ADOPTION OF ELECTRONIC SCHEDULING TO REDUCE WAITING TIME IN
THE HOSPITALS

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# DECLARATION

" I hereby declare that this thesis is my own work except the citation and except of each of which I have mentioned in the references."

Signature         :

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Date              :

# DEDICATION

*To my mom I want hug you tightly, to my brother and sisters I love you all after mom, and to my friends I love you all sincerely….*

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This study would not have been possible without help from so many people in many ways directly or indirectly. It would not have been possible to write this final year project without the help and support of the kind people around me.

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# ABSTRACT

This research is about to reduce waiting time of patients in hospital. The healthcare industry has experienced an explosion of innovations aimed to enhancing life as well as the treatment options. This industry has no waiting time guaranteed so that, all the other country have at least one specific improvement which is it specifies waiting time limits. Hence, this is the factors that the researcher wants to study, all about healthcare services. Healthcare management is such one of the discipline need well recognized the system that requires a multi-pronged approach and totally professional to achieve the quality and cost-effectiveness. Public sector hospitals include those which are government managed, city administered and community supported typically, provide service that need to pay half price, operate on a budget and not profit earning. Rather than private sector hospitals are run by trust, and charity. Though they may charge for the service but they are leading by using new technologies and always take care of their patients. Consequently, Electronic Scheduling Board and Mobile Phone Appointment Service represent strategies to overcome to care the problem. Some private sector may have used this technology thus; it is time for public sector hospital applied it. For this time being the researcher has examined the population of medical staffs and management unit in General Hospital Melaka who can deliver the technology via application among staffs and patients. This finding were meaningful if both of them finding the support and excited to go through the applications. The researcher acknowledge that many other factors may also affect including internal factors such as when placing patients on waiting lists and conflicts in the other part of external medical. But, this is not taken a long time to adapt in the hospital because one upon time, everyone can accept it because of the benefits is for long term period.

# ABSTRAK

*Kajian ini adalah untuk mengurangkan masa menunggu pesakit di hospital. Industri penjagaan kesihatan telah mengalami satu perkembangan inovasi ditujukan untuk mempertingkatkan hidup serta opsyen rawatan. Industri ini tidak ada jaminan masa menunggu, semua negara yang lain mempunyai sekurang-kurangnya satu peningkatan khusus yang merupakannya penentuan had-had masa menunggu. Maka, ini ialah faktor yang penyelidik mahu menyelidik, semuanya tentang perkhidmatan jagaan kesihatan. Pengurusan penjagaan kesihatan ialah salah satu keperluan disiplin di mana ia adalah kecaman sistem yang memerlukan satu pendekatan pelbagai penjuru dan betul-betul profesional untuk mencapai kualiti dan keberkesanan kos. Hospital-hospital sektor awam termasuklah menguruskan, bandar raya memberi dan menyokong komuniti lazimnya, memberi khidmat keperluan membayar separuh harga, menjalankan pembedahan terhadap satu belanjawan dan tidak memperoleh pendapatan. Daripada hospital-hospital sektor swasta pula dijalankan mengikut amanah, dan berkebajikan. Walaupun mereka mengenakan caj untuk perkhidmatan itu tetapi mereka mengetuai dengan menggunakan teknologi baru dan sentiasa menjaga pesakit mereka. Akibatnya, Electronic Scheduling Board dan Mobile Phone Appointment Service mewakili strategi mengatasi masalah. Sesetengah sektor swasta mungkin telah menggunakan teknologi ini maka; tiba masanya untuk hospital sektor awam menguna pakainya pula. Untuk kali ini penyelidik telah memeriksa populasi kakitangan perubatan dan unit pengurusan dalam Hospital Besar Melaka yang dapat menyampaikan teknologi melalui permohonan di kalangan pekerja dan pesakit. Penemuan ini bermakna jika mereka dapat mencari sokongan dan menguja untuk melalui permohonan. Penyelidik mengakui bahawa banyak faktor lain mungkin juga menjejaskan termasuk faktor-*

*faktor dalaman seperti apabila meletakkan pesakit di senarai menunggu dan konflik dalam bahagian yang lain luar perubatan. Tetapi , ini tidak mengambil masa yang lama untuk mengadaptasikan di hospital kerana semua orang boleh menerimanya disebabkan oleh faedah yang diterima untuk jangka masa yang panjang.*

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# CHAPTER 1

# INTRODUCTION

## 1.1 Background of the Study

Health is an intangible, there is no single word can define and give the objective of health but their really measure is the ability of individuals to be functional to the world. But, healthcare is the act of taking preventative medical procurement to improve a person to be well-being. This may include the surgery, medicine for their life, this service may see typical offered through a healthcare system that made up in the hospital.

According to (Walshe and Smith ,2006), healthcare system offer not only opportunities to shine in the eyes of the people when things going well, but also threats to future democratic success when there are problem with healthcare service provision. In other words, healthcare organization need to exist in a turbulent political and social environmental, in which their action and behaviors are highly visible and much reviewed.

