



**A Classifying and Rankings Selection of Medical
Tourism Services and Patients' Satisfaction in Malaysia**

by

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LIST OF ABBREVIATIONS

AHP	Analytic Hierarchy Process
ALOS	Average Length of Stay
BOR	Beds Occupancy Rate
CI	Consistency index
CR	Consistency ratio
FAHP	Fuzzy Analytic Hierarchy Process
FCM	Fuzzy pairwise comparison matrices
FMCDM	Fuzzy multi criteria decision making
JAKIM	Jabatan Kemajuan Islam Malaysia
MCDA	Multi-criteria decision attribute
MHTC	Malaysia Healthcare Travel Council
MTM	Medical Tourism Magazine
TFN	Triangular fuzzy number
WHO	World Health Organization

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LIST OF SYMBOLS

$\mu_A(X)$	The degree to which any given element x in the domain X belongs to the fuzzy number A
l, m, u	Lower, mode, and upper bounds of the triangular membership function
w	Weight
w_i	Attribute's weight
w_j^T	Attributes' weights
α	Alpha
n	Number
m	No. of attributes
Σ	Mean
CS+	Positive co-efficient
CS-	Negative co-efficient
$C \lambda$	Crisp value
λ	Degree of optimism

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ABSTRAK

Kajian ini dijalankan untuk menentukan faktor-faktor yang menyebabkan kepuasan pesakit dalam perkhidmatan pelancongan perubatan. Lokasi pensampelan yang terlibat ialah pelancongan perubatan domestik dan rentas sempadan di negeri Pulau Pinang, Kuala Lumpur and Selangor dan sasarannya sebanyak 92 sampel telah dipilih untuk melibatkan diri dalam kajian ini. Proses Hierarki Analisis Fuzzy (FAHP) merupakan salah satu kaedah penambahbaikan kualiti pelancongan perubatan yang tertinggi. Walau bagaimanapun, terdapat had untuk FAHP mengenal pasti kepuasan pesakit. Model Kano menyediakan cara untuk lebih memahami kepuasan pesakit melalui kategori Atribut Kualiti Kano. Oleh itu, pendekatan integrasi antara Model Kano dan FAHP dicadangkan dalam kajian ini. Pertama, kajian ini mengenal pasti faktor-faktor yang menyebabkan keperluan kepuasan pesakit dalam perkhidmatan pelancongan perubatan. Seterusnya, kajian itu mengukur kepuasan pesakit menggunakan Kano dan diklasifikasikan ke dalam Enam Kumpulan: *Must-be*; *Attractive*; *One-Dimensional*; *Indifferent*; *Reverse*; and *Questionable*. Akhir sekali, kajian ini menentukan faktor-faktor yang menyebabkan keperluan kepuasan pesakit dalam merangka kepentingan mereka dengan menggunakan Fuzzy AHP untuk mengutamakan keperluan kepuasan pesakit yang paling penting berdasarkan pendapat ahli. AHP konvensional disatukan dengan teori set fuzzy untuk menangkap ketidakpastian dan kekaburan pesakit semasa membuat kesimpulan. Hasil menunjukkan bahawa atribut *one-dimensional* memperoleh berat terbesar diikuti dengan atribut *attractive* di mana "kos perkhidmatan perubatan", "ketelusan kos" dan "penghantaran cepat" adalah atribut pertama, kedua dan ketiga dengan berat masing-masing 0.159, 0.134 dan 0.124. Penemuan kajian ini dapat memberi manfaat kepada pencetus yang membuat keputusan dalam perubatan untuk merancang dan meningkatkan pelancongan perubatan dan juga kepuasan pesakit dalam perkhidmatan pelancongan perubatan berdasarkan keperluan mereka yang paling utama.

