

UNIVERSITI TEKNOLOGI MARA

TECHNICAL REPORT

**GOAL PROGRAMMING APPROACH: BUSINESS
PLANNING IN A COSMETIC BUSINESS**

**SYAFIQAH IZLYN BINTI SAPARON (2020615324)
NURJAHIRAH BINTI JAMALUDIN (2020828116)
WAN ALEYA SYAKIRAH BINTI WAN ABDUL AZIZ (2020483152)
P29M23**

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

AUGUST 2023

ACKNOWLEDGEMENTS

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

Firstly, we are grateful to Allah S.W.T for giving us the strength to complete this project successfully.

Furthermore, we would like to convey our heartfelt appreciation to Mrs. Norul Fadhilah Ismail, who served as our supervisor from the start of the final year project proposal until the completion of our final year project technical report. She has provided us with lots of experience, useful knowledge, and abilities that will serve us well in the future. Furthermore, she consistently makes us feel grateful to have her as our supervisor since she consistently stimulates, guides, and encourages us to complete this assignment effectively.

Next, we also want to express our gratitude to Mrs. Noraimi Azlin Binti Mohd Nordin, who served as our lecturer for the MSP 660 course. She has given advice and knowledge on effective report writing so that our technical report would receive the maximum ratings. Additionally, she consistently emphasizes important dates to ensure our ability to performat work unaffected.

In addition, we would like to convey our heartfelt gratitude to our family, who always provides us with support, motivation, and energy to continue our journey as students. Finally, we would like to thank our friends who have been directly or indirectly involved in making this project a success.

TABLE OF CONTENTS	
ACKNOWLEDGEMENTS	i
TABLE OF CONTENTS	ii
LIST OF TABLES	iv
LIST OF FIGURES	iv
ABSTRACT	v
CHAPTER 1: INTRODUCTION	1
1.1 Motivation	1
1.2 Problem Statement	2
1.3 Objectives	3
1.4 Significant and Benefit of Study	3
1.5 Scope and Limitation of Study	4
1.6 Definition of Terms	4
CHAPTER 2: BACKGROUND THEORY AND LITERATURE REVIEW	6
2.1 Background Theory	6
2.1.1 Goal Programming Approach	7
2.2 Literature Review/ Related Research	8
2.2.1 Business Planning	8
2.2.2 Cosmetics	9
2.2.3 Goal Programming	10
CHAPTER 3: METHODOLOGY AND IMPLEMENTATION	13
3.1 Introduction	13
3.1.1 Pre-emptive Goal Programming	15
3.2 Details of data	16
3.3 Constraints	19
3.3.1 Hard constraint	19
3.3.2 Soft Constraint	19
3.4 Goals and Priority	21
3.5 Objective Function	22
3.6 Model Summarization	22
CHAPTER 4: RESULT AND DISCUSSION	24
4.1 Introduction	24
4.2 Results	24
4.3 Implementation of The Model	25

4.4 Validation	27
CHAPTER 5: CONCLUSIONS AND RECOMMENDATION	29
5.1 Introduction	29
5.2 Conclusion	29
5.3 Recommendation	30
REFERENCES	31
APPENDIX A: Coding for LINGO Software	35
APPENDIX B: Result for LINGO Software	37

ABSTRACT

The cosmetics business needs to strategize to achieve huge profits, and they also require accurate calculations to prevent high losses after launching their supplies. Goal Programming Model is a method that is used in the business field. This study focused on cosmetics retailers who freshly began operating and wish to manage their inventory in part using goal programming. All the information that was required, including financial and historical data that might be used to solve the problem, was successfully gathered. Because of the limitations, the corporation occasionally finds it challenging to decide on a plan of action to reach its objectives. Thus, this project handled the occurrence of issues with varied organizational priorities, such as getting sales amount, cost price and gross profit. Utilizing the Goal Programming approach, the objective is to reduce cost price and increase company profit while considering the cost and sales price of the product sold. In addition, the outcomes were obtained using LINGO software. The Mean Absolute Percentage Error (MAPE) calculation was performed to validate the accuracy of the outcomes. It was found that the project successfully achieved all its goals, with no negative or positive deviation variables. Based on the positive results obtained, the study concludes that the Goal Programming approach is suitable for business planning and can assist businesses in achieving their objectives effectively. It is recommended for those operating in the cosmetics industry or the broader business industry to adopt this approach and gain the correct strategy.