DETERMINANTS OF HUMAN RESOURCE INFORMATION SYSTEM

ACTUAL USAGE

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A thesis submitted in fulfillment of the

requirements for the award of the degree of

Masters of Science (Human Resource Development)

Faculty of Management

Universiti Teknologi Malaysia

DECEMBER 2015

DEDICATION

To my beloved parents

Ranjit Kumar Chakraborty

&

Kalyani Rani Majumder

Thank you for your unconditional love and endless support.

ACKNOWLEDGEMENT

I am greatly indebted to a number of people for the completion of this thesis. Firstly, my supervisor Assoc. Prof. Dr. Nur Naha Abu Mansor, I owe an immense debt to her for her patience and guidance throughout the entire research period. She has motivated and lifted me back on my feet at every stage of the research to keep me going. Thank you for all the effort and time you have given me.

My deepest gratitude to my assessors, Assoc. Prof. Dr. Khalil Md Nor, Dr. Abu Saim Md. Shahabuddin and Dr. Yusliza Mohd Yusoff for their sage advice and insightful criticisms that aided the writing of this thesis. A special thanks to my beloved lecturers Puan Halima Bt Ma'alip and Dr. Adlina Abd Samad for proofreading the thesis. I am indebted to the members of Faculty of Management, Universiti Teknologi Malaysia for their efforts and assistance along the way. I would also like to thank employees from Pasir Gudang Specialist Hospital who agreed to fill out questionnaires, thank you all for your time and cooperation.

I wish to express my sincere appreciations to my friends who have helped me to stay sane through this journey. Their support and care helped me to overcome setbacks and stay focused during my graduate study. Special thanks to Muna, Nithiyaa, Izzaty, Zati, Wawi, Mas, and Syafiqah. I am also thankful to all my fellow Bangladeshi friends, seniors and juniors at UTM; specially my friend Titas, Himadry, Shamim and Jhinuk, my senior brothers Adnan and Sohel, and my juniors Raiyan, Akash, Salehin, Rafee, Sakif, Sumaiya, Yahya and Tareq. I extend my deepest appreciation to all of you.

ABSTRACT

Human resource information system (HRIS) is an integrated part of modern organizations and has become increasingly important in managing organizations' human resource effectively. The actual use of HRIS occurs in the integration level of a system, where innovation becomes ubiquitous and members of an organization utilize it efficiently in their daily lives. However, there are very few studies on determinants of actual use of HRIS especially in the health care sector and in other private organizations. This study aims to identify the critical success factors influencing actual use of HRIS. In addition, the study also seeks to investigate the degree of influence of those factors on actual use of HRIS in the Malaysian private health care sector. A conceptual model was proposed, integrating the diffusion of innovation (DOI) theory, technology-organization-environment (TOE) framework and technology acceptance model (TAM). The research model consists of six constructs comprising relative advantage, complexity, compatibility, management commitment, perceived resources and training. A quantitative research approach was used to acquire data using adapted questionnaires based on previous studies. A survey was carried out among 114 nurses of Pasir Gudang Specialist Hospital, a branch of one of Malaysia's leading private health care service provider. Multiple regression analysis was used to analyze the data. Results from the analysis showed that only organizational support has a significant degree of influence on the actual use of HRIS. Findings from this study support that the actual use of HRIS can be ensured if organizational support is continuous throughout the post adoption phase. The results of this study could assist organizations in their adoption of HRIS effectively and ensure efficient usage of the system.