Kata kunci: perkhidmatan pelancongan perubatan, kepuasan pesakit, Model Kano, Proses Hierarki Analisis Fuzzy (FAHP)

ABSTRACT

The study is conducted in order to determine the determinant factors of patients' satisfaction in medical tourism services. The sampling location was domestic and cross-border medical tourism in Pulau Pinang, Kuala Lumpur and Selangor state and 92 target samples were selected to involve in this study. Fuzzy Analytic Hierarchy Process (FAHP) was one of the quality improvement methods for high medical tourism. However, there is a limitation for FAHP to identify the patients' satisfaction. The Kano Model provided a way to better understand of patients' satisfaction through the Kano Quality Attribute categories. Thus, the integration approach of Kano Model and FAHP is proposed in this study. The study is identifying the determinant factors of patients' satisfaction requirements in medical tourism services was first obtained. Next, the study is measured patients' satisfaction using Kano and classified them into Six Groups: Must-be; Attractive; One-Dimensional; Indifferent; Reverse; and Questionable. Finally, the study is ranked the determinant factors of patients' satisfaction requirements in order of importance using Fuzzy AHP to prioritize the most important patients' satisfaction requirement based on expert opinions. Conventional AHP is integrated with fuzzy set theory to capture the uncertainty and ambiguity of patients while concluding judgments. Results indicate that one-dimensional attributes gain the largest weights followed by attractive attributes where "medical service cost", "transparency of cost" and "fast delivery" are the first, second and third attributes with weights of 0.159, 0.134 and 0.124, respectively. The findings from the study able to benefits the medical decision maker to design and improve the medical tourism to enhance patients' satisfaction in the medical tourism services based on the most important patients' satisfaction requirement.

Keywords: medical tourism services, patients' satisfaction, Kano model, Fuzzy analytic hierarchy process

CHAPTER 1 : INTRODUCTION

1.1 Overview

The research purposely designed to investigate the classifying and rankings the effect of the determinants factors of patients' satisfaction in medical tourism services. The purpose of the study is to determine the classifying and rankings the impact of the determinants factors of patients' satisfaction in the medical tourism services.

It is significant for medical tourism services to investigate the determinants factors of patients' satisfaction in order to find out the important factors that able to the classifying and rankings the affects medical tourism services of patients' satisfaction. The findings from this study will able to purpose the medical sector the determinant factors of patients' satisfaction that need to consider in the strategy formulation process in order to improve medical tourism services while in the same time meeting the customer expectation.

Kano model is integrated with the Fuzzy Analytic Hierarchy Process (FAHP) in this study in order to better understanding the determinant factors of patients' satisfaction to classifying by using Kano model and then rankings these factors by using Fuzzy Analytic Hierarchy Process (FAHP) for better improvement strategies selection to enhance medical tourism services. The new approach able to rank the determinant factors of patients' satisfaction in medical tourism services more efficiently and the result able to benefits medical tourism sectors in order to more understanding the elements of satisfaction and concerns on these factors while develop the medical tourism sectors strategy to compete with other medical tourism industry.

1.2 Background of the Study

The tourism industry has experienced continuous growth since the 1950s and is one of the fastest growing economic sectors in the world, with an annual growth rate ranging from 3% to 7% (Cohen & Cohen, 2015b), notwithstanding terrorists attacks in tourist areas and health and also safety issues concerning natural disasters (United Nations World Tourism Organisation, 2013). Tourism industry activities have significantly contributed towards strengthening the economy of various nations, including developing countries. Not only that, the tourism industry plays a vital role in the global economy by supplying a variety of amenities and services.

In Malaysia, tourism is the second largest foreign exchange generator after the manufacturing sector, accounting for 5.7% of direct and 14.9% of indirect contribution to the Gross Domestic Product (GDP) in 2014, and this is expected to grow by 4.5% per annum to Malaysia Ringgit (MYR) 262.2 billion by 2025 (Hospitality Valuation Services, 2015). Malaysia has proven its ability in the tourism sector by being listed among the top 10 tourism destinations (Malaysia Investment Development Authority, 2015). Furthermore, income from the tourism sector was forecasted to rise by 4.0% in 2013 and by 4.6% pa between 2013-2022, generating MYR 90.7 billion in 2022 (World Travel and Tourism Council, 2012). This indicates that tourism industry is one of the promising sectors that will accelerate the development of Malaysia (Islam & Karim, 2011).

However in 2018, tourism is the third biggest contributor to Malaysia's GDP, after manufacturing and commodities (Hirschmann, 2020). In 2018, this sector contributed around 5.9% to the total GDP. In recent years, the tourism industry in Southeast Asia had experienced significant growth, and Malaysia was keen to capitalize on this trend. The "Visit Truly Asia Malaysia 2020" campaign was launched in the