

Universiti Teknologi MARA

**A Fuzzy Decision Support System for
Personal Loan Application**

MUHAMMAD MUSTAQIM BIN MD SAID

**Report submitted in fulfilment of the requirement
for Bachelor of Computer Science (Hons.)
Faculty of Computer and Mathematical Sciences**

January 2017

ACKNOWLEDGEMENT

Alhamdulillah, praises and thanks to Allah because of His Almighty and His utmost blessings, I was able to finish this research within the time duration given. Firstly, my special thanks go to my supervisor, Mr Muhammad Atif Bin Ramlan for guiding me until the completion of this project. Not to forget, the encouragement and all the creative ideas that have been given to me. Special appreciation also goes to my beloved parents for always giving a moral support when I am having a difficulty in completing this project. Last but not least, I would like to give my gratitude to my dearest friends who are non-stop from giving answer for my entire questions and in completing my report.

ABSTRACT

Due to the competition among financial institution, like banks and investment firms, they have been introduce a lot of personal loan scheme to the customer. In business world, is good when lot of choices provided for customer to choose. However, it will make customer hard to identify which personal loan scheme suitable for applicant based on customer information. Every personal loan scheme has different term and condition. Apparently, the committee approval system are very slow and the quality of decision not good enough. In this institution heavily rely on technology to manipulate daily operation and support business. Decision support system is interactive computer system that assists people in decision making process. Fuzzy logic can be adapted in decision support system and it can produce reliable and flexible result for the system. This paper discuss the implementation of decision support system for personal loan applicant using fuzzy logic in banking institution. This algorithm being implemented in order to help customer in identifying the suitable personal loan scheme. The evaluation have been done with loan expert in testing different applicant's information. The result produce 76.67% accuracy on approving personal loan and reliable in recommending the correct personal loan scheme for applicant.

TABLE OF CONTENTS

CONTENT	PAGE
SUPERVISOR APPROVAL	ii
STUDENT DECLARATION	iii
ACKNOWLEDGEMENT	iv
ABSTRACT	v
TABLE OF CONTENTS	vi
LIST OF FIGURES	x
LIST OF TABLES	xi
CHAPTER ONE: INTRODUCTION	
1.1 Background of Study	1
1.2 Problem Statement	3
1.3 Objectives	4
1.4 Project Scope	5
1.5 Project Significance	6
1.6 Research Methodology	7
1.7 Summary	8
CHAPTER TWO: LITERATURE REVIEW	
2.1 Introduction	9
2.2 Banking	9
2.2.1 Overview of Personal loan	10
2.2.2 Personal Loan Scheme	12

2.2.3 Personal Loan Process	13
2.2.4 Application in Banking	15
2.3 Overview of Decision Support System	17
2.3.1 Categories of Decision Support System	18
2.3.2 Architecture of Decision Support System	19
2.3.3 Application of Decision Support System	23
2.3.4 Technique in Decision Support System	25
2.4 Fuzzy Logic	26
2.4.1 Fuzzy Expert System	28
2.4.2 Application of Fuzzy Expert System	30
2.5 Fuzzy Decision Support System in Personal Loan	31
2.5.1 Application of DSS using Fuzzy Logic	31
2.6 Conclusion	32

CHAPTER THREE: METHODOLOGY

3.1 Introduction	33
3.2 Research Methodology	33
3.3 Preliminary Study	35
3.3.1 Data Collection	35
3.3.2 Data Preparation	36
3.4 Research Design	37
3.4.1 User Interface	37
3.4.2 Inference Engine	40
3.4.3 Database	41
3.4.4 Implementation	42