

UNIVERSITI TEKNOLOGI MARA

TECHNICAL REPORT

**THIRD LANGUAGE SELECTION BY USING
ANALYTICAL HIERARCHY PROCESS (AHP)
METHOD**

P44S18

**NUR AZYYATI BINTI AZMI (2016328705)
NURZAWANAH RAIHAH BT ZAMRI (2016729801)
NURUL NABILAH BT AZMI (2016326799)**

**Report submitted in partial fulfillment of the requirement
for the degree of
Bachelor of Science (Hons.) Mathematics
Faculty of Computer and Mathematical Sciences**

DECEMBER 2018

ACKNOWLEDGEMENTS

Firstly, in the name of “Allah”, the most beneficent and merciful who gave us opportunity, strength and knowledge to complete our final year project (MSP660). However, it would not have been possible, without the kind of support and help of many individuals.

We would like to express our gratitude to our supervisor, Madam Rasidah Binti Buang who gave us this opportunity to fulfil this report on the topic, THIRD LANGUAGE SELECTION BY USING ANALYTICAL HIERARCHY PROCESS (AHP) METHOD, which also willing to help us in doing a research about Analytic Hierarchy Process (AHP). Not forgetting our lecturers of MSP660 and MAT530, Dr Mat Salim Bin Selamat and Madam Maznah Banu Mohamed Habiboo Raman for guiding us to coordinate our project especially in writing this report.

We also would like to thank our respondents which are new undergraduate students from Universiti Teknologi MARA Seremban who were willing to spend their time and give cooperation in answering the questionnaires.

Last but not least, we would like to thank our friends who gave guidance for completion of our project and also our parents who gave moral supports, without you none of this would indeed be possible.

TABLE OF CONTENTS

Contents	Page
ACKNOWLEDGEMENTS	i
TABLE OF CONTENTS	ii
LIST OF TABLES	iii
LIST OF FIGURES	iii
ABSTRACT	v
1.0 INTRODUCTION	1
1.1 Problem Statement	2
1.2 Objectives	3
1.3 Significance of the project	3
1.4 Scope of the project	4
1.5 Definition of terms and Abbreviations	4
2.0 BACKGROUND THEORY AND LITERATURE REVIEW	5
2.1 Background Theory	5
2.2 Literature Review / Related Research	7
3.0 METHODOLOGY	18
3.1 Research Process	18
3.2 Identify Problem Statements and Determine the Goal	18
3.3 Identify Criteria and Alternatives Involved	19
3.4 Construct a Hierarchy Framework for Analysis	20
3.5 Collect Empirical Information and Data through Questionnaires	21
3.6 Analyse the Data Using AHP Method	21
3.7 Implementation / Numerical Example	32
4.0 RESULT AND DISCUSSION	43
4.1 Criteria	43
4.2 Alternative	53
5.0 CONCLUSIONS AND RECOMMENDATIONS	70
REFERENCES	71
APPENDIX	73

LIST OF TABLES

Table 1 : The Meaning of Term.....	4
Table 2 : Comparison Table of Each Pair	21
Table 3 : Scale of Pairwise Comparison	23
Table 4 : Random index	26
Table 5 : Random index	31
Table 6 : Data Collected from Respondent 1.....	32
Table 7 : Summation of Each Column.....	33
Table 8 : Weightage of Each Criteria	35
Table 9 : Data Collected from Respondent 1.....	37
Table 10 : Summation for Each Column	38
Table 11 : Weightage of Alternative for Criteria Ease of Learning (C_1).....	39
Table 12 : Weightage of Alternatives for Each Criterion	41
Table 13 : Weightage of Alternative.....	42
Table 14 : Weightage for Criteria	43
Table 15 : Weightage of Gender Against Criteria	44
Table 16 : Weightage of Faculty Against Criteria	45
Table 17 : Weightage of Previous Campus Against Criteria	46
Table 18 : Weightage of Program Against Criteria.....	49
Table 19 : Percentage of Students Choose Their Important Criteria.....	52
Table 20 : Weightage for Alternative.....	53
Table 21 : Weightage for Gender Against Alternative.....	54
Table 22 : Weightage of Faculty Against Alternative.....	55
Table 23 : Weightage of Previous Campus Against Faculty.....	56
Table 24 : Weightage of Programme Against Alternative	59
Table 25 : Percentage of Student Choose Their Important Alternative.....	61

LIST OF FIGURES

Figure 1 : Hierarchy for three level MCDM problem.....	6
Figure 2 : The Hierarchical of Selecting Bubble Tea Shop.....	8
Figure 3 : The Hierarchical of Wall Material Selection	9
Figure 4 : The Hierarchical Thermal Power Plant Equipment Selection	10
Figure 5 : The Criteria of Pharmaceutical Product Selection	11
Figure 6 : Structure of AHP Model.....	12
Figure 7 : Decomposition of the problem into a hierarchy	13
Figure 8 : The Hierarchical of Railway Station Site Selection	14
Figure 9 : The Hierarchical to Select Wire Cut Electrical Discharge Machining Process Parameter	15
Figure 10 : The Hierarchical of Course Selection	16
Figure 11 : The Hierarchy of Selecting Industrial Robots	16
Figure 12 : The Hierarchical of Object – Oriented Programming Language Selection	17

ABSTRACT

Taking a third language course is compulsory for new undergraduate students to fulfil the requirement of the program. Thus, selection third language is a crucial process for them to bring satisfaction in learning third language among them. The objectives of this research are to determine the main criteria that considered for third language selection and also to determine the third language that has high demand among the students through the Analytical Hierarchy Process (AHP) method. In this research, third language selection is conducted for new undergraduate students in Universiti Teknologi MARA Seremban. AHP considered a set of criteria and alternatives according to the problem in decision making. In this regard, six criteria are identified, namely Ease of Learning, Culture, Purpose of Language, Interest of Student, Parents Influence and Friend Influence. Third language such as Arabic, Mandarin, Korean, Japan, German, French and Italian are the decision alternatives. By evaluating the result from AHP, Mandarin become the most preferred third language with weightage, 0.1918. Among all the criteria, Ease of Learning become the main criteria that influence the students in third language selection.