

UNIVERSITI TEKNOLOGI MARA



**ANALYZING THE BARRIERS BEYOND HALAL CERTIFICATIONS USING
Z-SCORE FUNCTIONS OF HESITANT FUZZY DEMATEL (P32S22)**

MUHAMMAD SYAKIR BIN ABDUL RAZAK (2021118013)

NURUL HIDAYAH BINTI BAHRIN (2021113391)

PUTERI NUR SABRENNABINTI ASMAWI (2021103087)

Supervisor:

ZAHARI MD RODZI (DR)

**BACHELOR OF SCIENCE (HONS.) MATHEMATICS
COLLEGE OF COMPUTING,INFORMATICS AND MEDIA**

MARCH 2022

TABLE OF CONTENTS

Table od Contents	ii
List of Tables	iii
List of Figures	iv
Chapter 1 INTRODUCTION	2
1.1 Background of Study	2
1.2 Problem Statement	5
1.3 Research Questions	6
1.4 Research Objectives	6
1.5 Significant and Benefits	7
1.6 Summary Research	8
1.7 Scope and Limitations	8
1.8 Definition of Terms and Abbreviations	10
Chapter 2 LITERATURE REVIEW	11
2.1 Introduction	11
2.2 The Selected Barriers in Halal Certificate	13
2.2.1 Lack of Capital	13
2.2.2 Lack of Awareness	13
2.2.3 Failure to Understand Halal Requirement	14
2.2.4 Procedure by JAKIM	14
2.2.5 Supplier Factor	15
2.2.6 Using Fake Halal Logo	15
2.3 Hesitant Fuzzy Element (HFE)	16
2.3.1 Decision Making Trial and Evaluation Laboratory (DEMATEL)	16
2.4 Hesitant Fuzzy Set	17
2.5 Conclusion	22
Chapter 3 METHODOLOGY	24
3.1 Introduction	24
3.2 Qualitative and quantitative research	25
3.3 Hesitant fuzzy DEMATEL	25
Chapter 4 IMPLEMENTATION	28
4.1 Decision Making Trial and Evaluation Laboratory (DEMATEL)	28
4.1.1 Introduction	28
4.1.2 Implementation	28
4.1.3 Sensitivity Analysis	34
Chapter 5 RESULT AND DISCUSSION	39

5.1	Introduction	39
5.2	Analysis of Barriers in Halal Certification Among Small and Medium Entrepreneur in Negeri Sembilan	39
5.2.1	Demographics	39
5.2.2	Analysis on How Important of Halal Certificate from Respondents	42
5.2.3	Analysis of Barriers Beyond Halal Certification	45
5.3	Analysis of Hesitant Fuzzy DEMATEL Method	52
5.3.1	The Causal Diagram	52
5.3.2	Cause and Effect	57
5.3.3	Conclusion	62
5.3.4	Summary of Hesitant DEMATEL Method	62
Chapter 6	CONCLUSION AND RECOMMENDATION	64
6.1	Introduction	64
6.2	Conclusion and Recommendation	64
	References	66

LIST OF TABLES

2.1	Previous Study on Barriers in Halal Certificate	12
4.1	The Result from The Expert 1	29
4.2	Average Matrix	29
4.3	The Hesitant Degree	30
4.4	The Deviations Value	30
4.5	Z-arithmetic Mean Score Function	31
4.6	The Normalized Direct-Relation Matrix, M	31
4.7	The Identity Matrix, I	31
4.8	The subtraction of Identity, $I - M$	32
4.9	Inverse of $I - M$	32
4.10	The Total-Relation Matrix, S	33
4.11	Prominence and Net Cause/Effects	34
4.12	Prominence and Net Cause/Effects for $\alpha = 0, \beta = 0$	35
4.13	Prominence and Net Cause/Effects for $\alpha = 0, \beta = 0.5$	35
4.14	Prominence and Net Cause/Effects for $\alpha = 0, \beta = 1$	35
4.15	Prominence and Net Cause/Effects for $\alpha = 0.5, \beta = 0$	35
4.16	Prominence and Net Cause/Effects for $\alpha = 0.5, \beta = 0.5$	36
4.17	Prominence and Net Cause/Effects for $\alpha = 0.5, \beta = 1$	36
4.18	Prominence and Net Cause/Effects for $\alpha = 1, \beta = 0$	36
4.19	Prominence and Net Cause/Effects for $\alpha = 1, \beta = 0.5$	36
4.20	The Comparison of Ranking for $\alpha = [0, 1], \beta = [0, 1]$	38
5.1	How Factors Affects The Barriers on Halal Certifications	52
5.2	Halal Certification Criteria Ranking	63

Abstract

A halal certificate is an acknowledgment granted to commercial companies that have complied with the halal standards outlined in the Malaysian Halal Management System (MHMS) 2020 and Manual Prosedur Pensijilan Halal Malaysia, MPPHM (Domestic) 2020. The use of a halal emblem by a company to identify between halal-guaranteed and non-guaranteed halal products is permitted by a halal certificate. The most likely reason for this trend is increased the Halal Executives' dissatisfaction during halal certification process. Everyone has a different viewpoint, so it is challenging to come up with a concrete solution to the problem. Besides, there is no previous studies that use hesitant fuzzy DEMATEL to analyze halal certification in Malaysia. Also, every method that used in some application need to validate first with determine an applicability of the test result. In that case, this study aims to propose the Z-score function of hesitant fuzzy DEMATEL on analyzing the barriers beyond halal certifications, to determine the causes and effects of barriers to halal certification adoption through the proposed method, and to validate the robustness of our proposed method. Steps of methodology in this study have two parts which contain google form to collect data from respondents, and other part is using hesitant fuzzy DEMATEL based on the experts in halal certification. The result of this study shows that the using fake Halal logo is the most common in Halal certification criteria based on ranking by hesitant fuzzy DEMATEL method.