question (SQ–A) investigated in this study and reported on in this chapter is the following:

What are the opinions and perceptions of first-year BCF students regarding the skills that they required for the successful completion of the BCF programme and the skills that they acquired during their NSC education?

The researcher completed a critical analysis of the qualitative data collected during the focus-group discussions by categorising and summarising the responses. STATCON completed an analysis of the quantitative data collected during the survey and from the ITS, using the SPSS statistical software package. The reporting and interpretation of the research findings were done by the researcher. The research principles of reliability and validity have been adhered to during the processes of

designing the measuring instruments, data collection, data analysis, and reporting, as elaborated upon in Chapter 4.

An extract of the research findings of SQ–A was published in an article entitled “An investigation into the extent to which the NSC equips university finance students with required skills” in the *Journal of Economic and Financial Sciences* Volume 4 Number 1 of April 2011 (Oosthuizen & Eiselen 2011:31-50) and will be discussed in more detail in this chapter.

5.2 DESCRIPTIVE STATISTICS: THE SAMPLE OF STUDENTS PARTICIPATING IN THE SURVEY

The aim of presenting the descriptive statistics gathered is to describe the sample of students participating in the survey in terms of the variables regarding their biographic information, namely which are their gender, age at 1 January 2009 and ethnic group. A total of 215 students voluntarily participated in the quantitative phase of the study. The sample constitutes 82.69% of those in the primary target population. Tables 5.1, 6.2 and 6.3 summarise the biographic details of the primary target population and those who have voluntarily completed the survey (i.e. the sample), with respect to three categorical variables, namely gender, age and ethnic group.

Table 5.1: Frequency distribution of *gender* of the primary target population and the survey sample (n=215)

	First-year BCF students of 2009 (primary target population)		Students in the primary target population who voluntarily completed the survey (sample)	
	Frequency (N)	Percentage (%)	Frequency (N)	Percentage (%)
Male	113	43.5	89	41.4
Female	147	56.5	126	58.6
Total	260	100.0	215	100.0

Response rate: 82.69%

Graphical representations of the abovementioned data show the following:

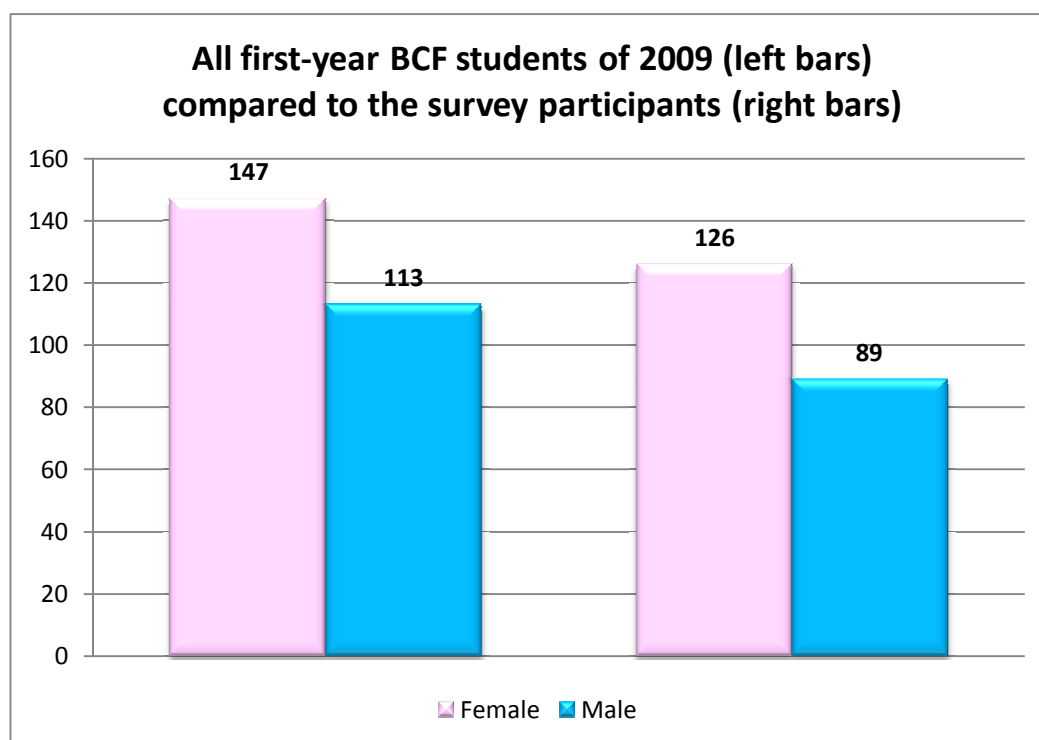


Figure 5.1: Frequency distribution of *gender* of the primary target population and the survey sample (n=215)

The following trends from Table 5.1 and Figure 5.1 are noteworthy:

- The majority of first-time entering students in the BCF programme in 2009 are female.
- Similarly, the majority of students completing the BCF first-year student opinion survey are female.

Table 5.2: Frequency distribution of the *age at 1 January 2009* of the primary target population and the survey sample (n=215)

	First-year BCF students of 2009 (primary target population)		Students in the primary target population who voluntarily completed the survey (sample)	
	Frequency	Percentage (%)	Frequency	Percentage (%)
17 years and younger	51	19.6	27	12.6
18 years	181	69.6	137	63.7
19 and 20 years	28	10.8	51	23.7
Total	260	100.0	215	100.0

Response rate: 82.69%

A graphical representation of the above-mentioned data shows the following:

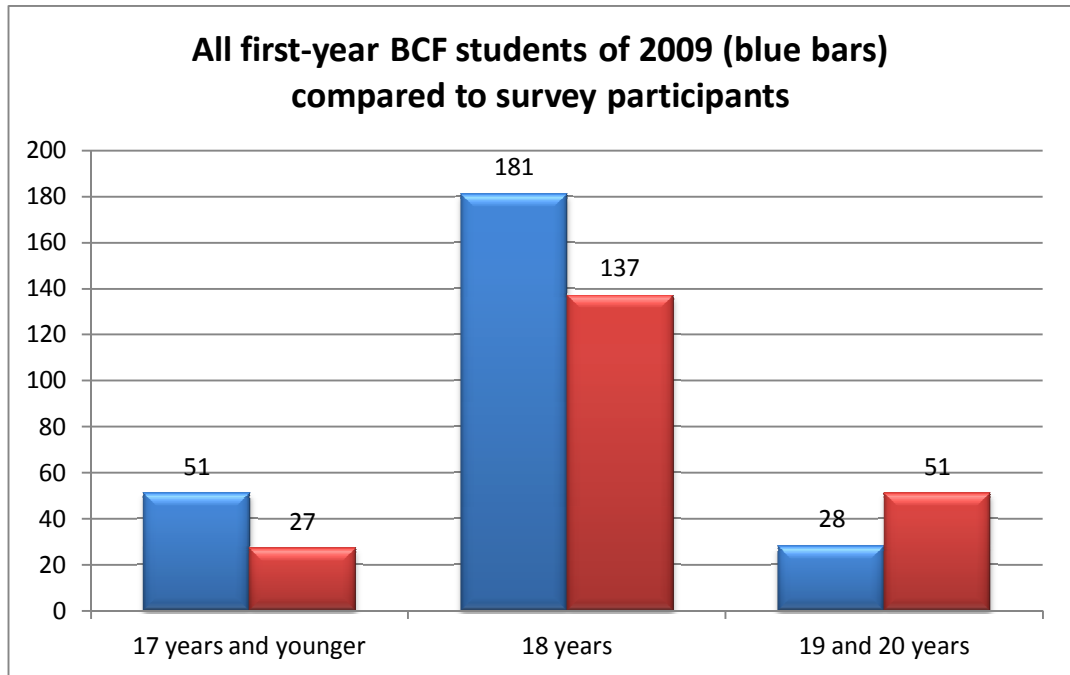


Figure 5.2: Frequency distribution of the *age at 1 January 2009* of the primary target population and the survey sample (n=215)

The following trends from Table 5.2 and Figure 5.2 are noteworthy:

- The majority of first-time entering students in the BCF programme in 2009 and those who have completed the survey were 18 years old on 1 January 2009.
- None of the first-time entering students into the BCF programme in 2009 or those who have completed the survey were older than 20 years of age on 1 January 2009.

Table 5.3: Frequency distribution for the *ethnic group* of the primary target population and the survey sample (n=215)

	First-year BCF students of 2009 (primary target population)		Students in the primary target population who voluntarily completed the survey (sample)	
	Frequency	Percentage (%)	Frequency	Percentage (%)
White	69	26.5	61	28.4
African	160	61.5	131	60.9
Indian	22	8.5	15	7.0
Coloured	9	3.5	8	3.7
Total	260	100.0	215	100.0

Response rate: 82.69%

A graphical representation of the above-mentioned data shows the following:

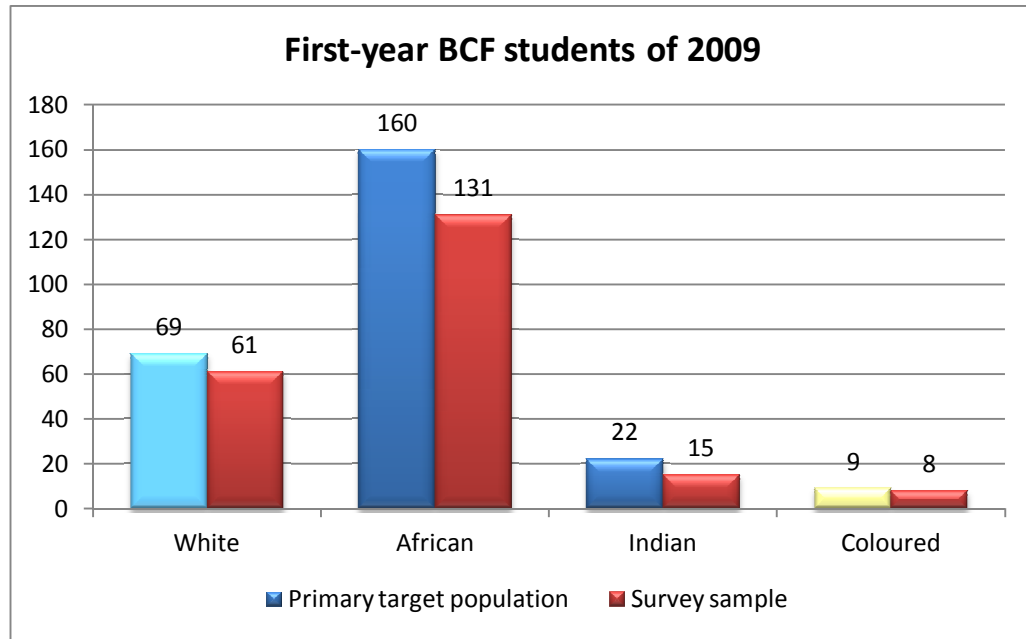


Figure 5.3: Frequency distribution of the *ethnic group* of the primary target population and the survey sample (n=215)

The following trends from Table 5.3 and Figure 5.3 are noteworthy:

- The majority of first-time entering students in the BCF programme in 2009 are from the African ethnic group.
- Similarly, the majority of students completing the BCF first-year student opinion survey are from the African ethnic group.
- When interpreting the participation rates per ethnic group, it is noted that 88.9% of all the Coloured students in the primary target population and 88.4% of all the White students in the primary target population completed the survey.

In summary:

The frequency tables of the biographic information of the primary target population in this investigation reveal that the majority of students registering for the BCF programme in 2009 are African, female and at least 18 years old. The biographic information (reported in terms of gender, age and ethnic group in this study) of the students in the sample are similarly distributed to those of the primary target population and therefore the sample is considered to be representative of the primary population.

5.3 DISCUSSION OF KEY FINDINGS OF SURVEY AND FOCUS-GROUP DISCUSSIONS

In the quantitative and qualitative analysis, similarities and differences in the students' perceptions of the skills required for success in B.Com. (Finance) studies and skills acquired at school were identified. These findings confirmed the skills required for university success, as identified in the literature. The analyses of both the quantitative and qualitative data are discussed in more detail in the following paragraphs.

5.3.1 Critical skills required for success in B.Com. (Finance) studies

Although a large percentage of respondents did not answer all of the questions in this section of the questionnaire, between 50% and 75% of the 215 respondents indicated that each of the skills listed is either important or very important. The skills that at least 70% of the 215 respondents indicated were important or very important were identified. According to Oosthuizen & Eiselen (2011:39) these skills are:

- *Critical thinking skills* (74% of the 215 respondents considered these to be important or very important);
- *Problem-solving skills* (73.5%);
- *Decision-making skills* (73%);
- *Analytical thinking skills* (72.6%);
- *Self-confidence* (71.6%);
- *Economic reasoning ability* (71.6%);
- *Ability to practically implement learning content* (70.2%); and
- *Organisational skills* (70.2%).

The quantitative results (n=215) are graphically illustrated in Figure 5.4 (percentages in the graph do not add up to 100% owing to the large percentage of non-responses to questions in this section). Very small percentages of respondents (typically less than 6%) did not consider these skills to be important.

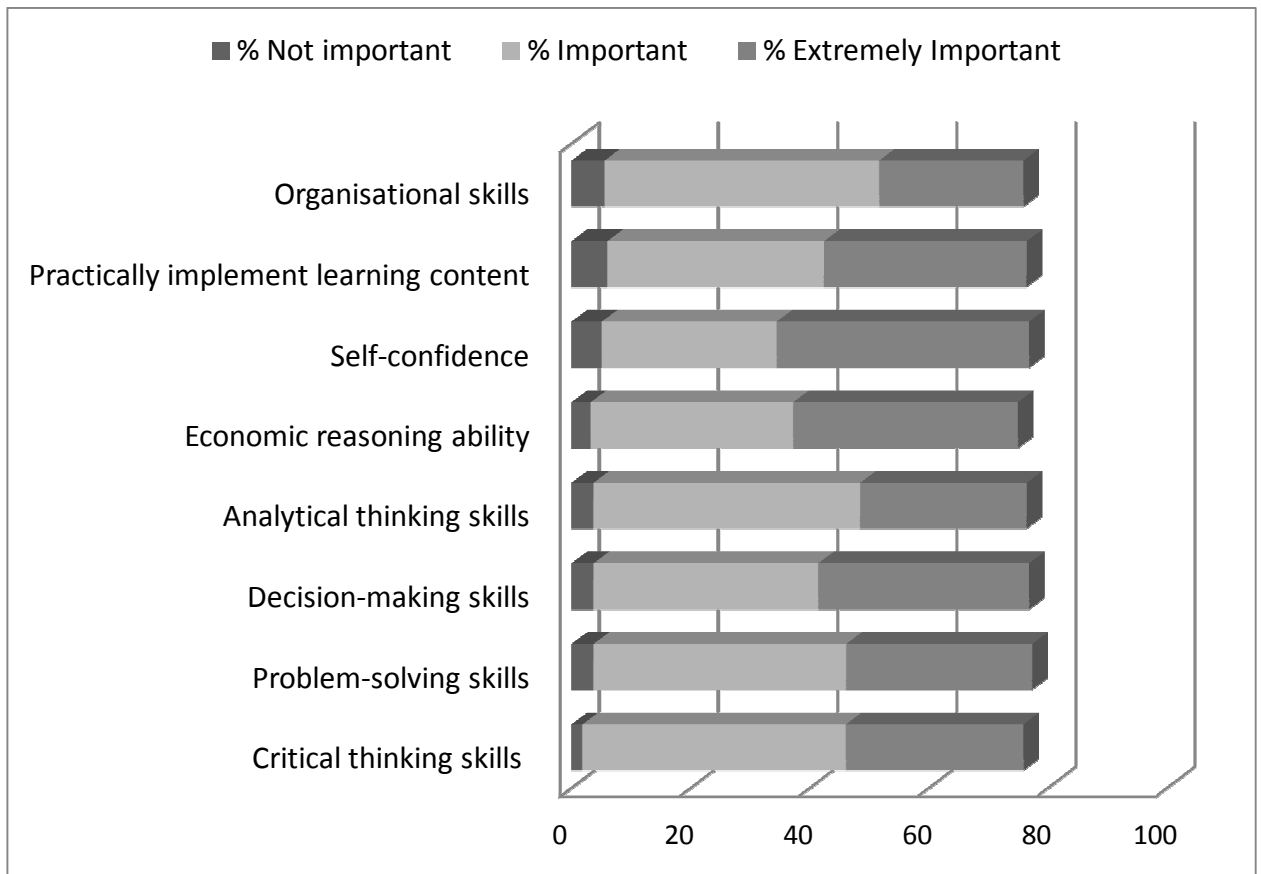


Figure 5.4: Most important skills *required* for B.Com. (Finance) studies (n=215)

In the qualitative phase of the study, the first question also addressed the most critical skills **required**. The majority of comments relating to this question referred to *time management skills* (i.e. the ability to be punctual and meet deadlines), which can be considered to be a *life skill*. The students felt that this is the most critical skill contributing towards success in this programme. The following comments, as reported by Oosthuizen and Eiselen (2011:40), express the students' concerns, fears, frustrations and sense of inferiority:

- “There are many students who dropped out of varsity due to lack of proper time management and planning.”
- “In high school I could study the day before the test or exam. I was always late and end up having to write sick tests. At varsity I cannot only study the night before.”

- “Time management helps us to prepare and attend classes on time. It helps us to avoid working under pressure, it goes with proper planning.”
- “Do not procrastinate. Some of us think we thrive under pressure but it never works out.”

The next most critical skill identified in the focus-group discussions also viewed as a *life skill*, was the *ability to work under pressure*: Students mentioned that the academic work-load at university is much higher in comparison to what they had to deal with in the NSC. The work pressure associated with this leads to stress, anxiety and, consequently, possibly dropping out of university. According to Oosthuizen and Eiselen (2011:40), some of the students’ comments are as follows:

- “University life is very stressful.”
- “Work load is tough, so find people to help you.”

Furthermore, it is evident that the use of ‘spoon feeding’ was a common occurrence amongst secondary school teachers, and that this has prevented the students from developing their own learning styles. They indicated that they do not know how to study effectively.

The following skills and the comments made in this regard refer to the difficulty in mastering learning content as a result of the teaching methods applied at SS-level (Oosthuizen & Eiselen, 2011:40). The *ability to practically implement learning content* has not been mastered properly, according to the respondents.

- “It is impossible to sleep when you do not understand the chapter and we end up panicking.”
- “At school, they spoon-fed us but here (at varsity) we are on our own.”
- “The exemplars damaged us. At university the past papers are very different from the actual paper, unlike in high school whereby the exemplar was exactly the same as the exam paper.”
- “The NSC Maths Paper 1 exemplar was very similar to the final paper.”

The next most critical skills identified in the focus-group discussions are *decision-making skills* and *self-confidence*. The comments made by students refer strongly to the *life skills* required by a first-year student. The ‘reality shock’ experienced in the transition from school to university varied in relation to their personal experience. It

was evident that those students who are used to city life and who function more independently of their families or support systems at home have a greater chance to succeed at university. Some of the comments made by students, and reported by Oosthuizen and Eiselen (2011:41), include:

- “Determination and perseverance is important. Being able to bounce back and pick up the pieces and not losing hope.”
- “You need self-motivation! It will be a bumpy road ... push yourself, boost yourself.”
- “Most of us come from a protected environment and when we come to varsity, it affects us because of peer pressure, e.g. choosing friends over your books.”

