



## CHAPTER 1

### INTRODUCTION

This study will investigate the non-cognitive, cognitive and demographic factors that determine risk for either failure or withdrawal before students enter university. Stated differently, the risk factor as determined by entry characteristics is seen as indicative of a student's readiness for university education. The theoretical framework of readiness for university education is based on various theories and models as well as psychological perspectives related to academic success, namely:

- Readiness theory (Conley, 2007)
- Transition theory (Schlossberg, Waters & Goodman, 1995; Tinto, 1993)
- Longitudinal model of student departure (Tinto, 1993)
- Psychological model of college student retention (Bean & Eaton, 2000)
- Psychological perspectives: constructs that have been related to student success include attribution theory, expectancy theory, self-efficacy theory and motivational theory.

The theoretical framework of this study is based on international research, specifically in the United States of America. One cannot from the outset reason that the context of higher education of all countries is the same or that one is unique from all other countries. There are, however, some differences between the North American (developed countries) and South African (developing countries) contexts. It is therefore important to consider the current educational context of the South African higher education system as background to the research. The motivation, scope, aim and research design will guide the reader as to the specific frame of reference of the research.

## 1.1. BACKGROUND

Higher education in South Africa has been subjected to rapid changes since the conception of a new democratic dispensation in 1994 (CHE, 2004). To enable such change, a national committee, The National Commission on Higher Education (NCHE), was established in 1995 (Cloete, 2006, p. 58). In 1997 the NCHE published a position paper entitled *Education White Paper 3: A Programme for the Transformation of the Higher Education to provide guidelines and principles on how the higher education system should change* (Bunting, 2006b, p. 96; DoE White Paper, 1997; Hay & Monnapula-Mapesela, 2009). Among others, some of the significant changes proposed to the higher education system were a change from a 'closed' system to an 'open' and equitable system with access to all the racial groups in South Africa (Cloete, 2006; Scott, Yeld & Hendry, 2007). This was necessary because the student profile of the higher education system before 1994 was characterised predominantly by white, male students (Bunting, 2006b, p. 95).

Another significant change proposed was the decision to increase and broaden participation (Cloete, 2006). The overall participation levels were estimated at 17% in 1993 and were also characterised by small graduate outputs. A third significant factor that was not added to the paper but became a concern for economic development in sub-Saharan Africa (Scott et al., 2007) was the low number of students enrolled in science, technology and commerce compared to the social sciences (Bunting, 2006b). Transformation of the higher education 'landscape' was eminent in the years to follow.

The transformation of higher education, according to Joubert (2002) and Scott et al. (2007) led to an increase in the number of prospective students wishing to enter tertiary education. Ten years after democracy a document was published by the CHE (2004) that points out that the enrolment of students has almost doubled since 1993 to 2002. African students' enrolment numbers in public higher education for instance grew from 40% of the student body in 1999 to 60% in 2002 (CHE, 2004) and 63% in 2007 (CHE, 2009).

The enrolment numbers in isolation seem to be very impressive, but at a closer glance the shortcomings in the South African higher education system become obvious. The racial distribution of student enrolment as set out in the guidelines of the *National Plan of Higher Education* (NPHE) in 1997 still does not represent the composition of the population in 2007 (DoE White Paper, 1997). Bunting (2006b, p. 100) indicates that by 1998 it was clear that the higher education system would not be able to reach the target of increasing student participation to 20%, as set out in the NPHE (DoE White Paper, 1997). Student enrolments are frequently transformed to participation rates in order to compare countries with one another and are often used to inform educational policy. Participation rates are calculated based on the total number of students enrolled in higher education (of all age's groups) in a given year, expressed as a percentage of the 20 to 24 year-old age group of the population (Scott, 2009, p. 20; Scott et al., 2007, p.10). Table 1.1. compares the racial distribution of participation rates at four definite points in South African higher educational history (Bunting, 2006b, p. 106; CHE, 2009, p. 18; Scott et al., 2007, p. 10).

