## UNIVERSITI TEKNOLOGI MARA

## TECHNICAL REPORT

## ANALYZING A MULTI - OBJECTIVE FINANCIAL PLANNING OF BANK ISLAM USING GOAL – PROGRAMMING

HANIYA SAFIAH BINTI ZAHRUL AZHAR (2022900661) NUR SABAREENA BINTI SHAIFUL (2022925841) WAN AMIRA AMALIN BINTI WAN AZMAN (2022786075) (P22S23)

# SUPERVISOR: NORUL FADHILAH BINTI ISMAIL

Report submitted in partial fulfillment of the requirement for the degree of
Bachelor of Science (Hons.) (Management Mathematics)
College of Computing, Informatics and Mathematics

**JANUARY 2024** 

#### **ACKNOWLEDGEMENTS**

### IN THE NAME OF ALLAH, THE MOST GRACIOUS, THE MOST MERCIFUL

First and foremost, we would want to convey our deepest gratitude to Allah S.W.T. We will always be thankful to the Almighty for His unceasing blessings.

However, we would like to thank our supervisor, Puan Norul Fadhilah Ismail, for all her support throughout our research and project writing. Her passion, patience, perceptive remarks, useful information, helpful counsel, and never-ending ideas have been invaluable. Her immense knowledge, profound experience and professional expertise in Goal Programming Method has enabled us to complete this research successfully. We also appreciate the encouragement and constant support we received from Dr. Zati Aqmar Binti Zaharuddin and Dr. Noorehan Binti Awang, our lecturers for Mathematical Modelling (MAT530) and Final Year Project (MSP660), as well as from them.

In addition, we also want to thank all our hardworking group members and classmates for their unwavering collaboration, tremendous dedication, prompt help, and amazing support directly or indirectly across this project. It is a nice opportunity to commemorate our parents and other family members who supported us during our academic careers with love, prayers, care, and wholeheartedness. Finally, allow us to express our gratitude to the Universiti Teknologi MARA (UiTM) Seremban Campus for offering us a welcoming atmosphere and cutting-edge resources that aided us in finishing the given project.

# TABLE OF CONTENTS

ACKN	OWLEDGEMENTS	ii
TABLI	E OF CONTENTS	iii
LIST (	OF TABLES	v
LIST (	OF FIGURES	v
AUTH	OR'S DECLARATION	vii
ABSTI	RACT	viii
CHAP'	TER 1	1
INTRO	DDUCTION	1
1.1	Introduction	1
1.2	Problem Statement	3
1.3	Objectives	4
1.4	Significant and Benefit of Study	4
1.5	Scope and Limitation of Study	5
1.6	Definition of Terms	6
CHAP'	TER 2	7
BACK	GROUND THEORY AND LITERATURE REVIEW	7
2.1	Background Theory	7
2.1	1.1 Background of Goal Programming	7
2.1	1.2 Financial planning in Islamic Banking	8
2.2	Literature Review/ Related Research	9
2.2	2.1 Financial Planning	9
2.2	2.2 Islamic Bank	10
2.2	2.3 Goal Programming	13
CHAP'	TER 3	17
METH	ODOLOGY AND IMPLEMENTATION	17
3.1 Overview		17
3.2	Research Steps	18
3.0	2.1 Stage 1: Specification of the Project	19

3.2.2 Stage 2: Data collection, analysis, and procedures	21
3.2.3 Stage 3: Output Result	23
3.3 Development of Financial Planning Goal Programming Model	24
3.3.1 The Goals	24
3.3.2 Goal Constraints	24
3.3.3 Objective Function	26
3.3.4 Goal Programming Model	26
3.3.5 Case Study	26
CHAPTER 4	28
RESULTS AND DISCUSSION	28
4.1 Result and analysis	28
4.2 Discussions	29
4.3 Implementation of the model	30
4.4 Validation	33
4.5 Mean Absolute Percentage Error (MAPE)	34
CHAPTER 5	35
CONCLUSIONS AND RECOMMENDATION	
5.1 Conclusions	35
5.2 Recommendations	36
REFERENCES	
A DDENINIV	42

#### **ABSTRACT**

A Malaysian company must have financial planning to maintain its financial performance. Particularly financial institutions like Bank Islam Malaysia Berhad. Unexpected costs, emergency scenarios, and uncontrollable events are a part of the risk in doing business for any organization. Financial planning is crucial for an organization for asset and liability management, risk management, profitability and growth, compliance with regulatory requirements and customer satisfaction. It enables the organization to navigate the dynamic banking landscape while maintaining its financial stability and delivering quality services to its customers. For example, setting larger sales goals can necessitate lowering pricing to maintain a higher profit margin for goods and services. This study aims to determine if BIMB accomplishes its financial objectives annually, to examine financial resource allocation, and utilize a broader multi-objective perspective of BIMB which includes economic goals using a goal programming model. The goal programming method is suggested in this study to ascertain the precise estimated value required to maximize total asset, total equity, financing, advance, and other factors, total net income and minimize total liability. The data of financial allocation based on BIMB annual report from 2017 and 2021 were used in this study. Following that, LINGO 20.0 was used to run the model. The equation used in the LINGO had determined whether each allocation needs to maximize or minimize the amount within a five-year period. The findings show that each financial allocation such as total asset, total liability, total equity, financing, advanced and others and total net income have achieved the objectives by using LINGO software. Thus, it can be concluded that the total liability of BIMB within five years could be minimized while the others could be maximized.