Admission criteria for post graduate MBL students.

FINAL REPORT FOR MBL3

Presented to the
Graduate school for business leadership
University of South Africa

In partial fulfilment of the requirements for the

MASTERS DEGREE IN BUSINESS LEADERSHIP,
UNIVERSITY OF SOUTH AFRICA

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November 2006

DECLARATION

I, **WA van Niekerk**, declare that "***Admission criteria for post graduate MBL students***" is my original work and that all the sources I have used or quoted have been indicated and acknowledged as complete references, and have not been submitted for degree purposes previously.

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Signature Date

ACKNOWLEDGEMENT

My wife Michele, thank you for all your patience and assistance.

EXECUTIVE SUMMARY

There is a great need for qualified MBL and MBA graduates in South Africa to support and maintain the current growth rate that the economy is experiencing. Diligent effort is required to ensure that the locally acquired MBA/MBL qualifications remain on par with international qualifications. As an initial step to ensure high standards, the Council for Higher Education (CHE) did accreditation evaluations and only 18 MBA courses are now accredited. Admission criteria for the MBA/MBL is one of the minimum standards being assessed as part of the accreditation process conducted by the CHE.

To be effective some of the aims of the admissions process at the UNISA SBL should be to:

- Determine as accurately as possible, which students are capable to complete the MBL qualification successfully; (this has two implications, not denying any students who could have completed the course, and not admitting students who will not be able to complete the course).
- Ensure that a culturally diverse and representative student body is admitted.
- Do the above mentioned by using a practical process that is as financially and time efficient as possible.

This research study focuses on the admissions criteria for MBL students at UNISA. The objectives of the study are:

- Understanding the admissions criteria in use at universities globally and locally in South Africa.
- Understanding the success rate of the GMAT as admissions predictor for MBA completion (globally).
- Determining the success rate of the current admissions criteria as admissions predictor for the UNISA MBL completion.
- Determine what data or combinations of data on the MBL application registration form can be used as a more successful predictor.

The data collected for this study was obtained from the UNISA SBL administration department and consisted of a list of 724 students that enrolled for their MBL in 2003. The corresponding list of students that completed their studies in 2005 was also collected, which were 151 of the 724 students, or 20.9%. The data was re-coded and tested to determine in which of the data fields on the admissions form were there a statistically significantly correlation with regards to completing the MBL in 3 years. The following data fields indicated a statistically significant correlation: Race, Nationality, Age Group and Language.

In order to test the final hypothesis, a classification tree making use of CHAID algorithms was used. The classification tree selected the data fields that showed statistically significant correlations. The data fields used was nationality, race and age groups. The classification tree re-grouped the data to achieve a 38.7% and 35.8% pass rate. Indicating that the newly developed admission tool is more successful in predicting students who will complete their MBL qualification in 3 years, than the current process, with which only 20.9% of the students passed. The pass rate of 38.7% might not sound significant, but it is an improvement of 85% on the current system.

The research question was whether the data fields on the MBL application registration could be used to develop admissions criteria in order to serve as a predictor of the post graduate MBL student's ability to complete the qualification in the prescribed period of time. This question was answered in two ways, firstly by the literature review, where Cate et al (2004) created a discriminant model that predicted MBA no-shows with 94.2% accuracy. Secondly by way of hypothesis 8 where the classification tree making use of CHAID algorithms grouped the students to achieve a pass rate of 38.7% and 35.8%, by only making use of the information available on the current UNISA admissions form.

All the objectives of the study were met, and the following recommendations were made:

- Modify the admissions form to include some fields that may prove to be better predictors.
- Do not show away students, who according to the model will not pass, rather give them additional tutoring or require the students to complete a preparatory programme such as the Programme in Business Leadership (PBL), prior to starting with their MBL.
- Refine the admissions prediction model up to a point where the model is able to predict 80% to 90% of the cases correctly, prior to it being implemented, by using more than one MBL group that will give a more representative sample, and do not limit the study to only students that finished in the minimum period, but to all students that finished within 5 years.

This study therefore concludes that the data fields on the MBL application registration form can be used to develop admissions criteria in order to serve as a predictor of the post graduate MBL student's ability to complete the qualification in the prescribed period of time.

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1. Introduction

This chapter will be used as an introduction to the whole study and give some background on the topic. The research question will be stated together with the research objectives. This chapter will also include the importance of the study, delimitations and definitions.

1.1. Audience

The research project is aimed at two groups of readers, namely:

- The School for Business Leadership at the University of South Africa, and
- Other academic institutions or scholars, with interest in admissions criteria for similar post graduate MBA courses.

1.2. Background

Reasons for acquiring a Master of Business Administration degree (MBA) are plentiful, but the most common reason is that it is seen as one of the key routes towards career advancement. It is believed that a MBA degree is a ticket to acquiring good employment and earning a sizable remuneration package (Chiu, 1999).

As a result of abovementioned reasons, the demand for tertiary institutions to provide MBA programs has increased dramatically. Especially the need for programs that supply part time or distance learning, due to the flexibility, convenience and affordability of such programs (Chiu, 1999). In 2003 the number of institutions offering MBA courses in South Africa totalled 28 (Furlonger, 2005).

The rapid growth in the number of students wanting to acquire MBA qualifications and the number of institutions offering the qualification has to be monitored and controlled to ensure a consistent high level of quality qualifications. The function of evaluating the MBA courses offered by institutions, is carried out by the

Council for Higher Education (CHE), while the evaluation of the students are done by the tertiary educational institutions themselves.

In 2003 a MBA reaccreditation process was launched as the first step in bringing the overall level of SA MBAs up to international standards. The results of this process was that of the 28 MBA courses offered by business schools, only six received full accreditation and 12 institutions were given one year to achieve full accreditation on their MBA courses (Furlonger, 2004).

The CHE set 13 criteria for business schools wanting to offer MBA courses (Refer to Appendix 3). Of these 13 criteria, two has direct influence on the selection and admissions criteria of the tertiary institutions (Furlonger, 2004). These are:

- Student recruitment: Among minimum standards for acceptance, 90% of each group must have a bachelor's degree or equivalent.
- Diversity: Schools must set target rates for black students and staff, and offer support systems to help them.

"A fundamental means of marketing an MBA program is to produce a high quality product. This long-term strategy entails keeping the admission standards high, providing comprehensive and rigorous delivery and on-going evaluations of the total program" (Chiu, 1999).

Taking the CHE admissions criteria and the abovementioned quote into account it is clear that the selection and admissions process of a MBA institution is critical for future acceptance and success of such an institution. The majority of institutions internationally that offer MBA courses use the Graduate Management Admissions Test (GMAT) as part of their admissions criteria. Studies have however shown that the GMAT alone is not a very good predictor and can typically only be attributed with 14% to 18% of the variance on MBA student Grade point average (GPA) performance (Koys, 2005).

Due to logistical, time and financial considerations, the University of South Africa (UNISA) does not use the GMAT as part of the admissions process. The admissions process described in the MBL brochure (2006) is as follows:

"In order to be considered for admission to the first year of MBL study, participants must:

- Hold a three year Bachelors degree (360 SAQA credits) from a recognised university.
- Have at least three years' work experience, to ensure that they can contribute meaningfully in group discussions, assignments and study schools.
- Have access to a computer and the Internet.

An evaluation of the applicant's academic record and a personal letter providing reasons for wishing to enrol for the MBL will be used for selection purposes. The SBL may introduce additional selection criteria."

This research study will focus on the admissions criteria and attempt to improve the predictability of the admissions process.

1.3. Research Question

Can the data fields on the MBL application registration be used to develop admissions criteria in order to serve as a predictor of the post graduate MBL student's ability to complete the qualification in the prescribed period of time?

1.4. Research objectives

Currently a substantial percentage of the MBL students fail to complete the qualification in the minimum period of time. This can be attributed to a number of reasons, of which admission criteria are one (Strasheim, 1998). The objectives of the study are:

- Understanding the admissions criteria in use at universities globally and locally in South Africa.

- Understanding the success rate of the GMAT as admissions predictor for MBA completion (globally).
- Determining the success rate of the current admissions criteria as admissions predictor for the UNISA MBL completion.
- Determining what data or combinations of data on the MBL application registration form can be used as more successful predictor.

1.5. Delimitations of the study

The study will spend time to understand the different admission criteria available and used globally. The study will however not attempt to develop better admissions criteria for other post graduate MBA institutions. The study will only attempt to develop an alternate admissions criterion for the SBL at UNISA.

Only historical data of MBL students who registered in 2003 at the SBL will be used to develop the new admissions model. Thus, students at other universities and other year groups, are excluded.

1.6. Importance of the study

Taking the target audience into account, the study will have the following importance:

- It will allow the SBL of UNISA to make a more accurate assessment of the likelihood of students to be successful in their post gradate MBL studies.
- A higher admissions success rate will invariantly lead to better pass rates.
- Less disruption of MBL study groups due to loss of members.
- Lastly, if successful, the study will show that less costly and less time consuming methods can be used effectively as successful admissions criteria.

1.7. Definitions and abbreviations

Postgraduate - A person with a degree who is studying for a more advanced qualification (Collins Dictionary & Thesaurus, 2005: 12).

Admissions – ***1*** permission to enter. ***2*** permission to join (an organisation). (Collins Dictionary & Thesaurus, 2005: 12).

Predictor – A predictor is a selection instrument that assist organisations in making selection decisions. A criterion is a standard to be attained, for example above average job performance. A predictor is thus any variable that can be used to forecast a criterion (Swanepoel, 1998).

Table1: Abbreviations

Abbreviation	Description
CHE	Council for Higher Education
EMBA	Executive Masters in Business Administration
GMAT	Graduate Management Admissions Test
GPA	Grade point average
MBA	Masters in Business Administration
MBL	Masters in Business Leadership
OU	Open University
PBL	Programme in Business Leadership
RSA	Republic of South Africa
SA	South Africa
SBL	School for Business Leadership
TOEFEL	Test of English as a Foreign Language
UK	United Kingdom
UNISA	University of South Africa
USA	United States of America

1.8. Chapter outline

Chapter 1: Introduction

This chapter will be used as an introduction to the whole study and give some background on the topic. The research question will be stated together with the research objectives. This chapter will also include the importance of the study, delimitations and definitions.

Chapter 2: Theoretical foundation

In this chapter the theoretical foundation will be set by outlining the applicable body of knowledge.

Chapter 3: Literature review

The literature pertaining to the study will be reviewed and discussed in chapter 3.

Chapter 4: Research methodology

This chapter will clarify the research methodology that was used, the data collection method as well as the limitations of the study.

Chapter 5: Analysis of research results

The results of the study will be displayed in this chapter.

Chapter 6: Discussion, conclusion and recommendations

The results achieved in chapter 5 will be discussed in detail and conclusions and recommendations made.

Chapter 7: Article for publication

The research study will be summarised into an article format for possible publication.

2. Theoretical Foundation

In this chapter the theoretical foundation will be set by outlining the applicable body of knowledge.

2.1. Scope of the body of knowledge

The relevant body of knowledge for this study can be listed as:

- Admissions criteria for tertiary institutions, and
- Cultural diversity

The review of the information available on admissions criteria will be focussed on the admissions criteria and tests set out by tertiary institutions for MBA qualifications. Material on the relevance of admissions tests such as the GMAT will also be investigated.

The theory on cultural diversity will be discussed, especially with relation to university admissions.

2.2. Rationale and Hypothesis statements

Rationale 1

The classification data available on the application forms of the MBL applicants will be tested for correlation to the student's success with regards to completing their MBL in 3 years.

Hypothesis statement 1

H_O: There is no difference between male and female students with regards to completing their MBL in 3 years.

H_A: There is a difference between male and female students with regards to completing their MBL in 3 years.

Hypothesis statement 2

H_O: There is no difference between students from previously disadvantaged groups and white students with regards to completing their MBL in 3 years.
H_A: There is a difference between students from previously disadvantaged groups and white students with regards to completing their MBL in 3 years.

Hypothesis statement 3

H_O: There is no difference between South African students and non-South African students with regards to completing their MBL in 3 years.
H_A: There is a difference between South African students and non-South African students with regards to completing their MBL in 3 years.

Hypothesis statement 4

H_O: There is no difference between students from different age groups with regards to completing their MBL in 3 years.
H_A: There is a difference between students from different age groups with regards to completing their MBL in 3 years.

Hypothesis statement 5

H_O: There is no difference between students who are not managers and students who are managers with regards to completing their MBL in 3 years.
H_A: There is a difference between students who are not managers and students who are managers with regards to completing their MBL in 3 years.

Hypothesis statement 6

H_O: There is no difference between students who are in the financial sector and students who are not in the financial sectors with regards to completing their MBL in 3 years.
H_A: There is a difference between students who are in the financial sector and students who are not in the financial sectors with regards to completing their MBL in 3 years.

Hypothesis statement 7

H_O: There is no difference between students who are English speaking and students who are not English speaking with regards to completing their MBL in 3 years.

H_A: There is a difference between students who are English speaking and students who are not English speaking with regards to completing their MBL in 3 years..

Rationale 2

The combined use of general registration information that proved to have a positive correlation to MBL success will prove to be a better admissions tool to predict successful MBL completion than the current admissions process.

Hypothesis statement 8

H_O: The newly developed admission tool is less successful in predicting students who will complete their MBL qualification in 3 years, than the current process.

H_A: The newly developed admission tool is more successful in predicting students who will complete their MBL qualification in 3 years, than the current process.

3. Literature Review

The literature under review will be comprised of the following two bodies of knowledge: admissions criteria and cultural diversity.

3.1. Admissions criteria

In this section the different admissions criteria in use internationally will be discussed.

3.1.1. Admissions criteria of distance learning Universities

The admissions criteria of distance learning universities will first be discussed. The two universities that will be discussed are the Open University in the United Kingdom that services the UK as well as parts of Europe, and the University of South Africa that services the greater Southern Africa region.

3.1.1.1 Open University (OU)

The OU is Europe's largest university and is ranked amongst the top UK universities. There are currently about 200 000 students enrolled at the OU, making use of their distant learning programmes to further their careers, without sacrificing work or family commitments (www.open.ac.uk, 2006).

The admissions criteria at the OU does not require testing, but is largely based on prior experience and qualifications. The admissions criteria for a MBA qualification are:

- All applicants are expected to have organisational experience, with some of it in management level.
- The applicant must be at least 25 years old when starting their first course of study.
- The maximum allowed period of time to complete the MBA is ten years, passing a minimum of one course every two years. Students are only allowed to repeat any subject once.

The MBA qualification is completed in two stages, and stage 1 has to be completed before enrolment into stage 2 is accepted. Stage 1 can be completed via three routes:

- Route 1: The applicant must be in possession of a recognised bachelor's level qualification. The applicant can complete stage 1 by taking either the Certificate in Business Administration course or, if the applicant's qualification is in the business studies area, taking the Professional Diploma in Management course. Both these courses will take at least 12 months to complete.
- Route 2: The applicant is already in possession of a professional diploma in management, or a post graduate qualification in management or business administration or a Masters degree in a related area. Then that qualification will count as stage 1.
- Route 3: The applicant is experienced in managerial work, but does not have the required qualifications. The applicant can then complete the Professional Diploma in Management course, which will take two years to complete.

Upon completing stage 1, the applicant can move on to stage 2, which entails completing the subjects in a pre-determined order until the required 180 points are accumulated to be awarded a MBA qualification (www.open.ac.uk, 2006).

3.1.1.2 University of South Africa (UNISA)

The admissions criteria for UNISA are mainly based on experience and qualifications. (Refer to appendix 3 for the complete MBL brochure for 2006). "In order to be considered for admission to the first year of MBL study, participants must:

- Hold a three year Bachelors degree (360 SAQA credits) from a recognised university.
- Have at least three years' work experience, to ensure that they can contribute meaningfully in group discussions, assignments and study schools.

- Have access to a computer and the Internet.

An evaluation of the applicant's academic record and a personal letter providing reasons for wishing to enrol for the MBL will be used for selection purposes. The SBL may introduce additional selection criteria" (MBL brochure 2006).

3.1.2. GMAT as predictor

The GMAT is designed to measure the ability and knowledge of the student. The test is all multiple-choice questions covering two sections, verbal and quantitative. The score is then used to base admission decisions on (Ahmadi et al, 1997). The GMAT is most commonly used in the US, but has been found to be a valid predictor of academic performance in a MBA program for non-U.S. students as well (Koys, 2005).

Several studies found a statistically significant correlation between GMAT scores and the MBA GPA. The square of the correlation coefficient was used to see the degree of changes in one variable to explain changes in another variable. The GMAT score was found to explain between 14% and 18% of the GPA variance (Koys, 2004).

"Standardized testing has been utilized for over a century. Providing many functions, testing can be used to sort people into groups, classify and rank employees, or admit students into educational programs. Tests can be designed to measure aptitude, personality, achievement, or even competency. There are many advantages to standardized testing; however, standardized testing does have drawbacks" (Ahmadi et al, 1997). Since the GMAT consists of multiple-choice type questions, it does not accurately measure an individual's ability, critical thinking skills, or competency (Ahmadi et al, 1997).

3.1.2.1 The Validity of the GMAT for Non-U.S. Students

Previous studies have show that the GMAT is a valid predictor of academic performance for US students undertaking their MBA qualification. There are however very little evidence that the GMAT predicts performance for non-US students. The study examined the validity of the GMAT on non–US students through a predictive validation procedure in which the students (from Bahrain, Czech Republic and Hong Kong) were given the GMAT, but the test results were not used to admit the students. The students were admitted based on their previous qualifications and verbal skills to three overseas MBA programs and their academic performance was correlated with their GMAT scores (Koys, 2005).

In the majority of previous validation studies of the GMAT on the MBA, a concurrent validation approach was used. The author felt that a predictive approach would provide a more accurate estimation of the validity of the GMAT, as the predictive approach does not suffer from a restriction of range on the predictor score. More specific, this means that in the concurrent technique, only students who were admitted with good GMAT results were evaluated for correlation upon completion of their qualifications. Thus a portion of the aspirant students with poor GMAT results were not part of the study. In the predictive validation process the students were allowed to study their MBA regardless of their GMAT scores. Thus an evaluation after completion of their qualifications would give a correlation on a wider range of GMAT results (Koys, 2005).

The findings showed that 41% of the variance in the MBA academic performance was explained by the GMAT. The correlation was higher than similar US students. The findings of the study indicated that the GMAT was a valid predictor of academic performance in an MBA program for non-US students (Koys, 2005).

3.1.2.2 Sample selection in models of academic performance

A study was conducted at the University of Nebraska-Lincoln about their MBA program, and provided a formal model of how the admission and enrolment process affects the interpretation of simple validation studies. It was theoretically found that the admission and acceptance process systematically reduces the correlation between test scores and performance relative to the relationship in the population of potential students. Traditional validation studies may mislead institutions into ignoring useful information about the potential productivity of prospective students (Cushing, 2004).

The assumption was made that institutions seek to predict performance using undergraduate performance in addition to test scores. Admissions committees usually examine a host of qualitative information like recommendation letters and undergraduate course-work, whereas validation studies typically use a small number of easily quantifiable variables. Another assumption was that institutions operate in a competitive environment and applicants base their enrolment decisions solely on the ranking of institutions (Cushing, 2004).

The Rationale was tested on a sample of students and applicants to the MBA program at the University of Nebraska-Lincoln. The coefficient was calculated from a regression of undergraduate GPA on GMAT scores from currently enrolled students and was compared to the regression coefficient using the pool of applicants as the population of potential students (Cushing, 2004).

According to Cushing (2004) the study indicated that the correlation between undergraduate GPAs and GMAT scores was almost twice as high in the applicant pool as in the pool of matriculating students. Standard validation studies will therefore understate the importance of GMAT scores in predicting performance of potential students to the MBA program.

3.1.2.3 Sidestepping the GMAT

This author indicated that thirteen top ranked MBA programs in the US have abandoned the GMAT as a requirement for their EMBA programs, some waive the test on a case by case basis, while others have cut it from their admissions criteria altogether. The author however eludes that the waiving of the GMAT is motivated by profit, since fulltime MBA offerings, which require the GMAT, are struggling to attract students (Gloeckler, 2005).

The arguments discussed by Gloeckler that supports the waiving of the GMAT were:

- Business experience is more important than test scores for EMBA programs,
- The GMAT is unfair to applicants who have been out of school for ten or more years,
- Rejecting for low test scores would reduce the diversity of backgrounds in the student body.

Arguments against the waiving of the GMAT were:

- Students may lack analytical skills needed in first year if they were not assessed on the GMAT,
- Exam is the only way to compare applicants of different backgrounds,
- An EMBA is still an MBA, and the requirements should be the same.

3.1.3. GMAT and undergraduate GPA as predictor

Many business schools use both the GMAT and undergraduate GPA to make admissions decisions. Some researchers have used multiple regression analysis to test the combined relationship of these two predictors with the criterion of MBA GPA. The results showed that the GMAT and undergraduate GPA together explained between 15% and 22% of the variance in MBA GPA (Koys, 2004).

3.1.4. GMAT and other variables as predictor

Other variables have been used together with the GMAT score and the undergraduate GPA. However, when GMAT and GPA were combined with other variables, such as involvement in campus activities, work experience, letters of recommendation, and personal goals (Ahmadi et al, 1997), these models explained only 19 to 21 % of the variation and were not as useful as predictors of success (Koys, 2005). One other popular test for non-US students is the TOEFEL, which has shown that 5% of the variance in first year MBA's GPA could be explained by the TOEFEL (Koys, 2005).

