UNIVERSITI TEKNOLOGI MARA

NICOTINE REPLACEMENT THERAPY DECISION BASED ON MODIFIED INTUITIONISTIC FUZZY ANALYTIC HIERARCHY PROCESS

NORFAZILLAH BINTI MATMALI

Thesis submitted in fulfillment
of the requirements for the degree of
Master of Science
(Information Technology and Quantitative)

Faculty of Computer and Mathematical Science

March 2018

CONFIRMATION BY PANEL OF EXAMINERS

I certify that a Panel of Examiners has met on 12th September 2017 to conduct the final examination of Norfazillah binti Matmali in her **Master of Science** thesis entitled "Nicotine Replacement Therapy Decision based on Modified Intuitionistic Fuzzy Analytic Hierarchy Process" in accordance with Universiti Teknologi MARA Act 1976 (Akta 173). The Panel of Examiner recommends that the student be awarded the relevant degree. The Panel of Examiners was as follows:

Jasni Mohamad Zain, PhD
Professor
Faculty of Computer & Mathematical Sciences
Universiti Teknologi MARA
(Chairman)

Nazirah Ramli. PhD
Senior Lecturer
Faculty of Computer & Mathematical Sciences
Universiti Teknologi MARA
(Internal Examiner)

Maznah Mat Kasim, PhD
Associate Professor
School of Quantitative Science
Universiti Utara Malaysia
(External Examiner)

PROF SR DR HAJI ABDUL HADI HAJI NAWAWI
Dean
Institute of Graduates Studies
Universiti Teknologi MARA
Date: 8 March 2018

AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

Name of Student	:	Norfazillah binti Matmali
Student I.D. No.	:	2012278522
Programme	:	Master of Science (Information Technology and Quantitative) – CS780
Faculty	:	Computer and Mathematical Science
Thesis Title	:	Nicotine Replacement Therapy Decision Based on Modified Intuitionistic Fuzzy Analytic Hierarchy Process
Signature of Student	:	.....
Date	:	March 2018

ABSTRACT

The increasing population of smokers is a critical issue in developing countries in this century due to the fact that it is the major cause of preventable illness and alarming tobacco-related death. In dealing with this issue, the Nicotine Replacement Therapy (NRT) as a smoking cessation was introduced as part of the program to decrease the population of smokers. Due to the current situation, NRT selection faces difficulty to help smokers (patients) get rid of the smoking habit besides the many advantages of NRT. The NRT decision-making problem involves information dataset but there are not many research studies about NRT decision based on multi-criteria decision-making (MCDM) to help decision makers such as patient (smokers), medical officer and pharmacist in the decision-making process. In response to this problem, a systematic MCDM process is required in this situation to evaluate the decision-making problem for NRT which involves both quantitative and qualitative information dataset in order to gain more comprehensive results. Besides that, the advantages of the intuitionistic fuzzy set (IFs) are utilized to handle fuzziness, uncertainty in decision-making and vagueness of information due to human language and subjectivity of the problem. In this research, the Modified Intuitionistic Fuzzy Analytic Hierarchy Process (IF-AHP) method was utilised to gain more systematic, comprehensive, and able to deal with uncertainty in the decision-making process. A case study was conducted at the Queen Elizabeth Hospital, Kota Kinabalu, Sabah which is patient, medical officer and pharmacist as respondent in order to demonstrate the feasibility of the proposed model when dealing with uncertainty. The proposed model was well suited with the local context and complied with the validating analysis in NRT decision-making problem. The result of this research shows that the best NRT alternative is gum, followed by lozenge, inhaler and patch which identified based on the local context. In addition, the IF-AHP method in this study is applicable as a specific decision tool for NRT decision-making problem. The result also shows that the proposed method gained a positive outcome with effect of changing the parameter toward ranking in the decision-making process. Thus, the proposed model offers an alternative, user-friendly method that is reliable in terms of patients and practicing decision.

TABLE OF CONTENTS