According to the (Voon, et al.,2014) the excellence service for hospital comes from medical service that have superior service performance. Means that have communication between medical services that gives the service to the patients that have high expectations and need. The focus of healthcare is gives the service excellent culture of certain healthcare requires a commitment towards customers satisfaction.

In these 21 centuries, new technology brought many advances thing into this such as electronic scheduling board and by using mobile phone we can receive news and arrangement of time in healthcare technology from medicine until the device. So that, government is struggling control the growing of expenditure without compromise the validity of healthcare. On the other words, healthcare is not probably one of the business models that can give a lucrative return on capital. But healthcare is the unique investment that can help people and gives new hope to the people.

## 1.2    Problem statement

The study of the problem is that: as we know, our country uses waiting system by using numbering system to get treatment sometimes daily treatment like registered, wait for result launch, appointments with the doctors, take medicine and so on. So, the patients need to wait until their numbers are calling in several times. Unfortunately, it is befall culture in the organization in Malaysia. (Sinsky et al.,2013) state that sustained waiting times and access deficiencies also have negative impact on hospital and patients. Although often unacknowledged, the inefficiencies that exist throughout healthcare have been found to contribute to the high level of provider dissatisfaction and burn out in primary care.

In reality, when you are in pain or ill, there is frustrating having to wait for treatment. It makes all the patients wait too long because of hospital still used traditional counter system to control the all patients in one time. The Malaysian healthcare system is ever improving we can do all the treatment and surgical by expertise and expert medical staffs in the local hospital and no need refer to overseas. But, the Malaysian Healthcare system, though not perfect, since long time ago, 1957. (Chan, et al., 2015) state that, they were then issued a queue ticker by the counter staffs while waiting for their medications to be dispensed. The same mechanism was used for patients visiting hospital monthly to collect their prescription refills. (Sinsky et al.,2013) state that sustained waiting times and access deficiencies also have negative impact on hospital and patients. Although often unacknowledged, the inefficiencies that exist throughout healthcare have been found to contribute to the high level of provider dissatisfaction and burn out in primary care.

## 1.3    Research Questions

The researcher has set out 3 research questions of this study. The researcher will attempt to answers the question by using questionnaire. The questions formulated are as follow:

1.  What are the factors that cause increase patients to wait at the hospitals?

2.  What are the tools hospitals should use to minimize the waiting time of patients?

3.  How reliable the tools to help patients to minimize the waiting time?

## 1.4    Research Objectives

By using the research question it conduct to specific objectives as follow:

1. To determine the factors that cause increase patients to wait at the hospitals.

2. To identify the tools that hospital should take to minimize the waiting time of patient.

3. To examine the tools that can hospital used to minimize the waiting time.

## 1.5    Scope

This research is covering the field of technology management in term of technology adoption at the Malacca General Hospital. This is because this hospital is the main attraction for every patients in Malacca that want to get treatment and for based the appointment have arrange by the staff.

Then, respondents are the patients, medical staffs and management units in the General Hospital Malacca which in the all units" hospital have patients waiting and already have appointment with doctors. This is because the researcher wants to know whether the adoption of technology can give benefit to medical staffs, management units and patients or not.

**1.6     Key Assumptions of the Study**

For this study the researcher assume that according to the objective and according to the patient treated the various assumption can classified are as follow:

- In hospital patient is key input in any part of hospital so, the complicated is the problem to collect the data based on the experience that they went through to get a turn to have the appointment. So that, it is goes same way to the management staffs.

- The size of hospital, the patients flow and the community also needs to determine the system that they use to get the effective function. This includes registered, wait for result launch, appointments with the doctors, to take medicine, diagnosis, rehabilitation to provide medical care to them and so on.

**1.7     Importance of the Study**

The significant of the study is due to waiting time of patients and to enhancing the effectiveness the system to reduce waiting time. The effectiveness of the system is very important for the hospital in order to providing daily treatment services before the patients continue to main treatment.

To achieve the aim of healthcare goals, understand knowledge and skillfulness about the system is important. So that there will reduce the errors and no barrier if all the staff know how to operate the new system well.

## 1.8    Summary

In essence, system to reduce waiting times is not something new in our country but in healthcare industry it may a little bit difficult to adapt it with every patient in every unit come to the hospital that have various type of patients. But then, actually the management is wants to help not only the patients but still to improve the skill and knowledge of the staffs.

Upgrading the system or procedure based on the situation will give us chance to enhance skill and knowledge of the staffs and we may reduce the waiting time. Hence, the purpose of applied upgrade system or procedure to the hospital or organization can give added value to them and customers or clients or patient itself.