3.1.5. Other variables as predictors

Carver (1994) stated that the correlation between GMAT and success in a MBA program are not particularly high, and that exploration of more qualitative variables, such as quality of work experience, may prove more fruitful than focusing exclusively on quantitative measures.

Another study by Ahmadi et al (1997) suggests that other additional criteria may need to be used in selecting prospective students. Due to their low predictive ability of the GMAT alone, other forms of assessment such as writing samples, interviews, work experience, or other non-quantitative measures or assessments would be useful.

Naik et al (2004) did a study where the GMAT score together with all other information on the students were evaluated by a neural network to predict student performance, and achieved an accuracy of 89.13%.

3.1.5.1 Predicting MBA No-Shows and Graduation Success with Discriminate Analysis

The study done by Cate et al (2004), investigates the possibility to determine whether information, only available at the time of admission to the MBA program, can be used to correctly categorize applicants into two groups, namely: no-shows and those who successfully graduate. The intent is that the factors identified in the study will assist the admissions committee of the Northern Kentucky University in predicting successful MBA students. The analysed data should indicate which of the current data being collected during the admissions process, is useful (Cate et al, 2004).

The data used in the study was obtained from the data available to the MBA admissions committee of Northern Kentucky University at the time of admission, namely the information on the graduate application form, the information on the GMAT and the information on the undergraduate GPA. The variables used in the analysis were:

- Age when admitted,
- Undergraduate GPA,
- GMAT scores,
- Years the applicant was with the current employer,
- Years that elapsed between the completion of the undergraduate degree and admission to the MBA program,
- Number of pre-MBA classes required for admission,
- Number of courses transferred to the University,
- Sex,
- Full time or part time,
- Race,
- Under graduate college,
- Tuition status.

Descriptive statistics for these variables indicated that the no-shows were marginally older when admitted; planned to let less time elapse between the completion of the undergraduate and the start of the MBA program; had higher GPAs; had marginally lower GMAT scores, were required to take almost twice as many pre-MBA courses; and had fewer graduate courses transferred to the university (Cate et al, 2004).

Discriminate analysis was selected above all other multivariate analysis techniques, due to its powerful classification capabilities. Specifically, discriminant analysis is a statistical tool that allows the researcher to identify variables or attributes that best discriminate members into two or more groups (Cate et al, 2004). SPSS for Windows, version 11.5. was used for the analysis.

The analysis correctly separated the no-shows with a 94.2% classification rate based entirely on the use of dummy variables. Unlike other studies, undergraduate GPAs, GMAT scores, and other numeric variables played no role in the final classification. Cate (2004), suggests that more attention be given to the use of dummy variables when it comes to predicting the success of MBA program graduates. It was cautioned that the specific results may not be transferable to other MBA programs, but that the methodology used is indeed transferable and should yield similar classification results.

3.1.5.2 Using neural networks to predict MBA student success

This study attempts to predict MBA student performance for admissions purposes. Contrary to traditional studies that made use of statistical models like discriminant analysis, multiple regression or stepwise regression, this study will attempt to predict MBA performance by making use of three different models, namely neural networks, logit (logistic regression) and probit (Naik et al, 2004).

The limitations associated with traditional statistical methods, as stated by Naik, are that they usually assume multivariate normality and homoscedastic

variances. Actual data seldom comply with this (like the use of skewed GPA data as a result of admissions criteria) and therefore diminish the predictive ability. An additional problem with multiple regression and stepwise regression studies is the low value of R^2 with some studies as low as 0.18%.

The data used in the study was gathered from results of recently graduated students from medium sized accredited mid-western Universities. The students was grouped into a successful pool and a marginal pool based on their results. The variables used in the study was: campus location, citizen status, gender, ethnic status, undergraduate GPA, junior year GPA, GMAT, age of student, undergraduate institution, and undergraduate major (Naik et al, 2004).

Neural networks entail the use of modern computer technology and information science to build information systems that can make decisions based on available historical data. These systems are also called learning systems and are usually used for prediction and classification purposes in various fields (Naik et al, 2004).

The neural network classified 93.38% of the successful students correctly and 80.9% of the marginal students correctly. The overall prediction accuracy for the neural network model was 89.13%. The neural network was then compared to two statistical models, namely logit and probit. The results obtained from the logit model classified 86.78% of the successful students and 46.03% of the marginal students correctly. The overall rate of prediction accuracy for the logit model was 72.83%. The results obtained from the probit model classify 87.6% of the successful students and 46.03% of the marginal students correctly. The overall rate of prediction accuracy for the probit model was 73.37%. The results indicated that the neural network performed at least as good as the statistical models (Naik et al, 2004).

The following limitations were highlighted with regards to the neural network models. The size of the sample was too small to enable the generalisation of the

results. There are several theories that can guide the design of network topology, thus meaning that the neural network used could have been sub-optimal. The training of the neural network can be computational intensive and the learning rate subject to the researcher's preferences. Neural networks does not explain its decision and should thus not be used alone, but in conjunction with admissions boards (Naik et al, 2004).

3.1.5.3 An examination of the admission criteria for the MBA programs: A case study

This study evaluates the adequacy of the GMAT as a measure of potential success of students during the admissions process for MBA programs. The study will determine if GMAT results and MBA success are correlated. Additional factors that may affect the success of students were also discussed (Ahmadi et al, 1997).

The data used for the study was obtained from accredited business schools in the South East of the US, one of which was the University of Tennessee. Students can be admitted via two routes. The first entails that the aspirant students undergraduate GPA is multiplied by a factor of 200 and added to the applicants GMAT score. If the total exceeds the required total of 950 the student is admitted. Secondly if the aspirant students total score is less than 950 the GPA of the most resent studies are used and multiplied with 200 and added to the GMAT score. If the total is more than 1000 the student is admitted (Ahmadi et al, 1997).

A bi-variant linear regression was used to verify the correlation between the dependant MBA graduate GPA and the following independent predictor variables: GMAT score, age of the student, gender, marital status, race of the student, undergraduate GPA and undergraduate major. The descriptive statistics gave the following results:

- The average age of the MBA students was 29.8 Years (61.3% fell within the 25 to 35 age group),
- 55.9% of the students were male,
- 85% of the students were Caucasian, 2.5% African American and 12.2% other,
- 60.2% had GPAs under 3.0,
- The average undergraduate GPA was 2.77,
- 71.9% of the students hold a qualification in business administration,
- 86% had GMAT scores of over 400, with the average at 483.

A bi-variant linear regression model was developed for each of the of the independent predictor variables to determine the correlation to the graduate GPA. An analysis was done on each of the independent variables and the findings were:

- Undergraduate is a significant predictor with a correlation of 27.1%,
- GMAT score is a significant predictor with a correlation of 18.75%,
- Index score is a significant predictor with a correlation of 12.67%,
- Age is a significant predictor with a correlation of 7.62%,
- Race is not a significant predictor,
- Graduate major is not a significant predictor,
- Gender is not a significant predictor.

The study suggest that even though undergraduate GPA and GMAT scores are significant variables in predicting success, their low predictive ability necessitate the use of additional criteria for the selection of prospective students (Ahmadi et al, 1997).

3.1.5.4 An empirical investigation of the MBA admission criteria for non-traditional programs

This study investigated the validity of the GMAT when taken under non-standard conditions such as persons with disabilities or persons whose native language is not English or students who study their MBA on a non-full time basis. The study make note that the degree of validity of the GMAT may be a function of the particular institution and the types of students who are attracted to that institution's MBA program. "The GMAT serves to exclude otherwise worthy and motivated prospective M.B.A. students as much or more than it does to preclude such students who would not or could not succeed to graduate management education" (Carver et al, 1994).

The study states that a number of Universities has started to add additional admissions criteria such as: undergraduate major, GPA in major courses, recommendation letter, work experience and undergraduate institution. The purpose is to find the best combination to predict success in the MBA and to identify students who might require remedial courses prior to enrolling. “Part-time students would be operating in an entirely different environment from full-time students, that is, first priority is often job rather than school" (Carver et al, 1994).

The study was mostly based on part time, distance learning students of a suburban University. The data used was of 467 students who completed their MBA between 1983 and 1988. Regression analysis was done with the aid of a Statistical Package for the Social Sciences (for PCs). Each variable was tested for correlation to the MBA GPA scores. The following results were obtained:

- No single variable was an excellent predictor of MBA success,
- The variable with the greatest predictive value was the students GMAT score, which explained 12.5% of the variance,
- The second best predictor was the student’s undergraduate GPA score explained 7.4% of the variation

Various combinations of variables were also used for a multiple regression analysis. The results indicted that:

- The model with the best results was the model using the variables GMAT, Under graduate GPA, and WORK, which explained 20.6% of the variance on MBA GPA (Carver et al, 1994).

The conclusion of the study is that the GMAT and undergraduate GPA are the best predictors of MBA success regardless of whether the program is full time or distance learning. Other observations made were that the age of the students did not appear to play a role in the student's success. According to the calculations, the following variables also had little impact on student performance: time lapsed since last studies, undergraduate institution, major and months work experience. When the study was repeated on students who did not get admission based on their GMAT scores, the results were comparable to the initial study. The study concludes by stating that "exploration of more qualitative variables, such as quality of work experience, may prove more fruitful than focusing exclusively on quantitative measures" (Carver et al, 1994).

3.1.5.5 Relationships between motivators and criteria in the selection of a distance learning MBA programme in Hong Kong

This study explores why Hong Kong managers decide to pursue a distance learning MBA degree and the criteria they use in selecting a desirable program. The survey indicated that most of the respondents were concerned about the reputation of the University, its programme curriculum, mode of delivery, supporting facilities, and placement opportunities. This information should be used in the marketing of MBA programs. "A fundamental means of marketing an MBA programme is to produce a high quality product. This long-term strategy entails keeping the admission standards high, providing comprehensive and rigorous delivery and on-going evaluations of the total programme" (Chui, 1999).

3.2. Cultural diversity

In this section the demographics of South Africa will firstly be discussed. Secondly, international studies on cultural diversity relating to University admissions will be studied to find the relevancy to the research study.

3.2.1. Demographics of South Africa

As mentioned in the background of the research study, one of the criteria set by the CHE for business schools wanting to offer MBA courses was that schools must set target rates for black students and staff, and offer support systems to help them. The intent of this criteria is to aid the transformation at universities with the goal to achieve a student body that is representative of South Africa's population. To understand the extent of the requirement, the demographics of South Africa need to be taken into account. Data was sourced for the Statistics SA website. Table 2 gives an estimate of the South Africa by population group and sex for 2006.

Table2: Mid-year estimates of South Africa by population group and sex for 2006 (StatsSA, 2006).

Mid-year estimates for South Africa by population group and sex, 2006

Population group	Male		Female		Total	
	Number	% of total population	Number	% of total population	Number	% of total population
African	18 558 500	79,6	19 104 400	79,4	37 662 900	79,5
Coloured	2 060 000	8,8	2 138 800	8,9	4 198 800	8,9
Indian/Asian	570 200	2,4	593 700	2,5	1 163 900	2,5
White	2 138 900	9,2	2 226 400	9,3	4 365 300	9,2
Total	**23 327 600**	**100**	**24 063 300**	**100**	**47 390 900**	**100**

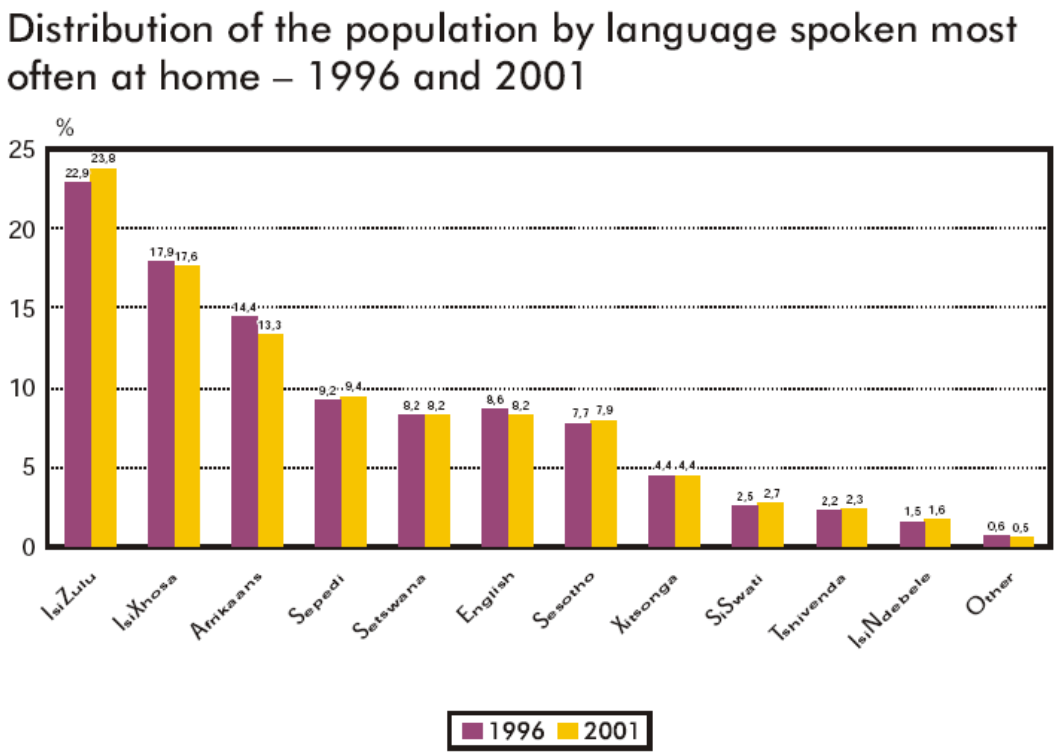


Figure 1: Distribution of the population by language for 1996 and 2001 (StatsSA, 2006).

One of the variables that will be used in the study as admissions criteria are language as indicated on the UNISA registration form. The distribution of the South African population by language is indicated in Figure 1. The level of education of the population aged 20 and up is illustrated in Figure 2. This figure highlights the need for higher education in South Africa, as it is clear from the graph that only 8.4% of the South African population, aged 20 and older, has acquired higher education qualifications. The South African population estimates by population group, age and sex for 2006 is supplied in Appendix 4.

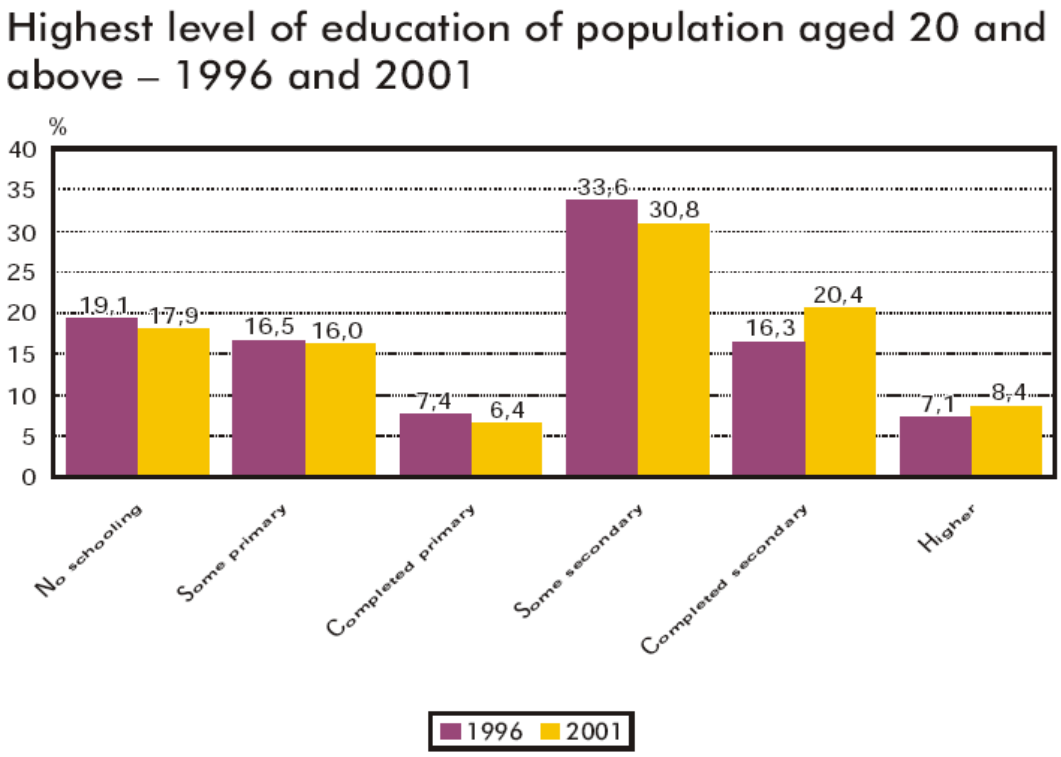


Figure 2: Highest level of education of population aged 20 and above (StatsSA, 2006).

3.2.2 Cultural diversity studies.

International studies on cultural diversity relating to University admissions will be discussed.

3.2.2.1 Achieving diversity on campus: a better approach

Munce (2005) viewed commitment to creating truly multicultural college and university campuses as investment in future diverse communities. He states that student bodies should be representative of all cultures in the country and that it will really improve and add to the experiences and the potential of young people.

He finds that current outreach and recruitment efforts are not enough and that a better action plan is needed to identify and recruit students from previously

disadvantaged backgrounds. Colleges and universities firstly need to be made aware, and then acknowledge the fact that their current efforts result in the under-representation of certain groups of students; and secondly they need to equip themselves with the correct tools so that greater cultural diversity is brought into these establishments.

Munce reminds these establishments that they must take into account the fact that the process of developing a campus's student body begins long before possible candidates hand in their applications. Persons involved in creating the criteria needed for enrolment influence the composition of classes two to three years in advance. Therefore admissions criteria can be seen as a vital factor and must be drawn up very carefully. In his own words admissions criteria "open doors to some young people, and close them for others; often those who already have too few viable options" (Munce, 2005).

The author further refers to research which shows that colleges and universities have a tendency to select more candidates from groups which are already well represented on campus and fewer candidates from underrepresented groups causing unbalanced numbers. It also suggests that colleges and universities mainly concentrate on students with excellent GPA scores in high school. Munce says that this is not an unfair approach, as high school GPA's "is among the most reliable predictors of college performance". But he then continues to say that if colleges and universities build their admissions criteria solely on GPA scores and take nothing else into account, diversity on campus will suffer and certain capable students will not have been given an opportunity to represent their minority group.

Munce recognises that colleges and universities have a lot of challenges besides their admission criteria to deal with, but he makes it clear that universities and colleges must turn away from a one-dimensional approach to

admittance and that they must look at different recruitment strategies in order to make sure that diversity on campus becomes a reality.

3.2.2.2 A preliminary analysis of African American college students' perceptions of racial preferences and affirmative action in making admissions decisions at a predominantly white university

Antwi-Boasiako & Asagba (2005) points out that predominantly white universities do not know how to regulate the use 'race-based preferences' for the selection of students during admissions. They state that many colleges and universities take in blacks as well as other ethnic group students using race as their main admittance criteria. They found that many white students felt that by using race as part of the admittance criteria with affirmative action in mind, reverse discrimination was taking place which led to many white students taking universities and colleges to court. On the other hand, as the author points out, many black students felt offended by the fact that other (white) students assumed that they were only admitted because of affirmative action, therefore their skin colour, and not because of their intellectual abilities and achievements.

According to Antwi-Boasiako et al, certain educators and political leaders made it clear that they feel that all public colleges should use affirmative action willingly and out of own accord. They feel that if colleges and universities do not look at race as one of their considering factors during admissions decisions doors will be closed and opportunities will be taken away from minority students.

The authors refers to American colleges where defenders for minority students expect there to be less black students attending colleges every year until these dwindling numbers become a huge concern for higher education institutions. In fact, they mention that the number of black students enrolling for higher education has already been steadily declining in the past years. The consequence of these diminishing numbers of black students attending white

campuses will make it problematic for black communities to reach their goals for "equality, greater opportunity, and progressive social change in American Society" (Antwi-Boasiako et al, 2005).

Antwi-Boasiako et al states that "the educational gap between black and white in college attainment will likely increase". They foresee that equality in the working environment will be even more difficult to reach, specifically at management levels, if the number of blacks enrolling in colleges continues to dwindle.

The research done by the authors of this article shows that there are black students who can understand why affirmative action is needed, but at the same time they do not wish to be associated with the stigma it is associated with. This is because there are those who argue that black students enrolled on a campus with an affirmative action policy are not qualified to be there. Most of the respondents who took part in the study felt however that even though there is a stigma associated with affirmative action, it is still very much needed and should definitely be regarded as part of the selection criteria for higher education institutions (Antwi-Boasiako et al, 2005).

Antwi-Boasiako et al refers to affirmative action as "a means of providing access to opportunities, which are denied to minority groups" as well as "a means of actions to eliminate discrimination". However, they also mention that affirmative action plans must be carefully planned and put into place without doing injustice to others.

The authors concludes in saying that to prevent a 'White America' where most of the managerial positions are filled with white people, one must start at college level and more minorities need to be admitted. Antwi-Boasiako & Asagba finish by saying: "Unless universities use their unique ways and means of opening their doors to minorities without blocking qualified white applicants into a

predominantly white university, the controversy over affirmative action will continue to be an academic debate without any practical solution".