**Table 1.1. Gross participation rates (1993, 2000, 2005 and 2007 cohorts)**

Year	African	Coloured	Indian	White	Overall
1993	9%	13%	40%	70%	17%
2000	13%	9%	39%	47%	16%
2005	12%	12%	51%	60%	16%
2007	12%	12%	43%	54%	16%

According to Table 1.1. the overall participation rates dropped to 16% by 2000 and continued to be approximately 16% through to 2007. There however seem to be minor fluctuations in overall participation rates when one takes into account that the rate was estimated at 15% in 2001 (Scott et al., 2007) and 18% in 2002 (CHE, 2004). Interpreting the results along racial distribution, a steady increase in African student participation

(1993-2000) is observed, as reflected by increased enrolment numbers as stated in the CHE document (2004) and in Bunting (2006b). During the same period (1993-2000) a drop is noted in participation rates in the coloured, Indian and white student groups, the largest drop being among white students. This, according to Bunting, was due to 41 000 fewer white student enrolling during this period and this largely influenced the drop in overall participation rates. The growth in African student enrolment, however, countered a drop in the overall participation rates (Bunting, 2006b) as would be expected.

During the period 2000 to 2005, African students' participation rate decreased by 1%, while all the other student groups had increases in participation rates. The white student group had the highest percentage increase of all the racial groups. Regardless of the increases in participation rates of white, Indian and coloured student groups, the overall participation rate stayed constant at 16%. The reason for this is that the participation rates are estimated on the proportionate size of the racial group. White, Indian and coloured racial groups are minority groups in South Africa and therefore have minimal impact on overall participation rates.

During the period 2005 to 2007, the overall participation rates remained constant at 16%. African and coloured students' participation rates remained constant at 12%, while there was a drop in the participation rates of white and Indian students. Participation rates for the white and Indian students are however still over-represented in the system with participation rates of 54% and 43% respectively (CHE, 2009). Accordingly there is not a drive to limit the number of white and Indian students but to increase the participation of African and coloured students. The drop in participation rates of white and Indian students is actually regarded as a cause of concern for the Ministry of Education (CHE, 2009).

Compared to other developing countries in 2001, South Africa's participation rates are low. The overall participation rate for South Africa was estimated at 15% compared to developing countries like Egypt with the same economic development at 22% (CHE, 2009, p. 4; Elmahdy, as cited in Teffera & Altbach, 2004, p. 25). A report by the Task

Force on Higher Education and Society (Teffera & Altbach, 2004, p. 25) indicates that South Africa has the third highest number of students enrolled in higher education following Nigeria and Egypt, but South Africa's participation rates compare favourably with only 5% for sub-Saharan Africa (CHE, 2009). Developed countries like the United States of America (USA), Finland and South Korea have participation rates of 60% and more (Maassen & Cloete, 2006, p. 13). These figures imply that South Africa is not making meaningful advances with their participation rates when compared to international participation rates.

Further concerns are the high attrition and low graduation rates of students who are in the system (CHE, 2009; Scott, 2009; Scott et al., 2007). Scott et al. (2007) report on the graduation rates of all 'first-time-entering' students who enrolled in the higher education system in 2000 (based on data from the Higher Education Management Information System of the DoE). This cohort study monitors student throughput over a five-year period and provides information on those students who have graduated, those that are still registered, and those who left without graduating. See Table 1.2. for the throughput rates of the first time entering student cohort at residential universities in 2000 (Scott et al., 2007, p. 12).

**Table 1.2. Throughput rates of the 2000 intake cohort across SA contact universities**

	<b>Graduate within 5 years</b>	<b>Still registered after 5 years</b>	<b>Left without graduating</b>
<b>Universities</b>	50%	12%	38%

Source: Scott et al. (2007, p. 12)

The results in Table 1.2. demonstrate that only half of all first-year students who registered in 2000 have graduated in a five-year period and 38% of students left without

graduating. The category 'left without graduating' refers to students who left their original institution without completing a qualification as a result of voluntary withdrawal or academic exclusion (Scott et al., 2007, p.12). The rates provided in Table 1.2. represent averages for all contact universities and according to Scott et al. (2007) the attrition rate for individual universities ranges from 25% to 64%. Universities' output of graduates in relation to the headcount enrolments for 2000 comprises only 16% of students graduated in that year (Bunting, 2006b, p. 109; CHE, 2009, p. 34). The graduate outputs of South African universities are 4% below the projected rate set out by the NPHE (DoE White Paper, 1997).

