

MANAGEMENT INFORMATION SYSTEM FOR HAJJ PILGRIM'S TOTAL
WELLNESS

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In dedication to Allahyarham Ahmad Bin Idris (ABI), Emak, Ayah, Ibu, Abah,
my lovely wife, families and friends.

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ABSTRACT

Hajj is a spiritual journey which require physical and mental preparation since pilgrims need to face hectic activity, extreme temperature and exhaustive environment during Hajj. Recently, there are few instruments and models that relate to wellness however they are too general and not specific for certain event or religious rituals. Besides, existing management system only focuses on treatment and emphasize on physical, physiological and medical history only. Thus, the purpose of this study was to develop instrument, model, prescription and management information system specific for Hajj Pilgrim's Wellness. Sequential exploratory design were used trough out this research. Eight construct were established from the interview conducted with 5 panel of expert consist of physical activity, physical care, healthy eating, intrapersonal, interpersonal, knowledge, mental toughness and relationship with Creator and creatures. Items for each construct were determine based on past study and need analysis. A survey was conducted to 300 respondents from six mosques in Johor Bahru district. The data gathered were analyzed using Rasch Measurement analysis. The findings showed instrument fit the model in terms of construct validity, item and person reliability, rating scale, dimensional and item fit. Besides, there were significant differences between wellness based on demographic characteristics including age, health status and occupation except gender. Next, a model was developed using average of item logit to determine the contribution factors hierarchy towards wellness level. Then, prescription was developed based on previous research and content validity were gathered from three panel of experts. Finally, a web based system was developed and the usability of the developed system was measured using IsoMetric^S questionnaire. Thus, it was recommended that the Ministry of Health and Tabung Haji used and promote awareness among hajj pilgrims by referring to the model in the success of Hajj practices.

ABSTRAK

Haji adalah pengembaraan rohani yang memerlukan persediaan fizikal dan mental di mana jemaah perlu mendepani aktiviti yang padat, suhu yang melampau dan persekitaran yang sesak semasa mengerjakan ibadah Haji. Terdapat beberapa inventori dan model berkaitan dengan kesihatan namun tidak khusus kepada ritual atau agama tertentu. Selain itu, sistem pengurusan yang sedia ada hanya fokus kepada rawatan dan menekankan aspek fizikal, fisiologi dan sejarah perubatan sahaja. Oleh itu, tujuan kajian ini adalah untuk membangunkan inventori, model, preskripsi dan sistem pengurusan maklumat khas untuk kesihatan jemaah Haji. Rekabentuk *Sequential Exploratory* digunakan sepanjang penyelidikan ini. Lapan konstruk telah dibangunkan hasil daripada temu bual yang dijalankan dengan lima panel pakar terdiri daripada aktiviti fizikal, penjagaan fizikal, pemakanan sihat, intrapersonal, interpersonal, pengetahuan, kekuatan mental dan hubungan dengan Pencipta dan makhluk. Item bagi setiap konstruk ditentukan berdasarkan kajian sebelumnya dan analisa keperluan. Kajian telah dijalankan kepada 300 responden di enam buah masjid dalam daerah Johor Bahru. Data yang dikumpul dianalisis dengan menggunakan analisis pengukuran Rasch. Dapatan kajian menunjukkan inventori sesuai dengan model dari segi kesahan konstruk, kebolehpercayaan item dan orang, skala likert, dimensi dan item *fit*. Terdapat perbezaan yang signifikan antara kesihatan dengan ciri-ciri demografi termasuk umur, status kesihatan dan pekerjaan kecuali jantina. Seterusnya, model dibangunkan menggunakan purata item logit untuk menentukan hierarki faktor sumbangan ke arah tahap kesihatan. Kemudian, preskripsi dibangunkan berdasarkan kajian lepas dan kesahan kandungan dinilai oleh tiga pakar. Akhir sekali, sistem berasaskan web dibangunkan dan kebolehgunaan sistem diukur dengan menggunakan soal selidik *Isometric*^s. Oleh itu disyorkan pihak Kementerian Kesihatan dan Tabung Haji mengamalkan dan memupuk kesedaran di kalangan jemaah haji dengan merujuk model dalam menjayakan ibadah Haji.