4. Research Methodology

This chapter will clarify the research methodology that was used, the data collection method as well as the limitations of the study.

4.1 Research design

The research question will be answered by making use of quantitative statistical techniques. The data used was collected from an existing database available at the SBL administration department. The target population for the study are the whole student population who started their MBL degree at UNISA in 2003. By linking the registration data for 2003 with the information of students who acquired their MBL qualification in 2005, the students who completed the qualification in the minimum period of three years, were identified.

4.2 Measuring instrument and analytical methodology

The data collection tool that was used was the registration form of UNISA, as displayed in Appendix 3. The data comprises of a selection of general details on the registration form as well as the student's pass or fail results at the end of the 3 year study period (2003 until 2005). Refer to table 3 for list of data fields.

Table 3: List of information acquired form application / registration forms.

Data field title
Gender
Race
Ethnic group
Nationality
Age group
Occupation
Economic sector
Language
Passed / failed

The data fields as set out in table 3, together with the corresponding pass / fail results were received from the SBL in Excel format. The data was rearranged to be in a user-friendly format. During this process the data was examined to ensure that there were no data missing or wrongly recoded. Incomplete data fields were excluded from the data set.

The collected data is all nominal of type, except for the age groups that is interval of nature. This means that the data has classification but not order, distance or origin (Cooper, 2003). This fact will determine what quantitative techniques can be used to further analyse the data. A further consideration is that there are 724 fields of data, but each variable per field has a different number of classification groups, this further complicates the calculations. Simple descriptive statistics will be generated from the collected data. This will aid in getting a feel for the data. Due to the fact that the data is nominal of nature, the descriptive statistics will not contain values such as averages, maximums, minimums, means or standard deviations.

In previous studies to determine success rates of MBA students, the following three research methods were employed: regression analysis, multiple discriminant analysis, and neural networks (Naik et al, 2004). For this study classification trees, making use of CHAID algorithms will be employed.

The CHAID algorithm was originally proposed by Kass (1980) and the Exhaustive CHAID by Biggs et al (1991). The CHAID algorithm only accepts nominal or ordinal categorical predictors, and when predictors are continuous, they are transformed into ordinal predictors. This method suits the study perfectly as the data is mostly nominal. For a detailed description of the CHAID algorithm method, refer to Appendix 7.

All the calculations done in the study was done on computer with the aid of SPSS 15.0 for Windows and MoonStats for Windows. The statistical methods used to

determine relatedness was Cramer's V coefficients, while the Chi^2 was used for the hypothesis testing.

4.3 Assumptions

The following assumptions were made that could influence the outcome of the study:

- That the students completed the applications forms honestly and accurately.
- That the data on the application forms were coded correctly by the staff at UNISA.
- That the data supplied by UNISA was the correct data as per request.
- That the researcher transferred the data correctly to the statistical programs used in the research.
- That the 2003 group is a good average and can be generalized for drawing conclusions and making recommendation for other years.

4.4 Hypothesis

The steps in hypothesis testing are the following (Cooper, 2003):

- Establish a null hypothesis as well as the alternative hypothesis,
- Choose the statistical test,
- Select the desired level of confidence,
- Compute the actual test value of the data,
- Obtain the critical test values,
- Interpret the results.

The hypotheses that were tested in the study are listed below:

Rationale 1

The classification data available on the application forms of the MBL applicants will be tested for correlation to the student's success with regards to completing their MBL in 3 years.

Hypothesis statement 1

H_O: There is no difference between male and female students with regards to completing their MBL in 3 years.

H_A: There is a difference between male and female students with regards to completing their MBL in 3 years.

Hypothesis statement 2

H_O: There is no difference between students from previously disadvantaged groups and white students with regards to completing their MBL in 3 years.

H_A: There is a difference between students from previously disadvantaged groups and white students with regards to completing their MBL in 3 years.

Hypothesis statement 3

H_O: There is no difference between South African students and non-South African students with regards to completing their MBL in 3 years.

H_A: There is a difference between South African students and non-South African students with regards to completing their MBL in 3 years.

Hypothesis statement 4

H_O: There is no difference between students from different age groups with regards to completing their MBL in 3 years.

H_A: There is a difference between students from different age groups with regards to completing their MBL in 3 years.

Hypothesis statement 5

H_O: There is no difference between students who are not managers and students who are managers with regards to completing their MBL in 3 years.

H_A: There is a difference between students who are not managers and students who are managers with regards to completing their MBL in 3 years.

Hypothesis statement 6

H_O: There is no difference between students who are in the financial sector and students who are not in the financial sectors with regards to completing their MBL in 3 years.

H_A: There is a difference between students who are in the financial sector and students who are not in the financial sectors with regards to completing their MBL in 3 years.

Hypothesis statement 7

H_O: There is no difference between students who are English speaking and students who are not English speaking with regards to completing their MBL in 3 years.

H_A: There is a difference between students who are English speaking and students who are not English speaking with regards to completing their MBL in 3 years..

Rationale 2

The combined use of general registration information that proved to have a positive correlation to MBL success, will prove to be a better admissions tool to predict successful MBL completion than the current admissions process.

Hypothesis statement 8

H_O: The newly developed admission tool is less successful in predicting students who will complete their MBL qualification in 3 years, than the current process.

H_A: The newly developed admission tool is more successful in predicting students who will complete their MBL qualification in 3 years, than the current process.

5. Analysis of research outcomes

Once data processing has been completed, the analysis of this data should follow. Data analysis is the statistical design and tests applied to the obtained data to test the various hypotheses (Cooper, 2003).

Frequency distribution refers to the need to organise randomly collected data. The purpose of grouping data is to reduce the number of figures or scores presented in a distribution so as to enable the reader to grasp the main features of the data and to present the information more effectively (Cooper, 2003).

5.1. Frequency Distribution

The frequency table for the data can be seen in Appendix 5. There were 724 students that enrolled in 2003. The data from the frequency tables were arranged from big to small and percentages were calculated, this data are graphically displayed in figure 3 to figure 11.

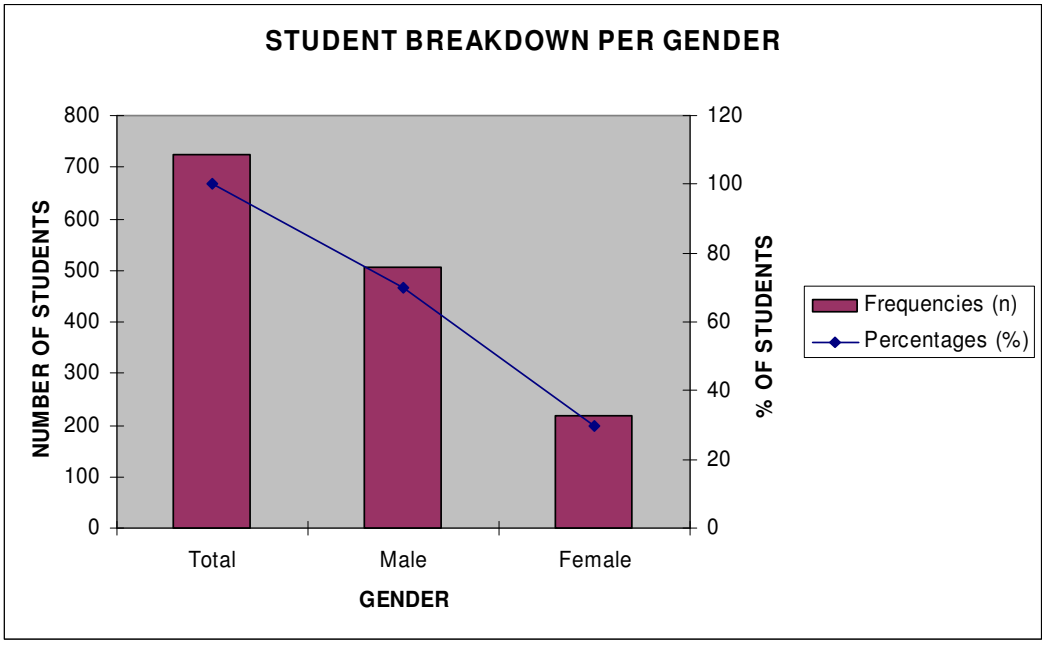


Figure 3: Frequency and percentage of students per gender group.

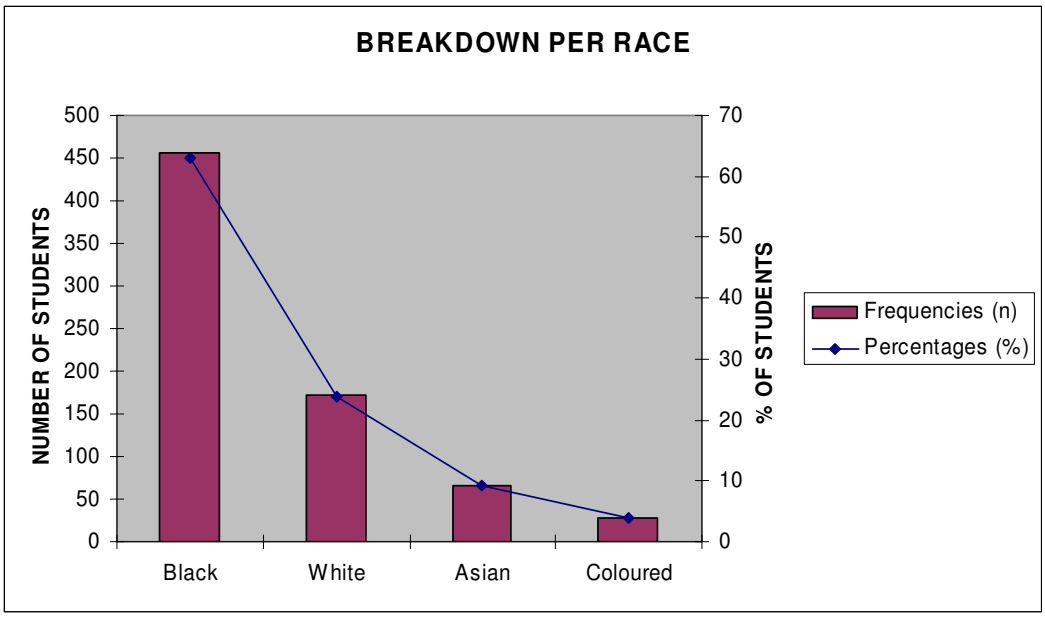


Figure 4: Frequency and percentage of students per race.

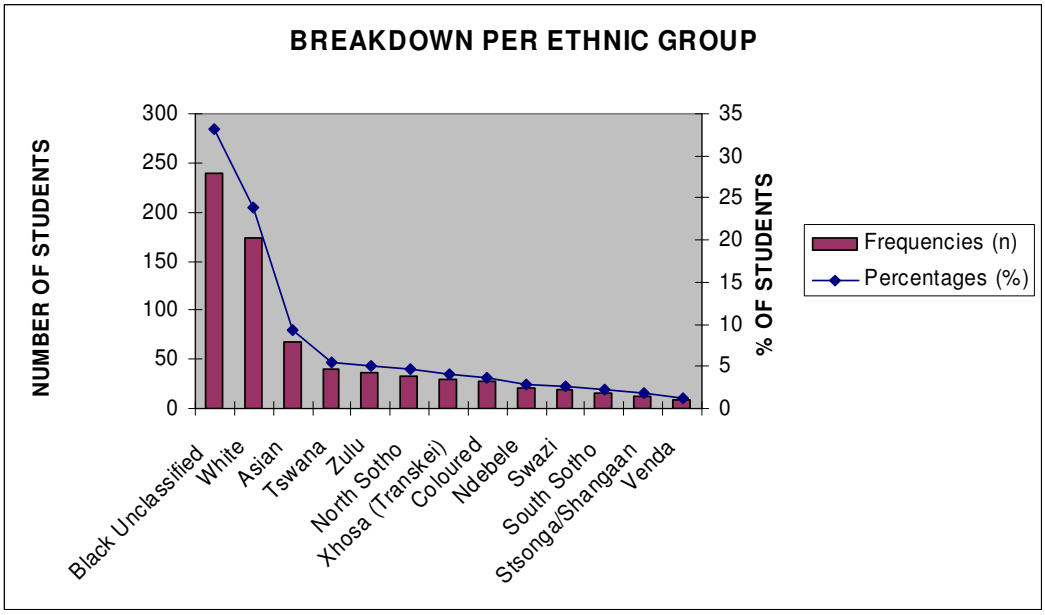


Figure 5: Frequency and percentage of students per ethnic group.

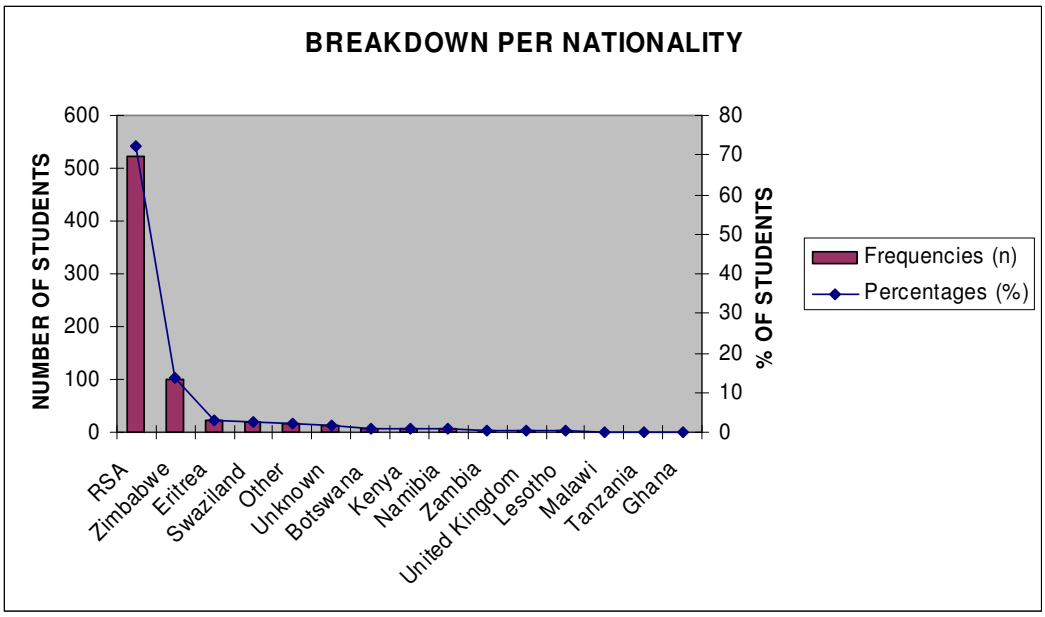


Figure 6: Frequency and percentage of students per nationality.

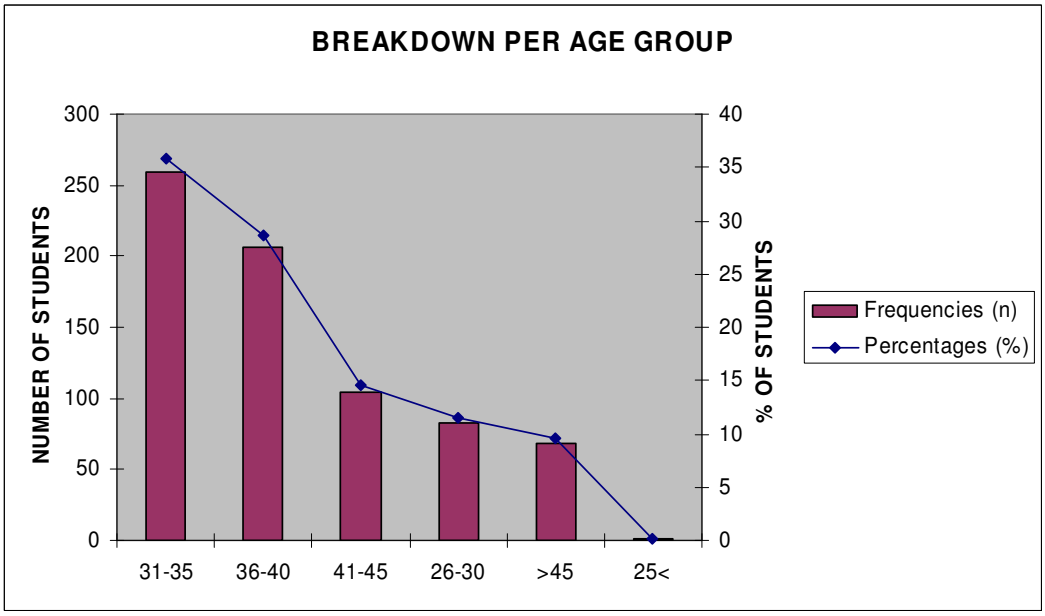


Figure 7: Frequency and percentage of students per age group.

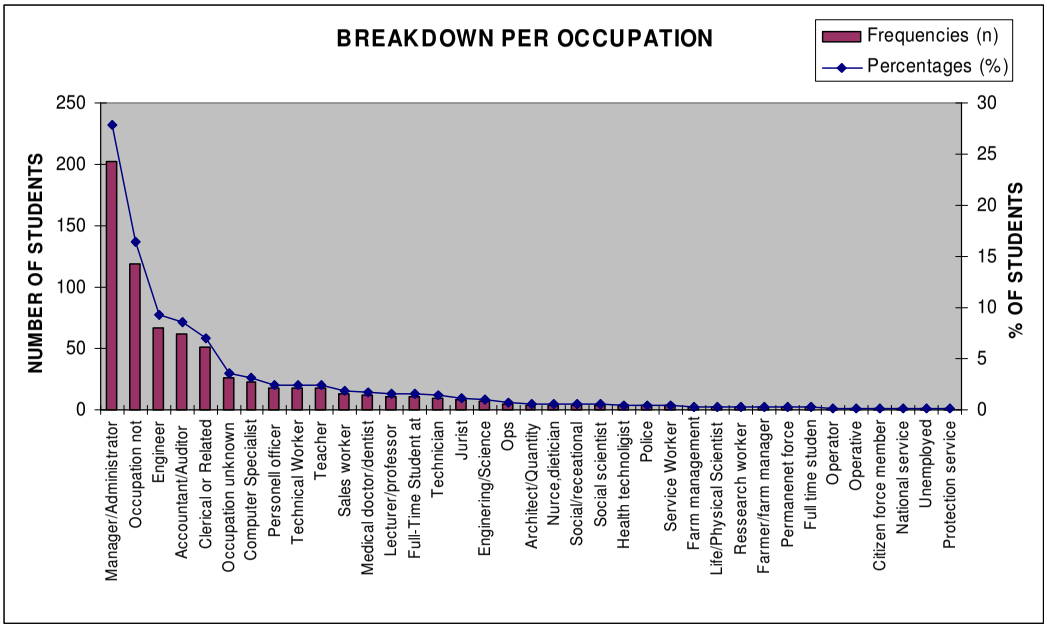


Figure 8: Frequency and percentage of students per occupation.

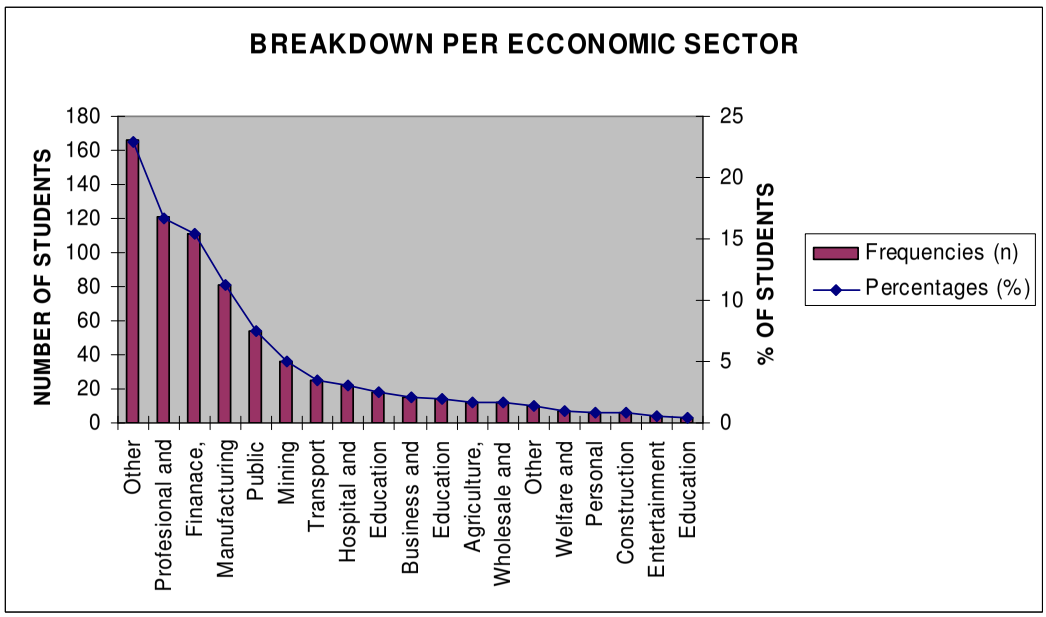


Figure 9: Frequency and percentage of students per economic sector.

