CHAPTER 1

INTRODUCTION

The aim of this thesis is to investigate the factors associated with student achievement and to develop a predictive model. The rationale for studying this question is that the Ministry of Universities needs to improve its system of screening students who wish to enter university. In the past, screening process used only the university entrance examination score. Under the new conditions, both school grade point average and university entrance examination score will be used. These scores constitute the main determinants of this study. The statistical methods are (a) two-sample t-tests, (b) analysis of variance and (c) multiple regression analysis.

In the present chapter we describe the background for the study. This includes the determinants of educational attainment, the rationale, and the research question.

Chapter 2 includes a description of the methods used in the study. These methods comprise the study design, the method of data selection, the data management, and the method of data analysis.

In Chapter 3 some preliminary results are presented. First, a descriptive summary of all the variables is given. Second, box plots and 95% confidence intervals are used to show the association between the outcome and each determinant, using two-sample t-tests and analysis of variance.

In Chapter 4, we develop a model of student achievement using multiple regression analysis. The multiple regression model is used because determinants are multivariate and need to be considered jointly because they are associated with each other. Confounding and interaction in regression need to be considered.

Finally, the conclusions and discussion are presented. The limitations of the study and suggestions for further studies are also described.

1. Introduction

Globalisation of the world today has enabled many countries to inter-communicate with one another quickly and easily across different time zones. This can be attributed to recent advances in information technology, improvements in tele-communications and economic competition throughout the world. Only when a country has these technological advances can it be competitive and thus afford self-reliance and economic stability. A developing country such as Thailand needs to keep up with the rest of the world in terms of supporting its population and improving its socioeconomic status. The concept of a peaceful existence in Thailand's society is extremely important for the pride of its people and only when other countries respect them can they stand tall with dignity (Prince of Songkla University, 1996).

Development of Thailand's socioeconomic system is thus an important issue for the government to consider when planning at a stable society for its future. In 1992 a plan was implemented aimed at improving the quality of Thailand's poorly educated population. It focused on the industries, rather than individuals, hoping to boost their financial viability (Prince of Songkla University, 1996). The plan ended in 1996 with some of its goals reached. However, a new plan was introduced concentrating more on allowing the Thai people ability to think for themselves, to create new ideas and to help themselves to develop independent skills to solve the problems of the country. The Thai government decided to try to improve the quality of life for its people by not only looking at its economy but at the society as a whole, with its main goal to change the ways of thinking in the community. This time the emphasis was on the individual.

An important factor in the development of the quality of life for the Thai population is a high level of education, especially basic education which ought to be a right for all people. For education to have a reasonably good quality, it should consist of the essential skills for learning and have definite substance for its basic learning. Continual improvements in mankind's overall quality of life are the essential reason for living and lies at the heart of the existence of mankind. It is the quest for knowledge that enables mankind to survive and continue to live with dignity. Education is thus the major factor in the development of a complete, harmonious society (Prince of Songkla University, 1996).

The development of industrialised countries indicates that the education level of their population has great importance in a country's decision-making policies. Thailand's education level is rather low when compared to other countries. When compared to a number of other Asian countries the number of students completing primary school is even lower. In 1990 a survey of adults aged 25 years or more revealed that the average duration of primary schooling were only 3.8 years while those for students in other countries in South East Asia were 4.4 years. In all countries of the world this average increases to 5 years, and for developed countries the average rises to a more respectable 10 years of school education. It has been shown that 35-40% of the population in developed countries have completed high school whereas in developing countries the percentage of the population completing high school drops to 10-20% (Tonpipat, 1997). A survey of Thailand's work force in 1993 found that only 80% of those surveyed had completed primary school education. It is clear then that the quality of education must be improved in developing countries and must start at the primary school level and continues on through to high school.

Thailand's ministry of education has decided to change the education system by increasing the number of compulsory years of primary schooling from 6 to 9 years. They have also decided to support the families of the students undertaking this compulsory education. Furthermore they have increased the availability of learning institutions around the country to enable those people living in remote areas better access. They also attempted to increase the proportion of students continuing high school education to more than 20% by 1997 (Prince of Songkla University, 1996).

2. Determinants of Educational Attainment

Studies have shown that the level of educational attainment is determined by various factors including, gender, socioeconomic status, university enrollment and educational background.