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LIST OF ABBREVIATIONS

HAJI	-	Hajj Wellness Instrument
HAM	-	Hajj Wellness Model
MIS	-	Management Information System
WHO	-	World Health Organizations
RMM	-	Rasch Measurement Model
SDLC	-	System Development Life Cycle
TH	-	Tabung Haji
MOH	-	Ministry of Health

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Health was previously seen more as something negative rather than positive as it had always been associated with illness or disease (Exeter, 2009; Millar & Hull, 1997). However, recently, people begin to look at it from a positive perspective. Health now has a more generic and holistic meaning as it encompasses wellness not only physically but also takes into account mental, spiritual, emotional and social factors (Miller & Foster, 2010). This concept has been approved by the World Health Organization which defines health as a state of complete mental, social and physical well-being and not only the absence of illness and disease (WHO, 1948).

High levels of wellness deal with progress towards a higher level of an individual's potential, functioning and a positive view of the future (Larson, 1999). Functioning process includes the combination of the complete individual's mind, spirit and body. According to Travis and Callander (2010), wellness is a multi-dimensional approach to health and well-being that stems from individuals. It is a connection between the state of well-being with body, emotion, mind and spirit; life experience and health; family, friends and community; personal and work life; and environment including internal factors such as home and neighborhood.

Others way to assess wellness is by using the actual model of health which focuses on aspects that enhance and support well-being (Antonovsky, 1996; Eriksson

& Lindstrom, 2008; Lindstrom & Eriksson, 2009). This model suggests that illness is a normal thing for human and it focuses on aspects that enable human to stay healthy despite having any illness or disease. There are two elements found to support this model: (1) Generalized Resistance which contains of elements like knowledge, social support, intelligence, experience, traditions and financial sources and (2) Sense of Coherence where it is a positive method of screening stress and life management capabilities (Anspaugh, Hamrick, & Rosato, 2008).

According to Copestake (2007), wellbeing is a situation of being with people in a society where their basic needs are met, have a sense of life satisfaction and can perform effectively as to achieve meaningful goals. Besides that, well-being is also seen as an optimum quality of life that focuses on good health, stable living standard, active and educated community, sustainable environment, balanced use of time, and participation in cultural, recreational and artistic dynamics as well as high level of civic participation (Institute of Wellbeing, 2009). Brow and Alco (2010) on the other hand define wellbeing as how human recognize themselves in all stages of mental, physical, emotional and spiritual, and how they link out to the community, environment and others.

Assessing wellness is inexact and it is a changing science consists of subjective and objective measurements. In some situations, a subjective indicator focuses on two perspectives (Millar & Hull, 1997). The first factor involves personal perspective including relationship, health, standard of living, safety, relationship with community and achievement. Meanwhile, the second factor is a national perspective which consists of environment, economy, governance, social, national security and business (Cummins *et al.*, 2008).

Majority of model wellness include a lot of dimensions (SRI International, 2010). In investigating the related framework wellness, it is obvious that there is no particular method to measure wellness however there are numerous frequent dimensions that have been incorporated in different frameworks. Some frameworks use the wellness and wellbeing terms while others stay with overall health view which consists a lot of subjective wellness indicators.

Well-being and wellness frameworks are found globally in a fairly wide range. The measurement used is called quality of life which consists of two indicators which are objective and subjective (Lepper & McAndrew, 2008). The frameworks are in addition to the main measurement of Gross Domestic Product (GDP) which it is used to estimate the standard of living for a country as it is equal to the well-being population (Ferdjani, 2010; Hamilton & Redmond, 2010).

1.2 Background of Study

Hajj is one of the five pillars of Islam and needed to be performed by Muslims who are physically and financially able at least once in a lifetime. Hajj involves a trip to the holy places in Saudi Arabia including Mecca and Medina in a certain period of time. It is performed on the 12th month in the Islamic calendar and it takes five days to complete the rituals starting from eight to twelve of Zulhijjah. 1.9 million Muslims from all over the world gather in Mecca annually and this number increases from time to time. Therefore, performing the Hajj rituals can take a considerable amount of time due to the large number of people (Mulyana & Gunawan, 2010).