In contrast to the findings of the quantitative phase illustrated in Figure 5.4, students participating in the qualitative phase mentioned *economic reasoning ability* only occasionally, while *critical thinking skills, problem-solving skills and analytical thinking skills* were not mentioned at all as critical skills required. Furthermore, *time management skills* were frequently mentioned in the qualitative phase, but were not among the most important skills identified in the quantitative phase.

In order to identify those skills that students considered to be least important, the skills most frequently considered by respondents **not** to be important for success in B.Com. (Finance) in the quantitative study were identified. Oosthuizen and Eiselen (2011:41) reported that these are:

- *teamwork ability* (21% of the 215 respondents considered it to be unimportant);
- *ability to find relevant information in the library* (16.3%);
- *leadership skills* (14.4%);
- *creative thinking skills* (13%);
- *ability to participate as a responsible citizen in the local community* (11.6%);
and
- *the ability to be culturally sensitive across the range of social contexts* (10.2%).

These results should be viewed within the context of this study: the students included in the study have only been exposed to the first semester of study in their first year at university, and hence skills such as *teamwork ability* or the *finding of information in the library* may not yet have been required of them. It is typically during their second and third year of study where these skills will be required.

5.3.2 Skills acquired in the National Senior Certificate

In terms of the extent to which each of the skills were acquired during the NSC, at least 35% but at most 51% of the 215 respondents considered each of the skills to have been acquired either well or very well, while between 12% and 32% of the 215 respondents considered each of the skills to have been acquired either poorly or only to a moderate extent. As was the case for skills required, large percentages of respondents did not answer all of the questions in this section of the questionnaire.

When considering those skills that were most frequently considered to have been **acquired**, the skills indicated by at least 50% of the 215 respondents to have been acquired either well or very well during the NSC were identified. According to Oosthuizen and Eiselen (2011:41-42), these skills are:

- *the ability to complete projects* (51% of 215 respondents indicated they acquired the skill either well or very well);
- *calculation skills* (51%);
- *decision-making skills* (50%); and
- *the ability to achieve personal goals* (50%).

The results are illustrated in Figure 5.5 (percentages do not add up to 100% owing to low response percentages for the various questions in this section). Note that for a clearer illustration of the responses, categories 1 and 2, *poorly* and *to a moderate extent*, have been grouped together.

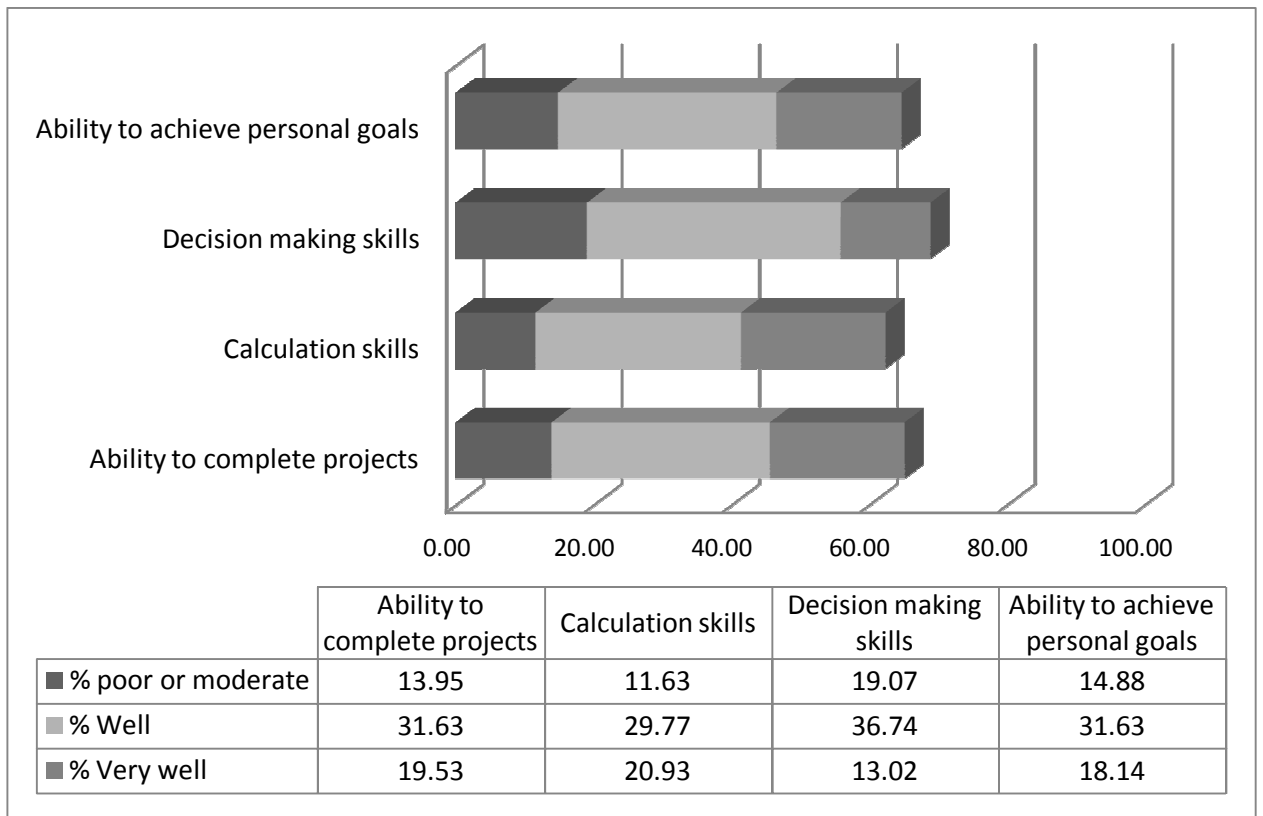


Figure 5.5: Most important skills *acquired* in the NSC (n=215)

The skills that were most frequently considered to have been acquired either *poorly* or only to a *moderate extent* were also identified. These skills are shown in Table 5.4 together with the percentage of respondents who indicated that they acquired the skill either *poorly* or only to a *moderate extent*.

Table 5.4: Skills most frequently identified as having been acquired *poorly or only to a moderate extent*, in the NSC (n=215)

Skill	% of 215 who indicated skills were acquired poorly or moderately
Economic reasoning ability	31.63
Ability to practically implement learning content	26.05
Ability to find relevant information in the library	25.12
Creative thinking skills	24.19
Analytical thinking skills	23.72
Critical thinking skills	23.72
Ability to interpret financial information	23.72
Ability to understand global issues and their impact on the local community	23.26
Ability to reflect on a variety of strategies to learn more effectively	22.79
Organisation skills	21.86
Developing entrepreneurial opportunities	21.86
Basic computer literacy skills	21.86
Problem-solving skills	21.40
Time management skills	21.40
Ability to organize information in a meaningful way	20.93
Ability to participate as a responsible citizen in the local community	20.93
Ability to prioritise activities	20.47
Adaptability to new situations	20.47

Oosthuizen and Eiselen (2011:42) state that it is of interest to note the fact that many of the skills identified to be the most important skills for success (Figure 5.4) appear in the table of skills most frequently not acquired (Table 5.4), namely:

- *Critical thinking skills;*
- *Analytical thinking skills;*
- *Economic reasoning ability; and*
- *The ability to practically implement learning content.*

This implies that there may be a gap between the extent to which these skills are **required** for success and the extent to which they were **acquired** in the NSC.

To further explore the gap between required and acquired skills, the focus was shifted to the students who indicated that they had acquired a skill *poorly* or only to a *moderate extent*. The number of students who considered the skill to be either important or very important was determined. The skills most frequently considered being important but not acquired, as reported by Oosthuizen and Eiselen (2011:43) and shown in Figure 5.6, are:

- *Economic reasoning ability* (30.2% of the 215 students indicated that this skill was important or very important but was acquired only poorly or to a moderate extent in the NSC);
- *Ability to practically implement learning content* (24.2%);
- *Critical thinking skills* (23.7%);
- *Analytical thinking skills* (23.3%);
- *Ability to interpret financial information* (22.8%); and
- *Time management skills* (20.5%).

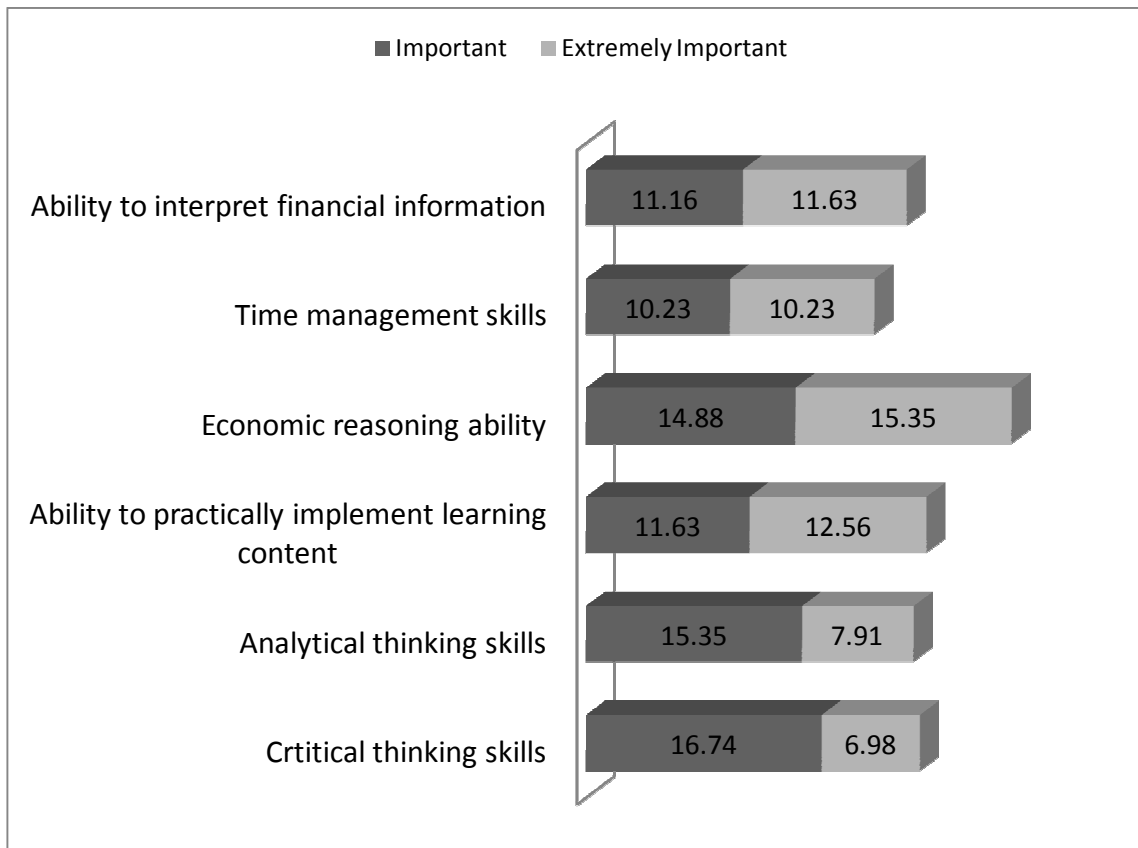


Figure 5.6: Skills *not acquired* in the NSC, but *required* in B.Com. (Finance) (n=215)

The response to the second question posed to the respondents during the focus-group discussions corresponds with the representation of the results in Figure 5.6.

In the analysis of the responses by students participating in the focus-group discussions, it was evident that the *ability to reflect on a variety of strategies to learn more effectively* was the skill that the majority of the respondents **lacked**. Although they were motivated and enthusiastic about their B.Com. (Finance) studies, they felt under-equipped to cope with the challenges of learning, mastering and practically implementing the learning content.

Some of the comments made are:

- “What works for the next person doesn’t work for you. You need to know your own preference of study methods.”
- “Study skills are important because you need to get a different study method and you have to practice.”
- “The method to study needs to change. How you studied in high school is different to how you should study in varsity.”

Students in the focus-group discussions felt that they also lacked *analytical thinking skills* (ability to analyse and categorise information) and *the ability to interpret financial information*. *Basic computer literacy skills* is one of the categories which they seem to have mastered at school, as one of the students commented: “We are the technology generation so computer literacy is not a problem; but to other generations it was a disadvantage.”

In summary, the following comments captured the general sentiment of UJ first-year B.Com. (Finance) students of 2009:

- “In high school we could play for the whole year and still pass, varsity is different.”
- “The NSC was too easy. Learners were easily getting As and Bs in high school: it was too simple.”

In terms of the skills required but not acquired, there is similarity between the results of the quantitative and qualitative phases. In both phases the *ability to practically implement learning content and interpret financial information* as well as *analytical thinking skills* were identified as skills required, but not acquired. The fact that *time management* was identified as the most critical skill for success in the qualitative phase is supported by the quantitative phase in the sense that *time management* was one of the skills identified as required, but not acquired. Hence, the results of the quantitative and the qualitative phases of this study supported one another, providing a measure of confirmation of the validity of the results obtained by Oosthuizen and

Eiselen (2011:44-45). A summary of the results of the triangulation is displayed in Table 5.5.

Table 5.5: Summary of findings of the triangulation process of skills required being regarded as very important for success in the BCF programme

	Quantitative Data Collected (Survey)	Qualitative Data Collected (Focus-group discussions)
Skills required regarded as very important for success in the BCF programme	<ul style="list-style-type: none"> • Critical thinking skills • Problem-solving skills • Decision-making skills • Analytical thinking skills • Self-confidence 	<ul style="list-style-type: none"> • Time management skills • Ability to work under pressure • Ability to practically implement learning content • Decision-making skills • Self-confidence

In the above table it is noted that two skills, namely *decision-making skills* and *self-confidence* have been regarded as very important in both the quantitative and qualitative data collected.

5.4 DISCUSSION AND SYNTHESIS

The only academic skill that was identified in both phases as **lacking** was *economic reasoning skills*. This does not necessarily imply that these skills were not conveyed to learners in the NSC, but rather that many students taking B.Com. (Finance) did not take any of the NSC Economic and Management Sciences subjects, namely Accounting, Business Studies and Economics, in their senior secondary (FET) phase subject choices. Indeed, many of the comments made by students in the qualitative focus-group discussions were related to a lack of good career advice. This issue should indeed have been addressed in the compulsory subject, Life Orientation (LO), as should *time management* and *organisational skills*. However, in practice this subject is viewed by most students (based on the comments made during the qualitative focus-group discussions) as a 'joke' and has also been shown to be the easiest subject in the NSC (in terms of the highest number of distinctions achieved in Life Orientation, compared to the results in all of the NSC subjects assessed in November 2008) (UMALUSI, 2009:3).

The foresight of the NSC curriculum designers should be commended, especially in view of the fact that the largest percentage of students indicated that the skills that the subject LO aimed to impart are perceived to be amongst the most important skills required for academic success at university. Unfortunately, the results of this study have indicated that LO is not effectively implemented or taken seriously by the learners.

Furthermore, the results of this study reflect on the implementation of the NSC rather than the content of the curriculum. The Grade 12s of 2008 felt that they were coached and spoon-fed and the onus rests upon the educators to improve in this regard. Lecturers at SA HEIs should take cognisance of these issues in planning their teaching and learning strategies. Tinto (1993:4) states that the key to successful student retention lies with the HEI, as it resides in the ability of the lecturers to apply what is known about student retention to the specific situation in which the institution finds itself.

It is of importance to note that the results of this study pertain to the perceptions of students. The perceptions of lecturers on these issues are useful avenues to be explored in future.

5.5 SUMMARY AND REVIEW OF THIS CHAPTER

The research results discussed in this chapter provide an understanding of some of the implications and challenges for HEIs in SA, resulting from the implementation of the NSC. Questions have been raised and answers have been sought as to whether the NSC curriculum adequately prepares learners for success in university studies and whether HEIs can adapt and add value to the 'products' of the NSC. Skills form part of a holistic approach to curriculum construction, that the most common criticism of secondary schools is that they fail to prepare young people for the world of work, and that the learners fail to develop essential life skills. The students' readiness for higher education can thus be described as a combination of maturity, ability and prior knowledge. The findings reported in this chapter are based on both a quantitative and a qualitative enquiry. The results of the study indicate that the students felt that they lacked some of the critical skills required for academic success at university. While it was expected by the researchers that curriculum-related skills would be lacking in first-year students. The results of this study show that those skills contributing to success at university, and lacking in those who enter university for the first time, are *life skills*, such as *time management skills*, rather than *academic skills*. The following chapter focuses on the discussion and interpretation of research results in order to determine profiles of successful BCF students entering a SA university before and after the introduction of the NSC.

CHAPTER 6 DISCUSSION AND INTERPRETATION OF RESEARCH RESULTS TOWARDS DETERMINING PROFILES OF SUCCESSFUL B.COM. (FINANCE) STUDENTS

“We are what we repeatedly do. Excellence, then, is not an act, but a habit.”

Aristotle

6.1 INTRODUCTION AND OVERVIEW OF THIS CHAPTER

The main aim of the statistical analysis was to answer the primary research question addressed in this study, namely:

What differences and similarities occur in the profiles of successful BCF students entering a SA university before and after the introduction of the NSC respectively?

After addressing the *first* secondary research question (SQ–A) in Chapter 5, the *second, third and fourth* secondary questions investigated in this study and reported on in this chapter are follows:

Secondary research question B (SQ–B)

What are the differences and similarities between the profiles of successful and unsuccessful BCF students entering a SA university after the introduction of the NSC?

Secondary research question C (SQ–C)

What are the differences and similarities between the profiles of successful and unsuccessful BCF students entering a SA university before the introduction of the NSC (i.e. with the NATED 550 qualification)?

Secondary research question D (SQ–D)

What are the differences and similarities between the profiles of successful BCF students entering a SA university with the NSC and those entering with the NATED 550?

The primary objective of this statistical analysis was to identify profiles of successful students in two cohorts of students, namely the 2009 and 2008 intakes. In particular, the objective of the statistical analysis was to assess the association between student success as binary dependent variable, and the following independent variables:

- **2009 cohort:** age (years), gender, ethnic group, APS, Grade 12 mathematics NSC mark (categorical), exposure in school to Accounting (binary), exposure in school to Economics (binary), exposure in school to Business Economics (binary); average of first semester mark of five compulsory modules (%).
- **2008 cohort:** age (years), gender, ethnic group, M-score, Grade 12 mathematics higher grade mark (categorical), exposure in school to Accounting (binary), exposure in school to Economics (binary), exposure in school to Business Economics (binary); average of first semester mark of five compulsory modules (%).

For the purpose of comparing the two cohorts, only those students who had taken Mathematics on higher grade in Grade 12 are included in the analysis of the 2008 cohort. From the entire 2008 cohort of 151 students who entered into the BCF programme in 2008, 100 students took mathematics on higher grade (HG) in Grade 12 and 51 students took Mathematics on standard grade (SG) in Grade 12. With the change to the NSC in the 2009 cohort's secondary school curriculum, the differentiation between HG and SG is no longer applicable. 257 of the 260 students of the 2009 cohort took the subject Mathematics in Grade 12, and three students took Mathematical Literacy. Since 2009, NSC Mathematics in Grade 12 is a recommendation for entry into the BCF programme at UJ.

The rationale for including the "average of the first semester mark of five compulsory modules" was to give an indication of the academic performance of the different success groups in their first semester at university. However, this variable was not included in the logistic regression analyses as only "school-leaving" results were considered to be available for prediction at time of admission to university. In Chapter 3, paragraph 3.4, it was mentioned that there is a body of literature that suggests that once students are in the HE system, HE performance becomes a better predictor of subsequent performance than school marks.