Scott et al. (2007, p.13) further differentiate between the graduation rates of different general Bachelor degrees (Table 1.3. below). Only half of the entering cohort of students graduated within five years and 43% of students leave the university without completing a general Bachelor's degree in Business and Management. Only 7% of students in these degrees are still registered after five years of study. The outcomes from the other programmes are similar to that of the Commerce programmes.

**Table 1.3. Graduation rates for general academic Bachelor degrees**

<b>Programme</b>	<b>Graduate within 5 years</b>	<b>Still registered after 5 years</b>
<b>Business/Management</b>	50%	7%
<b>Life and Physical Sciences</b>	47%	13%
<b>Mathematical Sciences</b>	51%	9%
<b>Languages</b>	47%	7%
<b>Social Sciences</b>	53%	6%

Source: Scott et al. (2007) based on the 2000 cohort of contact Universities

Scott et al. (2007, p.16) further show the graduation rates after five years in general Bachelor degrees according to race or equity of outcomes (Table 1.4. below). Graduation in general academic Bachelor degrees indicates that 33% of African versus 72% of white students graduated within five years. The difference between the two racial groups is a factor of 2.2 for a general academic Bachelor degree, implying that more than twice the number of white students graduate within five years, compared to African students.

**Table 1.4. Graduation after five years in general academic Bachelor degrees**

<b>Programme</b>	<b>African</b>	<b>White</b>
<b>Business/Management</b>	33%	72%
<b>Life and Physical Sciences</b>	31%	63%
<b>Mathematical Sciences</b>	35%	63%
<b>Languages</b>	32%	68%
<b>Social Sciences</b>	34%	68%

Source: Scott et al. (2007) based on the 2000 cohort of contact Universities

According to Scott et al. (2007) and Scott (2009) the growth in equity of access is disappointing when one views equity of outcomes along racial lines. Only one third of all African students who enrol for a general academic Bachelor degree in Business and Management complete within five years. The rest of the students are either still busy or have left without graduating. Roughly about 20% of first-year students registered at contact universities nationally withdraw from their studies (Scott, 2009).

The main reasons cited for low participation rates, poor graduation rates and high attrition rates are mainly ascribed to the many students who are under-prepared for higher education, even though they enjoy endorsement (Scott et al., 2007; Strydom as

cited in Joubert, 2002). Under-preparedness refers to students who are in general academically under-prepared and more specifically under-prepared in reading, writing and mathematics skills (Van Dyk & Weideman, 2004). This also explains the difficulty of conversing in the language of tuition in the case of English second language speakers. According to Van Dyk and Weideman (2004), under-prepared students find the transition to university even more challenging in programmes where advanced literacy skills are required.

Scott et al. (2007) indicate the reason for low participation levels of African students specifically is because of the shortage of candidates with endorsement for higher education (only 5% of 1995 grade 12 cohort) and the low number of African students passing physical and mathematical sciences on higher grade (26.8% of students in 2003). The result is that some schools are not preparing learners adequately to be successful at higher education.

Jones, Coetzee, Baily, and Wickham (2008) indicate that the low performing schools are predominantly in rural areas and from former Department of Education and Training schools (predominantly African schools). There is some evidence that the school system has lowered its standards for Senior Certificate Papers. The evidence can be seen in the elevated Senior Certificate pass rates since 2000 to 2003 (Scott et al., 2007, p. 35). According to the Council for Quality Assurance in General and Further Education and Training (Umalusi) there was a decline in the number of questions designed to assess student performance on more challenging cognitive levels during the period 2001 to 2003 (Umalusi, 2007). The Council's report on the quality of the Senior Certificate examination indicates that the question papers in 2007 in general were of a fair quality, but that some of the tasks set during assessment was not of an appropriate standard (Umalusi, 2007).

According to both Nunns and Ortlepp (1994) and Scott et al. (2007), universities admit students who comply with the minimum entry requirements, regardless of the standard of the Senior Certificate. The argument that only students who have the ability and who



are adequately prepared for higher education should be allowed to study further is highly contested by Scott et al. (2007). The reason is that the results of the NSC in many respects do not indicate the true ability or potential of a student to be ready for university education.