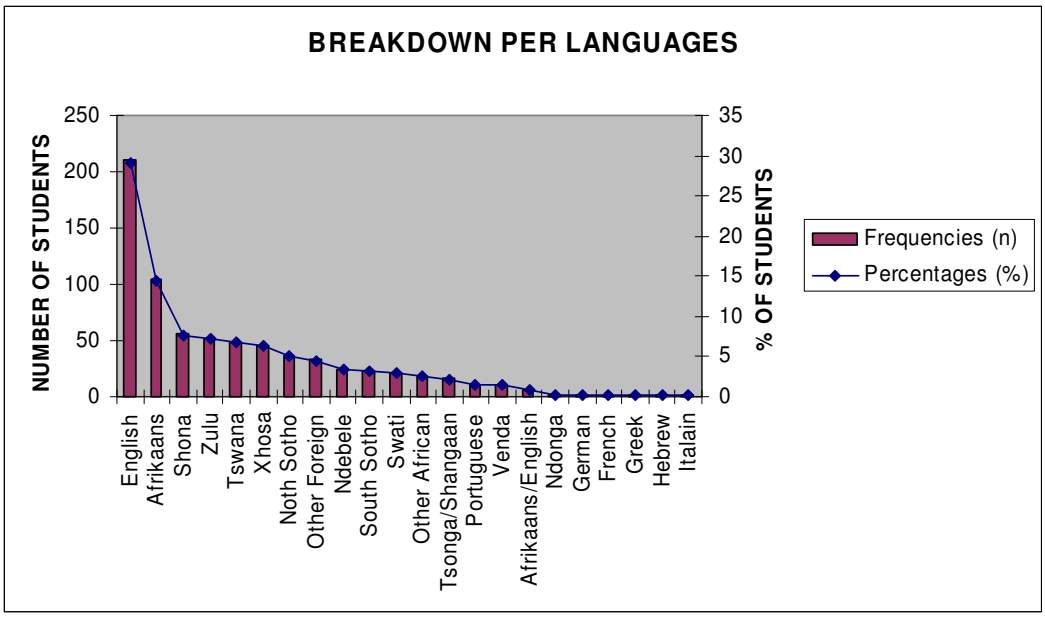


Figure 10: Frequency and percentage of students per language.

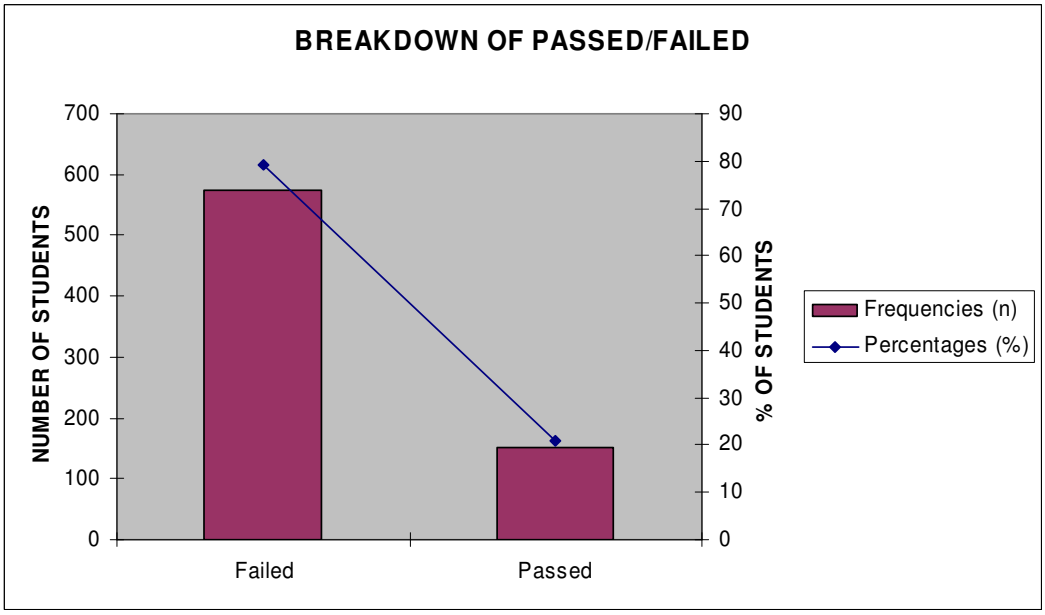


Figure 11: Frequency and percentage of students passed / failed.

The data was subsequently re-arranged only to display the information of the students that passed. This supplied the researcher with 151 data points. The students that passed were spilt up per classification per variable and the percentages calculated. These graphs will give an indication of which classification group per variable were most and least successful. This data is graphically represented in figure 12 to figure 19 (the black bar in the graphs represents the pass rate percentage for the total group).

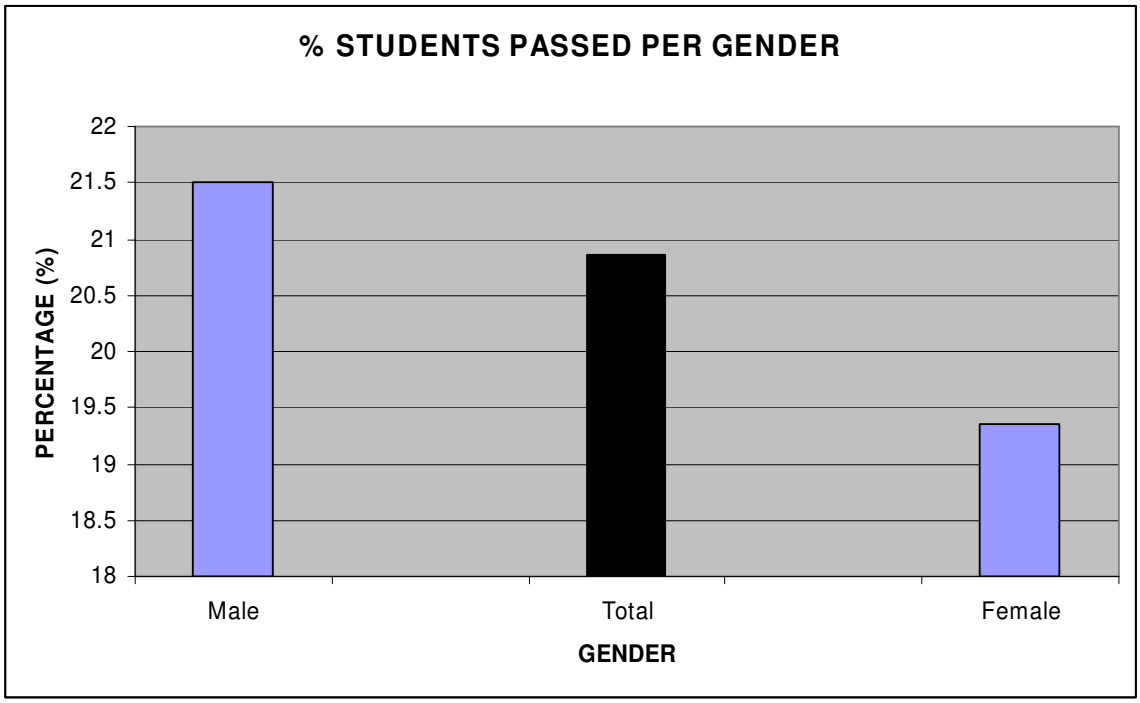


Figure 12: Percentage of students passed per gender.

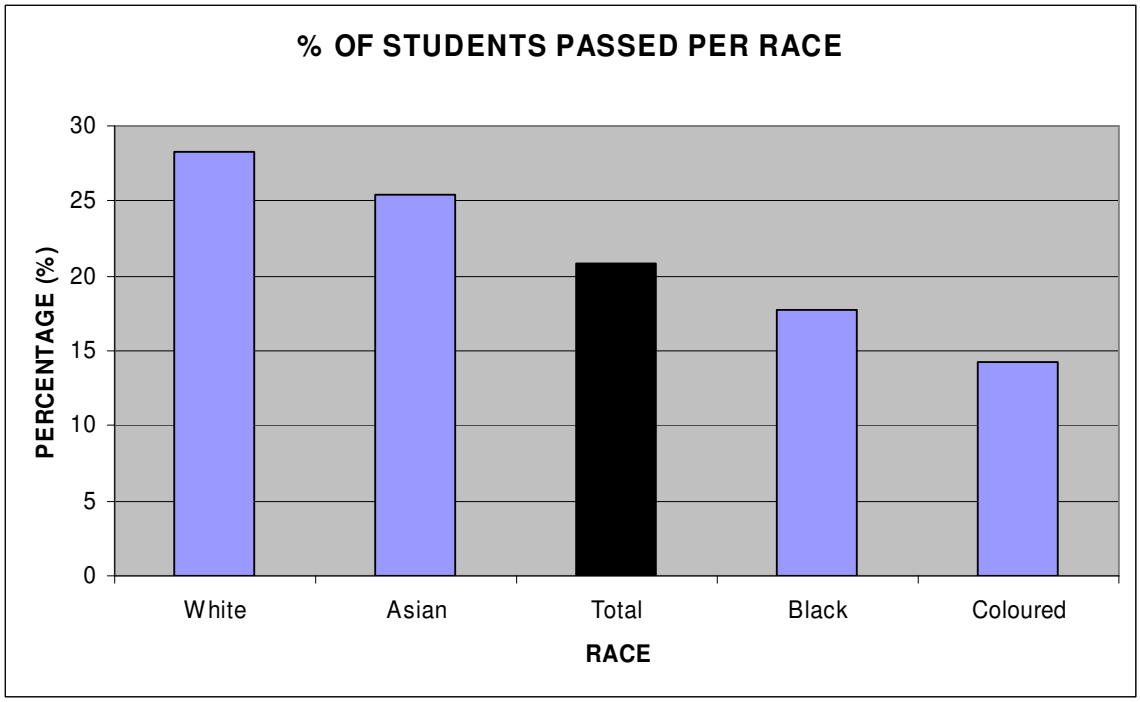


Figure 13: Percentage of students passed per race.

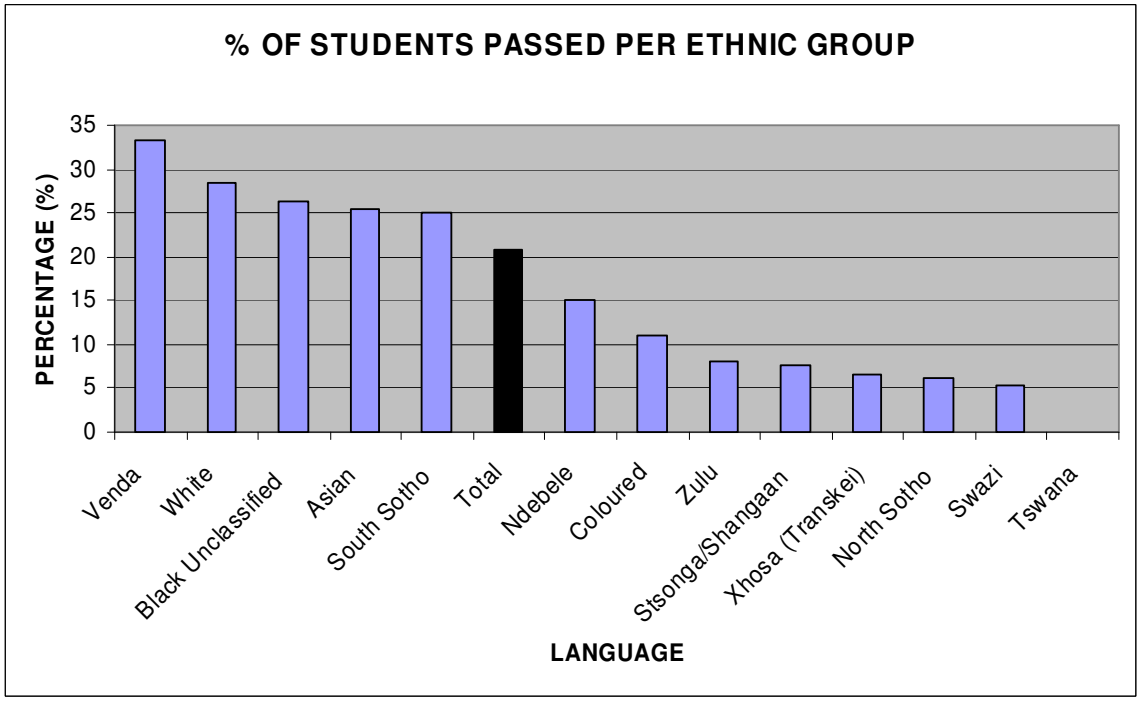


Figure 14: Percentage of students passed per ethnic group.

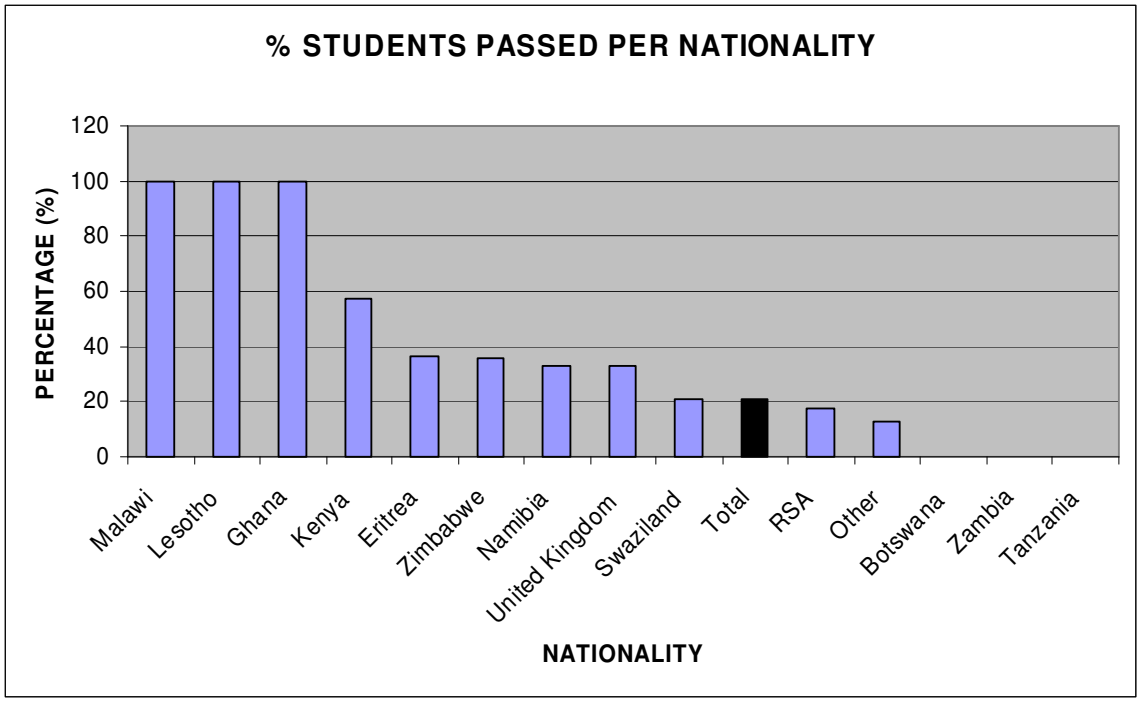


Figure 15: Percentage of students passed per nationality.

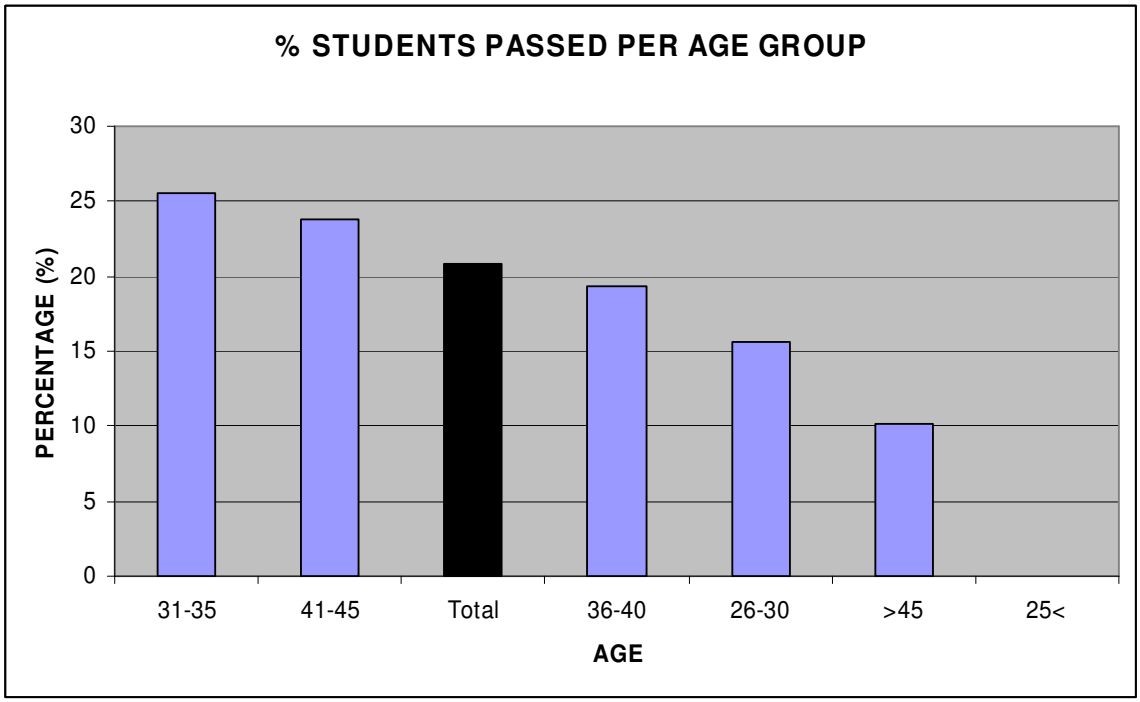


Figure 16: Percentage of students passed per age group.

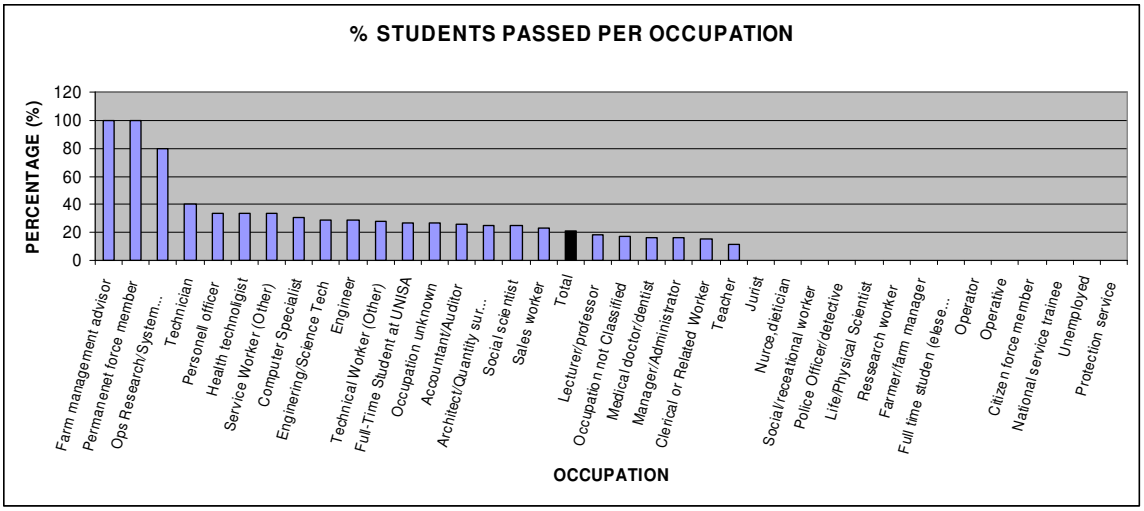


Figure 17: Percentage of students passed per occupation.

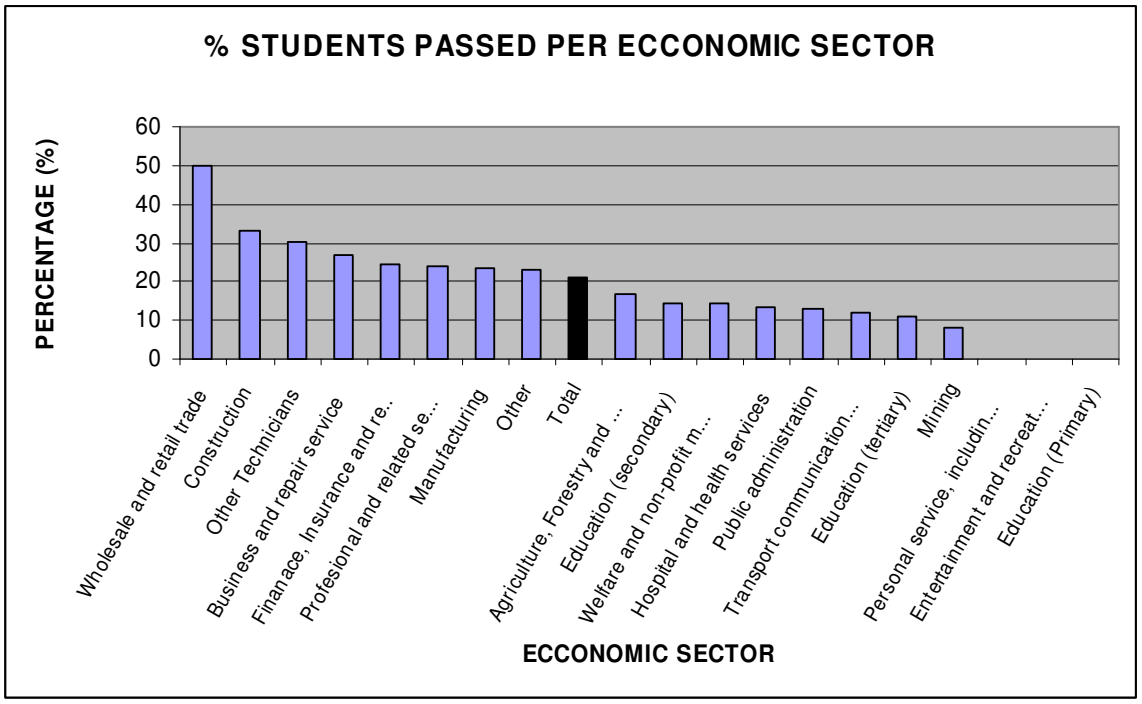


Figure 18: Percentage of students passed per economic sector.

