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Healthcare Tourism Services Ranking Selection

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Abstract: The study is conducted in order to determine the determinant factors towards patients' satisfaction in healthcare tourism services. The sampling location was Pulau Pinang and Kuala Lumpur state. For Kano questionnaire, 103 target samples were selected to involve in this study. While, five target samples were selected for Fuzzy AHP questionnaire to involve in this study. Fuzzy Analytic Hierarchy Process (FAHP) was one of the quality improvement methods for high health 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 towards patients' satisfaction requirements in healthcare tourism services was first obtained. Next, the study is measured patients' satisfaction using Kano and classified them into Five Groups: Must-be; Attractive; One-Dimensional; Indifferent; and Reverse. Finally, the study is ranked the determinant factors towards patients' satisfaction requirements in order of importance using Fuzzy AHP to prioritize the most important patients' satisfaction requirement based on expert opinions. The findings from the study able to benefits the healthcare decision maker to design and improve the health tourism to enhance patients' satisfaction in the healthcare tourism services based on the most important patients' satisfaction requirement.

Key words: *Fuzzy AHP, Kano Model, Healthcare Tourism, Ranking Selection*

INTRODUCTION

Healthcare tourism industry is one of the industries that experience most dynamic and rapid grows in world economy. Over the last 10 years or so, health tourism has been rising immensely as a global industry especially in developing countries [1]. In the Asia continent, health tourism is expanding rapidly in which countries are competing intensely through services efforts and marketing strategies globally [2]. The global phenomenon on health tourism is highly concentrated in countries such as United Kingdom, the United States, India and Malaysia [3]. Malaysia is a leading nation in the world for health tourism and has been making a huge stride in the industry for over a decade [4]. Malaysia is a leading nation in the world for health tourism and has been making a huge stride in the industry for over a decade. From the 60 years of efforts in health tourism, Malaysia besides Singapore and Thailand has set one of the best records in Asia [5].

However, studies have shown that Malaysia started to promote health tourism heavily after the debt crisis that hit South East Asia countries (Indonesia, Thailand, Singapore, Brunei, Vietnam, Philippines, Cambodia, Myanmar, Laos, Timor-Leste) in 1997 caused the performance of health tourism to plummet. Since then, the Malaysia government started to promote health tourism in 1998 as to branch out both of its healthcare and tourism sectors [6]. One of the mechanisms that both the government and the private sector took was to attract the neighbouring countries such as Singapore and Thailand as well as countries from other parts of the world, for an instance, the Middle-Eastern countries such as Iran, Israel, Saudi Arabia, Turkey, Egypt, United Arab Emirates, Syria, Iraq, Lebanon, Qatar,

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Jordon, Palestine, Kuwait, Yemen, Bahrain, Oman, Cyprus [7].

Many countries have doubled their efforts to enhance the health tourism production in the eyes of the world. Investments are made for technologies and medicines, accreditations are given out to qualified hospitals, health experts and infrastructure is being improvised to fit for the health tourism. [8] stated that countries in Asia such as India, Thailand, Singapore, Malaysia and the Philippines and South Korea have several hospitals in the world as well as up to date technologies and medical experts to offer excellence medical services. Even though today Asians nations are leading the pack, a few Latin countries such as Romania, Costa Rica, Peru, Venezuela, Chile, Guatemala, Ecuador, Cuba, Bolivia, Haiti, Dominican Republic, Honduras, Paraguay, El Salvador, Nicaragua, Panama, Puerto Rico, Uruguay, Guadeloupe, Martinique, French Guiana, Saint Martin and Saint Barthelemy have also taken a toll to be on top of the leading board in the industry [9]. This industry has both supply and demands factor that stimulate its growth.

The purpose of the study is to determine the impact of the determinants factors towards patients' satisfaction in the healthcare tourism services and classifying and ranking selection of healthcare tourism services by integrating with Kano Model and Fuzzy Analytic Hierarchy Process (FAHP). The factors that employ in this research to study the relationship with patients' satisfaction in healthcare tourism services including cost, motivation, destination image, perceived value and service quality. A range of research methodology was employ to attain the research objective of the study. The concept of Kano Model is integrating with Fuzzy Analytic Hierarchy Process (FAHP) to provide a systematic approach to classify and rank patients' satisfaction for better improvement strategies selection to enhance healthcare tourism services while in the same time understanding the consumer expectation so that more specification services and performance can formulate to enhance the level of patients' satisfaction in healthcare tourism services.