Scott et al. (2007) continue to say that despite the large number of under-prepared students that the secondary school sector is providing, the higher institutions also have a responsibility to accommodate more under-prepared students with the potential to succeed at higher education institutions. Scott et al. (2007) base their argument on the NPHE (DoE White Paper, 1997) to increase access to higher education and the responsibility of higher education institutions in developing the country by helping more students to graduate. The contribution of higher education according to the NPHE (DoE White Paper, 1997) towards this country's development and global competitiveness makes it imperative to nurture all students who have exemption to participate in higher education in order to achieve national goals (Scott et al., 2007).

Universities, however, have structural, financial and resource limitations and can only admit a limited number of students. The demand for higher education far exceeds the capacity. These limited resources should therefore be allocated to students who have the true possibility of achieving academic success (Nunns & Ortlepp, 1994). It should also be noted that the psychological impact and financial losses associated with failing a course outweigh the disappointment of being refused access to a preferred course (Nunns & Ortlepp, 1994). From an economic and financial point of view the Government, universities and industry can ill afford to lose human capital if the country is to achieve national developmental goals. Higher education institutions only receive funds based on a Subsidy Framework for students who complete their studies. If students do not complete their degrees, the institutions lose the initial financial investment in the student (consisting of marketing and recruitment expenses), as well as the state subsidy (Gouws & Wolmarans, 2002). Losing an estimated 35% to 40% of students before completing a degree, nationwide, could add up to an astronomical loss of income.

The motivation for the research against the backdrop of the national education system will be discussed in the next section.

## **1.2. MOTIVATION FOR THE RESEARCH**

The motivation for this study emanates against the backdrop of the national educational circumstances; these include the limited 'pool' of students with endorsement, the readiness of the students who have endorsement, the need for social transformation in terms of equity of access, the low graduation rates and the high attrition rates of students who are in the system, and the high demand for financial service professionals in the market place (CHE, 2009).

The demands placed on the Faculty of Economic and Management Sciences at the University of Pretoria are similar to South African contact universities with the same drivers taking precedence; namely to improve the graduation rate and decrease the attrition rate of first-time entering first-year students, the need to address equity of access and to supply the high demand for well equipped financial service professionals.

The Faculty of Economic and Management Sciences at the University of Pretoria is the largest faculty amongst eight other faculties and contributes 24.6% of all undergraduate enrolments for the 2008 cohort (BIRAP, 2008). The University of Pretoria is a large, research intensive 'contact' institution that provides tuition to both under- and postgraduate students. The majority of programmes are full-time and contact-based, where students have to attend classes and practical and tutorial sessions. In 2008, student numbers totalled 57 409 (38 934 contact and 18 475 distance) (University of Pretoria webpage). Pre-1994 the university was characterised as a 'Historically White (Afrikaans) University' (Bunting, 2006a, p. 50), but is currently a dual medium university that provides tuition in both English and Afrikaans (University of Pretoria webpage). Compared to four-year universities in the United States of America (Braxton & Hirschy,

2005), the University of Pretoria will be recognised as both a residential institution and a commuter institution.

The historical character of the University of Pretoria and the language of instruction influenced the equity of access of racial groups in the past, which influenced the number of African, coloured and Indian students gaining access to the university. From Table 1.5. below it is evident that in 2000 the enrolment rate of African students was only 20% and after eight years the rate almost doubled to 37%. The enrolment rate of African students registered at the faculty in 2007 was lower than the enrolment rate of the national cohort of contact universities during the same period. African students make up 50% of all enrolments in the national cohort of contact universities, thus the enrolment rate at the faculty under study is 13% lower than the average national enrolment rate (BIRAP, 2008; CHE, 2009). The proportion of white students enrolled in the faculty between 2000 and 2008 declined by a rate of over 20% in eight years. The decline experienced in the enrolment rate of white students corresponds to the trend in national enrolment rates for white students.