According to Ishak *et al.* (2014), Hajj is a unique gathering because of the following factors:

- a) Crowd: The whole crowd performs the same rituals at the same time doing essentially the same thing.
- b) Large number of elderly: Many countries in attempting to adhere to the quota, give preference to the elderly.
- c) Language barrier: Pilgrims come from various countries in the world where they speak different languages.
- d) Dress code: All pilgrims wear white garments called Ihram to cover their bodies.

- e) Accommodation: The accommodations provided for pilgrims are temporary white fabric tents especially in the area of Arafat and Mina.
- f) Transportation: Pilgrims can take buses or they can move around on foot.

The Hajj duties can be demanding in terms of physical activities. During Hajj, pilgrims need to perform several rituals including Tawaf (circumambulation seven times around Kaabah anti clock wise), Saie (shuttling on foot between two hills of Safa and Marwah), Wuquf (standing from noon to sunset in Arafat) and Jamrat (throwing stones at the three pillars). According to Alsafadi *et al.* (2011), Hajj is the most complex rituals which that requires walking long distances and camping in the desert.

Apart from that, performing Hajj requires mental effort. Temperature during Hajj is different for every Hajj season since the Islamic calendar is shorter than Gregorian. The temperature recorded during Hajj would be between 37°C and 45°C (Mimesh *et al.*, 2008). Hajj is the largest annual recurring mass gathering in the world. Pilgrims come from more than 183 countries which have differences in terms of ethnic origin and socioeconomic status. Pilgrims come from different gender and ages and majority of them are elderly (Memish *et al.*, 2012).

Pilgrims need to prepare themselves well in order to perform successful Hajj. They need to attend several courses organized by Tabung Haji (TH). Through the courses, pilgrims will equip themselves with the knowledge of Hajj and Hajj's procedures that include rules, tasks, practical steps and Al-Quran verses that need to be memorized. In the courses also, the pilgrims will be presented with the demonstration of the rituals in order for them to practice and experience the steps like in real situations (Sulaiman *et al.*, 2009; Yusoff *et al.*, 2011).

Besides organizing courses, TH in cooperation with Ministry of Health (MOH) also conducts health screening for every pilgrim who is selected to perform pilgrimage. This is essential in order to ensure all pilgrims attain optimal health and are free from any medical complications that will hinder them from performing the religious obligation successfully. All the information including health status and the

type of treatment received are recorded in pilgrim's Health Record Book for the medical team reference while in the Holy City. The health screening includes general and specific physical examination, laboratory test, SSKM-20 (mental health screening instrument) and elderly cognitive assessment questionnaire (ECAQ).

Majority of Malaysian pilgrims are elderly. For example, until March 2009, those who have registered for pilgrimage amounted to 162,737 candidates. A total of 83,559 (51.34%) comprised of those aged 50 and above while 55,107 (33.86%) of them were of the age 40 to 49 years old. This situation was not much different from the previous years. For example in 1426H Hajj season, a total of 34,995 people were selected to perform Hajj and 23,770 people (67.92%) were between 50 to 90 years old (Hanafi, 2010).

Thus, the concepts of wellness and wellbeing need to be applied among pilgrims to ensure that they are ready to endure the process of pilgrimage not only physically and mentally but also in other related dimensions. This is done to make sure pilgrims aware about the difficulties they might face while performing Hajj.

1.3 Problem Statements

There are several gaps that are highlighted in this study. Figure 1.1 until Figure 1.5 show the newspaper cutting and Tabung Haji reports. From the figures, it can be seen that there are quite a number of Malaysian pilgrims with poor level of health while performing Hajj (Tabung Haji, 2014). From the graph, it can be seen that every season of Hajj would be dealing with the death of pilgrims. This is because, most of Hajj rituals are challenging as they require pilgrims to do a lot of walking such as Tawaf and Saie (Al Shimemeri, 2012; WHO, 2010). Not only that, the overflow crowds causing discomfort to the pilgrims as 1.9 million pilgrims from all over the world are gathered at the same time and at the same place doing the same rituals (Memish *et al.*, 2012; Shafi *et al.*, 2008). Lastly, the extreme temperature is

one of the contributing factors to the death of pilgrims (Noweir, Bafail, & Jomoah, 2008; Seraj, 1992).