6.2 DESCRIPTIVE STATISTICS OF THE DEPENDENT VARIABLE

In this study the dependent variable is the answer to the question: *Is the BCF student successful or unsuccessful?* This question was answered by the researcher from an analysis of the data obtained from the ITS system. For the purposes of this study a *successful student* is a student who has completed the BCF degree in the minimum time of three years and an *unsuccessful student* is a student who has not completed the BCF degree in three years, irrespective of the reasons for non-completion in the minimum time.

Table 6.1 summarises the frequency of academic success amongst both the primary and secondary target populations with respect to successful (graduated in the minimum time) and unsuccessful (did not graduate in the minimum time).

Table 6.1: Frequency distribution (expressed in percentages) for students in the primary and secondary target populations who *graduated in the minimum time*

Success	First-year BCF students of 2008		First-year BCF students of 2009	
	Frequency (N)	Percentage (%)	Frequency (N)	Percentage (%)
No	71	71.0	219	84.2
Yes	29	29.0	41	15.8
Total	100	100.0	260	100.0

The distribution of the primary and secondary target groups according to their status as *successful* or *not successful* are shown in the following graphs:

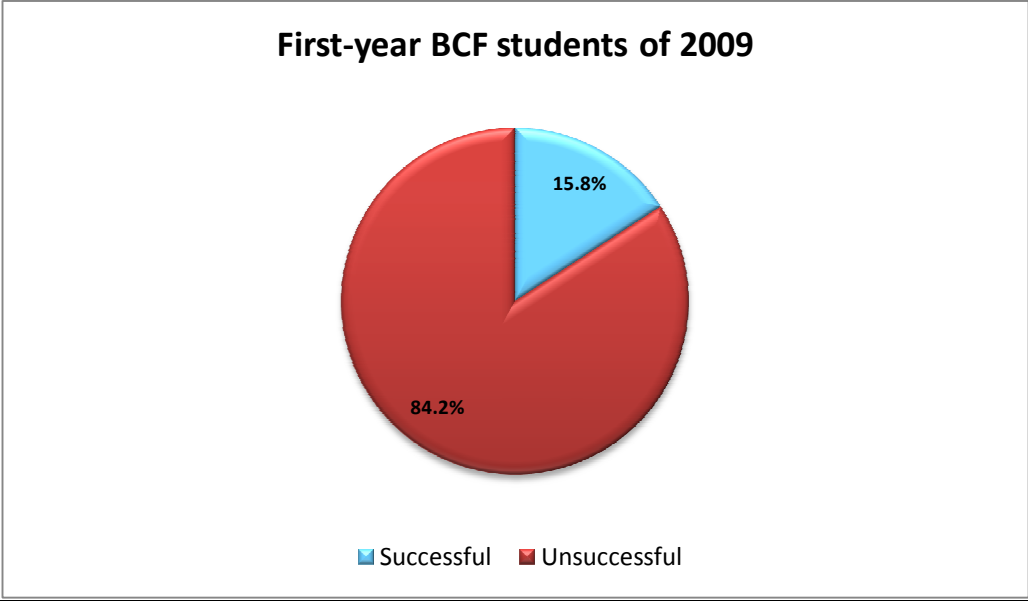


Figure 6.1: Frequency distribution (expressed in percentages) for students in the primary target population who *graduated in the minimum time*

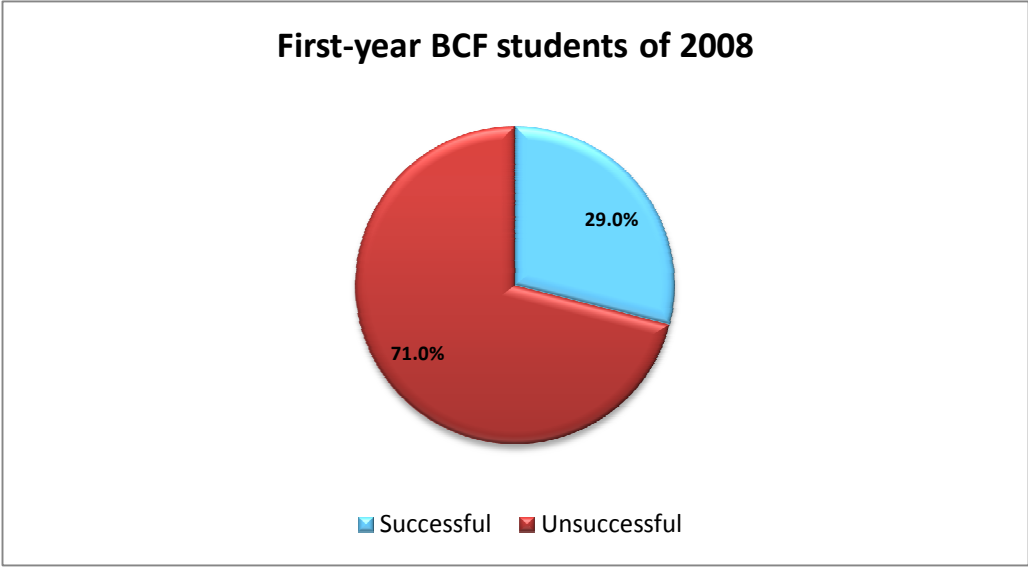


Figure 6.2: Frequency distribution (expressed in percentages) for students in the secondary target population who *to graduated in the minimum time*

The following trends from Table 6.1 and Figures 6.1 and 6.2 are noteworthy:

- A total of 260 first-year BCF students entered UJ in January 2009, of which 41 students (15.8%) completed the degree in the minimum duration of three years. 219 students (84.2%) did not achieve this goal.
- A total of 100 first-year BCF students entered UJ in January 2008 with mathematics HG, of which 29 students (29.0%) completed the degree in the minimum duration of three years. 71 students (71.0%) did not achieve this goal.
- The percentage of successful students decreased from 29.0% in 2008 to 15.8% in 2009.

Summary and interpretation of descriptive statistics of the dependent variable:

The frequency table of the *successful* students in the primary and secondary target populations in this investigation reveals that the success rate of the 2009 intake into the BCF programme is only 15.8%, and that the success rate of the 2008 intake into the BCF programme is 29.0%. From 2008 to 2009, the success rate decreased by 13.2%. One of the reasons for the decrease in the success rate could be the fact that the new admission system, namely the APS, was first applied at HEIs for the first-year students' intake of 2009. The APS assists in increasing the access rate, but not necessarily the success rate.

6.3 DESCRIPTIVE STATISTICS OF THE INDEPENDENT VARIABLES AND SUCCESS

In the following paragraphs the cross tabulation of categorical independent variables and success as well as of the quantitative (continuous) independent variables and success will be reported on.

6.3.1 Cross tabulation of categorical independent variables and success

Two-way frequency tables are presented, showing *success* versus the following independent variables per cohort where applicable (in terms of both the number of students and the percentage of students per category):

- Gender;
- Ethnic group;
- Mathematics (MATHS) APS (2009 cohort) and Mathematics (MATHS) HG M-Score (2008 cohort);
- Exposure in school to Accounting (ACC);
- Exposure in school to Business Economics (BECO); and
- Exposure in school to Economics (ECO).

Software: Statistical Analysis Software Package for Frequency Distribution (SAS FREQ)

The following tables present an illustrative summary of the results of the statistical analysis:

- Table 6.2: Frequency distribution for *gender* by *success* of the primary and secondary target populations;
- Table 6.3: Frequency distribution for *ethnic group* by *success* of the primary and secondary target populations;

- Table 6.4: Frequency distribution for *SS-leaving NSC Mathematics (MATHS) APS mark category* by *success* of the primary target population (2009 cohort);
- Table 6.5: Frequency distribution for *SS-leaving Mathematics HG (MATHS) M-score mark category* by *success* of the secondary target population (2008 cohort);
- Table 6.6: Frequency distribution for *Accounting (ACC) taken at school* by *success* of the primary and secondary target populations;
- Table 6.7: Frequency distribution for *Business Economics (BECO) taken at school* by *success* of the primary and secondary target populations; and
- Table 6.8: Frequency distribution for *Economics (ECO) taken at school* by *success* of the primary and secondary target populations.

6.3.1.1 *The frequency procedure: Table of gender by success*

Table 6.2: Frequency distribution for *gender by success* of the primary and secondary target populations

Variable	Categories	Student Success				Total
		No	%	Yes	%	
2009 Cohort (primary target population)						
Gender	Female	125	85.0%	22	15.0%	147
	Male	94	83.2%	19	16.8%	113
	Total	219	84.2%	41	15.8%	260
2008 Cohort (secondary target population with MATHS HG)						
Gender	Female	39	66.1%	20	33.9%	59
	Male	32	78.1%	9	21.9%	41
	Total	71	71.0%	29	29.0%	100

The following trends from Table 6.2 are noteworthy:

- In both the 2009 and 2008 cohorts the majority of students entering into the BCF programme are female.
- In the 2009 cohort, 147 (56.5%) female students and 113 (43.5%) male students entered into the BCF programme.
- In the 2008 cohort, 59 (59%) female students and 41 (41%) male students entered into the BCF programme.
- The majority of successful students entering into the BCF programme in 2008 and 2009 are female.

- In the 2009 cohort, 22 (53.7%) of the 41 successful students are female.
- In the 2008 cohort, 20 (69.0%) of the 29 successful students are female.
- In the 2009 cohort, 22 (15.0%) of the 147 female students are successful and 125 (85.0%) female students are unsuccessful.
- In the 2009 cohort, 19 (16.8%) of the 113 male students are successful and 94 (83.2%) male students are unsuccessful.
- In the 2008 cohort, 20 (33.9%) of the 59 female students are successful and 39 (66.1%) female students are unsuccessful.
- In the 2008 cohort, nine (21.9%) of the 41 male students are successful and 32 (78.1%) male students are unsuccessful.

6.3.1.2 The frequency procedure: Table of ethnic group by success

Table 6.3: Frequency distribution for *ethnic group by success* of the primary and secondary target populations

Variable	Categories	Student Success				Total
		No	%	Yes	%	
2009 Cohort (primary target population)						
Ethnic Group	African	143	89.4%	17	10.6%	160
	Coloured	7	77.8%	2	22.2%	9
	Indian	18	81.8%	4	18.2%	22
	White	51	73.9%	18	26.1%	69
Total		219	84.2%	41	15.8%	260
2008 Cohort (secondary target population with MATHS HG)						
Ethnic Group	African	42	79.2%	11	20.8%	53
	Coloured	4	66.7%	2	33.3%	6
	Indian	5	38.5%	8	61.5%	13
	White	20	71.4%	8	28.6%	28
Total		71	71.0%	29	29.0%	100

The following trends from Table 6.3 are noteworthy:

- In both the 2009 and 2008 cohorts, the majority of students entering into the BCF programme are Africans. In the 2009 cohort, the 160 African students represent 61.5% of this cohort, and in the 2008 cohort the 53 African students represent 53% of this cohort.
- The majority of successful students entering into the BCF programme in 2008 are African (37.9%) and the majority of successful students in the 2009 cohort are White (43.9%).
- In the 2009 cohort, 17 (10.6%) of the 160 African students are successful and 143 (89.4%) African students are unsuccessful. The majority of students in this ethnic group are unsuccessful.
- In the 2009 cohort, two (22.2%) of the 9 Coloured students are successful and seven (77.8%) of the Coloured students are unsuccessful. The majority of students in this ethnic group are unsuccessful.
- In the 2009 cohort, four (18.2%) of the 22 Indian students are successful and 18 (81.8%) of the Coloured students are unsuccessful. The majority of students in this ethnic group are unsuccessful.
- In the 2009 cohort, 18 (26.1%) of the 69 White students are successful and 51 (73.9%) of the White students are unsuccessful. The majority of students in this ethnic group are unsuccessful.
- In the 2008 cohort, 11 (20.8%) of the 53 African students are successful and 42 (79.2%) African students are unsuccessful. The majority of students in this ethnic group are unsuccessful.
- In the 2008 cohort, two (33.3%) of the six Coloured students are successful and 4 (66.7%) of the Coloured students are unsuccessful. The majority of students in this ethnic group are unsuccessful.
- In the 2008 cohort, eight (61.5%) of the 13 Indian students are successful and five (38.5%) of the Coloured students are unsuccessful. It is particularly noteworthy that the majority of students in this ethnic group (more than 60%) are successful.

- In the 2008 cohort, eight (28.6%) of the 28 White students are successful and 20 (71.4%) of the White students are unsuccessful. The majority of students in this ethnic group are unsuccessful.

6.3.1.3 The frequency procedure: Table of secondary school-leaving Mathematics mark category by success

Table 6.4: Frequency distribution for SS-leaving NSC Mathematics (MATHS) APS mark category by success of the primary target population (2009 cohort)

Variable	Categories	Student Success				Total
		No	%	Yes	%	
MATHS APS	1 & 2 & 3 (0-49%)	36	97.2%	1	2.8%	37
	4 (50-59%)	60	98.4%	1	1.6%	61
	5 (60-69%)	68	85.0%	12	15.0%	80
	6 (70-79%)	40	75.5%	13	24.5%	53
	7 (80-100%)	12	46.2%	14	53.8%	26
	Total		216	84.1%	41	15.9%

Frequency Missing = 3 (these three candidates took the option of Mathematical Literacy in Grade 12)

The following trends from Table 6.4 are noteworthy in the 2009 cohort:

- Only one (2.8%) of the 37 students with an NSC Mathematics mark of between 0% and 49% is successful and 36 (97.2%) are unsuccessful. The majority of students with an NSC Mathematics APS of 1, 2 or 3 are unsuccessful.

- Only one (1.6%) of the 61 students with an NSC Mathematics mark of between 50% and 59% is successful and 60 (98.4%) are unsuccessful. The majority of students with an NSC Mathematics APS of 4 are unsuccessful.
- 12 (15.0%) of the 80 students with an NSC Mathematics mark of between 60% and 69% are successful and 68 (85.0%) are unsuccessful. The majority of students with an NSC Mathematics APS of 5 are unsuccessful.
- 13 (24.5%) of the 53 students with an NSC Mathematics mark of between 70% and 79% are successful and 40 (75.5%) are unsuccessful. The majority of students with an NSC Mathematics APS of 6 are unsuccessful.
- 14 (53.8%) of the 26 students with an NSC Mathematics mark of between 80% and 100% are successful and 12 (46.2%) are unsuccessful. It is particularly noteworthy that the majority of students with an NSC Mathematics APS of 7 are successful.

Table 6.5: Frequency distribution for *SS-leaving Mathematics HG (MATHS) M-score mark category by success of the secondary target population (2008 cohort)*

Variable	Categories	Student Success				Total
		No	%	Yes	%	
MATHS M-score	1 & 2 (40-59%)	14	73.7%	5	26.3%	19
	3 (60-69%)	35	87.5%	5	12.5%	40
	4 & 5 (70-100%)	22	53.7%	19	43.3%	41
Total		71	71.0%	29	29.0%	100

The following trends from Table 6.5 are noteworthy in the 2008 cohort:

- Five (26.3%) of the 19 students with a Mathematics HG mark of between 40% and 59% are successful and 14 (73.7%) are unsuccessful. The majority of students with a Mathematics HG M-score of 1 or 2 are unsuccessful.
- Five (12.5%) of the 40 students with a Mathematics HG mark of between 60% and 69% are successful and 35 (87.5%) are unsuccessful. The majority of students with a Mathematics HG M-score of 3 are unsuccessful.
- 19 (43.3%) of the 41 students with a Mathematics HG mark of between 70% and 100% are successful and 22 (53.7%) are unsuccessful. The majority of students with a Mathematics HG M-score of 4 or 5 are unsuccessful.

6.3.1.4 *The frequency procedure: Table of Accounting taken at school by success*

Table 6.6: Frequency distribution for *Accounting (ACC) taken at school by success of the primary and secondary target populations*

Variable	Categories	Student Success				Total
		No	%	Yes	%	
2009 Cohort (primary target population)						
ACC taken at school	No	40	80.0%	10	20.0%	50
	Yes	179	85.2%	31	14.8%	210
	Total	219	84.2%	41	15.8%	260
2008 Cohort (secondary target population with MATHS HG)						
ACC taken at school	No	33	84.6%	6	15.4%	39
	Yes	38	62.3%	23	37.7%	61
	Total	71	71.0%	29	29.0%	100

The following trends from Table 6.6 are noteworthy:

- In both the 2009 and 2008 cohorts, a majority of students had taken Accounting up to Grade 12. In the 2009 cohort, 210 (80.8%) of the 260 students had taken Accounting, and in the 2008 cohort, 61 (61.0%) of the 100 students had taken Accounting.
- In the 2009 cohort, 31 (14.8%) of the 210 students who had taken Accounting are successful and 179 (85.2%) are unsuccessful. The majority of students who had taken Accounting are unsuccessful.
- In the 2009 cohort, 10 (20.0%) of the 50 students who had not taken Accounting are successful and 40 (80.0%) are unsuccessful. The majority of students who had not taken Accounting are unsuccessful.
- In the 2008 cohort, 23 (37.7%) of the 61 students who had taken Accounting are successful and 38 (62.3%) are unsuccessful. The majority of students who had taken Accounting are unsuccessful.
- In the 2008 cohort, six (15.4%) of the 39 students who had not taken Accounting are successful and 33 (84.6%) are unsuccessful. The majority of students who had not taken Accounting are unsuccessful.
- It is particularly noteworthy that, in the 2009 cohort, 20.0% of students who had not taken Accounting at school are successful, and a lower percentage of the students who had taken Accounting (14.8%) are successful in the BCF programme.
- In the 2008 cohort, 15.4% of students who had not taken Accounting at school are successful, and a higher percentage of the students who had taken Accounting (37.7%) are successful in the BCF programme.

6.3.1.5 The frequency procedure: Table of Business Economics taken at school by success

Table 6.7: Frequency distribution for *Business Economics (BECO)* taken at school by success of the primary and secondary target populations

Variable	Categories	Student Success				Total
		No	%	Yes	%	
2009 Cohort (primary target population)						
BECO taken at school	No	99	83.9%	19	16.1%	118
	Yes	120	84.5%	22	15.5%	142
Total		219	84.2%	41	15.8%	260
2008 Cohort (secondary target population with MATHS HG)						
BECO taken at school	No	45	67.2%	22	32.8%	67
	Yes	26	78.8%	7	21.2%	33
Total		71	71.0%	29	29.0%	100

The following trends from Table 6.7 are noteworthy:

- In the 2009 cohort, a majority of students had taken BECO up to Grade 12. 142 (54.6%) of the 260 students had taken BECO.
- In the 2008 cohort, a majority of the students had not taken BECO up to Grade 12. 67 (67.0%) of the 100 students had not taken BECO.
- In the 2009 cohort, 22 (15.5%) of the 142 students who had taken BECO are successful and 120 (84.5%) are unsuccessful. The majority of students who had taken BECO are unsuccessful.

- In the 2009 cohort, 19 (16.1%) of the 118 students who had not taken BECO are successful and 99 (83.9%) are unsuccessful. The majority of students who had not taken BECO are unsuccessful.
- In the 2008 cohort, seven (21.2%) of the 33 students who had taken BECO are successful and 26 (78.8%) are unsuccessful. The majority of students who had taken BECO are unsuccessful.
- In the 2008 cohort, 22 (32.8%) of the 67 students who had not taken BECO are successful and 45 (67.2%) are unsuccessful. The majority of students who had not taken BECO are unsuccessful.
- It is particularly noteworthy that, in the 2009 cohort, 16.1% of students who had not taken BECO at school are successful, and a lower percentage of students who had taken BECO (15.5%) are successful in the BCF programme.
- A similar trend is noted in the 2008 cohort, namely that 32.8% of students who had not taken BECO at school are successful, and a lower percentage of students who had taken BECO (21.2%) are successful in the BCF programme.