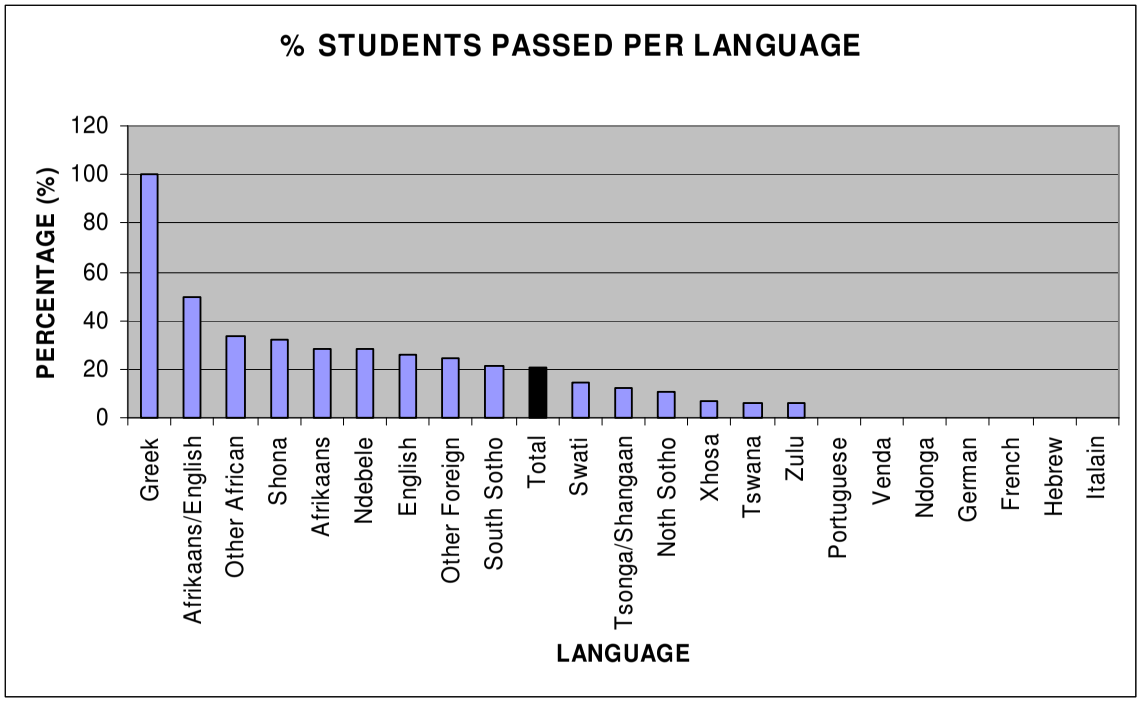


Figure 19: Percentage of students passed per language.

5.2. Testing of hypothesis

For each of the eight hypothesis raised, a null and alternative hypothesis was developed. The statistical test used for hypothesis one to seven was the Chi^2 test with a selected significance value of $\alpha = 0.05$. For hypothesis eight, a CHAID algorithm was used. Prior to testing the hypothesis a correlation matrix was compiled (refer to Appendix 6). Due to the fact that the data is nominal, Cramer's V was used to determine correlation.

Research hypothesis 1

Null hypothesis $H_O: X^2 = 0$

Alternative hypothesis $H_A: X^2 \neq 0$

The Chi^2 test is used to determine the statistical significance of the relationship between two categorical variables, which in this case are "gender" and "completing the course in 2005". The test will determine if there is a difference between male and female students with regards to completing their MBL in 3 years.

By viewing table 4, the p-value is shown to be 0.515. This is larger than the acceptable α value of 0.05. Therefore we fail to reject the null hypothesis as there is no statistically significant difference between male and female students with regards to completing their MBL in 3 years.

Table 4: Chi^2 test to determine if there is a difference between male and female students with regards to completing their MBL in 3 years.

Completed in 2005 (Y/N) * Gender Cross tabulation

			Gender		
			1	2	Total
Completed in 2005 (Y/N)	Yes	Count	109	42	151
		% within Gender	21.5%	19.4%	20.9%
		Std. Residual	.3	-.5	

	No	Count	398	175	573
		% within Gender	78.5%	80.6%	79.1%
		Std. Residual	-.2	.2	
Total		Count	507	217	724
		% within Gender	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.423(b)	1	.515		
Continuity Correction(a)	.303	1	.582		
Likelihood Ratio	.428	1	.513		
Fisher's Exact Test				.550	.293
Linear-by-Linear Association	.423	1	.516		
N of Valid Cases	724				

a Computed only for a 2x2 table
b 0 cells (.0%) have expected count less than 5. The minimum expected count is 45.26.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.024	.515
	Cramer's V	.024	.515
N of Valid Cases		724	

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.

Research hypothesis 2

Null hypothesis $H_O: X^2 = 0$

Alternative hypothesis $H_A: X^2 \neq 0$

The Chi^2 test is used to determine the statistical significance of the relationship between two categorical variables, which in this case are “race” and “completing the course in 2005”. The test will determine if there is a difference between students from previously disadvantaged groups and white students with regards to completing their MBL in 3 years.

By viewing table 5, the p-value is shown to be 0.006. This is smaller than the acceptable α value of 0.05. Therefore we reject the null hypothesis as there is a statistically significant difference between the white and previously disadvantaged students with regards to completing their MBL in 3 years.

Table 5: Chi^2 test to determine if there is a difference between students from previously disadvantaged groups and white students with regards to completing their MBL in 3 years.

Completed in 2005 (Y/N) * Race Cross tabulation

			Race		
			White	Other	Total
Completed in 2005 (Y/N)	Yes	Count	49	102	151
		% within Race	28.3%	18.5%	20.9%
		Std. Residual	2.2	-1.2	
	No	Count	124	449	573
		% within Race	71.7%	81.5%	79.1%
		Std. Residual	-1.1	.6	
Total		Count	173	551	724
		% within Race	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	7.679(b)	1	.006		
Continuity Correction(a)	7.096	1	.008		
Likelihood Ratio	7.303	1	.007		
Fisher's Exact Test				.007	.005
Linear-by-Linear Association	7.669	1	.006		
N of Valid Cases	724				

a Computed only for a 2x2 table
b 0 cells (.0%) have expected count less than 5. The minimum expected count is 36.08.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.103	.006
	Cramer's V	.103	.006
N of Valid Cases		724	

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.

Research hypothesis 3

Null hypothesis $H_O: X^2 = 0$

Alternative hypothesis $H_A: X^2 \neq 0$

The Chi^2 test is used to determine the statistical significance of the relationship between two categorical variables, which in this case are "nationality" and "completing the course in 2005". The test will determine if there is a difference between South African students and non-South African students with regards to completing their MBL in 3 years.

By viewing table 6, the p-value is shown to be 0.000. This is smaller than the acceptable α value of 0.05. Therefore we reject the null hypothesis as there is a statistically significant difference between the South African and non-South African students with regards to completing their MBL in 3 years.

Table 6: Chi^2 test to determine if there is a difference between South African students and non-South African students with regards to completing their MBL in 3 years.

Completed in 2005 (Y/N) * Nationality Cross tabulation

			Nationality		Total
			RSA	Other	
Completed in 2005 (Y/N)	Yes	Count	90	61	151
		% within Nationality	17.2%	30.3%	20.9%
		Std. Residual	-1.8	2.9	
	No	Count	433	140	573
		% within Nationality	82.8%	69.7%	79.1%
		Std. Residual	.9	-1.5	
Total		Count	523	201	724
		% within Nationality	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)

Pearson Chi-Square	15.187(b)	1	.000		
Continuity Correction(a)	14.402	1	.000		
Likelihood Ratio	14.405	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	15.166	1	.000		
N of Valid Cases	724				

a Computed only for a 2x2 table
b 0 cells (.0%) have expected count less than 5. The minimum expected count is 41.92.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	-.145	.000
	Cramer's V	.145	.000
N of Valid Cases		724	

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.

Research hypothesis 4

Null hypothesis $H_O: X^2 = 0$

Alternative hypothesis $H_A: X^2 \neq 0$

The Chi^2 test is used to determine the statistical significance of the relationship between two categorical variables, which in this case are “age” and “completing the course in 2005”. The test will determine if there is a difference between students from different age groups with regards to completing their MBL in 3 years.

By viewing table 7, the p-value is shown to be 0.035. This is smaller than the acceptable α value of 0.05. Therefore we reject the null hypothesis as there is a statistically significant difference between students from different age groups with regards to completing their MBL in 3 years.

Table 7: Chi^2 test to determine if there is a difference between students from different age groups with regards to completing their MBL in 3 years.

Completed in 2005 (Y/N) * Date of Birth Cross tabulation

			Date of Birth					Total
			1	2	3	4	5	
Completed in 2005 (Y/N)	Yes	Count	7	25	40	66	13	151
		% within Date of Birth	10.1%	23.8%	19.3%	25.5%	15.7%	20.9%
		Std. Residual	-2.0	.7	-.5	1.6	-1.0	
	No	Count	62	80	167	193	70	572
		% within Date of Birth	89.9%	76.2%	80.7%	74.5%	84.3%	79.1%
		Std. Residual	1.0	-.3	.3	-.8	.5	
Total		Count	69	105	207	259	83	723
		% within Date of Birth	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.349(a)	4	.035
Likelihood Ratio	11.134	4	.025
Linear-by-Linear Association	1.466	1	.226
N of Valid Cases	723		

a 0 cells (.0%) have expected count less than 5. The minimum expected count is 14.41.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.120	.035
	Cramer's V	.120	.035
N of Valid Cases		723	

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.

Research hypothesis 5

Null hypothesis $H_O: X^2 = 0$

Alternative hypothesis $H_A: X^2 \neq 0$

The Chi^2 test is used to determine the statistical significance of the relationship between two categorical variables, which in this case are “occupation” and “completing the course in 2005”. The test will determine if there is a difference between students who are not managers and students who are managers with regards to completing their MBL in 3 years.

By viewing table 8, the p-value is shown to be 0.063. This is larger than the acceptable α value of 0.05. Therefore we fail to reject the null hypothesis as there is no statistically significant difference between students who are not managers and students who are managers with regards to completing their MBL in 3 years.

Table 8: Chi^2 test to determine if there is a difference between students who are not managers and students who are managers with regards to completing their MBL in 3 years.

Completed in 2005 (Y/N) * Occupation Cross tabulation

			Occupation		Total
			Management	Non-management	
Completed in 2005 (Y/N)	Yes	Count	33	118	151
		% within Occupation	16.3%	22.6%	20.9%
		Std. Residual	-1.4	.9	
	No	Count	169	404	573
		% within Occupation	83.7%	77.4%	79.1%
		Std. Residual	.7	-.4	
Total		Count	202	522	724
		% within Occupation	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	3.467(b)	1	.063		
Continuity Correction(a)	3.098	1	.078		
Likelihood Ratio	3.599	1	.058		
Fisher's Exact Test				.067	.037
Linear-by-Linear Association	3.462	1	.063		
N of Valid Cases	724				

a Computed only for a 2x2 table
b 0 cells (.0%) have expected count less than 5. The minimum expected count is 42.13.

Symmetric Measures

	Value	Approx. Sig.

Nominal by Nominal	Phi	-.069	.063
	Cramer's V	.069	.063
	Contingency Coefficient	.069	.063
N of Valid Cases		724	

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.

Research hypothesis 6

Null hypothesis $H_O: X^2 = 0$

Alternative hypothesis $H_A: X^2 \neq 0$

The Chi^2 test is used to determine the statistical significance of the relationship between two categorical variables, which in this case are "economic sector" and "completing the course in 2005". The test will determine if there is a difference between students who are in the financial sector and students who are not in the financial sectors with regards to completing their MBL in 3 years.

By viewing table 9, the p-value is shown to be 0.328. This is larger than the acceptable α value of 0.05. Therefore we fail to reject the null hypothesis as there is no statistically significant difference between students in the financial sector and students who are not in the financial sector with regards to completing their MBL in 3 years.

Table 9: Chi^2 test to determine if there is a difference between students who are in the financial sector and students who are not in the financial sectors with regards to completing their MBL in 3 years.

Completed in 2005 (Y/N) * Economic sector Cross tabulation

			Economic sector		
			Financial sector	Other sectors	Total
Completed in 2005 (Y/N)	Yes	Count	27	124	151
		% within Economic sector	24.3%	20.2%	20.9%
		Std. Residual	.8	-.3	
	No	Count	84	489	573

		% within Economic sector	75.7%	79.8%	79.1%
		Std. Residual	-.4	.2	
Total		Count	111	613	724
		% within Economic sector	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.955(b)	1	.328		
Continuity Correction(a)	.723	1	.395		
Likelihood Ratio	.926	1	.336		
Fisher's Exact Test				.374	.196
Linear-by-Linear Association	.954	1	.329		
N of Valid Cases	724				

a Computed only for a 2x2 table
b 0 cells (.0%) have expected count less than 5. The minimum expected count is 23.15.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.036	.328
	Cramer's V	.036	.328
	Contingency Coefficient	.036	.328
N of Valid Cases		724	

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.

Research hypothesis 7

Null hypothesis $H_O: X^2 = 0$

Alternative hypothesis $H_A: X^2 \neq 0$

The Chi^2 test is used to determine the statistical significance of the relationship between two categorical variables, which in this case are “language” and “completing the course in 2005”. The test will determine if there is a difference between students who are English speaking and students who are not English speaking with regards to completing their MBL in 3 years.

By viewing table 10, the p-value is shown to be 0.024. This is smaller than the acceptable α value of 0.05. Therefore we reject the null hypothesis as there is a statistically significant difference between English and non-English speaking students with regards to completing their MBL in 3 years.

Table 10: Chi^2 test to determine if there is a difference between students who are English speaking and students who are not English speaking with regards to completing their MBL in 3 years.

Completed in 2005 (Y/N) * Language Cross tabulation

			Language		
			English	Other	Total
Completed in 2005 (Y/N)	Yes	Count	55	96	151
		% within Language	26.2%	18.7%	20.9%
		Std. Residual	1.7	-1.1	
	No	Count	155	418	573
		% within Language	73.8%	81.3%	79.1%
		Std. Residual	-.9	.6	
Total		Count	210	514	724
		% within Language	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	5.099(b)	1	.024		
Continuity Correction(a)	4.654	1	.031		
Likelihood Ratio	4.939	1	.026		
Fisher's Exact Test				.027	.017
Linear-by-Linear Association	5.092	1	.024		
N of Valid Cases	724				

a Computed only for a 2x2 table
b 0 cells (.0%) have expected count less than 5. The minimum expected count is 43.80.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.084	.024
	Cramer's V	.084	.024
N of Valid Cases		724	

a Not assuming the null hypothesis.
b Using the asymptotic standard error assuming the null hypothesis.

Rationale 2

The combined use of general registration information that proved to have a positive correlation to MBL success will prove to be a better admissions tool to predict successful MBL completion than the current admissions process.

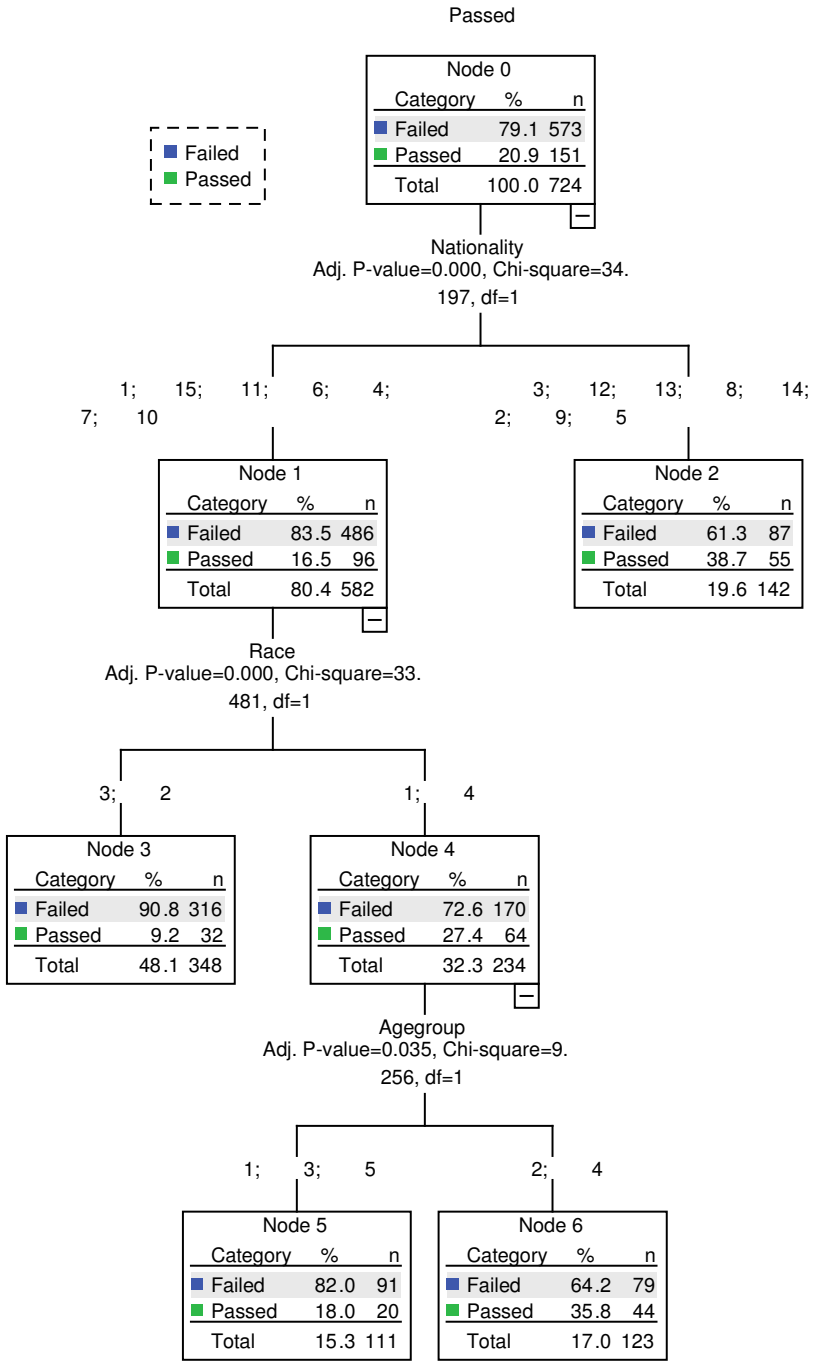
Hypothesis statement 8

H_O: The newly developed admission tool is less successful in predicting students who will complete their MBL qualification in 3 years, than the current process.

H_A: The newly developed admission tool is more successful in predicting students who will complete their MBL qualification in 3 years, than the current process.

In order to test Rationale 2 and hypothesis 8, a CHAID algorithm was used. CHAID algorithms are used to classify the relationship between one dependant and multiple independent variables. In this sample the dependent variable is the "Passed" variable and all the other variables are independent. In short what the CHAID classification tree does is to pick the data group that shows the strongest correlation and then group the variables in the data group to form the sub groups that are most likely and least like to pass. Once this is done the process is repeated.

Table 11: Classification tree using the CHAID algorithm.



Growing Method: CHAID
Dependent Variable: Passed

According to table 11, in the first level of the CHAID tree, nationality was used to classify the students between passed and failed. In node 1 the students who are least likely to pass were grouped together. This group consist of nationality groups 1, 15, 11, 6, 4, 7 and 10 (RSA, Other, Unknown, Swaziland, Botswana, Zambia and Tanzania) and a pass rate of 16.5% was achieved. In node 2 the students who are most likely to pass were grouped together. This group consist of nationality groups 3, 12, 13, 8, 14, 2, 9 and 5 (Namibia, Eritrea, Ghana, Zimbabwe, United Kingdom, Malawi, Kenya and Lesotho) and a pass rate of 38.7% was achieved.

In the second level of the CHAID tree, Node 1 was classified further by making use of race to classify the students between passed and failed. In node 3 the students who are least likely to pass were grouped together. This group consist of race groups 3 and 2 (black and coloured) and a pass rate of 9.2% was achieved. In node 4 the students who are most likely to pass were grouped together. This group consist of race groups 1 and 4 (white and Asian) and a pass rate of 27.4% was achieved.