LITERATURE REVIEWS

Malaysia has been promoting health tourism heavily through the campaigns up to 80% compared to the developed nations such as Singapore and Thailand [10]. Based on [11], it is possible that all of the initiatives above have become the goal for Malaysia to become the number one choice in health tourism destination. The goal for Malaysia to become the number one choice in health tourism destination because most studies stated that Malaysia has low medical cost and modern infrastructure facilities compare to other countries [12]. According to [13], it stated that countries in Asia such as India, Thailand, Singapore, Malaysia, the Philippines and South Korea have several best hospitals in the world as well as up to date technologies and medical experts to offer excellence medical services. Based on [14], Malaysia standout as a health tourist destination compared to other countries mainly because it is facilitated and monitored by Ministry of Health.

There are several factors that impacts patients' satisfaction and they are asserted that satisfaction with healthcare tourism services can result from different aspects. There are five factors of patients' satisfaction was selected in this study in order to classifying and ranking the relationship between five factors of patients' satisfaction with healthcare tourism services. The five factors of patients' satisfaction in the healthcare tourism services are cost, motivation, destination image, perceived value and service quality. Cost is considered to be one of the most important aspects of health tourism [15]. It has been further suggested by [16] and [17] when planning for health-related tourism, the cost is an essential consideration. In an agreement with this notion, [18] asserted that cost is one of the primary factors that drive satisfaction toward healthcare tourism services.

Motivation has also been found to share a meaningful relationship with tourists' satisfaction [19] [20]. Furthermore, patient satisfaction is said to be a result of the image of the destination [21] [22]. On the other hand, others are of the opinion that it becomes difficult for healthcare organizations to satisfy tourists without providing high quality service [23] [24] and value [25] [26]. Thus, service quality offered to patients and their perception regarding value is also very important concerns for patients' satisfaction. When it comes to healthcare tourism service, cost, service quality, motivation, destination image and perceived value are of utmost importance. In order to gain a comprehensive understanding about patients' satisfaction with healthcare tourism services it is essential to consider these respective aspects.

The concept of Kano Model is integrating with Fuzzy Analytic Hierarchy Process (FAHP) to provide a systematic approach to classify and rank the impact of these five factors of patients' satisfaction which are cost, motivation, destination image, perceived value and service quality for better improvement strategies selection to enhance healthcare tourism services. However, [27] also stated that Professor Noriaki Kano is the person who developed a Kano model. It is based on Herzberg's Two Factor Theory which is popular for categorize and prioritize

customer requirements for a product and how they affect customer's satisfaction. The Kano model categorizes the quality attributes into one of the five categories of perceived quality including attractive (A), onedimensional (O), must-be (M), indifferent (I), and reverse (R).

Moreover, FAHP uses the concepts of fuzzy set theory and hierarchical structure analysis for the selection of the most appropriate alternative among a set of feasible alternatives. The earliest FAHP method was proposed by [28] in which the fuzzy numbers with triangular membership functions describe the fuzzy comparing judgment. Besides that, [29] proposed a new method with the use of triangular fuzzy numbers and extent analysis method for the pairwise comparison scale of FAHP and the synthetic extent values of the pairwise comparisons, respectively.

In the healthcare sector, [30] suggested the integrated model with Kano and fuzzy AHP to derive strategies for the healthcare industry. As healthcare services get increasingly more critical, it is necessary to analyse service elements systematically for effective strategy formulation. Up to our knowledge, no research has been found that integrates Kano model and FAHP to classify and prioritize quality attributes in the healthcare industry such that patients' voice is represented. Thus, this study is the combination of the two methods which are Kano Model and Fuzzy AHP in order to improve the study of several factors of patients' satisfaction in healthcare tourism services.

METHODOLOGY

The target population is a broad group of the objects or the elements related to the research study where the target population are the group who provide the data for the research which is collected for the study [31]. The target population for Kano questionnaires was 103 patients or respondents who had an experience in the healthcare tourism service at Pulau Pinang and Kuala Lumpur which registered under Malaysia Healthcare Tourism Council (MHTC). The design of the Kano questionnaire involves functional and dysfunctional questions. The first question evaluated the response of the respondents while the factor is presence which known as the functional question. On the other hand, the second question evaluated the response of the respondents while the factors are absence which known as the dysfunctional question.