6.3.1.6 The frequency procedure: Table of Economics taken at school by success

Table 6.8: Frequency distribution for Economics (ECO) taken at school by success of the primary and secondary target populations

Variable	Categories	Student Success				Total
		No	%	Yes	%	
2009 Cohort (primary target population)						
ECO taken at school	No	156	83.9%	30	16.1%	186
	Yes	63	85.1%	11	14.9%	74
Total		219	84.2%	41	15.8%	260
2008 Cohort (secondary target population with MATHS HG)						
ECO taken at school	No	53	68.0%	25	32.0%	78
	Yes	18	81.8%	4	18.2%	22
Total		71	71.0%	29	29.0%	100

The following trends from Table 6.8 are noteworthy:

- In both the 2009 and 2008 cohorts, a majority of students had not taken ECO up to Grade 12. In the 2009 cohort, 186 (71.5%) of the 260 students had not taken ECO, and in the 2008 cohort, 78 (78.0%) of the 100 students had not taken ECO.
- In the 2009 cohort, 11 (14.9%) of the 74 students who had taken ECO are successful and 63 (85.1%) are unsuccessful. The majority of students who had taken ECO are unsuccessful.

- In the 2009 cohort, 30 (16.1%) of the 186 students who had not taken ECO are successful and 156 (83.9%) are unsuccessful. The majority of students who had not taken ECO are unsuccessful.
- In the 2008 cohort, four (18.2%) of the 22 students who had taken ECO are successful and 18 (81.8%) are unsuccessful. The majority of students who had taken ECO are unsuccessful.
- In the 2008 cohort, 25 (32.0%) of the 78 students who had not taken ECO are successful and 53 (68.0%) are unsuccessful. The majority of students who had not taken ECO are unsuccessful.
- It is particularly noteworthy that, in the 2009 cohort, 16.1% of students who had not taken ECO at school are successful, and a lower percentage of students who had taken ECO (14.9%) are successful in the BCF programme.
- A similar trend is noted in the 2008 cohort, namely that 32.0% of students who had not taken ECO at school are successful, and a lower percentage of students who had taken ECO (18.2%) are successful in the BCF programme.

6.3.2 Quantitative (continuous) independent variables by success category

Descriptive statistics (mean, standard deviation, median, minimum, maximum, number of observations) will be presented for each of the following independent variables per success category and total, and per cohort where applicable:

- Age (in years when entering first year of university studies);
- APS (2009 cohort) and M-score (2008 cohort);
- Grade 12 Mathematics mark; and
- Average mark of five compulsory modules in first semester at university.

Software: SAS Proc MEANS.

The following tables present an illustrative summary of the results of the statistical analysis:

- Table 6.9: Descriptive statistics from quantitative independent variables of the primary and secondary target populations;
- Table 6.10: Descriptive statistics from quantitative independent variables, by success category, of the primary target population (2009 cohort); and
- Table 6.11: Descriptive statistics from quantitative independent variables, by success category, of the secondary target population (2008 cohort).

6.3.2.1 *Primary and secondary target populations*

Table 6.9: Descriptive statistics from quantitative independent variables of the primary and secondary target populations

Variable	N	Mean	Standard Deviation	Minimum	Maximum
2009 Cohort (primary target population)					
Age	260	17.92	0.60	16.00	20.00
APS	260	32.13	7.72	28.00	46.00
MATHS NSC Mark	257	63.40	12.11	30.00	99.00
Average 1st semester at university	202	44.11	16.85	0.00	81.00
2008 Cohort (secondary target population with MATHS HG)					
Age	100	17.95	0.56	17.00	20.00
M-Score	100	18.70	3.02	14.00	28.00
MATHS HG Mark	100	67.00	9.07	45.00	90.00
Average 1st semester at university	87	49.84	14.67	0.00	81.00

2009 Cohort: *MATHS NSC Mark Frequency Missing = 3 (these three candidates took the option of Mathematical Literacy in Grade 12); and average 1st Semester at University Frequency Missing = 58 (these 58 candidates did not qualify for examination entry in June 2009)*

2008 Cohort with MATHS HG: *Average 1st Semester at University Frequency Missing = 13 (these 13 candidates did not qualify for examination entry in June 2008)*

The following trends from Table 6.9 are noteworthy:

- In the 2009 cohort, the minimum age is 16 years and the maximum age is 20 years, whereas in the 2008 cohort the minimum age is 17 years and the maximum age is also 20 years. The mean of the age variables in the 2009 and 2008 cohorts are very close in value: 17.92 years and 17.95 years respectively. The standard deviation of the age variable is 0.60 in the 2009 cohort, and 0.56 in the 2008 cohort.
- In the 2009 cohort, the minimum APS is 28 and the maximum APS is 46. In the 2008 cohort, the minimum M-score is 14 and the maximum M-score is 28.
- The mean and the standard deviation of the APS variable in the 2009 cohort are 32.13 and 7.72 respectively. The mean and the standard deviation of the M-score variable in the 2008 cohort are 18.70 and 3.02 respectively.
- In the 2009 cohort, the minimum Mathematics NSC mark is 30% and the maximum mark is 99%. In the 2008 cohort, the minimum Mathematics HG mark is 45% and the maximum mark is 90%.
- The mean and the standard deviation of the Mathematics NSC mark variable in the 2009 cohort are 63.4 and 12.11 respectively. The mean and standard deviation of the Mathematics HG mark variable in the 2008 cohort are 67 and 9.07 respectively.
- In both the 2009 and 2008 cohorts, the minimum average mark achieved in the five compulsory first-semester modules is 0% and the maximum is 81%. The explanation for the minimum value of 0% is that some of the students discontinued their studies without completing any assessments in any of the five compulsory first-semester modules.

- The mean and the standard deviation of the average mark achieved in the five compulsory first-semester modules of the 2009 cohort are 44.11 and 16.85 respectively.
- The mean and the standard deviation of the average mark achieved in the five compulsory first-semester modules of the 2008 cohort are 49.84 and 14.67 respectively.

6.3.2.2 *Per success category*

Table 6.10: Descriptive statistics from quantitative independent variables, by success category, of the primary target population (2009 cohort)

Success	Variable	N	Mean	Standard Deviation	Minimum	Maximum
No	Age	219	17.94	0.62	16.00	20.00
	APS	219	31.43	7.23	28.00	46.00
	MATHS NSC mark	216	61.35	11.32	30.00	96.00
	Average 1 st semester at university	161	40.17	16.20	0.00	78.00
Yes	Age	41	17.85	0.48	17.00	19.00
	APS	41	35.85	9.16	28.00	45.00
	MATHS NSC mark	41	74.20	10.36	47.00	99.00
	Average 1 st semester at university	41	59.61	8.23	52.00	81.00

The following trends from Table 6.10 are noteworthy in the 2009 cohort:

- The minimum age of successful students is one year higher than for the unsuccessful students, and the maximum age of successful students is one year lower than for the unsuccessful students.
- The ages of successful students are between 17 years and 19 years, and for unsuccessful students they are between 16 years and 20 years.
- The mean and standard deviation for ages of successful students are 17.85 and 0.48 respectively, and for ages of unsuccessful students they are 17.94 and 0.62 respectively.
- The APS of successful students ranges between 28 and 45 points, and for unsuccessful students they range between 28 and 46 points.
- The mean and standard deviation for APS of successful students are 35.85 and 9.16 respectively, and for the APS of unsuccessful students they are slightly lower at 31.43 and 7.23 respectively.
- The Mathematics NSC mark for successful students are between 47% and 99%, and for unsuccessful students they are between 30% and 96%.
- The mean and standard deviation for the Mathematics NSC marks of successful students are 74.2 and 10.36 respectively, and for the Mathematics NSC marks of unsuccessful students they are 61.35 and 11.32 respectively.
- The average achieved in the five compulsory modules of the first semester of the BCF programme for successful students are between 52% and 81% and between 0% and 78% for unsuccessful students.
- The mean and standard deviation for the average achieved in the five compulsory modules of the first semester of the BCF programme for successful students are 59.61 and 8.23 respectively, and for unsuccessful students they are 40.17 and 16.20 respectively.

Table 6.11: Descriptive statistics from quantitative independent variables, by success category, of the secondary target population (2008 cohort)

Success	Variable	N	Mean	Standard Deviation	Minimum	Maximum
No	Age	71	18.04	0.57	17.00	20.00
	M-Score	71	17.96	2.53	14.00	24.00
	MATHS HG mark	71	65.56	8.26	45.00	75.00
	Average 1 st semester at university	59	44.76	14.54	0.00	60.00
Yes	Age	29	17.72	0.45	17.00	18.00
	M-Score	29	20.52	3.38	16.00	28.00
	MATHS HG mark	29	70.52	10.12	45.00	90.00
	Average 1 st semester at university	28	60.54	7.50	51.00	81.00

The following trends from Table 6.11 are noteworthy in the 2008 cohort:

- The minimum ages of successful and unsuccessful students are the same, and the maximum age of successful students is two years lower than for the unsuccessful students.
- The ages of successful students are between 17 years and 18 years, and for unsuccessful students they are between 17 years and 20 years.
- The mean and standard deviation for ages of successful students are 17.72 and 0.45 respectively, and for the ages of unsuccessful students they are 18.04 and 0.57 respectively.
- The M-scores of successful students are between 16 and 28 points, and for unsuccessful students they are slightly lower, between 14 and 24 points.

- The mean and standard deviation for the M-scores of successful students are 20.52 and 3.38 respectively, and for the M-scores of unsuccessful students they are slightly lower at 17.96 and 2.53 respectively.
- The Mathematics HG marks for successful students are between 45% and 90%, and for unsuccessful students they are between 45% and 75%.
- The mean and standard deviation for Mathematics HG marks of successful students are 70.52 and 10.12 respectively, and for the Mathematics NSC marks of unsuccessful students they are 65.56 and 8.26 respectively.
- The averages achieved in the five compulsory modules of the first semester of the BCF programme for successful students are between 51% and 81% and between 0% and 60% for unsuccessful students.
- The mean and standard deviation for the averages achieved in the five compulsory modules of the first semester of the BCF programme for successful students are 60.54 and 7.50 respectively, and for unsuccessful students they are 44.76 and 14.54 respectively.

6.4 DISCUSSION AND INTERPRETATION OF DESCRIPTIVE STATISTICS

In this research study, descriptive statistics provided information to answer secondary research questions B, C and D. A summary of the answers to each of the three secondary research questions follows in the paragraphs below.

6.4.1 Secondary research question B (SQ–B)

SQ–B is: *What are the differences and similarities between the profiles of successful and unsuccessful BCF students entering a SA university after the introduction of the NSC?* The answer to SQ–B refers to the descriptive statistics of the 2009 cohort or the primary target population, which is discussed in the following paragraphs.

6.4.1.1 Descriptive statistics of the dependent variable, namely student success

A total of 260 first-year BCF students entered UJ in January 2009, of which 41 students (15.8%) succeeded in completing this degree in the minimum duration of three years. 219 students (84.2%) were unsuccessful at achieving this goal.

6.4.1.2 Descriptive statistics of the biographical, categorical independent variables, namely gender and ethnicity

Gender: 147 (56.5%) female students and 113 (43.5%) male students entered into the BCF programme in 2009, and 22 (53.7%) of the 41 successful students are female. Of the 147 female students, 22 (15.0%) are successful and 125 (85.0%) female students are unsuccessful. Furthermore, 19 (16.8%) of the 113 male students are successful and 94 (83.2%) of the male students are unsuccessful.

Ethnicity: The 160 African students represent 61.5% of this cohort. Of the 160 African students, 17 (10.6%) are successful and 143 (89.4%) are unsuccessful. The majority of successful students in the 2009 cohort are White (43.9%). Of the 69 White students, 18 (26.1%) are successful and 51 (73.9%) of the White students are unsuccessful. Two (22.2%) of the nine Coloured students are successful and seven (77.8%) of the Coloured students are unsuccessful. Four (18.2%) of the 22 Indian students are successful and 18 (81.8%) of the Indian students are unsuccessful.

6.4.1.3 Descriptive statistics of the academic, categorical independent variables, namely NSC Mathematics mark and Accounting, Business Economics and Economics having been taken at secondary school

NSC Mathematics mark (expressed in APS categories): Only one (2.8%) of the 37 students with an NSC Mathematics mark of between 0% and 49% (in APS categories 1, 2 and 3) is successful and 36 (97.2%) are unsuccessful. Only one (1.6%) of the 61 students with an NSC Mathematics mark of between 50% and 59% (in APS category 4) is successful and 60 (98.4%) are unsuccessful. Of the 80 students with an NSC Mathematics mark of between 60% and 69% (in APS category 5), 12 (15.0%) are successful and 68 (85.0%) are unsuccessful. Of the 53 students with an NSC

Mathematics mark of between 70% and 79% (in APS category 6), 13 (24.5%) are successful and 40 (75.5%) are unsuccessful. The majority of students with an NSC Mathematics APS in categories 1 to 6 are unsuccessful. Of the 26 students with an NSC Mathematics mark of between 80% and 100% (in APS category 7), 14 (53.8%) are successful and 12 (46.2%) are unsuccessful. It is particularly noteworthy that the majority of students with an NSC Mathematics APS of 7 are successful.

Accounting taken at secondary school: In the 2009 cohort, 210 (80.8%) of the 260 students had taken Accounting. Of the 210 students who had taken Accounting, 31 (14.8%) are successful and 179 (85.2%) are unsuccessful. Of the 50 students who had not taken Accounting, 10 (20.0%) are successful and 40 (80.0%) are unsuccessful. It is particularly noteworthy that, in the 2009 cohort, 20.0% of students who had not taken Accounting at school are successful, and a lower percentage of the students who had taken Accounting (14.8%) are successful in the BCF programme.

Business Economics taken at secondary school: In the 2009 cohort, 142 (54.6%) of the 260 students had taken Business Economics. Of the 142 students who had taken Business Economics, 22 (15.5%) are successful and 120 (84.5%) are unsuccessful. Of the 118 students who had not taken Business Economics, 19 (16.1%) are successful and 99 (83.9%) are unsuccessful. It is particularly noteworthy that 16.1% of the students who had not taken Business Economics at school are successful, and a lower percentage of students who had taken Business Economics (15.5%) are successful in the BCF programme.

Economics taken at secondary school: In the 2009 cohort, 186 (71.5%) of the 260 students had not taken Economics. Of the 74 students who had taken Economics, 11 (14.9%) are successful and 63 (85.1%) are unsuccessful. Of the 186 students who had not taken Economics, 30 (16.1%) are successful and 156 (83.9%) are unsuccessful. It is particularly noteworthy that 16.1% of the students who had not taken Economics at school are successful, and a lower percentage of students who had taken Economics (14.9%) are successful in the BCF programme.

6.4.1.4 Descriptive statistics of the quantitative (continuous), biographical, independent variable, namely age of students (in years) when entering their first year of university studies

The minimum age of this cohort is 16 years and the maximum age is 20 years. The mean of the age variable is 17.92 years. The minimum age of successful students is one year higher than for the unsuccessful students, and the maximum age of successful students is one year lower than for the unsuccessful students. The ages of successful students are between 17 years and 19 years, and for unsuccessful students they are between 16 years and 20 years. The mean age of successful students is 17.85 years and for unsuccessful students it is slightly higher at 17.94 years.

6.4.1.5 Descriptive statistics of the quantitative (continuous), academic, independent variables, namely APS, NSC Mathematics mark and average mark achieved in the five compulsory modules during the first semester at university

APS: For the primary target population, the minimum APS is 28 and the maximum APS is 46. The mean of the APS variable is 32.13 points. The APS of successful students ranges between 28 and 45 points, and for unsuccessful students it ranges between 0 and 46 points. The mean APS of successful students is 35.85 points and for unsuccessful students it is slightly lower at 31.43 points.

NSC Mathematics mark: In the 2009 cohort, the minimum Mathematics NSC mark is 30% and the maximum mark is 99%. The mean of the Mathematics NSC mark variable is 63.4%. The Mathematics NSC marks for successful students are between 47% and 99%, and for unsuccessful students they are between 30% and 96%. The mean Mathematics NSC mark of successful students is 74.2% and of unsuccessful students it is 61.35%.

Average mark achieved in the five compulsory modules during the first semester at university: The minimum average mark achieved in the five compulsory first-semester modules is 0% and the maximum is 81%. The mean of the average mark of the 2009 cohort is 44.11%. The averages achieved in the first semester of the BCF

programme for successful students are between 52% and 81%, and between 0% and 78% for unsuccessful students. The mean for the average achieved is 59.61% for successful students and 40.17% for unsuccessful students.

6.4.2 Secondary research question C (SQ–C)

SQ–C is: *What are the differences and similarities between the profiles of successful and unsuccessful BCF students entering a SA university before the introduction of the NSC (i.e. with the NATED 550 qualification)?* The answer to SQ–C refers to the descriptive statistics of the 2008 cohort or the secondary target population, which is discussed in the following paragraphs.

6.4.2.1 Descriptive statistics of the dependent variable, namely student success

A total of 100 first-year BCF students entered UJ in January 2008 with mathematics HG, of which 29 students (29.0%) succeeded in completing this degree in the minimum duration of three years, while 71 students (71.0%) were unsuccessful at achieving this goal.

6.4.2.2 Descriptive statistics of the biographical, categorical independent variables, namely gender and ethnicity

Gender: Of the students who entered into the BCF programme in 2008, 59 (59%) are female students and 41 (41%) are male students, while 20 (69.0%) of the 29 successful students are female. Of the 59 female students, 20 (33.9%) are successful and 39 (66.1%) of the female students are unsuccessful. Furthermore, 9 (21.9%) of the 41 male students are successful and 32 (78.1%) of the male students are unsuccessful.

Ethnicity: The 53 African students represent 53% of this cohort. The majority of successful students entering into the BCF programme in 2008 are African (37.9%). Of the 53 African students, 11 (20.8%) are successful and 42 (79.2%) are unsuccessful. Two (33.3%) of the six Coloured students are successful and four (66.7%) of the Coloured students are unsuccessful. Eight (61.5%) of the 13 Indian students are successful and five (38.5%) of the Indian students are unsuccessful. It is

particularly noteworthy that the majority of students in this ethnic group (more than 60%) are successful. Eight (28.6%) of the 28 White students are successful and 20 (71.4%) of the White students are unsuccessful.

6.4.2.3 Descriptive statistics of the academic, categorical independent variables, namely HG Mathematics mark and Accounting, Business Economics and Economics having been taken at secondary school

HG Mathematics mark (expressed in M-score categories): Five (26.3%) of the 19 students with a Mathematics HG mark of between 40% and 59% (in M-score category 1 and 2) are successful and 14 (73.7%) are unsuccessful. Five (12.5%) of the 40 students with a Mathematics HG mark of between 60% and 69% (in M-score category 3) are successful and 35 (87.5%) are unsuccessful. Of the 41 students with a Mathematics HG mark of between 70% and 100% (in M-score categories 4 and 5), 19 (43.3%) are successful and 22 (53.7%) are unsuccessful.