In the third level of the CHAID tree, Node 4 was classified further by making use of age groups to classify the students between passed and failed. In node 5 the students who are least likely to pass were grouped together. This group consist of age groups 1, 3 and 5 (>45, 36-40 and 26-30 years old) and a pass rate of 18.0% was achieved. In node 6 the students who are most likely to pass were grouped together. This group consist of age groups 2 and 4 (41-45 and 31-35 years old) and a pass rate of 35.8% was achieved.

If it is assumed that the success of the current admissions process at UNISA can be measured by the percentage of students that passed the course in the minimum period, then, according to the frequency tale in Appendix 5 and figure 11, the current UNISA admissions tool only classified 20.9% of the students correctly. If the filter criteria of node 2 or the combination of nodes 1, 4 and 6 is

used, then pass rates of 38.7% and 35.8% respectively, was achieved (based on the data used). The null hypothesis is thus rejected, as the newly developed admission tool (filter criteria according to node 2 or the combination of nodes 1, 4 and 6) is more successful in predicting students who will complete their MBL qualification in 3 years, than the current process.

6. Discussion, conclusions and recommendations

The results achieved in chapter 5 will be discussed in detail and conclusions and recommendations made.

6.1 Discussion of figures

In this chapter the graphs that were drawn from the data that was collected and analysed will be interpreted and discussed.

From figure 3 it is clear that more male students enrolled than female students, 30% of the students were female and 70% were male. This indicates that the enrolment in terms of gender is not completely in line with South Africa's demographics, as displayed in Appendix 4, which indicates that the female population is 50.8% of the total population. From figure 12 it can be seen that there are a slight difference in the percentage male and female students that passed in 2005, 21.5% of the male students passed and 19.4% of the female students passed.

From figure 4 the percentage of students per race are displayed. From this graph it can be seen that 63% of the students were black, 23.9% of the students were white, 9.35% of the students were a2sian and 3.9% of the students were coloured. Compared to the demographics indicated in table 2, there are too many white and Asian students, and too few black and coloured students. Figure 13 indicates the percentage of students per race that passed. Of the white students 28.3% passed, 25.4% of the Asian students passed, 17.8% of the black students passed and 14.3% of the coloured students passed.

Figure 5 illustrates the students per ethnic group. What is interesting to note is that the biggest group is classified as "Black unclassified" which most probably indicate that the students are non-South African. Figure 14 displays the percentage of students passed per ethnic group. From figure 14 the four groups

that had the highest percentage pass rate was: Venda, White, Black unclassified and Asian.

Figure 6 displays the breakdown of the students per nationality, with South Africa and Zimbabwe being the highest. Figure 15 displays the percentage of students that passed per nationality group and what is interesting to note is that South Africans performed worse than average.

Figure 7 displays the breakdown of the students per age group. The majority of the students were between 31 and 40 years of age. Figure 16 displays the percentage of students passed per age group. What is worth mentioning is the students that fell either in the youngest or oldest of the six groups, faired the worst.

Figure 8 displays the breakdown of students per occupation. The majority of the students classified themselves as Manager/Administrators. Figure 17 displays the percentage of students that passed per occupation. It is interesting to note that the students in manager/administrator occupations, faired well below average.

Figure 9 displays the breakdown of students per economic sector. From this graph it can be seen that the majority of students are grouped in the “other” group, thus not all economic sectors were available as options. Figure 18 displays the percentage of students per economic sector that passed.

Figure 10 displays the students per home language. From this graph it is clear that the majority of students are English speaking. Figure 19 displays the percentage of students that passed per language. It is interesting to note that English speaking students fair only slightly better than average.

Figure 11 displays the percentage of students in total that passed and failed, 20.9% of the students passed and 79.1% of the students failed, which is a rather low pass rate.

6.2 Discussion of hypothesis tests

There were eight hypothesis tests done in total. Of the eight hypotheses, seven were tested by means of the Chi squared test and one hypothesis was tested by means of classification tree making use of CHAID algorithms. Of the seven hypothesis that was tested by means of the Chi squared test, three showed no statistically significant difference between the selected data field and completing the MBL in 2005. These data fields could thus not be used as a predictor for MBL criteria. These three data fields were:

- Gender (hypothesis 1)
- Occupation (hypothesis 5), and
- Economic sector (hypothesis 6)

Of the seven hypothesis that was tested by means of the Chi squared test, four showed a statistically significant difference between the selected data field and completing the MBL in 2005. This meant that these data fields could be used as a predictor for MBL success. These three data fields were:

- Race (hypothesis 2),
- Nationality (hypothesis 3),
- Age group (hypothesis 4), and
- Language (hypothesis 7)

Hypothesis 2, which was conducted on race, indicated a statistically significant difference between the white and previously disadvantaged students with regards to completing their MBL in 3 years. When the result is interpreted with the assistance of the frequency table in table 5, it can be concluded that white students are more likely to complete their MBL in 3 years than previously

disadvantaged students (According to Figure 4 the majority of students are from the previously disadvantaged groups).

Hypothesis 3, which was conducted on nationality, indicated a statistically significant difference between the South African and non-South African students with regards to completing their MBL in 3 years. When the result is interpreted with the assistance of the frequency table in table 6, it can be concluded that non-South African students are more likely to complete their MBL in 3 years than South African students (according to Figure 6 the majority of the students are South African).

Hypothesis 4, which was conducted on age groups indicated a statistically significant difference between the different age groups of students with regards to completing their MBL in 3 years. When the result is interpreted with the assistance of the frequency table in table 7, it can be concluded that students younger than 30 years and students older than 45 at the of the 3 year study period, are less likely to complete their MBL in 3 years than students between 31 and 45 years at the end of the 3 year study period (according to Figure 7, the majority of the students fall between the age of 31 and 45 years).

Hypothesis 7, which was conducted on home language, indicated a statistically significant difference between English speaking students and non-English speaking students with regards to completing their MBL in 3 years. When the result is interpreted with the assistance of the frequency table in table 10, it can be concluded that English speaking students are more likely to complete their MBL in 3 years than non-English speaking students (according to Figure 10, the majority of the students are English speaking).

In order to test hypothesis 8, a classification tree making use of CHAID algorithms was used. The classification tree selected the data fields that showed statistically significant correlations. The data fields used was nationality, race

and age groups. According to table 11, the classification tree re-grouped the data to achieve a 38.7% and 35.8% pass rate. The null hypothesis is thus rejected, as the newly developed admission tool is more successful in predicting students who will complete their MBL qualification in 3 years, than the current process, which, according to Appendix 5, had only 20.9% of the students that passed. The pass rate of 38.7% might not sound significant, but it is an improvement of 85% on the current system.

6.3 Conclusions

The research question was whether the data fields on the MBL application registration could be used to develop admissions criteria in order to serve as a predictor of the post graduate MBL student's ability to complete the qualification in the prescribed period of time. This question was answered in two ways, firstly by the literature review, where Cate et al (2004) created a discriminant model that predicted MBA no-shows with 94.2% accuracy. Secondly by way of hypothesis 8 where the classification tree making use of CHAID algorithms grouped the students to achieve a pass rate of 38.7% and 35.8%, by only making use of the information available on the current UNISA admissions form.

The study also had four objectives that were aimed for, these objectives were:

- Understanding the admissions criteria in use at universities globally and locally in South Africa.
- Understanding the success rate of the GMAT as admissions predictor for MBA completion (globally).
- Determining the success rate of the current admissions criteria as admissions predictor for the UNISA MBL completion.
- Determining what data or combinations of data on the MBL application registration form can be used as more successful predictor.

The first objective was achieved in chapter 3.1.1 where the admissions criteria of Open University and UNISA was discussed in depth. The second objective was

achieved through the discussion of literature in chapter 3.1.2 to 3.1.4, where the use and success of the GMAT as predictor for successful MBA student was discussed. The third objective was obtained by compiling the frequency table for the data in Appendix 5, which indicated the success rate to be 20.9%, based on the percentage of students that completed the MBL in three years in 2005. The fourth objective was achieved by the hypothesis testing, which indicated that race, nationality, age and language can be used as predictors. This was tested in hypothesis 8, which indicated that the data could be used to predict 38.7% and 35.8% of the successful candidates correctly.

6.4 Recommendations

There are a number of general recommendations for UNISA's SBL. These are:

- Modify the admissions form to include some fields that may prove to be better predictors than the current fields, such as:
    - Will the student be paying for his/her own studies, or will the study fees be covered by the institution that he/she is working for. The reason for including this is that students who are paying for themselves might have more motivation to complete on time.
    - What prior qualifications do the student have (be specific in terms of BA, B.Com, B.Eng ….). The reason for including this is that the MBL degree includes a large number of mathematical and financial subjects, which might make it easier to grasp for students with B.com or B.Eng degrees.
    - Ask for the student's academic results, in terms of average percentage, of their last qualification (similar to the GPA used overseas). The reason for including this is that previous studies has indicated that student GPA can be successfully used as predictor.
- Do not show away students who according to the model will not pass, rather do one of the following:
    - Give additional tutoring for the borderline students.

- Require the students who are shown to be unlikely to pass, to complete a preparatory programme such as the Programme in Business Leadership (PBL), prior to starting with their MBL, similar to the process used by Open University.

The following recommendations are focussed on future studies in this field:

- It is recommended that the admissions prediction model be refined up to a point where the model is able to predict 80% to 90% of the cases correctly, before it is implemented. The recommendations that follow will highlight some of the methods that can be used to improve the accuracy of the model:
  - When considering the sample size, it is recommended that more than one MBL group is used, thus use student groups from at least 3 admission years; this will most likely give a more representative sample and thus improve the accuracy of the prediction model.
  - Do not limit the study to only students that finished in the minimum period of 3 years, but to all students that finished within 5 years. These students can still be seen as successful even though they did not complete the degree in the minimum time frame.

In conclusion it was shown that the data fields on the MBL application registration form can be used to develop an admissions criteria in order to serve as a predictor of the post graduate MBL student's ability to complete the qualification in the prescribed period of time.

7. Article

Admission criteria for post graduate MBL students

Willem A. van Niekerk

Abstract

This paper uses a classification tree making use of CHAID algorithms to examine one year of admissions records in order to separate the successful and unsuccessful students in the University of South Africa's (UNISA) Masters in Business Leadership (MBL) program. The study used normal data fields on the admissions form such as gender, race, ethnic group, nationality, age group, occupation, economic sector and language. The classification tree was able to group the students to achieve a 38.7% pass rate, compared to the 20.9% of the current system, based solely on the use of the following variables: nationality, race and age group. This study suggests that more attention should be given in using normal data fields on the admissions form when making admissions decisions.

Introduction

Reasons for acquiring a Master of Business Administration degree (MBA) are plentiful, but the most common reason is that it is seen as one of the key routes towards career advancement. It is believed that a MBA degree is a ticket to acquiring a good employment and earning a sizable remuneration package (Chiu, 1999). As a result of abovementioned reasons, the demand for tertiary institutions to provide MBA programs has increased dramatically. Especially the need for programs that supply part time or distance learning, due to the flexibility, convenience and affordability of such programs (Chiu, 1999). In 2003 the number of institutions offering MBA courses in South Africa totalled 28 (Furlonger, 2005).

In 2003 a MBA reaccreditation process was launched by the Council for Higher Education (CHE) as the first step in bringing the overall level of South Africa's MBAs up to international standards (Furlonger, 2004). The CHE set 13 criteria for business schools wanting to offer MBA courses. Of these 13 criteria, two has direct influence on the selection and admissions criteria of the tertiary institutions. These are:

- Student recruitment: Among minimum standards for acceptance, 90% of each group must have a bachelor's degree or equivalent.
- Diversity: Schools must set target rates for black students and staff, and offer support systems to help them (Furlonger, 2004).

"A fundamental means of marketing an MBA program is to produce a high quality product. This long-term strategy entails keeping the admission standards high, providing comprehensive and rigorous delivery and on-going evaluations of the total program (Chiu, 1999)." Taking the CHE admissions criteria and the abovementioned quote into account, it is clear that the selection and admissions process of a MBA institution is critical for future acceptance and success of such an institution. The majority of institutions internationally that offer MBA courses use the Graduate Management Admissions Test (GMAT) as part of their admissions criteria. Studies have however shown that the GMAT alone is not a very good predictor and can typically only be attributed with 14% to 18% of the variance on MBA student Grade point average (GPA) performance (Koys, 2005).

This research study will focus on the admissions criteria and attempt to improve the predictability of the admissions process. The objectives of the study are:

- Understanding the admissions criteria in use at universities globally and locally in South Africa.
- Understanding the success rate of the GMAT as admissions predictor for MBA completion (globally).
- Determining the success rate of the current admissions criteria as admissions predictor for the UNISA MBL completion.

- Determining what data or combinations of data on the MBL application registration form can be used as more successful predictor.

The research project is aimed at two groups of readers, namely:

- The School for Business Leadership at the University of South Africa, and
- Other academic institutions or scholars, with interest in admissions criteria for similar post graduate MBA courses.

Literature review

The literature under review will be comprised of the following two bodies of knowledge: admissions criteria and cultural diversity.

The admissions criteria of distance learning universities will first be discussed. The two universities that will be discussed are the Open University (OU) in the United Kingdom (UK) that services the UK as well as parts of Europe, and the University of South Africa that services the greater Southern Africa region.

The admissions criteria at the OU does not require testing, but is largely based on prior experience and qualifications. The admissions criteria for a MBA qualification are:

- All applicants are expected to have organisational experience, with some of it in management level.
- The applicant must be at least 25 years old when starting their first course of study.
- The maximum allowed period of time to complete the MBA is ten years, passing a minimum of one course every two years. Students are only allowed to repeat any subject once.

The admissions criteria for UNISA are mainly based on experience and qualifications. “In order to be considered for admission to the first year of MBL study, participants must:

- Hold a three year Bachelors degree (360 SAQA credits) from a recognised university.
- Have at least three years' work experience, to ensure that they can contribute meaningfully in group discussions, assignments and study schools.
- Have access to a computer and the Internet.
- An evaluation of the applicant's academic record and a personal letter providing reasons for wishing to enrol for the MBL will be used for selection purposes. The SBL may introduce additional selection criteria" (MBL brochure 2006).

GMAT as predictor

The GMAT is designed to measure the ability and knowledge of the student. The test is all multiple-choice questions covering two sections, verbal and quantitative. The score is then used to base admission decisions on (Ahmadi et al, 1997). The GMAT is most commonly used in the US, but has been found to be a valid predictor of academic performance in a MBA program for non-U.S. students as well (Koys, 2005).

Several studies found a statistically significant correlation between GMAT scores and the MBA GPA. The square of the correlation coefficient was used to see the degree of changes in one variable to explain changes in another variable. The GMAT score was found to explain between 14% and 18% of the GPA variance (Koys, 2004). Standardised test such as the GMAT has its problems as well. Since it is multiple-choice type questions, it does not accurately measure an individual's ability, critical thinking skills, or competency (Ahmadi et al, 1997). The study indicated that the correlation between undergraduate GPAs and GMAT scores was almost twice as high in the applicant pool as in the pool of matriculating students. Standard validation studies will therefore understate the importance of GMAT scores in predicting performance of potential students to the MBA program (Cushing, 2004).

GMAT and undergraduate GPA as predictor

Many business schools use both the GMAT and undergraduate GPA to make admissions decisions. Some researchers have used multiple regression analysis to test the combined relationship of these two predictors with the criterion of MBA GPA. The results showed that the GMAT and undergraduate GPA together explained between 15% and 22% of the variance in MBA (Koys, 2004).

GMAT and other variables as predictor

Other variables have been used together with the GMAT score and the undergraduate GPA. However, when GMAT and GPA were combined with other variables, such as involvement in campus activities, work experience, letters of recommendation, and personal goals (Ahmadi et al, 1997), these models explained only 19 to 21 % of the variation and were not as useful as predictors of success (Koys, 2005). One other popular test for non-US students is the Test of English as a Foreign Language (TOEFEL), which has shown that 5% of the variance in first year MBA's GPA could be explained by the TOEFEL (Koys, 2005).

Other variables as predictors

Carver (1994) stated that the correlation between GMAT and success in a MBA program are not particularly high, and that exploration of more qualitative variables, such as quality of work experience, may prove more fruitful than focusing exclusively on quantitative measures. Another study by Ahmadi et al (1997) suggests that other additional criteria may need to be used in selecting prospective students. Due to their low predictive ability of the GMAT alone, other forms of assessment such as writing samples, interviews, work experience, or other non-quantitative measures or assessments would be useful. Naik et al (2004) did a study where the GMAT score together with all other information on the students were evaluated by a neural network to predict student performance, and achieved a accuracy of 89.13%.

Cultural diversity studies

Munce (2005) makes it clear that universities and colleges must turn away from a one-dimensional approach to admittance and that they must look at different recruitment strategies in order to make sure that diversity on campus becomes a reality. Antwi-Boasiako & Asagba's (2005) article concludes in saying that to prevent a 'White America' where most of the managerial positions are filled with White people, one must start at college level and more minorities need to be admitted. Antwi-Boasiako & Asagba (2005) finish by saying: "Unless universities use their unique ways and means of opening their doors to minorities without blocking qualified white applicants into a predominantly White university, the controversy over Affirmative Action will continue to be an academic debate without any practical solution".

The data

The target population for the study is the whole of the student population who started their MBL degree at UNISA in 2003. The data comprises of a selection of the general details on the registration form, and their corresponding pass or fail results of the students that were achieved at the end of the 3 years (2003 until 2005). These data fields are: Gender, Race, Ethnic group, Nationality, Age group, Occupation, Economic sector and Language.

The data were received from the SBL in Excel format. The data was rearranged to be in a user-friendly format. During this process the data was examined to ensure that there were no data missing or wrongly recoded. Incomplete data fields were excluded from the data set.

The data type of the data collected is all nominal, except for the age groups that is interval of nature. This means that the data has classification but not order, distance or origin. This fact will determine what quantitative techniques can be used to further analyse the data. A further consideration is that there are 724 fields of data, but each variable per field has a different number of classification

groups, this further complicates the calculations. All the calculations done in the study was done on computer with the aid of SPSS 15.0 for Windows and MoonStats for Windows. The statistical methods used to determine relatedness was Cramer's V coefficients, while the Chi^2 was used for the hypothesis testing.

Hypothesis

The final hypothesis in the study was to determine whether the combined use of general registration information that proved to have a positive correlation to MBL success, would prove to be a better admissions tool to predict successful MBL completion than the current admissions process.

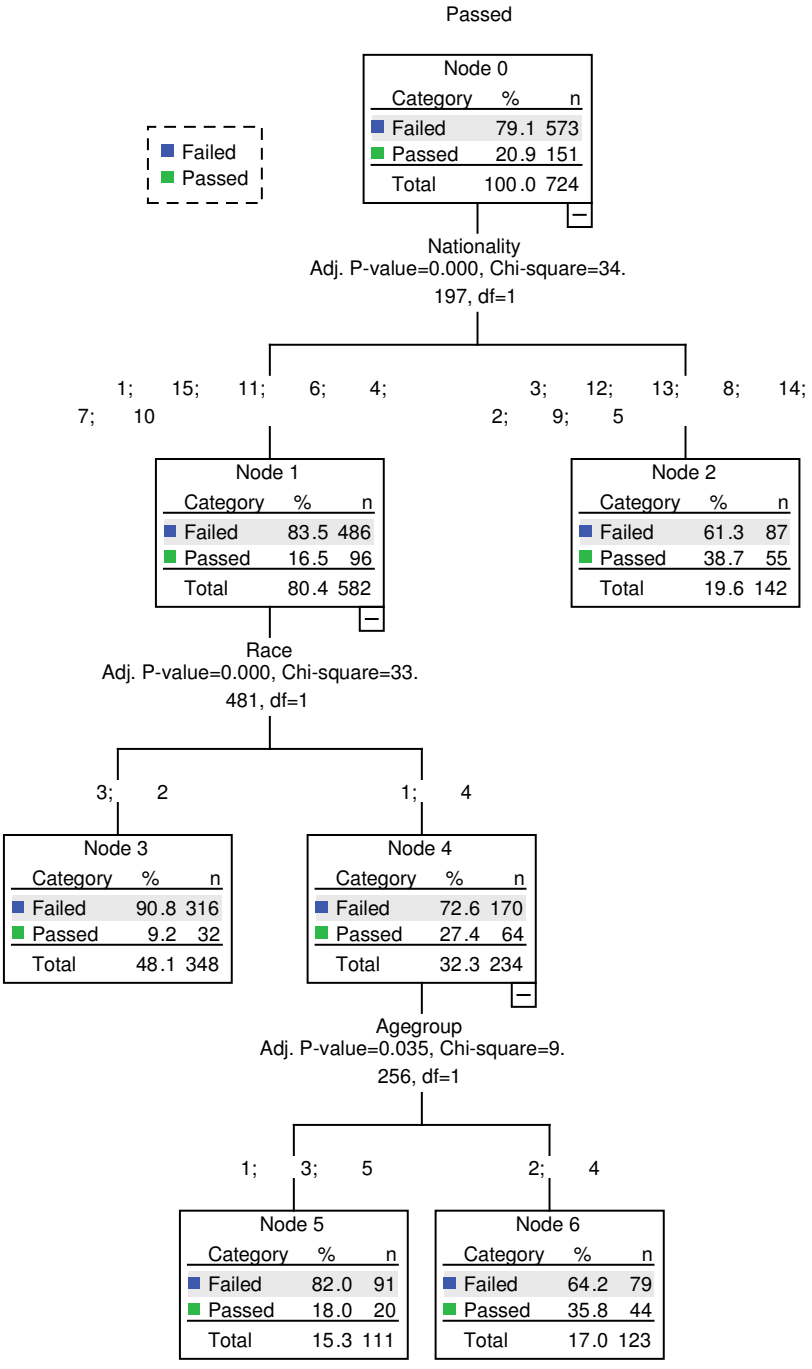
Hypothesis statement

H_O: The newly developed admission tool is less successful in predicting students who will complete their MBL qualification in 3 years than the current process.

