

Chapter 53

Predicting Academic Success for Business and Computing Students

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ABSTRACT

Various means to predict the success rate of students have been introduced by a number of educational institutions worldwide. The aim of this research was to identify predictors of success for tertiary education students. Participants were 353 students enrolled on Business and Computing programmes between 2009 and 2014, at a tertiary education provider in New Zealand. Enrolment data were used to determine the relationships between completion of the programme and prior academic achievement, age, ethnicity, gender, type of enrolment, and programme of study. These variables, as well as the overall GPA of the programme, were used to examine their relationship with the first year GPA. Results showed that pre- and post-enrolment data can be used for prediction of academic performance in ICT programmes. Based on the significance of some variables, tertiary education institutions can identify students who are likely to fail, these students can therefore be considered for additional support in the early stages of their study, in order to increase their chances of succeeding academically.

INTRODUCTION

Predicting success in academia is of interest to educational researchers across all disciplines. Various means to predict the success rate of students have been introduced by a number of educational institutions. For example, prior to being accepted into tertiary education, prospective students have to take tests such as the Scholastic Aptitude Test in the United States (The College Board, 2015); the College Admissions Test in the Philippines (Office of Admissions University of the Philippines, n.d.); The National Higher Education Entrance Examination in China (Zhang, 1995); the Special Tertiary Admissions Test

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in Australia (Australian Council for Educational Research, 2015); the Common Admission Test for the Indian Institutes of Management and other business schools in India (Indian Institutes of Management, 2014); and the Psychometric Entrance Test in Israel (National Institute for Testing and Evaluation, n.d.).

Educational institutions use admission tests to only admit students who pass, on the basis that they are more likely to succeed in completing the course in which they have been admitted. An alternative aim may be to provide more support to those students with lower probability of success (Simpson, 2006). Tinto (1987) reported that 43% of students would drop out and never achieve a qualification. According to Levitz and Noel (1989), most attrition is preventable; although this may be due to factors that are out of control of institutions. As such, several studies have shown that certain factors can predict academic success and have been associated with higher education retention rate, these include academic factors such as high school grades (Haviland, Shaw & Haviland, 1984); parents' education level (Ting & Robinson, 1998); personality traits (Chamorro-Premuzic & Furnham, 2003); and race (Litchman, 1989). In light of the possible existence of different predictive factors across various educational institutions and across various disciplines of study, it is useful to identify significant factors that predict academic achievement amongst distinct groups.

No data have been published evaluating predictors of success in New Zealand higher education or comparing institutions' predictors of achievement in higher education to the actual completion rate. With the funding challenges currently facing New Zealand education (Education Review, 2015) and the importance of increasing student retention rates in a competitive environment, almost certainly it will be beneficial to identify significant factors that predict academic success.

The aim of this research was to identify predictors of success for Computing and Information Technology (ICT) students. Specifically, the objectives of this study were to: 1) determine predictors of success of students enrolling in the Computing and Information Technology Programme between 2009 and 2014 at the enrolment stage, prior to commencing the programme of study; 2) determine predictors of academic success of students after commencing the programme; and 3) compare the enrolment and post enrolment predictors to determine key factors for predicting academic success of students.

STUDY 1: USING ENROLMENT DATA TO PREDICT ACADEMIC SUCCESS

Student retention and programme completion are important goals of academic institutions. Amongst the most consistent predictors of retention are high school achievements (Astin, Korn, & Green, 1987). Astin et al. studied 8000 students and found that students with an 'A' average in high school were seven times more likely to attain tertiary qualifications than students with a 'C' average. Similarly, Levitz, Noel and Richter (1999) showed that schools with the highest averages of test scores reported a retention rate of 91 percent of first- and second-year. However, this rate dropped to 56 percent among students with the lowest test score averages.

In other studies, the following factors were found to be significant predictors of retention: high school rank (Ting, 1997), gender (St. John, Hu, Simmons, & Musoba, 2001; Boero, Laureti & Naylor, 2005), ethnicity (Astin et al., 1987; Reason, 2003), faculty and nationality (Siraj & Abdoulha, 2009), and the secondary school science mark (Dekker, Pechenizkiy & Vleeshouwers, 2009).

The aim of this study was to explore enrolment data in order to determine key factors that may affect the study outcome in the Computing and Information Technology programme.

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