**Table 1.5. Enrolment by race of the 2000 and 2008 intake cohort at the Faculty of Economic and Management Sciences**

Year	African	Coloured	Indian	White
2000	20.1%	1.1%	4.0%	74.8%
2008	37.4%	2.2%	5.7%	54.7%

Source: BIRAP (2008)

Institutional information from the Bureau for Institutional Research and Planning (BIRAP) at the University of Pretoria will be used as the source of information for students' throughput rates. Throughput is monitored and analysed in cohort fashion over a five-year period and provides information on those students who have graduated, those who

are still registered, and those who left without graduating. From Table 1.6. below the graduation rates over five years of students registered within each of the Faculty Schools are 10% to 16% higher than the graduation rate of the national cohort of contact universities over the same period (2000 cohort). The number of students leaving the faculty after five years is also lower than the average rate of the national cohort of contact universities.

**Table 1.6. Throughput rates for general academic Bachelor degrees at the Faculty of Economic and Management Sciences Schools**

<b>Faculty School</b>	<b>Graduate within 5 years</b>	<b>Still registered after 5 years</b>	<b>Left without graduating</b>
<b>Financial Sciences</b>	66.1%	8.7%	25.2%
<b>Economic Sciences</b>	60.9%	15%	24.15%
<b>Management Sciences</b>	64.0%	17.6%	18.4%

Source: BIRAP (2008) for 2000 cohort

The rate that students leave the faculty without graduating is close to a quarter of the students. Research indicates that the majority of the students who leave the university do so in their first year (BIRAP, 2008; Scott, 2009; Scott et al., 2007, p. 29). In 2000 the percentage of the first-year attrition rate in relation to the total attrition rate over five years was estimated at 29%. National attrition rates for contact universities are estimated at 20% (Scott, 2009). These findings indicate that the first-year student is most at risk for withdrawal and that the reasons for doing so range from financial to emotional as well as academic reasons.

Given the realities faced by the Faculty of Economic and Management Sciences and the limited number of students allowed entry to the university and each faculty, the Faculty of Economic and Management Sciences use selection criteria. At present the only admission criteria for the Faculty of Economic and Management Sciences are cognitive variables, for example the Matriculation scores (M-score) and the Alternative Admissions Research Project (AARP) for those students who performed below a set standard in grade 11 or 12. Faculties use the subtests (Placement Test in English for Educational Purposes [PTEEP], Mathematics Achievement, and Mathematics Comprehension and Scientific Reasoning tests) of the AARP according to their own regulations and might differ from year to year (Murphy, 2002). The Faculty also makes use of a compulsory language test for all their first-year students (Van Dyk & Weideman, 2004).

Students who comply with the required M-score and register early are allowed to continue with their studies. Two factors inhibit registration: the first is students who have provisional permission to register but have to write the AARP test. The students who pass the test are allowed to register unconditionally. The second, related to the first, is that at a given point in time the dean of faculty decides that no more students are allowed to enrol at the faculty due to structural and resource limitations and students who apply late (even students who comply with the required M-score) are not allowed to register at the faculty.

The M-score and other ability tests measure cognitive skills and strategies as well as content knowledge (Conley, 2007). According to Conley (2007), these elements are very important indicators of students' readiness for university education. A number of factors, however, influence the motivation to include psycho-social factors as indicators of readiness. The first is that conventional ability tests do not measure the full range of abilities and characteristics necessary for university success (Sternberg, 2007). Closely aligned with the first factors are the questionable Senior Certificate results due to reviewed assessment standards (Umalusi, 2007). A third factor is the diverse student population registering at Historically White Universities since 1997 (Bunting, 2006b).

The fourth factor is that the M-score as predictor will no longer be used for the 2009 student intake. The Admissions Point Score (APS) based on the National Senior Certificate (NSC) will be used in its place, but it is still unclear how the APS will predict academic success. Calibration between the two measures is being done by Umalusi (2009) but due to various shortcomings in the assessment, data it is not yet finalised. It therefore makes sense to include non-cognitive factors when students are admitted to university, even if only as a transitional measure. As performance at university level serves as a constant, associations between student performance and their non-cognitive characteristics could serve as a means to calibrate the cognitive APS and M-Score measures and contribute to the calibration between the two measures. Having accomplished this, the outcome will impact on the entry requirements for students.