Figure 1.1 Newspaper Cutting 1

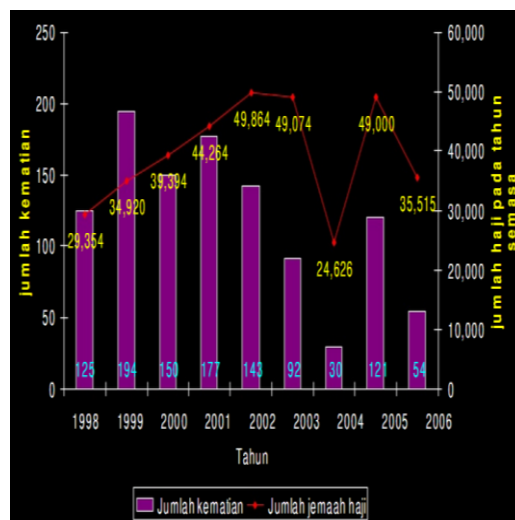


Figure 1.2 Tabung Haji Report



Figure 1.3 Newspaper Cutting 2



Figure 1.4 Newspaper Cutting 3



Figure 1.5 Newspaper Cutting 4

From the gaps, literature review and previous research, those are the problem statements that are being identified including problems with pilgrims, existing wellness inventory and model as well as problems with existing management system. Every Muslim must prepare themselves physically before performing Hajj because Hajj is physically demanding. During Hajj, pilgrims need to perform several rituals including Tawaf (circumambulating seven times around the Kaabah counterclockwise), Saie (shuttling on foot between the two hills of Safa and Marwah), Wuquf (standing from noon to sunset in Arafat) and Jamrat (throwing stones at the three pillars). As a result, long-standing and walking rituals may lead to health problems (Ahmed, Arabi, & Memish, 2006).

Hajj is one of the largest mass gathering events in the world where Muslims from all over the world gather for five days in Mecca and Madinah. This place and time limitations lead to some weaknesses and difficulties that influence their Hajj performance (Memish *et al.*, 2014). In addition, majority of the pilgrims are older where most of them aged more than 60 years. Thus, the highest number of pilgrims that tend to face health problems were the elderly (Madani *et al.*, 2006).

During summer, the temperature in the Mecca and Madinah may reach up to 45°C. Even during the winter, temperature during the day in Saudi Arabia can reach up to 30°C and during the night temperature can fall to a very low level. As a result, heat exhaustion, heat stroke and respiratory illnesses become major causes of

morbidity and mortality among pilgrims (Memish, 2010). This happens due to several factors such as the increase of activity level, lack of drinking plain water, consuming unhealthy foods and spending more time in outdoor environment (Bouchama & Knochel, 2002). In addition, Hajj is marked on the Islamic calendar 10 days shorter than the Gregorian calendar. This continuous seasonal movement has implications for the spread of disease and other health risks (Ahmed *et al.*, 2006).

Next, pilgrims need to undergo several courses before performing Hajj. Various forms of activities are conducted during the courses like lectures, simulations and consultations. However, most of the sessions are based on conventional methods and used traditional approach. Due to this, the pilgrims may still encounter difficulties in the real Hajj situation because of the lack of knowledge, cost consideration and misunderstanding of the pilgrimage's procedure (Fathnan *et al.*, 2010). Several pilgrims are confused with the information that needs to be memorized after they finished the courses. Thus, they lose confidence in performing the pilgrimage after completing the courses (Fathnan *et al.*, 2010). From the survey conducted by Yusoff, Zulkifli and Mohamed (2011), majority of the respondents agreed that they have difficulties to imagine the Hajj procedure. Therefore, they learn about Hajj from courses, books, CDs/DVDs, videos and websites. Nevertheless, courses conducted by TH are still the main source of learning about Hajj while the other methods are considered as supplementary approaches to strengthen their understandings and knowledge about Hajj.