2.1 Gender

The ability pcssessed by any individual in any mental trait is the result of (a) his original nature, (b) the extent to which his original tendencies have matured by move inner growth, ar (c) the circumstances of his life and training. His original nature is determined pr ly by genetics, and unknown causes of variation. We have then to study the influenr of gender, by comparing the ability of men with women of the same age (Thorndi, 1914).

or the girls in the classroom there is a need for a departure from the tra' nal textbook presentation portraying women as sociable, kind and timid, but ring of the potentiality for great achievement (Child, Potter, & Levine, 1954). nderson and Keith (1995) has reported that gender is statistical significant and an important predictor of achievement for high school students.

2.2 Socioeconomic Status

Kolb (1965) investigated the effect of training in achievement motivation on the academic performance of underachieving high school boys. This study was conducted as part of a summer academic course for underachieving high school boys from high and low socioeconomic homes. Another group of boys with similar characteristics took only the academic course and served as the control group. The later academic performance of the boys in the experimental program was compared with that of the control group. For this purpose school achievement was measured 6 and 18 months after the summer program. The main result was the boys from the higher socioeconomic group benefited from the special training relative to their controls while the boys from the lower socioeconomic group did not.

Rush and Vitale (1994) found that family income is a significant determinant of educational achievement. However Caldas (1997) argued that socioeconomic has significant influences on individual academic achievement. Student achievement was found to be a contributor to the three 10th grade components of the Louisiana Graduation Exit Examination.

2.3 University Enrollment

The university entrance examinations have three procedures for bachelor program. a) The direct entrance examination administered by each rural university is open to the final year students from rural high schools in each region of Thailand. The examination is scheduled in January with results announced in February of each year. b) The special project administered by each university is open to the final year students from high schools. The students in this project should have skills in sports, arts, or academic fields. c) The pooled entrance examination administered by Ministry of University Affairs is open to eligible students from all parts of the country. The examination is scheduled in April and results are announced in May.

Tonpipat (1997; 53) found that the correlation coefficients between university entrance examination score and secondary school grade point average were highly significant among students.

2.4 Educational Background

Education in Thailand has two systems, namely a) education within formal schools and, b) education within nonformal schools. Formal schools refers to new students entering primary school, usually before reaching the age of 7, and at the beginning and at the end of high school. The nonformal schools aims at students who are plan for the continuation of study focussing on giving students sufficient fundamental, academic understanding in the competitive entrance examinations to continue in institutions of higher education.

Thatavakorn (1994) compared students' study records and their success in work after graduation for two groups of students, namely, those with formal education and those with non-formal education. There were graduates of the 1993 class from the faculty of Engineering and the faculty of Science & Technology, Thammasat University. It was found that students with nonformal education had better study records through all four years in the university than those with formal education.

3. Rationale

It is argued that the Thai government should take advantage of technology and mass-communication to teach their students, and in turn they will improve such aspects as thinking for themselves, critical analysis of their teachers lectures, expression of opinion and the quest for knowledge (Prince of Songkla University, 1996). Improvements in the quality of measurement and assessment for studying need to be made. A system of screening students who wish to enter each level of the education system should be developed and standardized over the whole country. The university bureau thus will make a policy to allow universities and other education institutions to screen their prospective students. In 1999 more decision making power will be given to institutions regarding the choice of students they want to enter their faculties or departments. They will enforce a new set of rules and the terms and conditions of these rules will govern the students. The following three points outline the new system:

1. Every student will be given a grade point average (GPA) after years 3-6 of high school and together with the scholastic aptitude test (SAT) taken at the end of year 6. This will contribute 10% towards the requirements of entry into university.

2. Results of the compulsory subjects (university entrance examination) will contribute 90% towards the requirements of entry into university.

3. Results of an interview and physical examination will be undertaken in order to convince the university bureau that a student is fit to study.

In Thailand a student may sit for the university entrance examination at years 6 of high school. In some cases a student can sit a special entrance examination prior to entering year 6, thus skipping the last two years of high school.

In conclusion, the above system will enable the bureau to determine what components of the above are associated with achievements at university, thus enabling universities to give the best education to their students without regard to socioeconomic status, sex or religion. In the entrance examination everyone should have the same chances of success without any bias.

Our study will observe and describe the associations between GPA in high school, university entrance examination score and student achievements at Prince of Songkla University (Pattani campus). By looking at the results we may be able to

suggest improvements to the way the curriculum is devised while universities will be able to modify their selection criteria in order to improve the quality of education given to their students.

4. Research Questions

The research questions are as follows.

4.1 What are the factors associated with student achievement?

4.2 Can a predictive model for student achievement be developed?