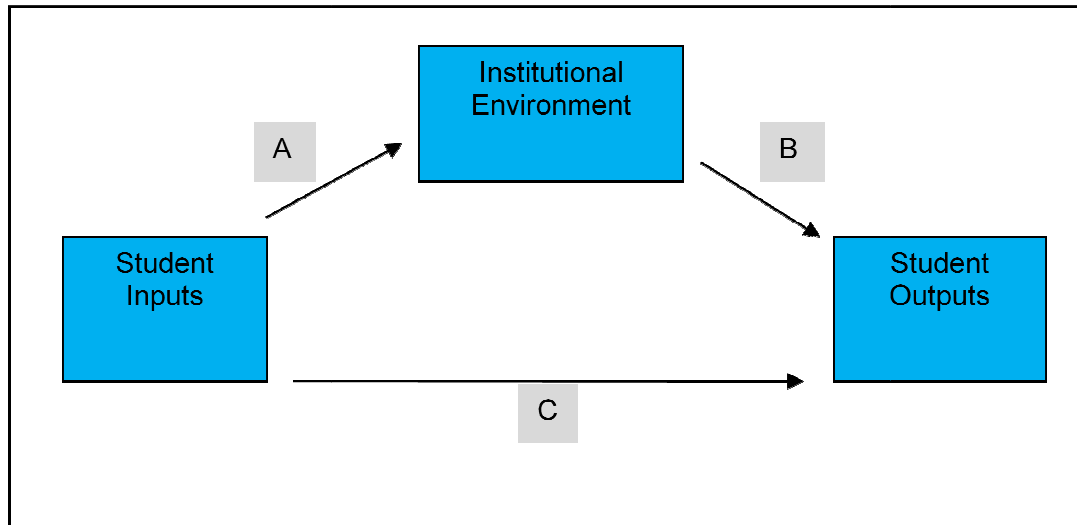
According to Kuh, Kinzie, Buckley, Bridges and Hayek (2007) an institution must understand and know its students when they arrive at the university (see Braxton & Hirschy, 2005, p. 82). Determining students' readiness for university education is seen as the first step in understanding the students that enrol at an institution and measuring the factors associated with risk for academic achievement and withdrawal. When students actually enrol, they bring with them, among others, personal attributes, academic ability and other socio-cultural characteristics (Tinto, 1993). The entry characteristics are hardly ever measured quantitatively and it is therefore difficult to know where and when in the life cycle students are most in need of academic, emotional or personal support. There seems to be a lack of measurement at strategic stages in the student life cycle and first-year students are particularly at risk for failure and voluntary withdrawal (BIRAP, 2008; Hawkins & Larabee, 2009; Du Plessis, Lemmens & Boardman, 2006; Jones, Coetzee, Baily & Wickham, 2008; Scott et al., 2007). The reasons for withdrawal vary and numerous authors (Braxton, 2000; Seidman, 2005; Tinto, 1993) mention family responsibilities, work responsibilities, social support, integration versus isolation and motivation as reasons for withdrawal.

### 1.3. SCOPE OF THE STUDY

Readiness for university education fits within the broad and encompassing field of student retention and success. The most basic model to explain this framework is from Astin's (1970) model of student development which indicates three distinct components of a higher education institution, namely Input – Environment – Output. The inputs refer to the abilities, skills and expectations that students bring with them to the university. The inputs that Astin refers to are associated with the elements of readiness for university education as explained by Conley (2007).

The environment refers to all the elements of the institution that influences the learning experiences of students. According to Wend (2006), the student learning experience can be defined as the variety of experiences within the sphere of the University's responsibility that students come in contact with and which influences learning. The student learning experience is therefore all-embracing and includes matters such as curricula, methods of teaching, learning and assessment, learning environment and resources, student progress and achievement, and academic and pastoral support.

Student outputs refer to the outcomes that institutions wish to influence, such as academic achievement, skills and attributes (Astin, 1970; Camara, 2005a). Academic success consists of many facets, such as knowledge and skills, motivation, leadership, communication and team work (Camara, 2005a).



**Figure 1.1. Astin's model of student development** (1970, p. 225)

Based on Astin's model of student development, the institutional environment is affected by student inputs (relationship A). Secondly, the institutional environment has an impact on the outputs of students (relationship B) and lastly the student inputs can affect outputs directly in relationship C (Astin, 1970).

