UNIVERSITI TEKNOLOGI MARA

TECHNICAL REPORT

CUSTOMER SATISFACTION EVALUATION OF WATER QUALITY USING FUZZY CONJOINT AND GREY RELATIONAL ANALYSIS METHOD

(P15M19)

NUR HADIRAH BINTI ASMADI–2017412744
NUR AZIZAH BINTI MOHD ARIFIN–2017412724
NORFARADIANA BINTI MARIANI–2017412774

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

JULY 2019

ACKNOWLEDGEMENTS

IN THE NAME OF ALLAH, THE MOST GRACIOUS, THE MOST MERCIFUL

For the first and foremost, we are feeling grateful to ALLAH S.W.T for giving us the strength to complete this final year project. The success and results of this project need guidance from many people and we are very happy to have successfully completed this project. Not forgetting also to those who have helped us to make this project a success.

Besides that, we would like to thank Universiti Teknologi MARA (UiTM) and to those who have given us the opportunity and encouragement to make this final year project. We would also like to thank our respected supervisor lecturer, Dr. Nor Azni Binti Shahari, for being very supportive and patient to guide us from the very beginning till the end of the project. Not forgetting, our fellow classmates that have helped and shared their opinions in the making of this final year project.

Last but not least, we would like to thank our parents and our families for the endless supports and moral advices towards us from afar to complete this project and we would also like to thank our supporters that have involved in the successfulness of making this project, either directly or indirectly.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

Customer satisfaction is a metric used to quantify the degree to which a customer is happy with a product, service or experience. Literally, the justification of customer satisfaction is calculated by percentage and statistical mean. However, some of the results obtained from the analysis by using percentage are not really consistent. Furthermore, since there are five criteria that should be analysed, therefore the ranking of the most satisfied criteria of water quality need to be done in order to achieve the desired result of customers' satisfaction level. The aim of this study is to analyse the data of customer satisfaction of water quality by using Fuzzy Conjoint Analysis method for every criteria and also to determine the most preferable criteria according to customers' satisfaction by using Grey Relational Analysis (GRA) method. The data of customer satisfaction of water quality for domestic, commercial, institution and industry was evaluated by using Fuzzy Conjoint Analysis and the criteria was ranked by using GRA. The result shows that the analysis using Fuzzy Conjoint method produced only one decision compared with analysis using percentage. Furthermore, GRA method which is using equal weight and entropy weight also produced consistent result in ranking the level of customer satisfaction for every criteria. In conclusion, both Fuzzy Conjoint and GRA method are reliable to be applied in this study because it can be used to compare the decisions between criteria used to measure customer satisfaction, and hence is very useful in providing additional information for decision making.