UNIVERSITI TEKNOLOGI MARA

TECHNICAL REPORT

A COMPARATIVE STUDY OF INTUITIONISTIC FUZZY ANALYTIC HIERARCHY PROCESS (IFAHP) WITH DIFFERENT SETS OF TRIANGULAR INTUITIONISTIC FUZZY NUMBERS (TIFNs)

P31S18

NUR SYAHERA BINTI ISHAK (2016351403)
SITI NUR SYAZWANI BINTI ZAINUDIN (2016596051)
NUR SHAZWANI BINTI LAILA (2016729827)

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

DECEMBER 2018

ACKNOWLEDGEMENTS

TABLE OF CONTENTS

LIST OF TABLES

ABSTRACT

Intuitionistic Fuzzy Analytic Hierarchy Process (IFAHP) has undeniably becoming well known as one of the methods to solve Multi Criteria Decision Making (MCDM) problems. MCDM tools help in doing selection or evaluation of multiple criteria in decision making. Basically, some of MCDM tools such as IFAHP use linguistic scale as a step in the method. However, linguistic scale for each individual may vary depends on individual interpretation. The information on the consequences of using different Triangular Intuitionistic Fuzzy Numbers (TIFNs) is also limited. Since FAHP can only be used to solve the fuzzy decision-making problems with the preference information of symmetrical distribution, IFAHP is proposed to deal with the uncertainty by taking both degree of the membership and non-membership function because it is more flexible and practical than fuzzy sets. This project aimed to apply the IFAHP method with different sets of TIFNs to solve MCDM problems. The project also aimed to compare the relative weightage and ranking of both criteria and alternatives for all respondents derived from the application of IFAHP with different sets of TIFNs. The study also aimed to check the consistency sensitivity between the three sets of TIFNs. The implementation of this method will use the data from a study made on video software selection. It is found that the ranking sequence for the five alternatives of three sets of TIFNs using the proposed method were different. Statistically, the relative weightage of the criteria and alternatives show that there is no significant difference among the criteria and alternatives of the three TIFNs. However, mathematically the weight dispersion for each criteria and alternatives were slightly different. The consistency sensitivity for the three TIFNs also shows different results with TIFN 2 and TIFN 3 have lower consistency sensitivity and TIFN 1 has moderate consistency sensitivity.