The empirical part of the research of this study leans heavily on relationship C of Astin's model. Student inputs are measured with a questionnaire and available student information (demographic data). The outputs have been demarcated to include only academic achievement and withdrawal behaviour of first-year students. Relationships A and B are investigated and explained with a literature discussion that includes readiness for university education, student transition, retention and withdrawal models. Relationships A and B are regarded as important to student output but are regarded as a controlled variable here. This can be regarded as a shortcoming of the investigation, but does not influence the research negatively (Astin, 1970). Not measuring the scope of elements that incorporate academic success (output) is also regarded as a shortcoming of the research, but the output is clearly demarcated here.



Retention and withdrawal models have to be investigated to determine the range of factors that could influence student persistence. Based on the investigation, inferences can be made about the factors that need to be included in an academic readiness questionnaire. These factors could inform an early warning and referral model as part of a tracking system of first-year students. The models do not make provision for teaching and learning *per se*, but how entry characteristics eventually relate and interact with the students' learning experience and student outputs.

#### **1.4. AIM OF THE STUDY**

The aim of the study is to determine the relationship between a student's entry characteristics and (1) withdrawal and (2) academic failure respectively. This aim is based on proposition number 3 of Tinto's longitudinal model of student persistence (Tinto, 1993). According to this proposition, student entry characteristics directly affect the student's likelihood of persistence or withdrawal (Braxton, Hirschy & McClendon, 2004). An assumption from Tinto's proposition is that a profile of students at risk, based on entry characteristics, can be used to predict withdrawal or failure behaviour. Braxton et al. (2004) tested the internal consistency of Tinto's 13 propositions using meta-analysis of empirical studies from a number of researchers. From this analysis the only direct empirical affirmation for proposition 3 came from a study in two-year colleges.

The Braxton et al. (2004) study indicates that none of the other 12 propositions received strong support as they did in four-year universities. There is therefore the possibility that this proposition tested in isolation could yield statistically significant results in a South African contact university. Furthermore, none of the propositions have been tested empirically using different racial or ethnic groups within single institutions (Braxton et al., 2004). Studies to conclude statistically significant results for whites on proposition 3 have been found (Braxton et al., 2004). Providing empirical evidence on proposition 3 for different racial groups would be invaluable in the South African higher education system

taking account of the large discrepancies that exist between the various racial groups regarding enrolment and throughput.

This study would benefit academia on both a theoretical and practical level. On a theoretical level the study will contribute to the current readiness and retention models by focussing on the cognitive and non-cognitive readiness characteristics of first-year students at a South African tertiary institution. Various theories and models will be investigated as a guide for the theoretical model on readiness for university education.

The practical benefit would be the development of a concise measurement instrument from the theoretical model that can be used by faculty as a screening tool and as part of an early warning system to determine 'risk'. The entry characteristics can thus be used to profile students in need of academic or personal support (Seidman, 2005, p. 302). According to Seidman (2005) new students who enter the university can be compared with the risk profile and their chances at success can be estimated based on the comparison group. According to Seidman (2005, p. 307), the purpose of collecting data and determining risk profiles is to support students at an early stage in the first academic year to overcome challenges and to persist with their academic goals. Seidman (2005) indicates that the data should be from various sources.

The proposed hypotheses for this study are:

- Students who score high on the 'Academic Readiness Questionnaire' factors will have higher academic performance than students who perform lower on the questionnaire factors.
- Students who score low on the 'Academic Readiness Questionnaire' factors are more likely to withdraw from their studies than students who score higher on the questionnaire factors.
- Student readiness characteristics directly affect the likelihood of withdrawal.
- Student readiness characteristics directly affect academic performance at first year.

- Academic performance is an intervening variable for withdrawal.
- The predictors of risk for failure will differ between the racial groups.
- The predictors of risk for withdrawal will differ between the racial groups.

## 1.5. RESEARCH DESIGN

A quantitative and qualitative approach for the research design were taken. The research project were completed in three phases. In the first phase (2007) a literature study were done to determine the entry characteristics and demographic variables that correlate with withdrawal and academic performance. A model were developed to show the relationship between these variables. Current questionnaires on non-cognitive factors were used in conjunction with a literature study to develop a contextually relevant questionnaire. A sample were selected to administer a pilot study to test the questionnaire's item constructs and scales before it were administered to the final sample. The data of the pilot study were analysed using various descriptive and inferential statistical methods.

