UNIVERSITI TEKNOLOGI MARA

RISK MODELING FOR DIPLOMA IN BUSINESS STUDIES (BM111) STUDENTS AT UiTM JOHOR

ADILAH BINTI MOHD DIN
2008263922

Dissertation submitted in partial fulfilment of the requirements
for the degree of

Master of Quantitative Sciences

Faculty of Computer and Mathematical Sciences

July 2012

ACKNOWLEDGEMENT

Alhamdulilah. Thanks to Allah for allowing me to complete this dissertation. First of all, I would like to extent my gratitude to my project supervisor Associate Professor Dr. Rasimah Aripin from the Faculty of Computer and Mathematical Sciences, Universiti Teknologi MARA, for her patience, guidance, ideas, time and comments throughout the preparation and completion of this dissertation.

I am also very grateful to many people who have helped me in my work especially the following: Associate Professor Dr. Omar bin Samat, Rector of Universiti Teknologi MARA (UiTM) Johor who gave me the approval for the use of the study data; academic administrative staff at UiTM Johor for providing me the raw data; and those who provided valuable comments and suggestions.

I would like to express my heartfelt gratitude to my beloved family especially to my parents, Haji Mohd Din Bin Mohd Saleh and Hajah Zainabah Binti Abu Bakar, and my parents-in-law Haji Mohd Rafdzi Bin Maulud and Hajah Siti Rabiah Binti Hamzah for their constant support and encouragement. To my beloved husband, Mohd Faidz Bin Mohd Rafdzi, thank you for the understanding, motivation, moral support and encouragement thoughout my studies. Finally, I dedicate this work to my beloved son, Muhamad Arif Bin Mohd Faidz who has provided me with the strength and encouragement throughout my study.

ABSTRACT

Diploma in Business Studies (BM111) is among the first programme offered at Universiti Teknologi MARA (UiTM) Johor. It is a popular programme as indicated by the large number of students registered every semester since its introduction. However, over the July 2000 until December 2007 period, more than 10 percent of the students failed to complete their studies on time, which is within six semesters. Hence, it is necessary to identify the causes of this phenomenon so that appropriate actions can be taken to help the students at-risk. This study aims to identify factors that affect students' chances of graduating on time and the first two semesters' subjects that are most influential on the students' chances of graduating on time. This study also applies the data mining approach and employs decision tree, logistic regression and neural networks models to predict the graduation outcome. Based on initial investigations, there is evidence of difference in the risk of not graduating on time or failed to graduate between males and females, as well as between the July and December intakes. In addition, those who did not do well in the first semester courses, Financial Accounting (ACC1) and Mathematics for Business (MAT) and second semester courses, Microeconomics (ECO) and Cost of Accounting (ACC2) are most likely to fail to graduate or graduate on extended time. Hence, this study has proposed a methodology to predict at-risk students which can be adopted by other programmes and level of studies. The results indicate that the identified predictive models are accurate and can be deployed to identify students at-risk immediately after their first semester. The following courses of actions are recommended: (1) Higher SPM grades for Mathematics and Accounting for acceptance to BM111 programme; (2) Placement tests for Mathematics and Basic Accounting; (3) Pre-Accounting course for those without SPM Accounting; (4) Those who failed to score at least a B- grade for Financial Accounting and Mathematics for Business during the first semester should attend a Peer-Tutorial Programme; (5) The effectiveness of the Peer-Tutorial Programme must be evaluated from time to time.

TABLE OF CONTENTS

			PAGE
ACKNOWLEDGEMENT			**i**
ABSTRACT			**ii**
TABLE OF CONTENTS			**iii**
LIST OF TABLES			**vi**
LIST OF FIGURES			**viii**
LIST OF ABBREVIATIONS			**ix**
CHAPTER 1		**INTRODUCTION**	
1.1		Introduction	1
1.2		Background of Study	1
1.3		Profile of Universiti Teknologi MARA	5
	1.3.1	UiTM Johor	6
1.4		Problem Statement	8
1.5		Research Questions	10
1.6		Research Objectives	10
1.7		Significance of the Study	10
1.8		Scope of the Study	11
1.9		Summary	11
CHAPTER 2		**LITERATURE REVIEW**	
2.1		Introduction	12
2.2		Risk Model	12
2.3		Education	13
2.4		Methods of Analysis	15
2.5		Summary	17

CHAPTER 3 **RESEARCH METHODOLOGY**

3.1		Introduction	18
3.2		Study Approach	18
3.3		Sources of Data	18
3.4		Study Variables	19
3.5		Selection of Variables	22
3.6		Methods of Analysis	23
	3.6.1	Predictive Modeling	27
	3.6.2	Comparing Predictive Performance	34
3.7		Summary	36

CHAPTER 4 **FINDING AND ANALYSIS**

4.1		Introduction	37
4.2		Profile of Study Subjects	37
4.3		Development of Predictive Models	43
	4.3.1	GOET versus GOT	45
	4.3.2	FTG versus GOT	59
4.4		Overall Comparison of Predictive Models	72
4.5		Implementation of Predictive Models	72
	4.5.1	July 2011 Intake	73
	4.5.2	December 2010 Intake	74
4.6		Summary	76

CHAPTER 5 **CONCLUSION AND RECOMMENDATIONS**

5.1		Conclusion	77
5.2		Recommendations	79