Even though many researchers have worked on studying the Hajj's difficulties and have come up with practical solutions, the same problems still occur in every Hajj season. According to Hameed (2010), difficulties of Hajj include managerial, organizational, emergency, and guidance issues; misunderstanding and lack of information about Hajj; communication between pilgrims and organizational committees; and inefficiency of the information and communication technology (ICT) facilities. Many researchers have contributed ideas to solve the Hajj problems such as controlling the crowd by conducting simulation (Mulyana & Gunawan, 2010), assisting in decision making by developing expert system (Sulaiman *et al.*, 2009) and providing supplementary learning materials through the design the virtual

environment (Yusoff *et al.*, 2011). There are pilgrims who use technological aids in assisting them but most of them cannot afford to use such technology.

Nonetheless, the problems mentioned are preventable if appropriate measures are taken. All of the facts stated above provide opportunity for the emergence of a new wellness assessment system for pilgrims which is more holistic and at the same time helps to increase awareness among pilgrims in terms of physical, psychological, spiritual, social and intellectual aspects of pilgrims.

1.4 Objectives of Study

The aim of this study is to develop a web based system known as Management Information System for Hajj Pilgrim's Total Wellness. The following objectives are formed as to achieve the aim:

- a) To develop a Hajj Wellness Instrument (HAJI).
- b) To analyze the psychometric properties of HAJI.
- c) To propose a Hajj Wellness Model (HWM) based on HAJI.
- d) To evaluate the usability of Management Information System for Hajj Pilgrim's Total Wellness.

1.5 Research Questions

These following research questions are to attend to the stated research objectives:

- a) What are the constructs that need to be evaluated in HAJI?
- b) What are the psychometric properties of HAJI?

- c) What model can best predict the total wellness among Hajj pilgrims based on HAJI?
- d) What is the usability of Management Information System for Hajj Pilgrim's Total Wellness?

1.6 Significance of Study

This study benefits several parties and impacts directly and indirectly to those involved in Hajj including the pilgrims, MOH and TH.

1.6.1 Pilgrims

This study has a major impact on pilgrims as they are the main target of this study. Through this study, pilgrims are exposed to the concept of holistic and integrated assessment which both focuses on the enhancement of wellness. Through this research, the main aspects of wellness that need to be improved can be identified.

Besides that, this study can help pilgrims to be more aware of their health and pay attention more on the disease prevention. This is to ensure them to achieve good wellness level. Thus, pilgrims will be more responsible towards themselves by putting extra care on their health and wellness.

Finally, this study can expose the pilgrims to the concept of assessment so that they can evaluate and change their attitudes to achieve a better level of wellness and wellbeing.

1.6.2 Ministry of Health

This study may provide information to MOH regarding pilgrim's wellness. The ministry can use this information to improve the existing health screening programs which are compulsory for the pilgrims to attend. In a way, this assessment can help to update the current system to be more comprehensive and balanced. Last but not least, the ministry can plan a better strategy to carry out this assessment regularly, spread the information to the public and provide guidance to pilgrims.

1.6.3 Tabung Haji

This study specifically assesses and evaluates pilgrims' wellness and this indirectly affects the agency which is responsible in managing the pilgrims. This is due to the agency's responsibility to manage pilgrims before, during and after the pilgrimage and thus making it important for them to be aware of the pilgrim's wellness. Hence, this study will assist the agency in evaluating the pilgrim's wellness due to the lack of current valid assessment tools.

Not only that, this study helps the agency to obtain information regarding pilgrims' wellness level and allows them to expose pilgrims to the concept of wellness. This study contributes as well to the improvement of Hajj courses that are conducted and Hajj modules that are published by TH.

1.7 Scope and Limitations of Study

This study focuses on assessing only suitable wellness dimensions which are determined through needs analysis and expert consultation. Constructs built in this study focus on physical, spiritual, psychological, social and intellectual areas. The

instruments were developed based on the previous research and supported by expert's recommendation.

This study was conducted at selected mosques in Johor Bahru district and organized Hajj courses. The respondents were only Hajj pilgrims aged between 40 to 69 years old as to control the homogeneity of the sample. The respondents were considered honest in assessing themselves.

This study is a mixed-method research which includes both quantitative and qualitative approaches. This study uses Rasch Measurement Model analysis to determine the validity and reliability of the developed instrument and model. Besides that, inductive thematic and coding analysis were conducted to analyse the qualitative data gathered from the interviews.