In the second phase the 'Academic Readiness Questionnaire' were administered to first-year students from the Faculty of Economic and Management Sciences in the beginning of February 2008 during the orientation week. The data were analysed using various descriptive and inferential statistical methods to report on the research problem. These include factor analyses, regression analyses and multiway frequency analyses. Student throughput statistics were also monitored at the end of the academic year to determine those students who have withdrawn from their studies.

Student marks at the end of the academic year were used as an indicator of academic achievement. Students were also monitored at the end of the academic year to determine those students who have withdrawn from their studies. Collectively the information from the academic readiness questionnaire and demographic information from the student database (BIRAP) will be known as readiness characteristics. These

readiness characteristics are synonymous with the elements of readiness for university education.

In the third phase the students who withdrew from their studies were interviewed in an attempt to triangulate the research result and to infer the 'causal' model of risk of first-year students in the faculty under study. The motivation for this approach is that '...theory on departure should develop from the direct experiences of college students' (Braxton et al., 2004, p. 19). The best way to understand student withdrawal behaviour is to ask students about their experiences and why they withdrew from university.

#### **1.6. LEVEL OF ANALYSIS**

The research on retention from the literature has various points of departures. The literature is dominated by contributions from the USA-model, in other words it distinguishes between two and four-year institutions. Some studies have been done with more than one institution and other studies within one institution. Braxton and Lee (2005) distinguished between commuter and residential colleges and universities because of the differences between the social communities in the two types of institutions. Residential institutions have well defined social communities, while commuter institutions lack structure and clarity in their social communities. The distinctions might indicate that student departure processes might differ between residential and commuter universities. Understanding the levels of analysis helps to interpret and compare the literature. The level of analysis of this study is focussed on individual withdrawal within a single institution, namely the University of Pretoria.

## **1.7. STUDENT LIFE CYCLE**

The student life cycle is seen as taking a holistic view of a student's academic career, in other words from pre-application to postgraduate learning experience. It is important to identify the different stages of the life cycle. The Centre for Teaching and Learning (CTL) at the University of Stellenbosch proposes an inclusive student life cycle model (Van der Merwe & Pina, 2008). The student life cycle addresses the potential prospective student, prospective student, first-year student, senior student, postgraduate student and the alumnus. Through each of these stages the students are tracked electronically using student information systems; the results are made accessible on student and staff portals. In each stage the CTL identified different administrative processes that need to be supported (Van der Merwe & Van Dyk, 2008). According to Van der Merwe and Van Dyk, the data sources could include surveys, and data from student information systems or a learning management system. Multiple sources of data should be sourced to profile, track and support students.

## **1.8. LAYOUT OF THE STUDY**

In Chapter 1 the background, motivation and aim of the study were discussed. A number of hypotheses are proposed and will be tested empirically. In Chapter 2, various retention and withdrawal models will be investigated to aid in the identification of the entry characteristics associated in the mentioned models. A seminal model will be used as the platform of departure and newer models will be used to evaluate the seminal model. A context specific model of risk will be proposed and evaluated. Chapter 3 will focus on the development of the questionnaire. The constructs and items of non-cognitive questionnaires will be evaluated based on the models discussed in Chapter 2. The process for the development of the 'Academic Readiness Questionnaire' will be discussed and the constructs and items of the questionnaire will be highlighted.

In Chapter 4 the research methodology and research design will be discussed. In Chapter 5 the results of the questionnaire will be presented. In this Chapter the reader can expect the psychometric properties of the questionnaire and view the relationships that exist between the entry characteristics with withdrawal behaviour and academic performance of first-year students. In Chapter 6 the research results will be discussed and interpreted based on the literature review in Chapter 2. In Chapter 7 the researcher will conclude with additional comments and recommendations and give a critical evaluation of his own research.

The models and perspectives are used firstly to identify the entry characteristics of students as they relate to readiness for university, secondly to determine how students' entry characteristics relate with institutional characteristics and thirdly how this interaction between students and institution leads to failure or withdrawal. This research project will make use of a structured questionnaire, biographical information from students, theoretical underpinnings and exit interviews to determine readiness for university education.