

**UNIVERSITI TEKNOLOGI MARA**

**INVESTIGATING STUDENT ACADEMIC  
PERFORMANCE BASED ON STUDENT  
DEMOGRAPHIC DATA USING  
PREDICTION ANALYSIS TECHNIQUES:  
A CASE STUDY OF MINISTRY OF EDUCATION  
MALAYSIA**

**RABIE AWALUDDIN BIN MOHAMAD**

Report submitted in partial fulfillment of the requirements  
for the degree of

**Master of Science (Information Technology)**

**Faculty of Computer and Mathematical Sciences**

**JULY 2014**

## ABSTRACT

Recently many researchers have been interested in conducting studies that relates to student academic performance. Student academic performance is an indicator for the student to indicate whether the student is performing well in their studies. To have a better prediction of student academic performance is an advantage for providing the counter measure for student who are not likely to succeed or dropout student. These counter measure can be translate in variety of action such as improving student retention, prioritization of attention, creating improvement programs, providing adequate teaching and learning and many more. Due to this reason, this study has been implemented to investigate the effect of student demographic data towards academic performance. This sample data are focused on the MARA University Of Technology (UiTM) students who pursue a bachelor degree in the computing discipline. The objective for this study are to identify the relationship between student demographic data and academic performance using prediction analysis techniques, evaluate appropriate prediction analysis technique for predicting student academic performance and propose student academic prediction model based on the prediction finding. This study was conducted using two techniques which are observation and interview session in order to collect data from the Ministry of Education (MOE). The prediction of student academic performance starting with identifying and evaluation the related demographic data that influences to academic performance, selection of the most accurate academic performance prediction techniques and analysis of the prediction finding to understanding the relationship between the demographic data with academic performance in term of graduation on time and final grade point average. The finding of this study can assist the institution of higher learning in the early detection of students who are most likely to be dropouts and remedial action taken. Thus, the arrangement of teaching and learning can be made to address the needs of potential dropout students. Improvement of student academic performance can also influenced the quality of academic landscape in a holistic manner.

## ACKNOWLEDGEMENT

*In the Name of Allah, the Most Gracious, the Most Merciful*

First and foremost praise be to Allah S.W.T and blessing be on His Prophet S.A.W for giving me this opportunity to pursue my study and was able to finish this Master degree study.

I would like to express my great appreciation to my supervisor, Assc. Prof. Norehan Abdul Manaf for her patience guidance, encouragement and useful critiques of my study, who was abundantly helpful and offered invaluable assistance, support, advice and inspired me greatly to complete this study. My grateful thank are also extended to Dr. Wan Rahim and Pn. Fauziah Redzuan for giving me valuable knowledge that assist me in completing this study.

I would like to express my sincere gratitude to the Data Management Unit, Ministry Of Education for the assistant and cooperation that have been given and also Malaysia Public Service for offering me a scholarship. Without their assistance, my Master study would not have been possible.

I would like to extend my deepest thanks and appreciation to my parents, sibling, and family for their valuable encouragement, help, advice, and moral support through my study. I would like to give my special thanks to my beloved wife and daughter who will always encourage and inspired me all the time. All the support is greatly appreciated.

Lastly I would like to thanks all my lecturers, friends and everyone who has supported my work until completed. May Allah S.W.T bless all of you. Thank you.

## TABLE OF CONTENTS

	<b>Page</b>
<b>STUDENT'S DECLARATION</b>	<b>i</b>
<b>ABSTRACT</b>	<b>ii</b>
<b>ACKNOWLEDGEMENT</b>	<b>iii</b>
<b>TABLE OF CONTENTS</b>	<b>iv</b>
<b>LIST OF TABLES</b>	<b>viii</b>
<b>LIST OF FIGURES</b>	<b>x</b>
<b>CHAPTER ONE: INTRODUCTION</b>	<b>1</b>
1.1 Research Background	1
1.2 Problem Statement	2
1.3 Research Questions	3
1.4 Research Objectives	4
1.5 Significance of Research	4
1.6 Research Scope	5
1.7 Report Outline	6
<b>CHAPTER TWO: LITERATURE REVIEW</b>	<b>7</b>
2.1 Introduction	7
2.2 Student Academic Performance / Achievement	7
2.3 Student Background and Student Academic Performance Relationship	8
2.3.1 Qualification Entry Level	9
2.3.2 Gender	9
2.3.3 Range of Age	10
2.3.4 Family Background	10

# CHAPTER ONE

## INTRODUCTION

### 1.1 Research Background

In Malaysia the Ministry of Education (MOE) is responsible for developing and creating an education environment to encourage the establishment of center of knowledge, and the development of competent, innovative and ethical thus fulfilling national and international aspirations. As a body that manage and monitors the progress and scenarios of tertiary and higher education in the country their regulation and policies creation and implementation must address all the issues that relate to the aspect of higher learning ecosystem which consists of students, lecturers, academicians, higher education institutions to produce the quality of higher education in Malaysia. The strategic planning and research department of higher education sector is responsible to construct and develop the National Higher Education Strategic Planning (PSPTN) which is the main objective to improve the country is knowledge and innovation abilities and produce higher quality of human capital. The PSPTN document is serve as a guidelines for the higher education development framework (Dr. Zubaidah Binti Ali, Former Head of Data Management Unit, Strategic Planning Division, Personal Communication, 2013).

One of the core guidelines of the PSPTN is to enhance the learning and education quality which is can be measured through data collection of students from public and private higher institution, Polytechnic and College Communities. To ensure the proper address the Ministry of Education Malaysia (MOE) is responsible for collecting the data relating