

**ANALYSIS OF A DECISION SUPPORT SYSTEM USING AHP FOR FOOD
AND RESTAURANT SELECTION BASED ON THE USER'S FOOD
CRAVINGS AND LOCATION IN JAKARTA.**

By

Dyondra
11902014

BACHELOR'S DEGREE
in

INFORMATION TECHNOLOGY
FACULTY OF ENGINEERING AND INFORMATION TECHNOLOGY



SWISS GERMAN UNIVERSITY
The Prominence Tower
Jalan Jalur Sutera Barat No. 15, Alam Sutera
Tangerang, Banten 15143 - Indonesia

Revision after the Thesis Defense on 12 July 2023

STATEMENT BY THE AUTHOR

I hereby declare that this submission is my own work and to the best of my knowledge, it contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgment is made in the thesis.


Dyondra

Student

24 July 2023

Date

Approved by:


James Purnama, S.Kom, M.Kom, M.Sc.

Thesis Advisor

24 July 2023

Date


Dr. Maulahikmah Galinium, S.Kom, M.Sc

Thesis Co-Advisor

24 July 2023

Date


Dr. Maulahikmah Galinium, S.Kom, M.Sc

Dean

24 July 2023

Date

Dyondra

ABSTRACT

**ANALYSIS OF A DECISION SUPPORT SYSTEM USING AHP FOR FOOD AND
RESTAURANT SELECTION BASED ON THE USER'S FOOD CRAVINGS AND
LOCATION IN JAKARTA**

By

Dyondra

James Purnama, S.Kom, M.Kom, M.Sc., Advisor

Dr. Maulahikmah Galinium, S.Kom, M.Sc, Co-Advisor

SWISS GERMAN UNIVERSITY

The purpose of this research is to develop a decision support system (DSS) using the AHP algorithm for selecting restaurants based on the user's food cravings and location in Jakarta. The data for the DSS was gathered by scraping restaurant data from online websites. The AHP algorithm implementation was based on the user's criteria, such as food cravings, dietary restrictions, price range, and location. The DSS was then evaluated with users. The findings of the research show that the DSS is effective in helping users make a decision about which restaurant to go to. The DSS was able to take into account the user's criteria and location to generate a list of restaurants that were most likely to meet their criteria. However, the DSS was found to be slow in dealing with large datasets. The conclusion of this paper is that the DSS is a valuable tool for indecisive people who are looking to select a restaurant. The DSS is effective in helping users make a decision based on their criteria and location. However, the DSS is slow in dealing with large datasets. Future research could focus on improving the performance of the DSS for large datasets.

Keywords: Analytical Hierarchical Process, Decision Support System, Restaurant Selection.



DEDICATION

I dedicate this works to all of my family, friends, and colleagues, as well as my lecturer who has given me a lot of support and love throughout my life.



ACKNOWLEDGEMENTS

I would like to take this opportunity to express my heartfelt gratitude to James Purnama, S.Kom, M.Kom, M.Sc., as my advisor for their invaluable guidance, insightful comments, and unwavering support throughout the course of my thesis work. I would also like to thank Dr. Maulahikmah Galinium, S.Kom, M.Sc, as my co-advisor for their priceless guidance, adept counsel, constant support, and sincere patience during my thesis work. Their expertise, encouragement, and dedication have been instrumental in the successful completion of my research.

I would also like to extend my sincere appreciation to my friends and family for their unconditional support, encouragement, and motivation throughout my academic journey. Their love and effort have been a constant source of inspiration and motivation for me.

Once again, I express my heartfelt thanks to everyone who has contributed to the successful completion of my thesis work.