Therefore, the technique of fuzzy analytic hierarchy process (FAHP) is used to prioritization of criteria. Thus, the target population for FAHP questionnaires was experts and masters in that field of study which register under Malaysia Healthcare Tourism Council (MHTC). According to [32], number of expert must be between 5 to 10 persons. So, the study is conducted FAHP questionnaire on 5 experts in which the study is administered 5 questionnaires by email to experts from Management of Malaysia Healthcare Tourism Council (MHTC). Then, the study is used *Expert Choice* and *Excel* to evaluate the collected survey data. The design of the FAHP questionnaire involves pairwise comparisons of factors of patients' satisfaction from Kano questionnaire. The question evaluated the response of the experts with pairwise comparisons of factors of patients' satisfaction from Kano questionnaire.

The goal of this study is to present an improved research approach according to Kano's framework to measure the determinant factors of patients' satisfaction requirements in the healthcare tourism services. There are three main phases of the integration framework for Kano Model and FAHP conducted mainly in this research.

In phase I, the study is identifying the determinant factors of patients' satisfaction requirements in the healthcare tourism services. First, the study is identified 30 satisfaction requirements and then categorized them into six main criteria of satisfaction requirements: cost, motivation, destination image, perceived value, service quality and patient satisfaction.

In phase II, the study is measured patients' satisfaction using Kano and classified them into Five Groups: Must-be; Attractive; One-Dimensional; Indifferent; and Reverse. The study is conducted the Kano questionnaire by using the satisfaction requirements identified by healthcare tourism through previous study. The study is classified each requirements using Kano model and divide them into the five groups on their impact on customer satisfaction (must-be, one-dimensional, attractive, indifferent, and reverse).

In phase III, 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. The study is conducted FAHP questionnaire on the experts based on the result from Kano. Then, the study is calculated the relative importance of all the requirements in the same category using FAHP method. Carefully, keeping in mind the goal of this study, the study is considered the patients' satisfaction in the healthcare tourism services as the very important factor.

Main Criteria of Satisfaction Requirement	Sub Criteria of Satisfaction Requirement
Cost	1. Healthcare service cost 2. Healthcare facility cost 3. Healthcare medical operations cost 4. Cost of hired physician 5. Cost of efficient state of the art medical equipment
Motivation	6. Cost saving purpose 7. Cultural reason 8. Family reason 9. Modern healthcare service and procedure 10. Good healthcare facility
Destination image	11. Supportive service 12. Quality of treatment 13. Credential of physician 14. Multiple language 15. Good socioeconomic environment
Perceived value	16. Perceived medical quality 17. Perceived service quality 18. Perceived enjoyment 19. Perceived sacrifice of fee 20. Perceived sacrifice of risk
Service quality	21. The variety of medical services 22. High communication skills of staff 23. Fast service delivery 24. Effective medication 25. Transparency of cost
Patient satisfaction	26. Hospital stay 27. Waiting time 28. Scheduled of medical check-up appointment 29. Responses of medical treatment 30. Scheduled of test and procedure

	Attributes	A	M	O	R	Q	I	Total	Group
Attributes related to cost									
A1	Healthcare service cost	1	50	52	0	0	0	103	One-dimensional
A2	Healthcare facility cost	2	52	49	0	0	0	103	Must-be
A3	Healthcare medical operations cost	1	53	49	0	0	0	103	Must-be
A4	Cost of hired physician	1	48	54	0	0	0	103	One-dimensional
A5	Cost of efficient state of the art	1	49	53	0	0	0	103	One-dimensional