Accounting taken at secondary school: In the 2008 cohort, 61 (61.0%) of the 100 students had taken Accounting. Of the 61 students who had taken Accounting, 23 (37.7%) are successful and 38 (62.3%) are unsuccessful. Six (15.4%) of the 39 students who had not taken Accounting are successful and 33 (84.6%) are unsuccessful. It is particularly noteworthy that 15.4% of the students who had not taken Accounting at school are successful, and a higher percentage of students who had taken Accounting (37.7%) are successful in the BCF programme.

Business Economics taken at secondary school: In the 2008 cohort, 67 (67.0%) of the 100 students had not taken Business Economics. Seven (21.2%) of the 33 students who had taken Business Economics are successful and 26 (78.8%) are unsuccessful. Of the 67 students who had not taken Business Economics, 22 (32.8%) are successful and 45 (67.2%) are unsuccessful. It is particularly noteworthy that, in the 2008 cohort, 32.8% of the students who had not taken Business Economics at school are successful, and a lower percentage of the students who had taken Business Economics (21.2%), are successful in the BCF programme.

Economics taken at secondary school: In the 2008 cohort, 78 (78.0%) of the 100 students had not taken Economics. Four (18.2%) of the 22 students who had taken

Economics are successful and 18 (81.8%) are unsuccessful. Of the 78 students who had not taken Economics, 25 (32.0%) are successful and 53 (68.0%) are unsuccessful. It is particularly noteworthy that, 32.0% of the students who had not taken Economics at school are successful, and a lower percentage of students who had taken Economics (18.2%), are successful in the BCF programme.

6.4.2.4 Descriptive statistics of the quantitative (continuous), biographical, independent variable, namely the student's age (in years) when entering the first year of university studies

The minimum age of this cohort is 17 years and the maximum age is 20 years. The mean of the age variable is 17.95 years. In this cohort, the minimum ages of successful and unsuccessful students are the same, and the maximum age of successful students is two years lower than for the unsuccessful students. The ages of successful students are between 17 years and 18 years, and for unsuccessful students they are between 17 years and 20 years. The mean age of successful students is 17.72 years, and for unsuccessful students it is slightly higher at 18.04 years.

6.4.2.5 Descriptive statistics of the quantitative (continuous), academic, independent variables, namely M-score, Mathematics HG mark and average mark achieved in the five compulsory modules during the first semester at university

M-score: In the secondary target population, the minimum M-score is 14 and the maximum M-score is 28. The mean of the M-score variable is 18.70 points. The M-scores of successful students are between 16 and 28 points, and for unsuccessful students they are slightly lower, between 14 and 24 points. The mean M-score of successful students is 20.52 points, and for unsuccessful students it is slightly lower at 17.96 points.

Mathematics HG mark: In the 2008 cohort, the minimum Mathematics HG mark is 45% and the maximum mark is 90%. The mean of the Mathematics HG mark variable is 67%. The Mathematics HG marks for successful students are between 45% and 90%, and for unsuccessful students they are between 45% and 75%. The

mean Mathematics HG mark of successful students is 70.52% and for unsuccessful students it is 65.56%.

Average mark achieved in the five compulsory modules during the first semester at university: The minimum average mark achieved in the five compulsory first-semester modules is 0% and the maximum is 81%. The mean of the average mark in the average mark of the 2008 cohort is 49.84%. The average achieved in the first semester of the BCF programme for successful students is between 51% and 81% and between 0% and 60% for unsuccessful students. The mean for the average achieved in the first semester of the BCF programme for successful students is 60.54% and for unsuccessful students it is 44.76%.

6.4.3 Secondary research question D (SQ–D)

SQ–D is: *What are the differences and similarities between the profiles of successful BCF students entering a SA university with the NSC and those entering with the NATED 550?* The answer to SQ–D refers to the descriptive statistics of the successful students of both the 2009 and 2008 cohorts or primary and secondary target populations, which is discussed in the following paragraphs.

6.4.3.1 Descriptive statistics of the dependent variable, namely student success

A total of 260 first-year BCF students entered UJ in January 2009, of which 41 students (15.8%) succeeded in completing this degree in the minimum duration of three years. A total of 100 first-year BCF students entered UJ in January 2008 with Mathematics HG, of which 29 students (29.0%) succeeded in completing this degree in the minimum duration of three years. The percentage of successful students has decreased from 29.0% in 2008 to 15.8% in 2009.

6.4.3.2 Descriptive statistics of the biographical, categorical independent variables, namely, gender and ethnicity

Gender: In both of the 2009 and 2008 cohorts the majority of successful students are female. In the 2009 cohort, 22 (53.7%) of the 41 successful students are female. 22 (15.0%) of the 147 female students are successful and 19 (16.8%) of the 113 male

students are successful. In the 2008 cohort, 20 (69.0%) of the 29 successful students are female. 20 (33.9%) of the 59 female students are successful and 9(21.9%) of the 41 male students are successful.

Ethnicity: In the 2009 cohort, the majority of successful students are White (43.9%). 17 (10.6%) of the 160 African students are successful, 18 (26.1%) of the 69 White students are successful, two (22.2%) of the nine Coloured students are successful and four (18.2%) of the 22 Indian students are successful. In the 2008 cohort, the majority of successful students are African (37.9%). Of the 53 African students, 11 (20.8%) are successful, eight (28.6%) of the 28 White students are successful, two (33.3%) of the six Coloured students are successful and eight (61.5%) of the 13 Indian students are successful.

6.4.3.3 *Descriptive statistics of the academic, categorical independent variables, namely Grade 12 Mathematics mark and having taken Accounting, Business Economics and Economics at secondary school*

NSC Mathematics mark (expressed in APS categories): In the 2009 cohort, 12 (15.0%) of the 80 students with an NSC Mathematics mark of between 60% and 69% (in APS category 5) are successful and 13 (24.5%) of the 53 students with an NSC Mathematics mark of between 70% and 79% (in APS category 6) are successful. Of the 26 students with an NSC Mathematics mark of between 80% and 100% (in APS category 7), 14 (53.8%) are successful. It is particularly noteworthy that the majority of students with an NSC Mathematics APS of 7 are successful.

Mathematics HG mark (expressed in M-score categories): In the 2008 cohort, five (12.5%) of the 40 students with a Mathematics HG mark of between 60% and 69% (in M-score category 3) are successful and 19 (43.3%) of the 41 students with a Mathematics HG mark of between 70% and 100% (in M-score categories 4 and 5) are successful.

Accounting taken at secondary school: In the 2009 cohort, 31 (14.8%) of the 210 students who had taken Accounting are successful and 10 (20.0%) of the 50 students who have not taken Accounting are successful. It is particularly noteworthy that, in the 2009 cohort, 20.0% of students who had not taken Accounting at school

are successful, and a lower percentage of students who had taken Accounting (14.8%) are successful in the BCF programme. In the 2008 cohort, 23 (37.7%) of the 61 students who had taken Accounting are successful and six (15.4%) of the 39 students who had not taken Accounting are successful. It is particularly noteworthy that, in the 2008 cohort, 15.4% of the students who had not taken Accounting at school are successful, and a higher percentage of students who had taken Accounting (37.7%) are successful in the BCF programme.

Business Economics taken at secondary school: In the 2009 cohort, 22 (15.5%) of the 142 students who had taken Business Economics are successful and 19 (16.1%) of the 118 students who had not taken Business Economics are successful. It is particularly noteworthy that 16.1% of students who had not taken Business Economics at school are successful, and a lower percentage of students, namely 15.5% who had taken Business Economics, are successful in the BCF programme. In the 2008 cohort, seven (21.2%) of the 33 students who had taken Business Economics are successful and 22 (32.8%) of the 67 students who had not taken Business Economics are successful. It is particularly noteworthy that, in the 2008 cohort, 32.8% of students who had not taken Business Economics at school are successful, and a lower percentage of students who had taken Business Economics (21.2%) are successful in the BCF programme.

Economics taken at secondary school: In the 2009 cohort, 11 (14.9%) of the 74 students who had taken Economics are successful and 30 (16.1%) of the 186 students who had not taken Economics are successful. It is particularly noteworthy that 16.1% of the students who had not taken Economics at school are successful, and a lower percentage of students who had taken Economics (14.9%) are successful in the BCF programme. In the 2008 cohort, four (18.2%) of the 22 students who had taken Economics are successful and 25 (32.0%) of the 78 students who had not taken Economics are successful. It is particularly noteworthy that 32,0% of students who had not taken Economics at school are successful, and a lower percentage of students who had taken Economics (18.2%) are successful in the BCF programme.

6.4.3.4 Descriptive statistics of the quantitative (continuous), biographical, independent variable, namely the age of students (in years) when entering their first year of university studies

In the 2009 cohort, the ages of successful students are between 17 years and 19 years, and the mean age of successful students is 17.85 years. In the 2008 cohort, the ages of successful students are between 17 years and 18 years, and the mean age of successful students is 17.72 years.

6.4.3.5 Descriptive statistics of the quantitative (continuous), academic, independent variables, namely APS (2009 cohort) and M-score (2008 cohort), Grade 12 Mathematics mark and average mark achieved in the five compulsory modules during the first semester at university

APS: In the 2009 cohort, the APS of successful students ranges between 0 and 45 points, and the mean APS of successful students is 35.85 points.

M-score: In the 2008 cohort, the M-score of successful students are ranges 16 and 28 points, and the mean M-score of successful students is 20.52 points.

Grade 12 Mathematics mark: In the 2009 cohort, the Mathematics NSC marks of successful students are between 47% and 99%, and the mean Mathematics NSC mark of successful students is 74.2%. In the 2008 cohort, the Mathematics HG marks of successful students are between 45% and 90%, and the mean Mathematics HG mark of successful students is 70.52%.

Average mark achieved in the five compulsory modules during the first semester at university: In the primary target population, the average achieved in the first semester of the BCF programme for successful students are between 52% and 81% and the mean average achieved is 59.61% for successful students. In the secondary target population, the average achieved in the first semester of the BCF programme for successful students are between 51% and 81% and the mean for the average achieved is 60.54% for successful students.

6.5 LOGISTIC REGRESSION

Logistic regression estimates the probability of an event (in this case, successful completion of the BCF degree in the minimum time) occurring as a function of one or more independent variables. If the estimated probability of the event occurring is greater than or equal to 0.5 (better than even chance), the event can be classified as occurring (e.g. a student is successful). If the probability of the event occurring is less than 0.5, the event can be classified as not occurring (e.g. a student is unsuccessful). Logistic regression is commonly used to identify predictors of an event of interest from a set of the independent variables.

6.5.1 Univariate analyses

Student success (binary) was analysed using one-way logistic regression, fitting (one at a time) each of the independent variables listed in paragraph 6.2 of this chapter. A likelihood-ratio chi-square statistic and associated p-value is reported in order to test the null-hypothesis that the effect of the independent variable in question is zero. Furthermore, a point estimate and associated 95% confidence interval for the odds ratio of success, associated with each independent variable, is reported.

Software: SAS Proc Logistic.

The following tables present an illustrative summary of the results of the statistical analysis:

- Table 6.12: Univariate logistic regression of the primary target population (2009 cohort);
- Table 6.13: Univariate logistic regression of members of secondary target population with Mathematics HG (2008 cohort);
- Table 6.14: Stepwise selection of predictors of student success (multiple logistic regression) of the primary target population (2009 cohort);
- Table 6.15: Stepwise selection of predictors of student success (multiple logistic regression) of members of the secondary target population with Mathematics HG (2008 cohort); and

- Table 6.16: Multiple logistic regression of student success (final model for 2009 and 2008 cohorts).

Table 6.12: Univariate logistic regression of the primary target population (2009 cohort)

Variable	LR-statistic	Degree of freedom	P-value	Effect	Odds ratio	95% CI
Age	0.6675	1	0.4139	Increase of 1 year in age	0.790	0.442 to 1.385
Gender	0.1637	1	0.6858	Female vs. male	0.871	0.446 to 1.714
Ethnic Group	8.6714	3	0.0340	African vs. White;	0.337	0.160 to 0.704
				Coloured vs. White;	0.810	0.114 to 3.729
				Indian vs. White.	0.630	0.165 to 1.964
APS	18.1087	1	<.0001	Increase of 1 point on APS	1.157	1.076 to 1.249
MATHS NSC Mark	40.7069	1	<.0001	Increase of 1 mark	1.105	1.069 to 1.147
ACC taken at school	0.7940	1	0.3729	ACC taken vs. not taken	0.693	0.322 to 1.592
BECO taken at school	0.0180	1	0.8934	BECO taken vs. not taken	0.955	0.489 to 1.879
ECO taken at school	0.0643	1	0.7998	ECO taken vs. not taken	0.908	0.413 to 1.876

The following trends from Table 6.12 are noteworthy for the 2009 cohort:

- There is an association between the independent variable *APS* and the dependent variable *success*. *APS* is a predictor of success with a p-value of $<.0001$. The odds ratio is 1.157 and the 95% Confidence Interval is 1.076 to 1.249. This is, with an increase of 1 point on the *APS*, an individual student's odds of success increase by 15.7%.
- There is an association between the independent variable *MATHS NSC mark* and the dependent variable *success*. *MATHS NSC mark* is a predictor of success with a p-value of $<.0001$. The odds ratio is 1.105 and the 95% Confidence Interval is 1.069 to 1.147. With an increase of 1% in the Mathematics NSC mark, the individual student's odds of success increase by 10.5%.
- The other independent variables were not statistically significant predictors of student success in this univariate analysis.

Table 6.13: Univariate logistic regression of members of secondary target population with Mathematics HG (2008 cohort)

Variable	LR-statistic	Degree of freedom	P-value	Effect	Odds ratio	95% CI
Age	7.5313	1	0.0061	Increase of 1 year in age	0.291	0.105 to 0.716
Gender	1.7122	1	0.1907	Female vs. male	1.823	0.746 to 4.723
Ethnic Group	7.8328	3	0.0496	African vs. White;	0.655	0.228 to 1.926
				Coloured vs. White;	1.250	0.152 to 7.852
				Indian vs. White.	4.000	1.031 to 17.103
M-Score	14.9078	1	0.0001	Increase of 1 point on M-score	1.343	1.151 to 1.597
MATHS Higher Grade Mark	6.6814	1	0.0097	Increase of 1 MATHS mark	1.072	1.016 to 1.140
ACC taken at school	6.1058	1	0.0135	ACC taken vs. not taken	3.329	1.271 to 9.902
BECO taken at school	1.5013	1	0.2205	BECO taken vs. not taken	0.551	0.196 to 1.415
ECO taken at school	1.7164	1	0.1902	ECO taken vs. not taken	0.471	0.126 to 1.422

The following trends from Table 6.13 are noteworthy for the 2008 cohort:

- There is an association between the independent variable *M-score* and the dependent variable *success*. *M-score* is a predictor of success with a p-value of 0.0001. The odds ratio is 1.343 and the 95% Confidence Interval is 1.151 to 1.597. With an increase of 1 point on the *M-score*, an individual student's odds of success increase by 34.3%.
- There is an association between the independent variable *MATHS HG mark* and the dependent variable *success*. *MATHS HG mark* is a predictor of success with a p-value of 0.0097. The odds ratio is 1.072 and the 95% Confidence Interval is 1.016 to 1.140. With an increase of 1% in the *MATHS HG mark*, the individual student's odds of *success* increase by 7.2%.
- The other independent variables did not meet the criteria for significance regarding p-value, odds ratio and the 95% Confidence Interval.

6.5.2 Multivariate analysis

The data for both of the 2009 and 2008 cohorts were analysed using multiple regression. Initially, the logistic regression model for student success contained the eight independent variables listed in paragraph 6.2 of this chapter, *excluding* the variable of the average of the first semester mark of the five compulsory modules. This variable was excluded in order to fit only predictor variables available before students entered university.

Likelihood ratio chi-square statistics and associated p-values are calculated for each variable in the model. Stepwise model selection was applied by removing, one at time, the variable among the independent variables that is least significantly associated with the outcome (student success), provided that the p-value is at least 0.1.

Software: SAS Proc Logistic.

Table 6.14: Stepwise selection of predictors of student success (multiple logistic regression) of the primary target population (2009 cohort)

Model	Independent variables in model	Variable to be removed from model	Chi-square statistic (for variable to be removed)	Degrees of freedom	P-value
1	Age, gender, ethnic group, APS, MATHS NSC mark, ACC taken, BECO taken, ECO taken	Gender	0.0204	1	0.8863
2	Age, ethnic group, APS, MATHS NSC mark, ACC taken, BECO taken, ECO taken	APS	0.0878	1	0.7671
3	Age, ethnic group, MATHS NSC mark, ACC taken, BECO taken, ECO taken	ECO taken	0.1374	1	0.7108
4	Age, ethnic group, MATHS NSC mark, ACC taken, BECO taken	Ethnic group	1.5530	3	0.6701
5	Age, MATHS NSC mark, ACC taken, BECO taken	ACC taken	0.3363	1	0.5620
6	Age, MATHS NSC mark, BECO taken	Age	0.7479	1	0.3872

The following trends from Table 6.14 are noteworthy for the 2009 cohort:

- In step 1, the variable *gender* with a p-value of 0.8863 is removed, which left the model with seven independent variables.
- In step 2, the variable *APS* with a p-value of 0.7671 is removed, which left the model with six independent variables.

- In step 3, the variable *ECO taken* with a p-value of 0.7108 is removed, which left the model with five independent variables.
- In step 4, the variable *ethnic group* with a p-value of 0.6701 is removed, which left the model with four independent variables.
- In step 5, the variable *ACC taken* with a p-value of 0.5620 is removed, which left the model with three independent variables.
- In step 6, the variable *age* with a p-value of 0.3872 is removed, which left the model with two independent variables, namely *MATHS NSC mark* and *BECO taken*.

Table 6.15: Stepwise selection of predictors of student success (multiple logistic regression) of members of the secondary target population with Mathematics HG (2008 cohort)

Model	Independent variables in model	Variable to be removed from model	Chi-square statistic (for variable to be removed)	Degrees of freedom	P-value
1	Age, gender, ethnic group, M-score, MATHS HG mark, ACC taken, BECO taken, ECO taken	Ethnic group	0.1463	3	0.9858
2	Age, gender, m-score, MATHS HG mark, ACC taken, BECO taken, ECO taken	Gender	0.2440	1	0.6214
3	Age, M-score, MATHS HG mark, ACC taken, BECO taken, ECO taken	BECO taken	0.6866	1	0.4073
4	Age, M-score, MATHS HG mark, ACC taken, ECO taken	MATHS HG mark	1.0543	1	0.3045
5	Age, M-score, ACC taken, ECO taken	ECO taken	2.1356	1	0.1439

The following trends from Table 6.15 are noteworthy for the 2008 cohort:

- In step 1, the variable *ethnic group* with a p-value of 0.9858 is removed, which left the model with seven independent variables.
- In step 2, the variable *gender* with a p-value of 0.6214 is removed, which left the model with six independent variables.

- In step 3, the variable *BECO taken* with a p-value of 0.4073 is removed, which left the model with five independent variables.
- In step 4, the variable *MATHS HG mark* with a p-value of 0.3045 is removed, which left the model with four independent variables.
- In step 5, the variable *ECO taken* with a p-value of 0.1439 is removed, which left the model with three independent variables, namely *age*, *M-score* and *ACC taken*.