TABLE OF CONTENTS

	Page
STATEMENT BY THE AUTHOR	2
ABSTRACT	3
DEDICATION	5
ACKNOWLEDGEMENTS	6
TABLE OF CONTENTS	7
LIST OF FIGURES	9
LIST OF TABLES	10
LIST OF SCRIPT	11
CHAPTER 1 - INTRODUCTION	12
1.1 Background	12
1.2 Research Problems	13
1.3 Research Objectives	14
1.4 Significance of Study	14
1.5 Research Questions	14
1.6 Hypotheses	15
1.7 Scope and Limitations.....	15
CHAPTER 2 - LITERATURE REVIEW	16
2.1 Scientific Paper Review	16
2.1.1 The Paradox of Choices	16
2.1.2 Decision Support System	16
2.1.3 Web Scraping.....	17
2.1.4 Analytical Hierarchical Process	18
2.1.5 Algorithm Comparison	19
2.2 Theoretical Perspectives	20
2.2.1 MySQL	20
2.2.2 Python	20
2.2.3 Javascript.....	20
2.2.4 Cascading Style Sheets (CSS)	21
2.2.5 Hyper Text Markup Language (HTML).....	21
2.2.6 Django.....	21
2.2.7 OpenStreetMap API.....	21
2.3 Competition.....	22
2.3.1 Dinner Mate	22
2.3.2 Entrée	22
2.3.3 Tasty.....	23
2.4 Previous Study	23

2.4.1 Decision Support System for Restaurant Selection in Badung Regency with Geography Visualization	23
2.4.2 A Questionnaire Method of Class Evaluations Using AHP with a Ternary Graph	24
2.4.3 A Mobile Decision Support System for Dynamic Group Decision-Making Problems	24
2.4.4 Decision Support System for Finding the Best Restaurant Using AHP Method	25
2.4.5 Group Decision Support for Leisure Activities Using Voting and Social Networks	25
2.4.6 Comparison Between Research	26
CHAPTER 3 – RESEARCH METHODS	28
3.1 Business and Competitor Analysis	29
3.2 Use Case Diagram.....	29
3.3 Implementation Phase	30
3.3.1 Data Gathering and Implementation	30
3.3.2 Question Implementation.....	31
3.3.3 AHP implementation	32
3.4 System Development	44
3.5 Prototype Development and Testing.....	44
CHAPTER 4 – RESULTS AND DISCUSSIONS	45
4.1 System Description	45
4.2 Project Implementation	45
4.2.1 Web scraping process.....	45
4.2.2 Database Implementation and Criteria Adding.....	46
4.2.3 User Interface Design	47
4.3 Result Evaluation	50
4.3.1 User Acceptance Testing of the System	52
4.3.2 Functional Testing of the System	52
4.3.3 Interface Testing of the System	54
CHAPTER 5 – CONCLUSIONS AND RECOMMENDATIONS	55
5.1 Conclusions.....	55
5.2 Recommendations	55
REFERENCES.....	56
GLOSSARY.....	58
CURRICULUM VITAE.....	61

LIST OF FIGURES

Figures	Page
Figure 1 Analytical Hierarchical Process Scheme	17
Figure 2 Research overview	27
Figure 3 Use Case Diagram	28
Figure 4 ERD of the system	29
Figure 5 Questionnaire's questions framework	30
Figure 6 AHP Workflow	31
Figure 7 Pseudocode of the AHP Algorithm	32
Figure 8 Weight of the cuisine question workflow	35
Figure 9 Dietary restriction question workflow	36
Figure 10 Price level question workflow	37
Figure 11 Location question workflow	38
Figure 12 Pseudocode of the restaurant distance calculation	39
Figure 13 Cuisine offered question workflow	42
Figure 14 Sequence Diagram of the System	43
Figure 15 Web scraping using Apify	45
Figure 16 Sample of the Category Dataset	45
Figure 17 Sample of the Restaurant Dataset	46
Figure 18 Screenshot of the Homepage of the System	47
Figure 19 Screenshot of the Questionnaire Page	47
Figure 20 Screenshot of the Recommendation Page	48

LIST OF TABLES

Table	Page
Table 1 Screenshot on the growing numbers of restaurants between 2011-2018	11
Table 2 Comparison between algorithm method	18
Table 3 Comparison between research	25
Table 4 Respondents demographics	49
Table 5 Likert Scale	50
Table 6 Range of values	50
Table 7 User Acceptance Testing Result	51
Table 8 Functionality Testing Result	51
Table 9 Interface Testing Result	53