H_A: The newly developed admission tool is more successful in predicting students who will complete their MBL qualification in 3 years than the current process.

In order to test the hypothesis, a CHAID algorithm was used. CHAID algorithms are used to classify the relationship between one dependant and multiple independent variables. In this sample the dependent variable is the "Passed" variable and all the other variables are independent. In short what the CHAID classification tree does is to pick the data group that shows the strongest correlation and then group the variables in the data group to form the sub groups that are most likely and least like to pass. Once this is done the process is repeated.

Table A: Classification tree



According to table A, in the first level of the CHAID tree, nationality was used to classify the students between passed and failed. In node 1 the students who are least likely to pass were grouped together. This group consist of nationality groups 1, 15, 11, 6, 4, 7 and 10 (RSA, Other, Unknown, Swaziland, Botswana, Zambia and Tanzania) a pass rate of 16.5% was achieved. In node 2 the students who are most likely to pass were grouped together. This group consist of nationality groups 3, 12, 13, 8, 14, 2, 9 and 5 (Namibia, Eritrea, Ghana, Zimbabwe, United Kingdom, Malawi, Kenya and Lesotho) a pass rate of 38.7% was achieved.

In the second level of the CHAID tree, Node 1 was classified further by making use of race to classify the students between passed and failed. In node 3 the students who are least likely to pass were grouped together. This group consist of race groups 3 and 2 (black and coloured) a pass rate of 9.2% was achieved. In node 4 the students who are most likely to pass were grouped together. This group consist of race groups 1 and 4 (white and Asian) a pass rate of 27.4% was achieved.

In the third level of the CHAID tree, Node 4 was classified further by making use of age group to classify the students between passed and failed. In node 5 the students who are least likely to pass were grouped together. This group consist of age groups 1, 3 and 5 (>45, 36-40 and 26-30 years old) a pass rate of 18.0% was achieved. In node 6 the students who are most likely to pass were grouped together. This group consist of age groups 2 and 4 (41-45 and 31-35 years old) a pass rate of 35.8% was achieved.

If it is assumed that the success of the current admissions process at UNISA can be measured by the percentage of students that passed the course in the minimum period, then the current UNISA admissions tool only classified 20.9% of the students correctly. If the filter criteria of node 2 or the combination of nodes 1, 4 and 6 is used, then pass rates of 38.7% and 35.8% respectively, was

achieved (based on the data used). The null hypothesis is thus rejected, as the newly developed admission tool (filter criteria according to node 2 or the combination of nodes 1, 4 and 6) is more successful in predicting students who will complete their MBL qualification in 3 years, than the current process.

Conclusion

The research question was whether the data fields on the MBL application registration could be used to develop admissions criteria in order to serve as a predictor of the post graduate MBL student's ability to complete the qualification in the prescribed period of time. This question was answered positively in two ways, firstly by the literature review, where Cate et al (2004) created a discriminant model that predicted MBA no-shows with 94.2% accuracy. Secondly by way of hypothesis where the classification tree making use of CHAID algorithms grouped the students to achieve a pass rate of 38.7% and 35.8%, by only making use of the information available on the current UNISA admissions form.

There are a number of general recommendations for UNISA's SBL. These are:

- Modify the admissions form to include some fields that may prove to be better predictors than the current fields, such as:
    - Will the student be paying for his/her own studies, or will the study fees be covered by the institution that he/she is working for. The reason for including this is that students who are paying for themselves might have more motivation to complete on time.
    - What prior qualifications do the student have (be specific in terms of BA, B.Com, B.Eng ….). The reason for including this is that the MBL degree include a large number of mathematical and financial subjects, which might make it easier to grasp for students with B.com or B.Eng degrees.
    - Ask for the student's academic results, in terms of average percentage, of their last qualification (similar to the GPA used

overseas). The reason for including this is that previous studies has indicated that student GPA can be successfully used as predictor.

- Do not show away students who according to the model will not pass, rather do one of the following:
    - Give additional tutoring for the borderline students.
    - Require the students who are shown to be unlikely to pass, to complete a preparatory programme such as the Programme in Business Leadership (PBL), prior to starting with their MBL, similar to the process used by Open University.

The following recommendations are focussed on future studies in this field:

- It is recommended that the admissions prediction model be refined up to a point where the model is able to predict 80% to 90% of the cases correctly, before it is implemented. The recommendations that follow will highlight some of the methods that can be used to improve the accuracy of the model:
    - When considering the sample size, it is recommended that more than one MBL group is used, thus use student groups from at least 3 admission years; this will most likely give a more representative sample and thus improve the accuracy of the prediction model.
    - Do not limit the study to only students that finished in the minimum period of 3 years, but to all students that finished within 5 years. These students can still be seen as successful even though they did not complete the degree in the minimum time frame.

In conclusion it was shown that the data fields on the MBL application registration form can be used to develop admissions criteria in order to serve as a predictor of the post graduate MBL student's ability to complete the qualification in the prescribed period of time.

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Appendices

Appendix 1 – MBA ranking table

Table 12: MBA rankings for 2005 (Source: http://www.financialmail.co.za)

RANKING THE MBAs 2005

		GRADUATES			STAKEHOLDERS			SCHOOL INFORMATION				WEIGHTED AVERAGE
	Ranking	Salary improvement	Achievement of aims	Programme weighting	Other graduates	Employers	Business schools	Faculty	Students	Programme	Research	
1	Wits Business School	2	1	3	1	1	3	7	8	1	2	110,8
2	Stellenbosch	3	3	1	3	3	2	4	10	3	1	108,0
3	Cape Town	5	6	6	2	2	1	3	7	2	3	107,6
4	Gordon Institute of Business Science	9	5	2	4	5	4	8	1	4	6	101,8
5	Pretoria	6	8	5	4	6	5	5	6	7	4	100,5
6	Unisa	7	7	4	4	4	6	1	5	12	7	100,0
7	Henley	1	4	9	7	8	10	2	12	5	11	99,6
8	Milpark	4	2	8	7	10	11	11	4	8	10	97,0
9	Free State	11	9	7	7	10	7	12	2	11	5	95,8
10	Potchetstroom	10	10	10	7	7	7	9	11	10	7	94,5
11	Nelson Mandela (UPE)	8	12	11	12	9	9	6	9	9	11	93,0
12	KwaZulu-Natal	12	11	12	7	10	11	10	3	6	7	91,4

Source: MARKINOR

Table 13: MBA rankings for 2004 (Source: http://www.financialmail.co.za)

THE TOP MBAs 2004

		GRADUATES						
Ranking	School	Salary increases	Promotion/ entrep success	Achievement of aims	Own school rating	Value to employer	Peer review	Total score
1	Wits	2,7	6,3	14,7	7,2	20,2	20,0	71,1
2	Gibs	1,2	6,6	14,4	7,7	21,2	17,0	68,1
3	Cape Town	1,7	5,3	13,3	5,5	20,2	19,6	65,6
4	Pretoria	2,0	6,9	16,7	8,9	18,9	9,5	62,8
5	Stellenbosch	2,7	5,2	14,6	6,8	18,4	13,3	60,9
6	Unisa	2,3	5,8	14,0	7,3	19,3	10,7	59,5
7	Henley	3,4	7,6	14,9	8,1	21,3	4,0	59,4
8	Damelin	2,5	8,3	14,9	7,1	22,6	0,8	56,2
9	Netherlands	1,7	4,6	16,8	8,5	23,8	0,3	55,5
10	Milpark	2,1	6,7	15,7	7,3	18,8	2,1	52,7
11	Free State	2,1	7,5	16,7	8,5	17,0	0,9	52,6
12	PE Technikon	1,7	4,1	14,5	7,1	24,0	0,3	51,7
13	Potchefstroom	1,8	5,5	14,8	6,5	18,6	1,4	48,7
	RAU	2,5	6,2	14,9	7,7	22,0	2,3	55,5
	Heriot Watt	1,8	6,3	13,7	6,0	12,0	0,4	40,3
	Southern Queensland	1,0	5,8	16,0	7,8	0,0	0,0	30,6

Source: MARKINOR

Appendix 2 – CHE Business school criteria.

The CHE set 13 criteria for business schools wanting to offer MBAs. These are:

- External organisation : The MBA program must be an integral part of the business school and of the national higher education system.
- Internal organisational : The school's organisation must be conducive to teaching, learning and research.
- Mission: The school and program must have a clearly stated motivation with supporting objectives.
- Governance: There must be clearly defined policies.
- Resources: There must be sufficient resources to meet stated goals. Facilities should include a library, computers, access to business information, SA case studies and archives of SA financial publications, and these should all be available after hours and at weekends.
- Human resources: All subjects should be taught by experts with academic or professional qualifications; 75% of full-time faculty must have at least a master's degree as well as business experience; all staff must undergo regular performance evaluation.
- Student recruitment: Among minimum standards for acceptance, 90% of each group must have a bachelor's degree or equivalent.
- Diversity: Schools must set target rates for black students and staff, and offer support systems to help them.
- Learning program: MBA programmes must be practical and grounded in current theory, and be subject to quality management and review. They must last at least one year (full-time) or two years (part-time) and cover all the main management areas . No more than 33% of a course should be dedicated to a specialised topic.
- Teaching and learning: Programmes must have a minimum 476 teaching and tutorial hours, and 1 000 hours of preparatory study. Skills to be taught must include leadership, entrepreneurship and negotiation . Teaching must be applicable to real-life situations and company projects must be included.
- Assessment: Schools must routinely ensure programmes are at master's level.
- Research: Schools must have an active research focus. Research should account for at least 20% of an overall MBA pass mark, and a faculty must regularly publish research.
- External environment: Schools must have formal links with the business world to support their MBA programmes.

(Source: http://www.financialmail.co.za)

Appendix 3- UNISA MBL application form

MBL
Master of Business Leadership

Managers at senior and top level will enhance their global professional perspective and refine their strategic leadership skills in order to lead and change their organisations.

2006

VISION

To be the leading internationally relevant and reputable business school of excellence in Africa

MISSION

The Graduate School of Business Leadership of UNISA is a distance learning, multimedia technology, part-time residential institution that develops leaders and managers for the international management community with particular emphasis on the African continent in response to the diverse leadership and management development challenges of society.

CLIENT INFORMATION CENTRE

Graduate School of Business Leadership (SBL)
University of South Africa
Tel: (011)652-0208/0000
Fax: (011)652-0299
E-mail address: sbl@UNISA.ac.za
Web address: www.sblUNISA.ac.za
Postal address: Graduate School of Business Leadership
PO Box 392, UNISA, 0003
Physical address: Graduate School of Business Leadership (SBL)
Corner Smuts and First Avenue, Midrand
(Only for courier and personal deliveries)

SBL
GRADUATE SCHOOL *Of*
BUSINESS LEADERSHIP

GRADUATE SCHOOL Of
BUSINESS LEADERSHIP

The MBL provides highly professional management development at postgraduate level with particular emphasis on the theory as well as the practice of management. It also offers an opportunity for the development of leadership qualities.

WHAT IS THE MBL?

The Master of Business Leadership (MBL) is a highly professional, three-year, postgraduate management development programme which is offered on a largely distance learning platform. This distributed learning model offers a special learning opportunity and a unique self-development programme to graduates who want to follow a management career in business and public sectors.

Its unique structure incorporates lecturer contact, group and individual work, and multimedia interaction (through an electronic delivery system) enhancing the learning experience.

The economic environment of the organisation, the functions of the organisation and the integrated concepts of strategy, and leadership are the main fields of study which are integrated into the MBL. The first two years of study deliver a broad spectrum of both theory and practice which covers aspects of management from the operational level through general management and culminates in strategic management and leadership.

During the final year the participant will have the opportunity to integrate the learning experience through a compulsory executive project management, a field study module and a research report. In addition, during the final year, advanced studies in certain subjects are presented as electives.

On completion of the programme the successful participant will have developed strong leadership skills through the combination of theory and practice. During the programme the participants will have had the opportunity to apply learning experiences both personally and within their work environment.

The resulting Master's degree equips the participant for a meaningful top management role in business, public and private sectors and other organisations.

ENTRY REQUIREMENTS

In order to be considered for admission to the first year of study, participants must:
hold a three-year Bachelors degree (360 SAQA credits) from a recognised university, have at least three years' work experience, to ensure that they can contribute meaningfully in group discussions, assignments and at study schools.

- have access to a computer and the Internet. Please see eds online requirements on p 3.

An evaluation of the applicant's academic record and a personal letter providing reasons for wishing to enrol for the MBL will be used for selection purposes. The SBL may introduce additional selection criteria.

HOW IS THE MBL STRUCTURED?

The study period is three years and the programme is based on a combination of theoretical and applied content.

The first two years consist of core modules, and must be taken by all participants. The final year offers the opportunity to integrate all learning experiences through a research project, an executive project management module and one elective module.

The distributed distance learning element comprises self-tuition and group work in which the participant must do both prescribed and recommended reading, complete assignments, and contribute to group activities and assignments. Attendance at the compulsory study schools and group meetings gives the participants an opportunity to network with fellow participants and to interact with lecturers.

Examinations will be written at the end of the year (Oct/Nov).

STUDY SCHOOLS

Two compulsory five-day study schools are held at Midrand and all participants in their first, second and third year must attend.

MBL 1: First study school - last week in February and first week in March.
Second study school - last week in August and first week in September

MBL 2: First study school - second and third week in February Second
study school - first and third week in August

MBL 3: Only one study school - first week in April

Participants who are registered for subjects for which no formal conference has been scheduled may arrange individual or small group meetings.

Participants are responsible for their own accommodation, travel arrangements and expenses incurred while attending the study schools.

Centre meetings

Centre meetings are scheduled for each of the six modules of the first and second year. These will be arranged by lecturers with participant groups. Attendance is compulsory. Location of these meetings is dependent on the geographic area and the group you are allocated to.

Interactive study groups

Each participant is allocated to a study group comprising five or more members in a specific geographical area. In exceptional cases a group of less than five members may be allowed. Group members meet on a weekly basis for interactive study and the preparation of group assignments. These sessions usually last a few hours. International participants as well as participants resident in remote areas will be allocated "virtual groups", which will function largely by using electronic media such as the eds online, e-mail, Internet, fax and telephone.

Assignments and tests

Assignments contribute 24% towards the final mark per module. The tests are written at approved UNISA examination centres during May and contribute 16% towards the final mark.

Examinations

The programme ends in October with one four-hour open-book examination per module. It contributes 60% per module towards the final mark. Examinations will be held at centres designated by UNISA. Examination eligibility will be according to the rules and procedures applicable to the MBL.

ELECTRONIC DELIVERY SYSTEM (eds online)

The programme delivery will be by eds online, accessed on our website www.sblUNISA.ac.za or on www.sbleds.ac.za.

Study material and contact with the SBL, lecturers and fellow participants are provided through eds online. The eds online is available 24 hours a day and connects participants and staff through the Internet. All study guides and other material supplied by the SBL are available through eds online.

Assignments are submitted electronically. Participants will work on common projects, share ideas, information and understanding, and create new ideas or solutions. They can use eds online to interact with their own groups and also with other participants, groups and lecturers. Using eds online means that distance between participants, members of their group and the SBL becomes irrelevant.

Advantages of eds online over conventional printed materials:

- It improves access to the Programme.
- It teaches participants more about business in conjunction with the latest computer technology.
- Participants acquire knowledge about technology and how to utilise it in business.
- The electronic delivery makes communication efficient.

Requirements: eds online

Participants will be required to have access to a computer and the Internet. The minimum hardware requirements are as follows: Pentium III (50-OMhz); SVGA monitor (1026x728); CD-ROM (32 x speed); 128MB RAM; Windows XP or Windows 98; 500MB hard disk space; mouse, keyboard, etc. Other requirements are Microsoft Office, Adobe Reader, Internet Explorer 6 or higher and the Internet connectivity should at least be 56Kbps.

In the interest of speed of contact, quality of delivery, and of developing a truly computer literate manager, all participants are strongly encouraged to make use of eds online.

Language medium

Prescribed material is available in English. Participants may submit assignments and do examinations in English or Afrikaans. The language medium for study schools is English.

APPLICATION FOR ADMISSION

Application for admission must be made from 1 September each year. The closing date for applications is 4 November. No late applications will be considered. Successful candidates will be notified by e-mail not later than 30 November.

NB: The application for admission form can be found at the back of this brochure. The form must be completed, signed and accompanied by the required documents as set out in sections A-E. All correspondence will be done via e-mail. Please ensure all details are correctly recorded on the application form.

Once admission is accepted participants must register immediately.

In terms of the admission requirements, participants must register simultaneously for all the prescribed modules of the particular year. A student may only register for the modules of the following year if no more than one module of any previous year still has to be passed and the outstanding module is taken concurrently with the present year's modules.

Fees (No VAT payable)

The prescribed fees for MBL 1 for the 2006 academic year are set out below. The initial payment must accompany the application for selection. A full refund will be made if the application is not accepted.

Tuition fees:	R19 140
Prescribed study material:	± R4 285* (compulsory)
Total cost:	R23 425

Foreign students pay an additional levy.
Please contact the Client Information Centre at +27 (0)11 652 0208 for details.

The total cost is payable in FULL on application or in THREE installments as follows:
R10 705 on applicarion
R 6 360 before 15 May 2006
R 6 360 before 15 August 2006

If fees are not paid on due dates, the SBL is entitled to disallow further participation in the programme. Once admitted to the programme, participants are responsible for payment of the full fees. In the event of cancellation of study, University policy applies.

The prescribed textbooks form part of the study package provided by the SBL on registration. Refunds for these textbooks will only be considered if cancellation takes place within three weeks of your registration date and the books are immediately returned to the SBL in the original wrapping.

Study material and required textbooks

A participant's registration must be finalised by the Administration of the University before any textbooks will be issued. All compulsory textbooks are supplied on registration. Study information is only available on the eds online and can be accessed after registration is finalised. Instructions on how to use the eds online will be sent to you after registration.

Adequate progress and re-registration

For the duration of the participant's study he/she must re-register annually before the stipulated date. Re-registration at the SBL may be refused in any year on the grounds of inadequate progress and poor performance.

Concurrent registration

Concurrent registration at two South African universities is not permitted without the permission of both universities.

Curriculum

The first and second years consist of core modules which must be taken by all participants. Participants must register for all modules at the beginning of the year. An elective is offered in the third year in conjunction with the research projects.

First year

- Human resource management and employment relations (MBL911K)
- Operations management (MBL912L)
- Marketing management (MBL913M)
- Financial and management accounting (MBL914N)
- Strategic management (MBL915P)
- Economics and the global business environment (MBL916Q)

Second year

- Leadership and organisational dynamics (MBL921M)
- Strategic financial management (MBL922N)
- Strategy dynamics and international business (MBL923P)
- Information resource management (MBL924Q)
- Business research (MBL925R)
- Business ethics (MBL926S)

Third year

- A compulsory year module: Executive Project Management and a field study (MBLEPM-X)
- A research report (MBLREP-P)
- An elective module

NB (1) All the elective modules will not necessarily be offered each year.
(2) The participant's choice is subject to the approval of the Executive Director, SBL.
The current elective modules of the third year must be chosen from the following list:

- Change management
- Managing and resolving employment relations issues
- Corporate governance
- Corporate strategic management
- Advanced financial management
- Advanced financial systems
- E-business and technology management
- Supply chain management
- Advanced marketing

MBL application for selection/registration 2006

Submit completed form before 4 November 2005 or mail to:
MBL Registration,
Graduate School of Business Leadership (SBL), P O Box 392, UNISA, 0003

NB: Read this before completing the form.

- Please complete this form WITH A BLACK PEN AND WRITE IN BLOCKLETTERS. **See A-E on the next page.**
- Programme fees are payable as set out in the accompanying brochure. (NO VAT PAYABLE)
- Once registration has been finalised, the participant will be liable for payment of all fees and will not be relieved of that liability.
- Attendance at study schools is compulsory.
- **No registration can be finalised before the required initial payment is received.**

SBL
GRADUATE SCHOOL OF BUSINESS LEADERSHIP
UNISA

Attach two recent, clear passport photos here. Photographs should preferably be taken against a white -background.