Table 6.16: Multiple logistic regression of student success (final model for 2009 and 2008 cohorts)

Variable	Chi-square statistic	Degrees of freedom	P-value	Effect	Odds Ratio	95% CI
2009 Cohort (entire primary target population)						
MATHS NSC mark	31.2496	1	<.0001	One mark	1.116	1.077 to 1.163
BECO taken	2.8169	1	0.0933	BECO taken vs. not taken	1.977	0.906 to 4.497
2008 Cohort (members of the secondary target population with MATHS HG)						
Age	6.1534	1	0.0131	One year	0.216	0.059 to 0.672
M-score	12.1861	1	0.0005	One M-score point	1.378	1.163 to 1.673
ACC taken	5.9576	1	0.0147	ACC taken vs. not taken	4.208	1.410 to 14.593

The following trends from Table 6.16 are noteworthy:

- According to this model, *MATHS NSC mark* with a p-value of <.0001 and an odds ratio of 1.116 and a 95% confidence interval of 1.077 to 1.163 is the

most significant predictor of success in the 2009 cohort. For every one mark increase in a student's *MATHS NSC mark*, the chances of success increase by 11.6%.

- *BECO taken* is also an important predictor of success in the 2009 cohort.
- *MATHS NSC mark* and *BECO taken* simultaneously predict success in the BCF programme when analysed by means of a multiple logistic regression of the 2009 cohort.
- According to this model, *M-score* with a p-value of 0.0005, an odds value of 1.378 and a 95% confidence interval of 1.163 to 1.673, is the most significant predictor of success in the 2008 cohort. For every one mark increase in a student's *M-score*, the chances of success increase by 37.8%.
- *Age* and *ACC taken* are also important predictors of success in the 2008 cohort.
- *M-score*, *age* and *ACC taken* simultaneously predict success in the BCF programme when analysed by means of a multiple logistic regression of the 2008 cohort.
- According to this model, *MATHS NSC mark* is the most significant predictor of success and *BECO taken* is also an important predictor of success in the 2009 cohort. *MATHS NSC mark* and *BECO taken* simultaneously predict success in the BCF programme when analysed by means of a multiple logistic regression.
- According to this model, *M-score* is the most significant predictor of success and *age* and *ACC taken* are also important predictors of success in the 2008 cohort. *Age* and *ACC taken* simultaneously predict success in the BCF programme when analysed by means of a multiple logistic regression.

6.5.3 Discussion and interpretation of logistic regression

The main aim of the statistical analysis was to answer the primary research question addressed in this study, namely:

What differences and similarities occur in the profiles of successful BCF students entering a SA university before and after the introduction of the NSC respectively?

The answer to this question is as follows:

- For the 2009 cohort: According to this model, the Mathematics NSC mark is the most significant predictor of success. Whether Business Economics was taken in secondary school is also an important predictor of success. This means that the Mathematics NSC mark and whether Business Economics was taken simultaneously predict success in the BCF programme when analysed by means of a multiple logistic regression.
- For the 2008 cohort: According to this model, M-score is the most significant predictor of success. The student's age and whether Accounting taken was taken in secondary school are also important predictors of success. This means that the student's M-score, age and whether they have taken Accounting simultaneously predict success in the BCF programme when analysed by means of a multiple logistic regression.

After thorough investigation of data-bases of published research, no similar studies on profiles of successful BCF students entering a SA university before and after the introduction of the NSC could be found.

6.6 SUMMARY AND REVIEW OF THIS CHAPTER

In this chapter the research results and their interpretation and discussion were dealt with by providing the answers to the primary and secondary research questions, namely:

The primary research question: *What differences and similarities occur in the profiles of successful BCF students entering a SA university before and after the introduction of the NSC respectively?*

After addressing the *first* secondary research question (SQ–A) in Chapter 5, the *second, third and fourth* secondary questions investigated in this study and reported on in this chapter were the following:

Secondary research question B (SQ–B)

What are the differences and similarities between the profiles of successful and unsuccessful BCF students entering a SA university after the introduction of the NSC? The answer to this question was discussed in paragraph 6.2.4.1.

Secondary research question C (SQ–C)

What are the differences and similarities between the profiles of successful and unsuccessful BCF students entering a SA university before the introduction of the NSC (i.e. with the NATED 550 qualification)? The answer to this question was discussed in paragraph 6.2.4.2.

Secondary research question D (SQ–D)

What are the differences and similarities between the profiles of successful BCF students entering a SA university with the NSC and those entering with the NATED 550? The answer to this question was discussed in paragraph 6.2.4.3.

Descriptive statistics revealed that the success rates of students included in this investigation have decreased from 29.0% in 2008 to 15.8% in 2009. From 2008 to 2009, the success rate decreased by 13.2%. This supports empirical evidence by Dlomo *et al.* (2011:705). In both of the 2009 and 2008 cohorts, the majority of successful students entering into the BCF programme are female. In the 2009 cohort, the majority of successful students are White and in the 2008 cohort, the majority of successful students are African. In the 2009 cohort, the majority of students with an NSC Mathematics APS of 7 are successful. Having taken Accounting, Business Economics and/or Economics at school does not necessarily improve a student's chances of success in BCF studies. Successful students of both the 2009 and 2008 cohorts are 17, 18, or 19 years of age when they enter their first year of university studies. The mean APS of successful students in the 2009 cohort is 35.85 points and the mean M-score of successful students in the 2008 cohort is 20.52 points. The

Grade 12 Mathematics marks of successful students in both the 2009 and 2008 cohorts are between 47% and 90%. The mean average mark achieved by successful students in the five compulsory modules during the first semester at university is approximately 60% for both of the 2009 and 2008 cohorts.

Logistic regression revealed that when success in BCF is analysed by means of a multiple logistic regression, the most significant predictor of success in the 2009 cohort is the Mathematics NSC mark, and the most significant predictor of success in the 2008 cohort is the M-score. The following chapter focuses on the conclusions, limitations and recommendations of this study.

CHAPTER 7 CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS OF THE STUDY

“Recipe for success: Study while others are sleeping; work while others are loafing; prepare while others are playing; and dream while others are wishing.”

William A. Ward

7.1 INTRODUCTION AND OVERVIEW OF THIS CHAPTER

This study aimed to provide a better understanding of and insight into the profiles of successful BCF students entering a SA HEI *before* and *after* the introduction of the NSC. Consequently, the following primary research question emerged: *What differences and similarities occur in the profiles of successful BCF students entering a SA university before and after the introduction of the NSC respectively?* This research study was conducted in the Department of Finance and Investment Management of the Faculty of Economic and Financial Sciences at UJ.

Chapter 1 indicated the background and orientation of the study. An introductory literature overview and clarifications of some of the core concepts were provided. The core concepts defined in Chapter 1 were as follows:

- Higher education (HE) and higher education institution (HEI);
- Student profiles of both successful and unsuccessful students;
- National Senior Certificate (NSC) and NATED 550;
- Admission points score (APS) and matriculation score (M-score);
- Academic achievement in Grade 12 and in the BCF programme;
- Integrated tertiary system (ITS) and higher education management information system (HEMIS);
- Module or course, couplet module and passing or failing a module or course;
- Outcome and skill;
- First-time entering student;
- Registrations or enrolments; and
- Student dropout.

Furthermore, Chapter 1 provided the problem statement, research questions, research aims and objectives. An exposition of the scope of the research, the research design and the methods of the study were introduced, followed by an explanation of the value and perceived contributions of the study. Finally, a brief overview of the chapters in this thesis was provided in Table 1.1 on pages 21 and 22.

In Chapter 2, the researcher reported on the findings of a literature study that was conducted on the students' transition from SS to HE. This chapter provided the theoretical framework behind the *academic focus* of this study. This was done through a critical review of national and international *curriculum-related* literature. A detailed description of students' transition from SS to HE in SA, including the four major curriculum reforms in the SA school curriculum and the principles and outcomes of the previous and current FET-phase curriculum, were provided. Furthermore, the current challenges related to the students' transition from SS to HE were discussed. Characteristics of the SA HEI landscape and the associated admission requirements were elaborated upon. Moreover, the BCF programme at UJ was outlined and discussed in terms of its curriculum, outcomes, admission requirements and graduation requirements.

In Chapter 3 a critical review of literature on undergraduate student success at university was provided. The purpose served by this chapter was to report on existing research findings through a critical review of international and national literature on this topic. Details regarding definitions and importance of student success, factors contributing to success, profiles of successful students in general, and particularly in commerce- and finance-related university programmes, were investigated and reported on in this chapter. In paragraphs 3.4 and 3.5, the literature study revealed controversial findings by various researchers and resulted in an extended list of characteristics, skills and experiences associated with undergraduate student success. It was found that critical thinking, active listening and creative collaboration are some of the keys to succeeding in post school education.

The research design and methods for this research study were set out in Chapter 4. The research problem of this study centres on addressing profiles of successful BCF students entering a SA university *before* and *after* the introduction of the NSC. As

such, Chapter 4 describes the empirical investigation undertaken as a means of providing the perspectives and profiles of successful students. The chapter commences with the primary research question, namely: *What differences and similarities occur in the profiles of successful BCF students entering a SA university before and after the introduction of the NSC respectively?* The empirical study, which is located within both the quantitative and qualitative paradigms, was conducted by means of an analysis of data collected from the BCF first-year opinion survey, focus-group discussions and information extracted from the ITS. Chapter 4 also provided a detailed discussion of the research methodology including the development phase (paragraph 4.6.1), the implementation phase (paragraph 4.6.2) and the analysis/validation phase (paragraph 4.6.3).

In Chapter 5, the discussion and interpretation of the research results on the investigation of the opinions and perceptions of first-year BCF students were presented and interpreted. The first secondary research question A (SQ–A) was answered, namely: *What are the opinions and perceptions of first-year BCF students regarding the skills which they required for the successful completion of the BCF programme and the skills which they acquired during their NSC education?*

In Chapter 6, the research results and their interpretation and discussion were dealt with by providing the answers to the primary and the remaining secondary research questions, namely SQ–B, SQ–C and SQ–D.

SQ–B addressed the question: *What are the differences and similarities between the profiles of successful and unsuccessful BCF students entering a SA university after the introduction of the NSC?* The answer to this question was discussed in detail in paragraph 6.4.1.

SQ–C addressed the question: *What are the differences and similarities between the profiles of successful and unsuccessful BCF students entering a SA university before the introduction of the NSC (i.e. with the NATED 550 qualification)?* The answer to this question was discussed in detail paragraph 6.4.2.

SQ–D addressed the question: *What are the differences and similarities between the profiles of successful BCF students entering a SA university with the NSC and those*

entering with the NATED 550? The answer to this question was discussed in detail in paragraph 6.4.3.

Descriptive statistics revealed that the success rates of students included in this investigation have decreased from 29.0% in 2008 to 15.8% in 2009. From 2008 to 2009, the success rate decreased by 13.2%. This supports empirical evidence by Dlomo *et al.* (2011:705). In both the 2009 and 2008 cohorts, the majority of successful students entering into the BCF programme are female. In the 2009 cohort, the majority of successful students are White and in the 2008 cohort, the majority of successful students are African. In the 2009 cohort, the majority of students with an NSC Mathematics APS of 7 are successful. Having taken Accounting, Business Economics and/or Economics at school does not necessarily improve a student's chances of success in BCF studies. Successful students in both the 2009 and 2008 cohorts are 17, 18, or 19 years of age when they enter their first year of university studies. The mean APS of successful students in the 2009 cohort is 35.85 points and the mean M-score of successful students in the 2008 cohort is 20.52 points. The Grade 12 Mathematics marks of successful students in both the 2009 and 2008 cohorts are between 47% and 90%. The mean average mark achieved by successful students in the five compulsory modules during the first semester at university is approximately 60% for both of the 2009 and 2008 cohorts.

Logistic regression revealed that when success in BCF is analysed by means of a multiple logistic regression, the most significant predictor of success in the 2009 cohort is the Mathematics NSC mark, and the most significant predictor of success in the 2008 cohort is the M-score of a student. Chapter 7 provides the conclusions, recommendations and implications of the research study.

7.2 CONCLUSIONS

For the purpose of this study, the following hypotheses were tested:

Null hypothesis (H_0): The profiles of successful BCF students entering a SA university *before* and *after* the introduction of the NSC are the *same*.

Research hypothesis (H_1): The profiles of successful BCF students entering a SA university *before* and *after* the introduction of the NSC *differ*.

The researcher found in favour of the research hypothesis (H_1). To interpret the results of the research study, descriptive statistics and statistics of association were used. Descriptive statistics and logistic regression were used to describe the independent variables by indicating aspects such as the number of respondents, mean, standard deviation, minimum and maximum. After the descriptive statistics were reported, statistics of association indicated the relationships among the variables through univariate and multivariate analyses. The results of the univariate and multivariate analyses of association were considered collectively in pointing to significant predictors of success and non-success in the BCF degree programme. The following paragraphs will present the conclusions regarding the profiles of successful BCF students entering UJ before and after the introduction of the NSC.

7.2.1 The dependent variable

In this study the dependent variable, namely successfulness (being defined as the BCF student being *successful* or *unsuccessful*), is categorical. Note that, for the purposes of this study, a *successful student* is a student who has completed the BCF degree in the minimum time of three years and an *unsuccessful student* is a student who has not completed the BCF degree in three years, irrespective of the reasons for non-completion in the minimum time.

In other words, the dependent variable is derived from the answer to the question: *Is the BCF student successful or unsuccessful?* This question was answered by the

researcher in Chapter 6, from an analysis of the data obtained from the ITS system. The distribution of the primary and secondary target groups according to their status as *successful* or *not successful* was shown in Figures 6.1 and 6.2 of Chapter 6. The following trends from Table 6.1 and Figures 6.1 and 6.2 are noteworthy:

- A total of 260 first-year BCF students entered UJ in January 2009, of which 41 students (15.8%) completed the degree in the minimum duration of three years. 219 students (84.2%) did not achieve this goal.
- A total of 100 first-year BCF students entered UJ in January 2008 with mathematics HG, of which 29 students (29.0%) completed the degree in the minimum duration of three years. 71 students (71.0%) did not achieve this goal.
- The percentage of successful students decreased from 29.0% in 2008 to 15.8% in 2009.

Summary and interpretation of descriptive statistics of the dependent variable

The frequency table of the *successful* students in the primary and secondary target populations in this investigation reveals that the success rate of the 2009 intake into the BCF programme is only 15.8%, and that the success rate of the 2008 intake into the BCF programme is 29.0%. From 2008 to 2009, the success rate decreased by 13.2%. This supports empirical evidence by Dlomo *et al.* (2011:705).

One of the reasons for the decrease in the success rate could be the fact that in the analysis of the 2008 cohort, the Mathematics SG students were excluded for the purpose of comparing of the two cohorts. Note that the success rate of the total 2008 cohort, including students with Mathematics HG and SG, is as follows: a total of 151 first-year BCF students entered UJ in January 2008, having taken either Mathematics HG or SG in Grade 12, of which 50 students (33.1%) completed the degree in the minimum duration of three years and 101 students (66.9%) did not.

7.2.2 The independent variables

The independent variables of biographic information and of academic achievement were analysed in this study.

7.2.2.1 Findings regarding the independent variables of biographic information

Statistical analysis revealed the following findings regarding the three independent variables of biographical information:

Gender: In both the 2009 and 2008 cohorts the majority of successful students are female. In the 2009 cohort, 22 (53.7%) of the 41 successful students are female. Of the 147 female students, 22 (15.0%) are successful and 19 (16.8%) of the 113 male students are successful. In the 2008 cohort, 20 (69.0%) of the 29 successful students are female. Of the 59 female students, 20 (33.9%) are successful and 9 (21.9%) of the 41 male students are successful.

Age of student when first entering university: In the 2009 cohort, the ages of successful students are between 17 years and 19 years, and the mean age of successful students is 17.85 years. In the 2008 cohort, the ages of successful students are between 17 years and 18 years, and the mean age of successful students is 17.72 years.

Ethnicity: In the 2009 cohort, the majority of successful students are White (43.9%). Of the 160 African students, 17 (10.6%) are successful, 18 (26.1%) of the 69 White students are successful, two (22.2%) of the nine Coloured students are successful and four (18.2%) of the 22 Indian students are successful. In the 2008 cohort, the majority of successful students are African (37.9%). Of the 53 African students, 11 (20.8%) are successful, eight (28.6%) of the 28 White students are successful, two (33.3%) of the six Coloured students are successful and eight (61.5%) of the 13 Indian students are successful.

7.2.2.2 Findings regarding the independent variables of academic achievement

Statistical analysis revealed the following findings regarding the independent variables of academic information:

APS: In the 2009 cohort, the APS of successful students ranges between 0 and 45 points, and the mean APS of successful students is 35.85 points.

M-score: In the 2008 cohort, the M-score of successful students are ranges 16 and 28 points, and the mean M-score of successful students is 20.52 points.

Grade 12 Mathematics mark: In the 2009 cohort, the Mathematics NSC marks of successful students are between 47% and 99%, and the mean Mathematics NSC mark of successful students is 74.2%. In the 2008 cohort, the Mathematics HG marks of successful students are between 45% and 90%, and the mean Mathematics HG mark of successful students is 70.52%.

NSC Mathematics mark (expressed in APS categories): In the 2009 cohort, 12 (15.0%) of the 80 students with an NSC Mathematics mark of between 60% and 69% (in APS category 5) are successful and 13 (24.5%) of the 53 students with an NSC Mathematics mark of between 70% and 79% (in APS category 6) are successful. Of the 26 students with an NSC Mathematics mark of between 80% and 100% (in APS category 7), 14 (53.8%) are successful. It is particularly noteworthy that the majority of students with an NSC Mathematics APS of 7 are successful.

Mathematics HG mark (expressed in M-score categories): In the 2008 cohort, five (12.5%) of the 40 students with a Mathematics HG mark of between 60% and 69% (in M-score category 3) are successful and 19 (43.3%) of the 41 students with a Mathematics HG mark of between 70% and 100% (in M-score categories 4 and 5) are successful.

Accounting taken at secondary school: In the 2009 cohort, 31 (14.8%) of the 210 students who had taken Accounting are successful and 10 (20.0%) of the 50 students who had not taken Accounting are successful. It is particularly noteworthy that, in the 2009 cohort, 20.0% of students who had not taken Accounting at school are successful, and a lower percentage of students who had taken Accounting (14.8%) are successful in the BCF programme. In the 2008 cohort, 23 (37.7%) of the 61 students who had taken Accounting are successful and six (15.4%) of the 39 students who had not taken Accounting are successful. It is particularly noteworthy that, in the 2008 cohort, 15.4% of the students who had not taken Accounting at school are successful, and a higher percentage of students who had taken Accounting (37.7%) are successful in the BCF programme.

Business Economics taken at secondary school: In the 2009 cohort, 22 (15.5%) of the 142 students who had taken Business Economics are successful and 19 (16.1%) of the 118 students who had not taken Business Economics are successful. It is particularly noteworthy that 16.1% of students who had not taken Business Economics at school are successful, and a lower percentage of students, namely 15.5% who had taken Business Economics, are successful in the BCF programme. In the 2008 cohort, seven (21.2%) of the 33 students who had taken Business Economics are successful and 22 (32.8%) of the 67 students who had not taken Business Economics are successful. It is particularly noteworthy that, in the 2008 cohort, 32.8% of students who had not taken Business Economics at school are successful, and a lower percentage of students who had taken Business Economics (21.2%) are successful in the BCF programme.