1.8 Operational Definitions

1.8.1 Wellness

Wellness is not that easy to define because it suggests more than just the absence of illness or disease. It is usually seen from a holistic point of view which includes the aspects of mental, physical, spiritual and social health (William, 2005). World Health Organization on the other hand defines health as a condition of complete mental, social and physical well-being as well as not merely the absence of illness and disease (WHO, 1948). There are several main dimensions that need to be considered in defining wellness which are physical, psychological or emotional, social, intellectual and spiritual.

The physical wellness focuses on maintaining a healthy lifestyle of fitness, flexibility and strength through healthy eating and regular exercise (Barwais, Cuddihy & Michaud, 2014). In addition, seeking medical care when appropriate as

well as keeping a realistic view of one's physical capabilities and limits is important as well (Gosliner *et al.*, 2010; Williams *et al.*, 2011).

For the psychological wellness, it is developed as one matures (Cowen, 2000). Gaining a strong sense of purpose or identity while maintaining optimism is important as is having high self-esteem, positive and realistic self-concept (Adams *et al.*, 2000; Epstein, Griffin, & Botvin, 2002). Being able to reflect on emotions and communicate with others in a useful and confident manner are the important aspects within the definitions (Harris, Martin, & Martin, 2013). In addition, coping with stress and maintain a positive attitude towards life and being optimistic about the future are the common themes within the definition of psychological wellness (Erickson & Johnson, 2011; Lucia, 2014).

Next, social wellness has a broad scope that includes individual interaction with family, friends, community, nature and work (Grace & Gleasure, 2015). The quality and extent of these relations is affected by motivation, action, intent and perception of oneself and others to the interactions (Cookingham & Ryan, 2015). Social wellness relates strongly to level of communication skills and comfort level that one feels in interacting with others within a variety of different settings or situations (Munson *et al.*, 2010). Different with others, intellectual wellness involves acquiring an optimum level of stimulating intellectual activity (Kelly, 2008). This acquired knowledge can be used or shared as critical reasoning, development of talent, higher order thinking, both for personal growth and the improvement of society (Naz *et al.*, 2014).

Lastly, spiritual wellness key aspects are the creation of personal values and beliefs by individual towards life's purpose and oneself in relation to others, community, nature, universe and higher power (Briggs & Shoffner, 2006; Graybill & Esquivel, 2012; Purdy & Dupey, 2005).

1.8.2 Management Information System

Management information system (MIS) is a process whereby data called input are recorded, stored, retrieved and processed for decision making known as output. Decision making basically includes managerial aspects such as planning, organising and controlling health care facilities. In public health programs, MIS focuses on health care delivery issues such as antenatal care, immunization and disease control as well as administrative issues including reporting, inventory, financial, vehicle and personnel management issues.

1.8.3 Hajj

Hajj is an annual Islamic pilgrimage to Mecca and is a compulsory religious duty for capable Muslims that must be carried out at least once in their lifetime. It is one of the five pillars of Islam after Shahadah, Salat, Fasting and Zakat, to be performed by adult Muslims who are physically and financially capable. The pilgrimage is held from 8th to 12th Zulhijjah annually which is the last month in the Islamic calendar. Hajj is considered as the largest annual gathering of people in the world where it is a demonstration of the solidarity of Muslim and their submission to Allah.

1.9 Summary

This chapter defines the concept of wellness. It is an important aspect to be studied as to improve the Hajj pilgrim's performance. The existence of health assessment system can become the primary option to reduce health problems among pilgrims. The background of this study highlights the issues of current assessment in Malaysia which emphasizes more on pilgrims' physical, physiological and mental health. There are lack of instruments and model available to measure the wellness specific for Hajj is another main reason for researcher to conduct this study.

Instrument in this study focuses on Hajj pilgrims and was administered using a self-assessment method. Data was analyzed using Rasch Measurement Model which is combined with a classic test theory.

The main objective for this study is to develop management information system. In order to achieve this objective, four other objectives have been set which are to develop the instrument, analyze the psychometric properties of developed instrument, design model and testing the effectiveness of the developed system. This study is found to benefit Malaysian pilgrims, MOH and TH. In order to avoid this study from becoming too broad as well as to ensure all objectives are achieved, scopes and limitations were set. Finally, the operational definition is made to give explanation on how the terms are used in this study.

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