# CHAPTER 2

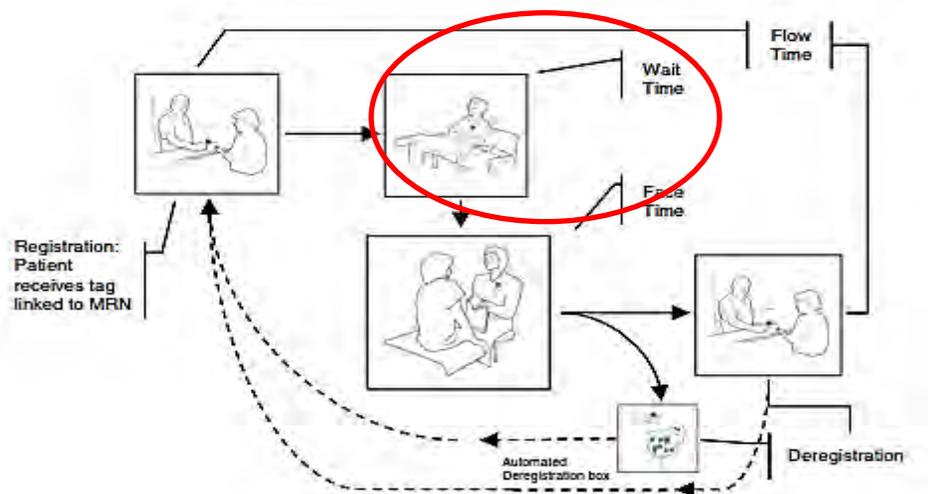# LITERATURE REVIEW

## 2.1    Introduction



Figure 2.1: Real-time location system (RTLS) work flow

By using the figure 2.1, the researcher wants to show the actuals work flow that usually happened in all the clinic or hospital. The waiting can be extremely distressing for patients or anyone who accompany to wait together. Also, the condition of patient"s may became worsen while waiting turn to meet the doctors; it may cause the effectiveness of treatment can be reduced at that time too. (E. James et al.,2014) state that the figure shows work flow between the patients and clinician during real time location systems. The process looks goods but the other side patients and staffs having a hard time to finish the appointment and treatment.

In Malaysia, at the one hospital, top management will decide the healthcare sector system that can be divided in some categories. Every category has boundaries between all sectors and health services. Then, every sector system patient will follow the journey across all the sectors. Frequently, individually patient may follow an unloading of service provided within more than one sector at the same time. A typical patients journey will follow all this complex treatment and taking a lot of time to finish it. This is the journey of patients in Malaysia.

According to (Latiff, 2011) the traditional method was exactly manual to book appointment doctors but if the hospital changing to system the environment of waiting time can be reduce and efforts. In general the researcher wants to be a part of this problem solving to change setting patients from wait too long. From the research question proposed, the result to service management and doctors is a useful way to improve attitude toward their important role in timing and the impact of their delay on waiting time patient"s.

## 2.2     Technology Adoption


The researcher will briefly discuss about the technology adoption theory and concept. Right now, technology plays role to reduce waiting time in healthcare industry. By the entire healthcare factors for treatment the continuing education of health are provided, it is all about promoting the health individuals and the society. There are no barriers to the adoption and implementation of new medical technologies to improving the healthcare outcomes of patients as well as the benefits comes to their families and of course the entire medical staffs (Carter, 2015).


The technology adoption is full of use the open action of innovation, the process of innovation that connected through certain channels over the social system. As specified, the researcher chooses innovation as the components of technology adoption. The literature of technology adoption is currently moving based on one direction because the researcher wants to explore the factors waiting time of patients to get the treatment from medical staffs. As is clear scenario with reducing time means gap patients would reduce significantly based on the appointment. For example, before this it may take until 3 hour for one gap for patients to wait their turn. After the appointment makes by management it clearly means weather patients come to hospital soon or the doctors come to check the patients late. Rogers suggests that the more beneficial a technology is perceived, the more suited for adoption it becomes. He posits that relative advantage, compatibility and simplicity in an innovation provide positive standing towards its adoption (Azadegan., 2010).


A great part of Zaroukian, M. H., & Basch, p. (2010).The "Game Changers" : Healthcare Informatics: improving efficiency and productivity, 24-25. On February 17,2009, President Obama have signed the Health Information technology for Economic and Clinic Health (HITECH) Act, a large component ($31.2 billion gross investment,

$19.2 billion net of expected savings). The HITECH Act made the IOM recommendation for major federal funding available starting 2011 for use as incentive payment to Medicare- and Medicaid-participating physicians and hospital that use certified HER systems in a "meaningful" way. This means that, the United Sate president have taken seriously the significant of the adoption new technology and appropriate use to improving public health, safety, efficacy and engaging with the patients and families by using the funding has given. Besides, the condition of the hospitalizations has to advance in term of the technology healthcare, clinical area support use, safety for patients and staff.

### 2.2.1 Technology

Generally, technology can make our life easier; on the whole technology care can give satisfaction to patients and seriously to the hospital. According (D.Bruton, G., & A.White, M. 2011) Strategic Foundation, in Strategic Management of Technology and Innovation (2nd ed., p. 14) South-western. Technology is the practical implementation of learning and knowledge by individual and organizations to aid human endeavor. Technology is the knowledge, products, process, tools, and systems used in the creation of goods or in the provision services. This definition have strong variety of different perspectives on technology exist. A few of the major of technology include:

❖ The process used to change inputs into outputs
❖ The application of knowledge to perform work
❖ The theoretical and practical knowledge, skills, and artifacts that can be used to develop products as well as their production and delivered system