Economics taken at secondary school: In the 2009 cohort, 11 (14.9%) of the 74 students who had taken Economics are successful and 30 (16.1%) of the 186 students who had not taken Economics are successful. It is particularly noteworthy that 16.1% of the students who had not taken Economics at school are successful, and a lower percentage of students who had taken Economics (14.9%) are successful in the BCF programme. In the 2008 cohort, four (18.2%) of the 22 students who had taken Economics are successful and 25 (32.0%) of the 78 students who had not taken Economics are successful. It is particularly noteworthy that 32.0% of students who had not taken Economics at school are successful, and a lower percentage of students who had taken Economics (18.2%) are successful in the BCF programme.

Average mark achieved in the five compulsory modules during the first semester at university: In the primary target population, the averages achieved in the first semester of the BCF programme for successful students are between 52% and 81% and the mean average achieved is 59.61% for successful students. In the secondary target population, the averages achieved in the first semester of the BCF programme for successful students are between 51% and 81% and the mean for the average achieved is 60.54% for successful students.

7.2.3 The confounding variables

The academic achievement of undergraduate students is influenced by a great variety of factors. Confounding variables include a host of cognitive and non-cognitive variables, for example, the students' personal characteristics and circumstances, learning styles, type of SS, participation in extra-mural activities, means of transport, type of accommodation, finances, etc. The effect of these variables on the dependent variable was not measured or controlled in this study because of the impossibility to do so. Therefore, at a quantitative level this study presents an investigation into a cross-section of biographic factors and academic history that were co-variants or predictors of academic achievement at HE level.

7.3 CRITICAL REFLECTION

Although the results obtained in this study cannot readily be generalised to other HEIs owing to the study's temporal and localised nature, it will provide other HEIs with guidelines in terms of factors associated with success in commerce- and finance-related programmes. The research findings should inform further research as it provides a basis of comparison or benchmark for other HEIs.

This thesis highlights important differences between successful and unsuccessful students. However, several limitations apply and the results should be viewed in light of the following considerations:

- Firstly, the perceptions of students who did not proceed to the second semester could not be established nor could these be linked to their performance.
- Secondly, the study explored only the *perceptions* of students in terms of skills acquired. The extent to which these skills had indeed been acquired during the NSC was not established.
- The third limitation arises from the fact that the perceptions of lecturers regarding the skills acquired during the NSC and the differences in skills levels of those entering the university after having completed the NSC rather than the previous NAT550 certification have not been explored.

- Fourthly, this study was undertaken with the first cohort of NSC matriculants and thus needs to be replicated for subsequent cohorts and in other programmes before the results can be generalised.
- Fifthly, the survey questionnaire and the focus-group discussions were only conducted on the primary target group, and not on the secondary target group.

This study is not perfect, and more limitations than the above-mentioned could possibly be identified. However, given the urgency and extent of the problem with the BCF programmes in SA, this study will contribute to awareness of problems in first-year BCF modules. Lecturers, institutional managers and students will benefit from various aspects of the investigation. This could possibly result in reflection on policies and practices as well as a review of current procedures and even changed perceptions.

7.4 IMPLICATIONS OF THIS STUDY

HEIs have an obligation to provide graduates with the necessary knowledge and skills to enter the workforce and to contribute effectively to the financial and economic development of the country. The expansion envisaged in the National Development Plan and the recently released white paper may involve the admission of students even less well prepared, because the HE sector currently absorbs a very high proportion of those who are eligible for admission. Clearly, unless more effective teaching and learning approaches and perhaps structures are introduced, failure rates will rise, representing billions in “fruitless expenditure” (Yeld, 2014:1). In response to these challenges, it is acknowledged that the SA government and its agencies have embarked on several ambitious schemes to encourage and steer more effective teaching and learning in the HE system, e.g. the teaching development grant scheme, which has been running for several years.

The discussion of the research results provided an understanding of some of the implications and challenges for HEIs in SA, resulting from the implementation of the NSC. Questions have been raised and answers have been sought as to whether the NSC curriculum adequately prepares learners for success in university studies and

whether HEIs can adapt and add value to the 'products' of the NSC. Mwamwenda (1995:116), as cited in Oosthuizen and Eiselen (2011:45), states that skills form part of a holistic approach to curriculum construction, that the most common criticism of secondary schools is that they fail to prepare young people for the world of work, and that the learners fail to develop essential life skills. The students' readiness for HE can thus be described as a combination of maturity, ability and prior knowledge. The findings reported in this chapter are based on both quantitative and a qualitative enquiry. The results of the study indicate that the students felt that they lacked some of the critical skills required for academic success at university. While it was expected by the researcher that curriculum-related skills would be lacking in first-year students, the results of this study show that those skills contributing to success at university, and lacking in those who enter university for the first time, are *life skills*, such as *time management skills*, rather than *academic skills*. The following chapter focuses on the discussion and interpretation of research results in order to determine profiles of successful BCF students entering a SA university before and after the introduction of the NSC.

The only academic skills that were identified in both phases as **lacking** were *economic reasoning skills*. This does not necessarily imply that these skills were not conveyed to learners in the NSC, but rather that many students in the BCF programme did not include any of the Economic and Management Sciences (EMS) subjects, namely Accounting, Business Studies and Economics, in their FET-phase subject choices. Indeed, many of the comments made by students in the qualitative focus-group discussions related to a lack of proper career advice. This issue should indeed have been addressed in the compulsory subject, Life Orientation (LO), as should *time management* and *organisational skills*. However, in practice this subject is viewed (based on the comments made during the qualitative focus-group discussions) by most students as a 'joke' and has also been shown to be the easiest subject in the NSC (in terms of the highest number of distinctions achieved in LO, compared to the results in all of the NSC subjects assessed in November 2008) (UMALUSI, 2009:3).

The controversy identified in Chapter 5, paragraphs 5.4 and 5.5, between the apparent low importance of non-cognitive skills in the quantitative results and their prominence in the focus-group discussions, brings attention to the fact that some students who entered for the BCF programme in 2009, did not realise the importance of *problem-solving skills, analytical thinking skills, critical thinking skills and the ability to interpret financial information*. These findings are a matter of concern and has serious implications for how SS learners are taught. As established in Chapter 3, paragraph 3.5, these skills are critical for student success in commerce- and finance-related study fields at university.

The foresight of the NSC curriculum designers should be commended, especially in view of the fact that the largest percentage of students indicated that the skills that the subject Life Orientation aimed to acquire are perceived to be amongst the most important skills required for academic success at university. Unfortunately, the results of this study have indicated that LO is not effectively implemented or taken seriously by the learners.

Furthermore, the results of this study reflect on the implementation of the NSC rather than the content of the curriculum. The Grade 12s of 2008 felt that they were coached and spoon-fed and the onus rests upon the educators to improve in this regard. Lecturers at SA HEIs should take cognisance of these issues in planning their teaching and learning strategies. Tinto (1993:4) states that the key to successful student retention lies with the HEI; it resides in the ability of the lecturers to apply what is known about student retention to the specific situation in which the institution finds itself. It is of importance to note that the results of this study pertain to the perceptions of students. The perceptions of lecturers on these issues are avenues to be explored in future.

The findings reported in this research study are based on both a quantitative and a qualitative enquiry. The results of the study indicate that the students felt that they lacked some of the critical skills required for academic success at university. While it was expected by the researchers that curriculum-related skills would be lacking in first-year students, the results of this study show that those skills contributing to

success at university, and lacking in those who enter university for the first time, are *life skills* rather than *academic skills*, e.g. *time management skills*.

Bloch (2009:29) recognises that “change will not happen quickly or overnight”. Still, there are many things that can be done immediately that would make a difference. Furthermore, he states that “though there is no quick fix, if we do not start now, with urgency, with unity, we will never achieve anything in the long term either. Without a sense of urgency, our country will surely end in serious trouble, and the loss of our human potential will be unforgiveable” (Bloch, 2009:29).

7.5 RECOMMENDATIONS

This research study informs educational managers and university administrators, university lecturers and SS educators, career counsellors, prospective commerce- as well as finance-related degree students, on profiles of successful BCF students. These recommendations are made below, under the various sub-headings of paragraphs 7.5.1 to 7.5.4. Furthermore, recommendations on further research are made at the end of this section, in paragraph 7.5.5.

7.5.1 Recommendations for educational managers and university administrators

Recommendations emanating from this study could specifically assist in the review of selection and/or admission requirements for students entering into the BCF programme at UJ. The importance of using measures of school performance as primary criteria for university admission has been confirmed as a valid and reliable predictor of university success. It is recommended that the current admission requirements in Mathematics should increase from 50% to 60% for entry into the BCF programme.

It is acknowledged that UJ already has very good support programmes for first-year and other undergraduate students. It is recommended that more students make use of these support systems and activities. It is recommended that attendance of these programmes should be made compulsory for those students entering the BCF

programme with Mathematics results of less than 65%, as the findings of this study indicated that these students are at risk of failing the BCF programme.

7.5.2 Recommendations for university lecturers and secondary school educators

The high levels of attrition in first-year BCF have huge resource implications for the university, particularly after the implementation of the NSC. It is recommended that tailor-made support systems and activities provided to the students who are at risk to fail should become an integral part of the university offerings.

Recommendations for university lecturers are that undergraduate students' attendance of tutorials, i.e. small-group timetabled sessions to complement lectures that provide effective opportunities for students to experience learning in an alternative setting, in addition to the traditional lectures, should be made compulsory for all students enrolled in the BCF programme.

It is acknowledged that large-scale programmes are being developed to establish such initiatives as a national resource centre for "first-year experience" initiatives. On a national basis, the development of a number of courses designed to cover key teaching and learning areas are recommended to be offered at various levels to meet the needs of tutors as well as lecturers; and guidelines and resources for the recruitment, training and support of mentors (Yeld, 2014:4).

Recommendations for SS educators are that they should reflect on the teaching methods which they use. Perhaps more innovative and interactive teaching methods should be utilised in order to develop the learners' *problem-solving skills, analytical thinking skills, critical thinking skills and the ability to interpret financial information*. These skills have been found to be required for academic success, but SS learners have failed to acquire it at SS.

7.5.3 Recommendations for career counsellors

LO periods should be utilised more effectively to include more details on career guidance. Specific information on choosing a study field for HE studies and an

awareness of the associated careers with each study field should be conveyed to SS learners, from as early as Grade 8. In Grade 9, when learners are choosing subjects for the FET phase of SS studies, learners should already be equipped with knowledge to make the correct decisions on subject choices. In consideration of BCF as a university programme, it is important for students to take Mathematics (not Mathematical Literacy) and to include optional subjects from the EMS study field, e.g. Business Economics and Accounting.

7.5.4 Recommendations for prospective B.Com. (Finance) students

The research findings of this study lead to five recommendations for prospective university students being formulated on how to prepare for success at university. The five recommendations are as follows:

7.5.4.1 *Establish good study habits*

- While at school, find and use good study habits. This will help you to cope with the heavier work-load expected at university.
- Organise your work and life effectively, apply self-discipline and continuously work hard. Remember: the only time that success comes before work is in the dictionary.
- Manage your time effectively. Don't miss deadlines for the submission of homework or assignments.
- Discover and use effective study methods. Note that various subjects require various methods, e.g. Mathematics & Accounting need practice by doing lots of exercises and past papers. Theoretical subjects such as Business Economics and Economics need lots of reading and summarising of key concepts.
- Find a quiet place to work and study. If not available at home, study at school or in the public library during the afternoons and over weekends.
- Do not be absent from class. You already master a lot of the learning content just by focusing and paying attention in class every day. Ask questions to clarify your understanding of the work.

- Summarise your work. This should preferably be done on the same day or before the next test or examination.

7.5.4.2 *Make informed career choices*

- Unfortunately, many students dropout of university because of uninformed career choices.
- Seek career advice and become aware of the variety of careers available, as well as the pre-requisites of studying towards each career.
- Align your career choice with your personal interests and skills.
- Choose a career that will improve your chances of finding a job. Know which skills are classified as scarce skills.
- Participate in job shadowing.
- Attend university open days and read through university websites.
- Choose the correct subjects at the end of Grade 9 for the FET phase.
- Some university courses require Mathematics and *not* Mathematical Literacy.

7.5.4.3 *Take care of your physical and emotional health and wellness*

- Balance your lifestyle to include enough sleep, sport and study hours.
- Keep a healthy, balanced diet, including all food groups.
- Avoid negative peer group pressure. Choose your friends wisely. They should positively inspire you towards success and shouldn't pull you down.
- Join study groups and get a tutor or mentor.
- Don't stress too much.

7.5.4.4 *Set realistic, personal goals in each of your subjects*

- Stays focused on your academic goals and celebrate each of your successes.
- Always strive towards being the best that you can be.
- Take pride in your work and complete every task (big or small) with diligence.
- Remember that your Grade 11 marks are used when you apply to universities and your Grade 12 marks are used throughout your life e.g. for future job applications.

- Consider doing a one-year pre-university course (Grade 13) to improve your chances of admission to and success at university e.g. at the International Pre-University College (IPC).

7.5.4.5 *Continuously work on your positive self-image*

- Always remind yourself about what you have already achieved and what you do well. Maintain a positive attitude in your studies.

7.5.5 Recommendations for further research

It is recommended that future research studies should be conducted to explore student perceptions at the outset of the first semester of study rather than at the outset of the second semester. To obtain a more holistic picture of the skills of students entering the university with an NSC, the views of lecturers and tutors should also be explored. Another research question to be explored in future is the effect of the students' English language abilities on their performance in university Accounting, and whether English Home Language NSC students perform better than those who took English as a First or Second Additional Language at NSC-level. Future researchers may consider similar research studies in different programmes, faculties, study fields or programmes. It is recommended that a similar study be conducted with the inclusion of students who have entered into the extended, four year degree programmes, into the target group of research.

7.6 FINAL CONCLUSION

The more that is known about the profiles of successful students, factors associated with student performance, and factors that can predict academic success at university, the better educators and policymakers will be able to make informed decisions regarding the admission criteria and the university curriculum.

One of the main findings of this study is that the cohort of students who matriculated with NSC has a lower success rate in the BCF programme, than the cohort who matriculated with NATED 550. Research findings made in both the univariate and multivariate analysis in the process of logistic regression lead towards profiles of

successful BCF students entering a SA HEI before and after the introduction of the NSC, as displayed in Tables 6.12 to 6.16 in Chapter 6. The following trends in the profiles of successful BCF students are noteworthy:

- According to this model, *MATHS NSC mark* with a p-value of $<.0001$ and an odds ratio of 1.116 and a 95% confidence interval of 1.077 to 1.163 is the most significant predictor of success in the 2009 cohort. For every one mark increase in a student's *MATHS NSC mark*, the chances of success increase by 11.6%.
- *BECO taken* is also an important predictor of success in the 2009 cohort.
- *MATHS NSC mark* and *BECO taken* simultaneously predict success in the BCF programme when analysed by means of a multiple logistic regression of the 2009 cohort.
- According to this model, *M-score* with a p-value of 0.0005, an odds value of 1.378 and a 95% confidence interval of 1.163 to 1.673, is the most significant predictor of success in the 2008 cohort. For every one mark increase in a student's *M-score*, the chances of success increase by 37.8%.
- *Age* and *ACC taken* are also important predictors of success in the 2008 cohort.
- *M-score*, *age* and *ACC taken* simultaneously predict success in the BCF programme when analysed by means of a multiple logistic regression of the 2008 cohort.
- According to this model, *MATHS NSC mark* is the most significant predictor of success and *BECO taken* is also an important predictor of success in the 2009 cohort. *MATHS NSC mark* and *BECO taken* simultaneously predict success in the BCF programme when analysed by means of a multiple logistic regression.
- According to this model, *M-score* is the most significant predictor of success and *age* and *ACC taken* are also important predictors of success in the 2008 cohort. *Age* and *ACC taken* simultaneously predict success in the BCF programme when analysed by means of a multiple logistic regression.

One of the major challenges for HEI is that they were required to set admission requirements for the 2009 student intake without examination exemplars available during 2008 and without the promised pilot that would have provided an idea of the metric that would be used in the NSC given that HG and SG had fallen away. As things turned out higher marks are generally obtained on the NSC in comparison to the NATED 550. Consequently most universities set their admission requirements too low for the 2009-intake resulting in more at risk students being admitted. This was most likely a contributing factor to the lower success rates seen in the 2009 cohort. This requires university to adjust their entry requirements and provide additional academic support to assist first-year students in their transition from SS to HE.

In this study, the academic achievement of the first cohort of students entering into the BCF degree programme after the introduction of the NSC was investigated over a period of three years to establish, *inter alia*, the association between NSC results and undergraduate results. Selected biographic and academic factors distinguishing successful from unsuccessful BCF students were investigated and described. Furthermore, the implications associated with the implementation of the NSC for higher education institutions were investigated and described.

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Department of Finance and Investment Management
University of Johannesburg

Appendix 1: B.Com. (Finance) First-year Opinion Survey of 2009

27 July 2009

Dear Student

Ms Annelie Oosthuizen is a registered Ph.D. student and she is currently conducting research as part of the requirements for the Ph.D. (Higher Education Studies) degree.

The title of the research project is: "Profiles of successful B.Com. (Finance) students entering a South African university before and after the introduction of the National Senior Certificate (NSC)". The purpose of this survey is to establish the perceptions of UJ's B Com (Finance) first year students regarding the extent to which their school education prepared or equipped them to successfully deal with the demands of university studies. This study complies with the ethical requirements for post-graduate studies at the University of Johannesburg.

You are hereby kindly requested to complete the attached questionnaire which should take no longer than 20 minutes of your time. ***The success of this study largely depends on your cooperation and it will be highly appreciated if you could complete the attached questionnaire.*** All information provided by you will be treated as confidential at all times. ***Under no circumstances will your name be divulged. Information supplied by you will be reported in summary format only and exclusively for the purpose of this research project.***

Please follow the instructions provided to complete and submit the questionnaire.

Should you have any queries regarding this research project, please contact me at: +27 11 559 4349 or rjeiselen@uj.ac.za.

Thank you for your assistance in this regard.

Yours sincerely,

Prof. Riëtte Eiselen (Co-promoter)



**Department of Finance and Investment Management
University of Johannesburg**

***B.COM. (FINANCE) FIRST-YEAR
STUDENT OPINION SURVEY: JULY 2009***

Dear Student

The purpose of this survey is to establish the perceptions of UJ's B.Com. (Finance) first-year students regarding the extent to which their school education prepared or equipped them to successfully deal with the demands of university studies.

To this end, we kindly request that you complete the following questionnaire as honestly, objectively and accurately as possible.

- We assure you that your responses will be treated confidentially.
- Although you will be requested to provide your student number, the results of this survey will be presented in summary format, and the identity of an individual student will NOT be revealed.
- Please answer each of the questions by crossing (X) the appropriate box or entering your answer in the space provided.
- Kindly note that there are no right or wrong answers to any one of the opinion-related questions. We only require your HONEST opinion.
- Participation in this survey is voluntary.

Your time and input is much appreciated!

**Prof. Riëtte Eiselen
Co-promoter**

**Ms. Annelie Oosthuizen
Ph.D. Student**

SECTION A: DEMARCATION OF TARGET GROUP OF RESPONDENTS

The following statements pertain to the university degree for which you are currently registered. Indicate whether each of the statements is TRUE or FALSE by marking the appropriate block:

	STATEMENT	TRUE	FALSE
1	I am a first-year student at the University of Johannesburg.	1	2
2	I am registered for the B.Com. (Finance) degree.	1	2
3	I am registered as a full-time student.	1	2
4	I attend my classes at the Auckland Park Kingsway Campus.	1	2
5	I have started with university studies for the first time in 2009.	1	2
6	I have matriculated in 2008.	1	2
7	I have matriculated by completing the South African National Senior Certificate (NEW NSC) at a government or independent school or FET College.	1	2

If ALL of the above statements are TRUE, please continue completing the rest of the questionnaire.

