

**FUZZY AHP-SCOR APPROACH
FOR SUPPLIER EVALUATION AND SELECTION
IN MEDICAL FACILITIES**

**MOHAMAD KHAIRUL EMAN BIN SOFIAN
MUHAMMAD SYAHIR IZZUDDIN BIN MD SHOKRI**

**Thesis Submitted in Fulfilment of the Requirement for
Bachelor of Science (Hons.) Computational Mathematics in the
Faculty of Computer and Mathematical Sciences
Universiti Teknologi Mara**

July 2019

DECLARATION BY CANDIDATE

We certify that this report and the project to which it refers is the product of our own work and that any idea or quotation from the work of other people, published or otherwise are fully acknowledged in accordance with the standard referring practices of the discipline.


.....:

MOHAMAD KHAIRUL EMAN BIN SOFIAN

2016299096


.....:

MUHAMMAD SYAHIR IZZUDDIN BIN MD SHOKRI

2016289626

11 JULY 2019

ABSTRACT

Nowadays, medical supplies are very important in our lives as new illnesses are being discovered every day. Medical facilities serve an important purpose in providing people with affordable and trustworthy medicines. Therefore, medical facilities need to decide on the best medicine suppliers to obtain the best supplies. This paper suggest a combination techniques of Fuzzy Analytical Hierarchy Process (FAHP) together with Supply Chain Operation Reference (SCOR) model to develop a new decision support system to these facilities. The main stages in supplier selection process includes data gathering, FAHP calculation, SCOR evaluation and implementation of decision making. Medical facilities which implment this method will gain benefits and competitive advantage providing their decision makers are exposed to this approach in future decision support system.

LIST OF TABLE

Table		Page
1	Definition of terms and concepts	5
2	Definition and Adaptation to SCOR Model.	17
3	Weightage preferences	22
4	Main criteria and sub-criteria	23
5	Linguistic terms and the corresponding triangular fuzzy numbers	25
6(a)	Pairwise comparison for main criteria	27
6(b)	Pairwise comparison for sub-criteria cost	28
6(c)	Pairwise comparison for sub-criteria quality	29
6(d)	Pairwise comparison for sub-criteria organization	30
6(e)	Pairwise comparison for sub-criteria service	31
6(f)	Pairwise comparison for sub-criteria relationship	32
7(a)	Comparison matrix for main criteria	33
7(b)	Comparison matrix for sub-criteria cost	33
7(c)	Comparison matrix for sub-criteria quality	34
7(d)	Comparison matrix for sub-criteria organization	34
7(e)	Comparison matrix for sub-criteria service	34
7(f)	Comparison matrix for sub-criteria relationship	35
8(a)	Fuzzy geometric mean comparison main criteria	35
8(b)	Fuzzy geometric mean comparison sub-criteria cost	36
8(c)	Fuzzy geometric mean comparison sub-criteria quality	36
8(d)	Fuzzy geometric mean comparison sub-criteria organization	37
8(e)	Fuzzy geometric mean comparison sub-criteria service	37

8(f)	Fuzzy geometric mean comparison sub-criteria relationship	38
9(a)	Fuzzy weight of main criteria	39
9(b)	Fuzzy weight of sub-criteria cost	39
9(c)	Fuzzy weight of sub-criteria quality	39
9(d)	Fuzzy weight of sub-criteria organization	39
9(e)	Fuzzy weight of sub-criteria service	40
9(f)	Fuzzy weight of sub-criteria relationship	40
10(a)	Averaged and normalized weights for main criteria	41
10(b)	Averaged and normalized weights for sub-criteria cost	41
10(c)	Averaged and normalized weights for sub-criteria quality	41
10(d)	Averaged and normalized weights for sub-criteria organization	42
10(e)	Averaged and normalized weights for sub-criteria service	42
10(f)	Averaged and normalized weights for sub-criteria relationship	43
11(a)	Average weight for criteria cost	45
11(b)	Average weight for criteria quality	45
11(c)	Average weight for criteria organization	45
11(d)	Average weight for criteria service	45
11(e)	Average weight for criteria relationship	46
12	AHP evaluation to the main criteria	46
13	The result for best supplier	48