	medical equipment								
Attributes related to motivation									
A6	Cost saving purpose	1	51	50	0	0	1	103	Must-be
A7	Cultural reason	0	48	51	0	0	4	103	One-dimensional
A8	Family reason	2	48	49	0	0	4	103	One-dimensional
A9	Modern healthcare service and procedure	2	48	52	0	0	1	103	One-dimensional
A10	Good healthcare facility	2	52	49	0	0	0	103	Must-be
Attributes related to destination image									
A11	Supportive service	1	48	54	0	0	0	103	One-dimensional
A12	Quality of treatment	51	6	49	0	0	0	103	Attractive
A13	Credential of physician	1	49	53	0	0	0	103	One-dimensional
A14	Multiple language	23	25	55	0	0	2	103	One-dimensional
A15	Good social economic	53	2	48	0	0	0	103	Attractive
Attributes related to perceived value									
A16	Perceived medical quality	1	53	49	0	0	0	103	Must-be
A17	Perceived service quality	1	50	52	0	0	0	103	One-dimensional
A18	Perceived enjoyment	24	25	54	0	0	0	103	One-dimensional
A19	Perceived sacrifice of fee	1	2	53	0	0	47	103	One-dimensional
A20	Perceived sacrifice of risk	1	52	2	0	0	48	103	Must-be
Attributes related to service quality									
A21	The variety of medical services	52	24	24	0	0	3	103	Attractive
A22	High communication skills of staff	1	47	55	0	0	0	103	One-dimensional
A23	Fast service delivery	51	25	25	0	0	2	103	Attractive
A24	Effective medication	48	1	54	0	0	0	103	One-dimensional
A25	Transparency of cost	50	4	49	0	0	0	103	Attractive
Attributes related to patient satisfaction									
A26	Hospital stay	0	54	48	0	0	1	103	Must-be
A27	Waiting time	2	49	52	0	0	0	103	One-dimensional
A28	Scheduled of medical check-up appointment	1	49	53	0	0	0	103	One-dimensional

A29	Responses of medical treatment	2	49	52	0	0	0	103	One-dimensional
A30	Scheduled of test and procedure	4	53	46	0	0	0	103	Must-be

Healthcare Dimension	**Kano classes**	**Quality attributes**	**Total Weights (TFNs)**	**Crisp value**	**Normalized crisp value**	**Rank (KANO-FAHP)**
Cost	Must-be	A2	(0.004,0.009,0.019)	0.011	0.007	24
		A3	(0.022,0.044,0.092)	0.053	0.036	10
	One dimensional	A1	(0.091,0.195,0.418)	0.235	0.159	1
		A4	(0.011,0.024,0.058)	0.031	0.020	16
		A5	(0.020,0.045,0.100)	0.055	0.037	9
Motivation	Must-be	A6	(0.003,0.006,0.014)	0.023	0.015	20
		A10	(0.001,0.001,0.003)	0.005	0.003	28
	One dimensional	A7	(0.001,0.002,0.006)	0.003	0.002	29
		A8	(0.003,0.007,0.016)	0.026	0.017	18
		A9	(0.014,0.0270,0.063)	0.035	0.024	13
Destination Image	One dimensional	A11	(0.043,0.097,0.221)	0.120	0.081	4
		A13	(0.012,0.027,0.061)	0.033	0.022	14
		A14	(0.010,0.022,0.049)	0.027	0.018	17
	Attractive	A12	(0.013,0.026,0.055)	0.031	0.021	15
		A15	(0.002,0.004,0.008)	0.014	0.010	23
Perceived Value	Must-be	A16	(0.006,0.011,0.0217)	0.039	0.026	12
		A20	(0.001,0.002,0.003)	0.002	0.001	30
	One dimensional	A17	(0.032,0.065,0.138)	0.078	0.053	7
		A18	(0.008,0.017,0.038)	0.021	0.014	21
		A19	(0.003,0.007,0.017)	0.027	0.016	19
Service Quality	One dimensional	A22	(0.003,0.006,0.012)	0.007	0.005	25
		A24	(0.020,0.041,0.082)	0.048	0.032	11
	Attractive	A21	(0.007,0.016,0.034)	0.019	0.013	22
		A23	(0.021,0.051,0.112)	0.184	0.124	3
		A25	(0.070,0.167,0.356)	0.198	0.134	2
Patient Satisfaction	Must-be	A26	(0.001,0.003,0.007)	0.004	0.003	27
		A30	(0.003,0.008,0.019)	0.010	0.068	5
	One dimensional	A27	(0.023,0.049,0.105)	0.059	0.040	8
		A28	(0.003,0.005,0.001)	0.003	0.004	26
		A29	(0.010,0.019,0.040)	0.080	0.054	6

CONCLUSIONS

In this research, Kano model is applied to classify healthcare tourism services attributes into five main categories based on their effects on patients' satisfaction. Then, the study is ranking and prioritized using FAHP method. Based on the result of Kano categories, the results show that onedimensional attributes gain the largest followed by must-be attributes and finally attractive attributes. Otherwise, indifferent attributes and reverse attributes does not effects on patients' satisfaction. Based on the result integration of Kano model and FAHP, the results shows that the ranked and prioritize the most important patients' satisfaction requirement in the healthcare tourism services using FAHP method.

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