If ONE or MORE of the above statements are FALSE, you do not need to complete the rest of the questionnaire. Please hand your questionnaire to the invigilator after CONFIRMING this option with her.

SECTION B: ABOUT YOURSELF – BIOGRAPHICAL DETAILS

The questions in this section relate to your background or biographical details. The information gathered in this section will allow us to compare groups of first year students. Once again, we assure you that the information you provide will be treated confidentially.

1. Your UJ student number:

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2. How old were you, in completed years, on 1 January 2009?

Younger than 17 years	1
17 years	2
18 years	3
19 years	4
20 years	5
21 years	6
22 years	7
23 years	8
Older than 23 years	9

3. Your gender:

Female	1
Male	2

4. How would you be classified by the South African government? (Your answer to this question is optional)

African	1
Coloured	2
Indian or Asian	3
White	4
Do not want to indicate	5

5. What is the language that you FIRST LEARNED (your 'mother tongue')? (Mark only one option)

English	1
Afrikaans	2
Nguni (Zulu, Xhosa, Swati, Ndebele)	3
Sotho (Sepedi, Sesotho, Tswana)	4
Venda/Tsonga	5
Other (please specify)	6

6. What language do you currently consider your primary HOME LANGUAGE? (Mark only one option)

English	1
Afrikaans	2
Nguni (Zulu, Xhosa, Swati, Ndebele)	3
Sotho (Sepedi, Sesotho, Tswana)	4
Venda/Tsonga	5
Other (please specify)	6

SECTION C: ABOUT YOUR SECONDARY SCHOOL

In this section of the questionnaire, your circumstances at school and your academic performance in Grade 12 are explored.

1. In which ONE of the following provinces is your secondary school situated?

Eastern Cape	1
Free State	2
Gauteng	3
KwaZulu-Natal	4
Limpopo	5
Mpumalanga	6
Northern Cape	7
North-West	8
Western Cape	9

2. Which ONE of the following statements best describes the type of secondary school where you completed your NSC?

Government school	1
FET college	2
Independent (private) school	3
Home school	4
Other (please specify)	5

3. Which ONE of the following statements best describes the area in which your secondary school is situated?

In the centre of a major city	1
In a suburb of a city	2
In a small town or rural area	3
In a township	4
Other (please specify)	5

4. What was your main TUITION LANGUAGE at secondary school? (Mark ONE option only)

English	1
Afrikaans	2
English and Afrikaans (dual medium)	3
Nguni (Zulu, Xhosa, Swati, Ndebele)	4
Sotho (Sepedi, Sesotho, Tswana)	5
Venda/Tsonga	6
Other (please specify)	7

5. REFER TO THE TABLE BELOW: In the line next to EACH of your compulsory Grade 12 subjects, please indicate your final school leaving (NSC) results by crossing the relevant block.

SUBJECT	FINAL SCHOOL LEAVING NSC RESULTS (APS RATING)						
	7 (80-100%)	6 (70-79%)	5 (60-69%)	4 (50-59%)	3 (40-49%)	2 (30-39%)	1 (0-29%)
5.1 <i>English</i> Home Language	7	6	5	4	3	2	1
5.2 <i>English</i> First Additional Language	7	6	5	4	3	2	1
5.3 <i>English</i> Second Additional Language	7	6	5	4	3	2	1
5.4 <i>Afrikaans</i> Home Language	7	6	5	4	3	2	1
5.5 <i>Afrikaans</i> First Additional Language	7	6	5	4	3	2	1
5.6 <i>Afrikaans</i> Second Additional Language	7	6	5	4	3	2	1
5.7 Language (<i>other</i> than English or Afrikaans) taken as Home Language. Please specify:	7	6	5	4	3	2	1
5.8 Language (<i>other</i> than English or Afrikaans) taken as First Additional Language. Please specify:	7	6	5	4	3	2	1
5.9 Language (<i>other</i> than English or Afrikaans) taken as Second Additional Language. Please specify:	7	6	5	4	3	2	1
5.10 Mathematics	7	6	5	4	3	2	1
5.11 Mathematical Literacy	7	6	5	4	3	2	1
5.12 Life Orientation	7	6	5	4	3	2	1

6. REFER TO THE TABLE BELOW: In the line next to EACH of your Grade 12 choice subjects, please indicate your final school leaving (NSC) results by crossing the relevant block.

SUBJECT	FINAL SCHOOL LEAVING NSC RESULTS (APS RATING)						
	7 (80-100%)	6 (70-79%)	5 (60-69%)	4 (50-59%)	3 (40-49%)	2 (30-39%)	1 (0-29%)
6.1 Accounting	7	6	5	4	3	2	1
6.2 Agricultural Sciences	7	6	5	4	3	2	1
6.3 Business Studies	7	6	5	4	3	2	1
6.4 Consumer Studies	7	6	5	4	3	2	1
6.5 Dramatic Arts	7	6	5	4	3	2	1
6.6 Economics	7	6	5	4	3	2	1
6.7 Engineering Graphics and Design	7	6	5	4	3	2	1
6.8 Geography	7	6	5	4	3	2	1
6.9 History	7	6	5	4	3	2	1
6.10 Information Technology	7	6	5	4	3	2	1
6.11 Life Sciences	7	6	5	4	3	2	1
6.12 Music	7	6	5	4	3	2	1
6.13 Physical Sciences	7	6	5	4	3	2	1
6.14 Religion Studies	7	6	5	4	3	2	1
6.15 Visual Arts	7	6	5	4	3	2	1
6.16 Other (please specify)	7	6	5	4	3	2	1

7.1 Did you ever have to repeat a school year?

YES	NO
If YES, proceed to question 7.2 and then to Section D.	If NO, proceed directly to Section D.

7.2 If you answered YES to question 7.1: a) How many times did you fail a year?

Once	1
Twice	2
More than twice	3

b) In which of the following phases of your school career did you repeat a school year?
(Mark ALL applicable)

Foundation Phase (Grade R – 3)	1
Intermediate Phase (Grade 4 – 6)	2
GETC Phase (Grade 7 – 9)	3
FET Phase (Grade 10 – 12)	4

SECTION D: ABOUT YOUR STUDIES AT UNIVERSITY

In this section of the questionnaire, your circumstances at the university and your performance thus far, are explored.

1. What is your main TUITION LANGUAGE at university? (Mark ONE option only)

English	1
Afrikaans	2

2. Which ONE of the following statements best describes the location of your accommodation/place of residence during the university semester?

Residence or accommodation on the APK campus	1
Accommodation situated 1 to 15 kilometres from UJ – APK campus	2
Accommodation situated 16 – 30 kilometres from UJ – APK campus	3
Accommodation situated 31 – 45 kilometres from UJ – APK campus	4
Accommodation situated more than 45 km travelling distance from UJ – APK campus	5

3. For each of your first semester B.Com. (Finance) modules (courses) please indicate your final results after the first semester of 2009 by crossing the relevant block. If you cancelled or deregistered for a module (course), please mark N/A.

MODULE / COURSE	FINAL FIRST SEMESTER 2009 RESULTS							
	7 (80-100%)	6 (70-79%)	5 (60-69%)	4 (50-59%)	3 (40-49%)	2 (30-39%)	1 (0-29%)	N/A
3.1 Analytical Techniques 1A	7	6	5	4	3	2	1	
3.2 Accounting 1A	7	6	5	4	3	2	1	
3.3 Business Management 1A	7	6	5	4	3	2	1	
3.4 Commercial Law 1A	7	6	5	4	3	2	1	
3.5 Economics 1A	7	6	5	4	3	2	1	
3.6 Other (please specify)	7	6	5	4	3	2	1	

4. During the academic year, for how many hours per week are you employed (part-time)?

Not employed	Work less than 10 hours per week	Work between 10 and 15r hours per week	Work more than 15 hours per week
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5. During the academic year, for how many hours per week do you participate in organised sport?

Do not participate in sport	Less than 5 hours per week	Between 5 and 10 hours per week	More than 10 hours per week
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6. Which of the following UJ Academic support services have you used during the past 6 months?

	SUPPORT SERVICE	YES	NO
1	IT / Computer Labs	1	2
2	Library	1	2
3	Learning Centre	1	2
4	Student Services Bureau	1	2
5	Academic Support Unit	1	2
6	Student Counselling	1	2
7	Centre for Technology Assisted Learning (CenTAL)	1	2
8	Tutors appointed for the modules in B Com (Finance)	1	2
9	Other (please specify)	1	2

SECTION E: SKILLS ACQUIRED IN THE NSC AND ITS RELEVANCE TO UNIVERSITY STUDIES IN B.COM. (FINANCE)

In this section of the questionnaire, your perceptions regarding the skills you require at university and the extent to which the NSC has prepared you for university are explored.

For each of the skills listed in the table below, please indicate:

The importance you attach to the skills or attributes in university studies of B.Com. (Finance).

Use the following scale in Column A:

1: Totally Unimportant; 2: Unimportant; 3: Important; 4: Extremely Important

The extent to which the NSC (NEW secondary school curriculum) prepared you to acquire that skill or attribute. Use the following scale in Column B:

1: Poorly; 2: Moderately; 3: Well; 4: Very Well

Type of skill / ability		COLUMN A: Importance in terms of success / performance in B Com (Finance)				COLUMN B: Extent to which NSC prepared you in acquiring these skills			
		Totally unimportant	Unimportant	Important	Extremely Important	Poorly	Moderately	Well	Very Well
1	Problem solving skills	1	2	3	4	1	2	3	4
2	Decision making skills	1	2	3	4	1	2	3	4
3	Critical thinking skills (reflective judgement)	1	2	3	4	1	2	3	4
4	Analytical thinking skills (ability to analyse and divide information)								
5	Creative thinking skills (generation of new ideas)	1	2	3	4	1	2	3	4
6	Ability to practically implement learning content	1	2	3	4	1	2	3	4
7	Economic reasoning ability								
8	Teamwork ability	1	2	3	4	1	2	3	4
9	Organisation skills								
10	Leadership skills								
11	Self-confidence	1	2	3	4	1	2	3	4
12	Ability to complete projects	1	2	3	4	1	2	3	4

Type of skill / ability		COLUMN A: Importance in terms of success / performance in B Com (Finance)				COLUMN B: Extent to which NSC prepared you in acquiring these skills			
		Totally unimportant	Unimportant	Important	Extremely Important	Poorly	Moderately	Well	Very Well
13	Ability to achieve personal goals								
14	Ability to prioritise activities								
15	Ability to work independently	1	2	3	4	1	2	3	4
16	Time management skills (ability to be punctual and meet deadlines)								
17	Ability to work under pressure	1	2	3	4	1	2	3	4
18	Ability to organise information in a meaningful way	1	2	3	4	1	2	3	4
19	Ability to critically evaluate information	1	2	3	4	1	2	3	4
20	Ability to find relevant information in the Library								
21	Ability to interpret financial information	1	2	3	4	1	2	3	4
22	Mathematical communication skills, e.g. using graphs and tables	1	2	3	4	1	2	3	4
23	Calculation skills								
24	Skills to read with understanding	1	2	3	4	1	2	3	4
25	Oral communication skills								
26	Academic writing skills	1	2	3	4	1	2	3	4
27	Basic computer literacy skills	1	2	3	4	1	2	3	4
28	Ability to understand global issues and their impact on the local community	1	2	3	4	1	2	3	4
29	Ability to reflect on a variety of strategies to learn more effectively	1	2	3	4	1	2	3	4
30	Ability to participate as a responsible citizen in the local community	1	2	3	4	1	2	3	4
31	Ability to be culturally sensitive across the range of social context	1	2	3	4	1	2	3	4
32	Adaptability to new situations	1	2	3	4	1	2	3	4
33	Exploring career opportunities	1	2	3	4	1	2	3	4
34	Exploring education opportunities	1	2	3	4	1	2	3	4
35	Developing entrepreneurial opportunities	1	2	3	4	1	2	3	4

THANK YOU VERY MUCH FOR YOUR PARTICIPATION!

If you are willing to participate in a Focus Group Discussion on this topic, please provide your name and contact details.

Name and Surname:

Cell phone / telephone number:

E-mail address:



Department of Finance and Investment Management

University of Johannesburg

APPENDIX 2. B.COM. (FINANCE) FIRST-YEAR

Focus-group discussions: September 2009

CONSENT FORM

By participating in this focus-group discussion, I hereby give my consent that the discussion may be tape-recorded and that the information may be used for research purposes only. I understand that my identity will not be disclosed as the information supplied during this discussion will be reported in summary format.

STUDENT'S NAME AND SURNAME:

STUDENT NUMBER:

DATE:

SIGNATURE:



APPENDIX 3. B.COM. (FINANCE) FIRST-YEAR

Focus-group discussions: September 2009

QUESTIONS

The following questions require answers based on your OWN personal experience, perceptions and opinion.

1. On a scale of 1 to 10, where 1 indicates NEVER and 10 indicates DEFINITELY, please indicate the extent to which the **NEW National Curriculum at Secondary School (NSC)** equipped or prepared you to successfully deal with the demands of **university studies in B Com (Finance)**.

NEVER									DEFINITELY
1	2	3	4	5	6	7	8	9	10

Please give reasons for your answer.

2. What are the three most critical NSC secondary SCHOOL SUBJECTS that should be included as prerequisites in the UNIVERSITY ADMISSION REQUIREMENTS for B.Com. (Finance) studies?
3. What are the three most critical SKILLS that will contribute towards SUCCESS in B.Com. (Finance) studies at university?
4. In retrospect, what are the three most critical SKILLS that you might have LACKED when you started with your first-year university studies?

5. What are the three most critical aspects of the learning content (KNOWLEDGE) that you acquired in your NSC studies at secondary school that equipped you for SUCCESS in your B.Com. studies at university?
6. What are the three most critical aspects of the learning content (KNOWLEDGE) that might have LACKED in your NSC studies at secondary school and which would have better equipped you for success in your B.Com. studies at university?
7. What is your best ADVICE or 'RECIPE FOR SUCCESS' for secondary-school learners who consider studying B.Com. (Finance) at university?

SECONDARY RESEARCH QUESTIONS B, C, D

Prepared by: Prof. Robert Schall

Date: 15 May 2014

Statistical Consultation Services, UFS

1. Objective of statistical analysis

The primary objective of this statistical analysis was to identify profiles of successful students in two cohorts of students, namely the 2009 and 2008 intake of B.Com. (Finance) students at the University of Johannesburg. In particular, the objective of the statistical analysis was to assess the association between student success as a binary dependent variable, and the following independent variables:

- **2009 cohort:** age (years), gender, ethnic group, APS, Grade 12 mathematics NSC mark (categorical), exposure in school to Accounting (binary), exposure in school to Economics (binary), exposure in school to Business Economics (binary); average of first semester mark of 5 compulsory modules (%).
- **2008 cohort:** age (years), gender, ethnic group, M-score, Grade 12 mathematics HG mark (categorical), exposure in school to Accounting (binary), exposure in school to Economics (binary), exposure in school to Business Economics (binary); average of first semester mark of 5 compulsory modules (%).

2. Descriptive analysis

Two-way frequency tables (number of students and percent of students per category) of success versus the following independent variables, per cohort where applicable, are presented:

- Gender;
- Ethnic group;
- Mathematics APS (2009 cohort) and Mathematics HG M-score (2008 cohort);

- Exposure in school to Accounting;
- Exposure in school to Business Economics; and
- Exposure in school to Economics.

Software: SAS Proc FREQ.

Descriptive statistics (mean, standard deviation [SD], median, minimum, maximum, number of observations) will be presented for each of the following independent variables, per success category and total, and per cohort where applicable:

- Age (years when entering first-year of university studies);
- APS (2009 cohort) and M-score (2008 cohort);
- Grade 12 Mathematics mark; and
- Average mark of first semester at university of 5 compulsory modules.

Software: SAS Proc MEANS.

3. Univariate analyses

Student success (binary) was analysed using one-way logistic regression, fitting (one at a time) each of the independent variables listed in Section 1. A likelihood-ratio chi-square statistic and associated p-value is reported testing the null-hypothesis that the effect of the independent variable in question is zero. Furthermore, a point estimate and associated 95% confidence interval for the odds ratio of success, associated with each independent variable, is reported.

Software: SAS Proc Logistic.

4. Multivariate analysis

The data for each cohort was analysed using multiple regression.

- **2009 cohort:** Initially, the logistic regression model for student success contained the eight independent variables listed in Section 1, excluding the variable of average of first semester mark of 5 compulsory modules. This variable was excluded in order to fit only the predictor variables available before students entered university.

- **2008 cohort:** Initially, the logistic regression model for student success contained the eight independent variables listed in Section 1, excluding the variable or average of first semester mark of 5 compulsory modules. This variable was excluded in order to fit only the predictor variables available before students entered university.

Likelihood ratio chi-square statistics and associated p-values are calculated for each variable in the model. Stepwise model selection was applied by removing, one at time, the variable among the independent variables that is least significantly associated with the outcome (student success), provided that the p-value is at least 0.1.

Software: SAS Proc Logistic.

APPENDIX 5. ETHICAL CLEARANCE

Oosthuizen, Annelie

-----Original Message-----

From: Matshoba, Tumeke
Sent: Tuesday, September 22, 2009 11:46 AM
To: Oosthuizen, Annelie
Cc: Eiselen, Riëtte
Subject: RE: Internal Request for Information

Dear Annelie,

I have read through all the attached documents and hereby give you ethical clearance.

Regards,

Ms Tumeke Matshoba CA(SA)
011 559 3698

-----Original Message-----

From: Oosthuizen, Annelie
Sent: Tuesday, September 15, 2009 3:11 PM
To: Matshoba, Tumeke
Cc: Eiselen, Riëtte
Subject: RE: Internal Request for Information

Dear Tumeke

I am a registered PhD (Finance) student, working under the supervision of Prof Riette Eiselen. The topic of my research is "University entry requirements and success in B Com (Finance): Subsidy implications". My request to you, as chair of the Faculty Ethics Committee, is a document of proof of ethical clearance for this project.

In search of primary data regarding first year B Com (Finance) students' background, performance, etc. I have completed an 'internal request for information form' and sent it to Elize de Wet at the Corporate Governance office last month. Her response to my request was that I have to provide proof of 'ethical clearance' for the project in order to gain access to the data from the ITS system.

Riette suggested that I forward my research proposal, questionnaire and 'letter from supervisor' to you. I have presented my research proposal to the Departmental Higher Degrees committee in May 2009 and after a few minor changes were suggested, the proposal was approved. With the exception of the research proposal (which is currently being finalized) I have attached the relevant documents to this email for your attention.

Please do not hesitate to contact me for further details required.

Kind regards

Annelie Oosthuizen
Unit for Institutional and Strategic Planning Division for Institutional Planning and
Quality Promotion University of Johannesburg Tel 011 559 2619 Fax 011 559 3671
Email annelieo@uj.ac.za

-----Original Message-----

From: Matshoba, Tumeke
Sent: Tuesday, September 15, 2009 11:34 AM

To: Eiselen, Riëtte; Oosthuizen, Annelie
Subject: RE: Internal Request for Information

Dear Riette and Annelie,

I am the chair of the Ethics Committee for the Faculty. Please could you write your query for me in English and I will attend to it as soon as I can.

Regards,

Ms Tumeka Matshoba CA(SA)
011 559 3698