1. Surname, Initials, Title (eg Smith, RJ, Mr)

2. (i) Full name(s)

(ii) Preferred name

3. Maiden name and/or previous surname

4. Language medium preferred (correspondence)		Afrikaans	English
5. Date of birth	YY MM DD	**6.** Male	Female
7. Identity number		Passport no.	
8. Physical disabilities	(i) None	(ii) Other (specify)	
9. Contact details	Tel (h) ( )		
	Tel (w) ( )		
	Cell phone ( )		
	Fax ( )		
	E-mail address:		

10. You are being registered on the University's General Student Voters Roll (see Information Brochure).

May fellow students contact you for student representation purposes? Yes No

11. ADDRESSES

Postal address and code	Home address and code	Work address and code (Not PO Box)

12. Suburb in which you reside **13.** Postal code of suburb

14. Please indicate preferred location of study group | Area of home | Area of work

15. Employer Job title

16. Person/institution responsible for payment

17. Country of your postal address (if not SA)

18. Examination centre (eg Secunda)

19. Home language

20. Do you have access to the Internet? Yes No

YOUR REPLIES TO QUESTIONS 21-26 ARE REQUIRED FOR STATISTICAL PURPOSES ONLY.

21. Nationality

22. Population group

23. Occupation

24. Economic sector (eg education)

25. Have you registered previously at Unisa or any other institution(s) for further study? Yes No

26. Highest qualification(s) attained **(please enclose proof)**

Institution(s) (eg Unisa,UP, NCP)	**Degree(s)/Diploma(s)** (eg BA, BA HONS, HED)	**Year(s)** (eg 79-81)	**Student number(s)**	**If completed, state year(s)**

NB: THE REVERSE SIDE OF THIS FORM MUST ALSO BE COMPLETED.

leadership in practice

MBL application continued

SBL
GRADUATE SCHOOL OF BUSINESS LEADERSHIP
UNISA

27. Qualification Code (supplied for your convenience) 0605 - x

28. You will be registered for all first year MBL modules unless otherwise stated in your acceptance letter.

29. Particulars of Payment - see "Payment of Fees" in this brochure.

Cheques, as well as postal or money orders, must be made payable to UNISA. Credit card: only MasterCard or Visa is accepted.

Cash	Cheque	Postal order	Money order	Bank draft	Credit card	TMO	ABSA Bank Deposit	TOTAL
R	R	R	R	R	R	R	R	R

Period in months **(credit cards only)** 6 12 18 24 **OR** Straight

Card number Exp date

ID no. of Card holder CVC no. Last 3 digits on back of card

Card holder: Surname and initials

Card holder: Signature

FOR OFFICE USE ONLY	
Late Reg	
yes	no
0108	
Advisor	

30. Declaration by Master's and Doctoral Participants: By signing this form I, in accordance with Rule PG18, cede to the University of South Africa the entire copyright subsisting in any dissertation or thesis, or part thereof, including any electronic version, that I may complete for the MBL degree. (Exemption from cession may, under special circumstances, be requested in an accompanying letter.)

31. Declaration and Undertaking - I declare that all the particulars furnished by me on this form are true and correct, and I undertake to comply with the rules, regulations and decisions of the University, and any amendments thereto, and have note of advice which may be applicable to applicants in general and/or to the field of study for which I am registered.

Please include the following documents:

A.(i) Complete history of your work career
(On separate page, use the following guidelines and list all your full-time positions, starting with the most recent)
- Firm/Employer
- Nature of business
- Date of assumption and termination of service
- Job title (eg Managing Director)
- Your duties

A.(ii) A two-page double-spread document motivating why you want to obtain a MBL degree

B. A recommendation from your employer which supports your application for selection and acknowledging your study obligations, using the guidelines below.
- Name of employer
- Job title (eg Managing Director)
- Company
- Address
- Recommendation
- Acknowledgement
- Signature

C. (i) Original official academic records issued by every university you have attended, indicating the symbol or percentage obtained for each course. (An academic record is an original declaration issued and signed by the Registrar of a university, indicating all courses passed or failed (with percentages/symbols), and showing whether or not the qualification was completed.) **Kindly note that copies, certified copies, or faxes of your academic records are NOT acceptable**.

C. (ii) Also include certified copies of your degree(s) and certificate(s).

D. Original documentary proof of at least three years' work experience (eg a letter from your employer (on an official company letterhead), indicating your period of service or a certificate of service. If you operate your own business, the statement can be made by your auditor, accountant , attorney or partner.

E. Initial payment.

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	yes	no
Ai		
Aii		
B		
Ci		
Cii		
D		
E		

32. Your signature on the application for selection form implies that:
- The required documents are included with the application for admission.
- You declare that you will obey the Rules of the University and that you will attend the study schools and centre meetings.
- You accept that lecturers will be conducted predominantly in English.
- **You will be responsible for all fees and book costs**.

33. A limited number of participants are selected every year and it may happen that a person who meets all the above requirements does not gain admission in a particular year.

34 You will be notified regarding your acceptance by 30 November 2005.

NB: No faxed application forms will be accepted. Courier or personal deliveries must be made to the physical address on the back of this brochure.

Date.....Participant's signature.....

FOR OFFICE USE ONLY Admission approved
Signed.....Date.....

Appendix 4 – Population demographics of South Africa for 2006.

Table 14: Demographics: Population estimates by population group, age and sex for 2006 (StatsSA, 2006).

Age	African			Coloured			Indian/Asian			White			South Africa		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
0–4	2 238 700	2 207 900	4 446 600	203 800	201 300	405 100	44 500	43 500	88 000	113 900	110 900	224 800	2 600 900	2 563 600	5 164 500
5–9	2 142 500	2 115 600	4 258 100	202 600	200 300	402 900	47 200	46 400	93 600	130 300	127 200	257 500	2 522 600	2 489 500	5 012 100
10–14	2 146 500	2 129 000	4 275 500	201 500	199 600	401 100	51 800	51 200	103 000	157 000	153 200	310 200	2 556 800	2 533 000	5 089 800
15–19	2 065 700	2 053 900	4 119 600	191 700	191 300	383 000	53 400	53 500	106 900	166 100	162 400	328 500	2 476 900	2 461 100	4 938 000
20–24	1 937 600	1 927 000	3 864 600	184 300	184 600	368 900	54 200	54 100	108 300	156 700	155 300	312 000	2 332 800	2 321 000	4 653 800
25–29	1 796 800	1 733 000	3 529 800	191 100	192 600	383 700	50 600	51 000	101 600	128 400	127 600	256 000	2 166 900	2 104 200	4 271 100
30–34	1 582 300	1 556 000	3 138 300	190 700	194 000	384 700	44 800	45 500	90 300	114 700	113 500	228 200	1 932 500	1 909 000	3 841 500
35–39	1 041 000	1 090 600	2 131 600	161 100	167 800	328 900	41 300	42 300	83 600	150 100	147 900	298 000	1 393 500	1 448 600	2 842 100
40–44	811 600	913 300	1 724 900	138 000	146 500	284 500	38 300	40 000	78 300	170 400	170 100	340 500	1 158 300	1 269 900	2 428 200
45–49	729 100	822 800	1 551 900	114 400	122 800	237 200	34 800	36 700	71 500	174 300	180 100	354 400	1 052 600	1 162 400	2 215 000
50–54	580 800	673 600	1 254 400	86 400	95 700	182 100	30 600	33 300	63 900	157 400	163 000	320 400	855 200	965 600	1 820 800
55–59	437 000	526 700	963 700	62 100	72 900	135 000	25 200	28 600	53 800	145 900	156 700	302 600	670 200	784 900	1 455 100
60–64	383 500	460 500	844 000	49 700	57 400	107 100	20 800	23 700	44 500	132 500	141 500	274 000	586 500	693 100	1 279 600
65–69	286 600	363 400	650 000	36 600	45 700	82 300	14 800	18 000	32 800	99 000	110 700	209 700	437 000	537 800	974 800
70–74	192 000	255 800	447 800	24 100	32 700	56 800	9 200	12 200	21 400	65 200	81 200	146 400	290 500	381 900	672 400
70–79	109 800	152 300	262 100	12 900	18 800	31 700	5 100	7 600	12 700	40 600	58 500	99 100	168 400	237 200	405 600
80+	76 900	123 000	199 900	9 000	14 800	23 800	3 600	6 100	9 700	36 400	66 600	103 000	125 900	210 500	336 400
Total	18 558 400	19 104 400	37 662 800	2 060 000	2 138 800	4 198 800	570 200	593 700	1 163 900	2 138 900	2 226 400	4 365 300	23 327 600	24 063 300	47 390 900

All numbers have been rounded off to the nearest hundred.

Appendix 5 – Frequency table of UNISA student that registered in 2003

Table 15: Frequency table of UNISA student that registered in 2003

Variable	Level	Frequencies (n)	Percentages (%)
Gender	Male	507	70.0
	Female	217	30.0
	Total	724	100.0
Race	White	173	23.9
	Coloured	28	3.9
	Black	456	63.0
	Asian	67	9.3
	Total	724	100.0
Ethnic group	White	173	23.9
	Coloured	27	3.7
	Black Unclassified	240	33.1
	South Sotho	16	2.2
	North Sotho	33	4.6
	Stsonga/Shangaan	13	1.8
	Tswana	40	5.5
	Venda	9	1.2
	Xhosa (Transkei)	30	4.1
	Zulu	37	5.1
	Ndebele	20	2.8
	Swazi	19	2.6
	Asian	67	9.3
	Total	724	100.0
Nationality	RSA	523	72.2
	Malawi	1	0.1
	Namibia	6	0.8
	Botswana	7	1.0
	Lesotho	2	0.3
	Swaziland	19	2.6
	Zambia	4	0.6
	Zimbabwe	100	13.8
	Kenya	7	1.0
	Tanzania	1	0.1
	Unknown	12	1.7
	Eritrea	22	3.0
	Ghana	1	0.1
	United Kingdom	3	0.4
	Other	16	2.2
	Total	724	100.0
Age at end of MBL	>45	69	9.5
	41-45	105	14.5
	36-40	207	28.6
	31-35	259	35.8
	26-30	83	11.5
	25<	1	0.1
	Total	724	100.0

Continued

Variable	Level	Frequencies (n)	Percentages (%)
Age at end of MBL	>45	69	9.5
	41-45	105	14.5
	36-40	207	28.6
	31-35	259	35.8
	26-30	83	11.5
	25<	1	0.1
	Total	724	100.0
Occupation	Engineer	67	9.3
	Accountant/Auditor	62	8.6
	Architect/Quantity surveyor	4	0.6
	Computer Specialist	23	3.2
	Farm management advisor	2	0.3
	Jurist	8	1.1
	Life/Physical Scientist	2	0.3
	Ops Research/Systems Analyst	5	0.7
	Personell officer	18	2.5
	Medical doctor/dentist	12	1.7
	Nurce,dietician	4	0.6
	Health technoligist	3	0.4
	Social/receational worker	4	0.6
	Lecturer/professor	11	1.5
	Enginering/Science Tech	7	1.0
	Technician	10	1.4
	Ressearch worker	2	0.3
	Technical Worker (Other)	18	2.5
	Manager/Administrator	202	27.9
	Clerical or Related Worker	51	7.0
	Operator	1	0.1
	Operative	1	0.1
	Farmer/farm manager	2	0.3
	Police Officer/detective	3	0.4
	Citizen force member	1	0.1
	Permanenet force member	2	0.3
	National service trainee	1	0.1
	Service Worker (Other)	3	0.4
	Full-Time Student at UNISA	11	1.5
	Full time studen (elesewhere)	2	0.3
	Occupation not Classified	119	16.4
	Unemployed	1	0.1
	Occupation unknown	26	3.6
	Protection service	1	0.1
	Social scientist	4	0.6
	Teacher	18	2.5
	Sales worker	13	1.8
	Total	724	100.0

Continued

Variable	Level	Frequencies (n)	Percentages (%)
Economic sector	Agriculture, Forestry and Fisheries	12	1.7
	Other Technicians	10	1.4
	Mining	36	5.0
	Manufacturing	81	11.2
	Transport communication and other public utilities	25	3.5
	Wholesale and retail trade	12	1.7
	Finanace, Insurance and real estate	111	15.3
	Business and repair service	15	2.1
	Personal service, including hotel and household service	6	0.8
	Entertainment and recreational service	4	0.6
	Education (Primary)	3	0.4
	Education (secondary)	14	1.9
	Education (tertiary)	18	2.5
	Welfare and non-profit membership organisatons	7	1.0
	Profesional and related services (other)	122	16.9
	Public administration	54	7.5
	Other	166	22.9
	Construction	6	0.8
	Hospital and health services	22	3.0
	Total	724	100.0
Language	Afrikaans	105	14.5
	Afrikaans/English	6	0.8
	German	1	0.1
	English	210	29.0
	French	1	0.1
	Greek	1	0.1
	Hebrew	1	0.1
	Italain	1	0.1
	Ndebele	25	3.5
	Ndonga	2	0.3
	Noth Sotho	37	5.1
	Other African	18	2.5
	Other Foreign	33	4.6
	Portuguese	10	1.4
	Shona	56	7.7
	South Sotho	23	3.2
	Swati	21	2.9
	Tsonga/Shangaan	16	2.2
	Tswana	49	6.8
	Venda	10	1.4
	Xhosa	46	6.4
	Zulu	52	7.2
	Total	724	100.0
Pass or Fail	Passed	151	20.9
	Failed	573	79.1
	Total	724	100.0

Legends for data

Table 16 Legends for data

AGE GROUP			**ETHNIC GROUP**	
>45	1		White	1
41-45	2		Coloured	2
36-40	3		Black Unclassified	3
31-35	4		South Sotho	4
26-30	5		North Sotho	5
25<	6		Stsonga/Shangaan	6
			Tswana	7
Economic sector			Venda	8
Agriculture, Forestry and Fisheries	1		Xhosa (Transkei)	9
Other Technicians	2		Zulu	10
Mining	3		Ndebele	11
Manufacturing	4		Swazi	12
Transport communication and other public utilities	5		Asian	13
Wholesale and retail trade	6			
Finanace, Insurance and real estate	7		**OCCUPATION**	
Business and repair service	8		Engineer	1
Personal service, including hotel and household service	9		Accountant/Auditor	2
Entertainment and recreational service	10		Architect/Quantity surveyor	3
Education (Primary)	11		Computer Specialist	4
Education (secondary)	12		Farm management advisor	5
Education (tertiary)	13		Jurist	6
Welfare and non-profit membership organisatons	14		Life/Physical Scientist	7
Profesional and related services (other)	15		Ops Research/Systems Analyst	8
Public administration	16		Personell officer	9
Other	17		Medical doctor/dentist	10
Construction	18		Nurce,dietician	11
Hospital and health services	19		Health technoligist	12
			Social/receational worker	13
Home language			Lecturer/professor	14
Afrikaans	1		Enginering/Science Tech	15
Afrikaans/English	2		Technician	16
German	3		Ressearch worker	17
English	4		Technical Worker (Other)	18
French	5		Manager/Administrator	19
Greek	6		Clerical or Related Worker	20
Hebrew	7		Operator	21
Italain	8		Operative	22
Ndebele	9		Farmer/farm manager	23
Ndonga	10		Police Officer/detective	24
Noth Sotho	11		Citizen force member	25
Other African	12		Permanenet force member	26
Other Foreign	13		National service trainee	27
Portuguese	14		Service Worker (Other)	28
Shona	15		Full-Time Student at UNISA	29
South Sotho	16		Full time studen (elesewhere)	30
Swati	17		Occupation not Classified	31

Tsonga/Shangaan	18		Unemployed	32
Tswana	19		Occupation unknown	33
Venda	20		Protection service	34
Xhosa	21		Social scientist	35
Zulu	22		Teacher	36
			Sales worker	37
NATIONALITY				
RSA	1		**Completed in 2005**	
Malawi	2		Y	1
Namibia	3		N	2
Botswana	4			
Lesotho	5			
Swaziland	6		**GENDER**	
Zambia	7		Male	1
Zimbabwe	8		Female	2
Kenya	9			
Tanzania	10		**RACE**	
Unknown	11		White	1
Eritrea	12		Coloured	2
Ghana	13		Black	3
United Kingdom	14		Asian	4
Other	15			

Appendix 6: Correlation matrix using Cramer's V

Table 17: Correlation matrix using Cramer's V

..... Not statistically significantly correlated
..... Statistically significantly correlated at the 5% level
..... Statistically significantly correlated at the 1% level

Correlations										
		Gender	**Race**	**Ethnic Group**	**Nationality**	**Age**	**Occupation**	**Economic Sector**	**Home Language**	**Completed in 2005 (Y/N)**
Gender	Cramer's V	1	0.020	0.020	0.032	0.110	0.051	0.123	0.013	0.024
	Significance		0.587	0.587	0.389	0.003	0.172	0.001	0.728	0.515
Race	Cramer's V	0.020	1	1	0.282	0.013	0.045	0.023	0.106	0.103
	Significance	0.587		0.000	0.000	0.732	0.223	0.542	0.004	0.006
Ethnic Group	Cramer's V	0.020	1	1	0.282	0.013	0.045	0.023	0.106	0.103
	Significance	0.587	0.000		0.000	0.732	0.223	0.542	0.004	0.006
Nationality	Cramer's V	0.032	0.282	0.282	1	0.005	0.076	0.096	0.029	0.145
	Significance	0.389	0.000	0.000		0.898	0.040	0.010	0.432	0.000
Age	Cramer's V	0.110	0.013	0.013	0.005	1	0.008	0.095	0.058	0.120
	Significance	0.003	0.732	0.732	0.898		0.829	0.010	0.119	0.035
Occupation	Cramer's V	0.051	0.045	0.045	0.076	0.008	1	0.120	0.010	0.069
	Significance	0.172	0.223	0.223	0.040	0.829		0.001	0.797	0.063
Economic Sector	Cramer's V	0.123	0.023	0.023	0.096	0.095	0.120	1	0.074	0.036
	Significance	0.001	0.542	0.542	0.010	0.010	0.001		0.045	0.328
Home Language	Cramer's V	0.013	0.106	0.106	0.029	0.058	0.010	0.074	1	0.084
	Significance	0.728	0.004	0.004	0.432	0.119	0.797	0.045		0.024
Completed in 2005 (Y/N)	Cramer's V	0.024	0.103	0.103	0.145	0.120	0.069	0.036	0.084	1
	Significance	0.515	0.006	0.006	0.000	0.035	0.063	0.328	0.024	

Appendix 7: CHAID algorithms theory

(As per the help files of SPSS for Windows)

Both CHAID and exhaustive CHAID algorithms consist of three steps: merging, splitting and stopping. A tree is grown by repeatedly using these three steps on each node starting form the root node.

Notation (CHAID algorithms)

The following notation is used throughout this chapter unless otherwise stated:

Y	The dependent variable, or target variable. It can be ordinal categorical, nominal categorical or continuous. If Y is categorical with J classes, its class takes values in C = {1, …, J}.
Xm, m=1, ..., M	The set of all predictor variables. A predictor can be ordinal categorical, nominal categorical or continuous.
$\hbar$={**x**n,yn} Nn=1	The whole learning sample.
wn	The case weight associated with case n.
fn	The frequency weight associated with case n. Non-integral positive value is rounded to its nearest integer.

The following algorithm only accepts nominal or ordinal categorical predictors. When predictors are continuous, they are transformed into ordinal predictors before using the following algorithm.

Merging (CHAID algorithms)

For each predictor variable X, merge non-significant categories. Each final category of X will result in one child node if X is used to split the node. The merging step also calculates the adjusted p-value that is to be used in the splitting step.

1. If X has 1 category only, stop and set the adjusted p-value to be 1.

2. If X has 2 categories, go to step 8.

3. Else, find the allowable pair of categories of X (an allowable pair of categories for ordinal predictor is two adjacent categories, and for nominal predictor is any two categories) that is least significantly different (i.e., most similar). The most similar pair is the pair whose test statistic gives the largest p-value with respect to the dependent variable Y. How to calculate p-value under various situations will be described in later sections.

4. For the pair having the largest p-value, check if its p-value is larger than a user-specified alpha-level α_{merge}. If it does, this pair is merged into a single compound category. Then a new set of categories of X is formed. If it does not, then go to step 7.

5. (Optional) If the newly formed compound category consists of three or more original categories, then find the best binary split within the compound category which p-value is the smallest. Perform this binary split if its p-value is not larger than an alpha-level $\alpha_{\text{split-merge}}$.

6. Go to step 2.

7. (Optional) Any category having too few observations (as compared with a user-specified minimum segment size) is merged with the most similar other category as measured by the largest of the p-values.

8. The adjusted p-value is computed for the merged categories by applying Bonferroni adjustments that are to be discussed later.

Splitting (CHAID algorithms)

The “best” split for each predictor is found in the merging step. The splitting step selects which predictor to be used to best split the node. Selection is accomplished by comparing the adjusted p-value associated with each predictor. The adjusted p-value is obtained in the merging step.

1. Select the predictor that has the smallest adjusted p-value (i.e., most significant).

2. If this adjusted p-value is less than or equal to a user-specified alpha-level α_{split}, split the node using this predictor. Else, do not split and the node is considered as a terminal node.

Stopping (CHAID algorithms)

The stopping step checks if the tree growing process should be stopped according to the following stopping rules.

1. If a node becomes pure; that is, all cases in a node have identical values of the dependent variable, the node will not be split.

2. If all cases in a node have identical values for each predictor, the node will not be split.

3. If the current tree depth reaches the user specified maximum tree depth limit value, the tree growing process will stop.

4. If the size of a node is less than the user-specified minimum node size value, the node will not be split.

5. If the split of a node results in a child node whose node size is less than the user-specified minimum child node size value, child nodes that have too few cases (as compared with this minimum) will merge with the most similar child node as measured by the largest of the p-values. However, if the resulting number of child nodes is 1, the node will not be split.