ABSTRAK

Sistem maklumat sumber manusia (HRIS) merupakan bahagian bersepadu organisasi moden dan semakin penting dalam menguruskan sumber manusia organisasi dengan efektif. Penggunaan sebenar HRIS berlaku pada tahap integrasi sistem, yakni inovasi menjadi merata dan ahli-ahli organisasi menggunakannya dengan cekap dalam kehidupan harian. Walau bagaimanapun, terdapat hanya beberapa kajian tentang penentu penggunaan sebenar HRIS terutamanya dalam sektor penjagaan kesihatan dan organisasi swasta lain. Kajian ini bertujuan untuk mengenal pasti faktor-faktor kejayaan kritikal yang mempengaruhi penggunaan sebenar HRIS. Di samping itu, kajian ini juga bertujuan untuk mengkaji tahap pengaruh faktor-faktor tersebut ke atas penggunaan sebenar HRIS dalam sektor kesihatan swasta di Malaysia. Model konseptual dicadangkan dengan mengintegrasikan teori difusi inovasi (DOI), rangka kerja teknologi-organisasi-persekitaran (TOE) dan model penerimaan teknologi (TAM). Model kajian terdiri daripada enam konstruk meliputi kelebihan relatif, kompleksiti, keserasian, komitmen pengurusan, tanggapan sumber dan latihan. Pendekatan kajian kuantitatif digunakan untuk memperolehi data dengan menggunakan soal selidik yang disesuaikan berdasarkan kajian lepas. Satu kaji selidik telah dijalankan dalam kalangan 114 orang jururawat Hospital Pakar Pasir Gudang, iaitu satu cawangan pembekal perkhidmatan kesihatan swasta terkemuka di Malaysia. Analisis regresi berganda telah digunakan untuk menganalisis data. Keputusan daripada analisis menunjukkan bahawa hanya sokongan organisasi mempunyai pengaruh yang signifikan dalam penggunaan sebenar HRIS. Dapatan kajian ini menyokong bahawa penggunaan sebenar HRIS boleh dipastikan jika sokongan organisasi berterusan sepanjang fasa pasca-penerimagunaan. Hasil kajian ini diharap dapat membantu organisasi dalam penggunaan HRIS secara efektif dan memastikan keberkesanan penggunaan sistem ini.

LIST OF PUBLICATIONS

Chakraborty, A. R., Abu Mansor, N. N. (2013). *Adoption of Human Resource Information System: A Theoretical Analysis*. Procedia - Social and Behavioral Sciences, 75, (473-478)

Abu Mansor, N. N., Chakraborty, A. R., Yin, T. K., Mahitapoglu, Z. (2012). *Organizational Factors Influencing Performance Management System in Higher Educational Institution of South East Asia*. Procedia - Social and Behavioral Sciences, 40, (584–590)

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LIST OF ABBREVIATION

HRIS - Human Resource Information System

HRMS - Human Resource Management System

HRM - Human Resource Management

HR - Human Resource

e-HR - Electronic Human Resource

e-HRM - Electronic Human Resource Management

NKEAs - National Key Economic Areas

ICT - Information and Communication Technology

IT - Information Technology

IS - Information System

EMS - Employee Management System

PCI - Perceived Characteristic of Innovation

DOI - Diffusion of Innovation

TOE - Technology-Organization-Environment

TAM - Technology Acceptance Model

MAS - Malaysian Airlines

CEO - Chief Executive Officer

HMIS - Homeless Management Information System

HIS - Hospital Information System

CSF - Critical Success Factor

MIS - Management Information System

IEBT - Internet/E-Business Technologies

SMEs - Small and Medium-sized Enterprises

RFID - Radio Frequency Identification

EDI - Electronic Data Interchange

ERP - Enterprise Resource Planning

LIST OF APPENDICES

CHAPTER 1

INTRODUCTION

In this chapter, the background of this study, problem statement, purpose of this study, objectives, significance of the study, and the scope of this study are explained. The chapter begins with a brief background of the study and is followed by some background regarding human resource management (HRM), human resource information system (HRIS) and transnational HRIS. Next, the explanations on the purpose of this study, objectives, significance of the study and at the end of this chapter is the scope of this study followed by definition of terms.

1.1 Background of Study

In recent years, information systems have been deployed by organizations for achieving efficiency, effectiveness, enhancing quality and gaining competitive advantage. In order to be competent and up to date, organizations started using computer technologies to cope with the growing competition in the global market. Several authors agreed that within HRM, the most fundamental use of technology is an organization's HRIS (Bohlander & Snell, 2007). HRIS provides current and accurate data for the purpose of control and decision making related to HRM. This integrated system with HR does not only store and retrieve information but also

includes wider applications such as producing reports, forecasting HRM needs, strategic planning, career and promotion planning, and evaluating human resources policies and practices (Razali & Vrontis, 2010).

As early as in 1980s human resources (HR) has shifted the focus from low level routine tasks (i.e. recruiting, record keeping, rewards and wages) to a more integrated focus on management activities like human resource planning and human resource policies for example, training, career development, performance appraisal, and employment security (Kavanagh *et al.*, 2012). Gradually, as HR started to focus more on people orientated rather than task orientated activities, it became a crucial part of organizations' strategic management. Thus, HR evolved towards a more advanced orientation as the need for simple record keeping information systems decreased with the increased requirements for more detailed information of employees (Zhang & Yuan, 2008). The HR department not only needs to serve the managers and employees, but also at the same time it is responsible for effective use of the human capital, becoming more strategic, providing programs, policies and practices for the organization. Therefore, simple data-tracking became inadequate and HR started to advance their activities to recruitment and selection of personnel, organizational change process, strategic knowledge management and training of personnel (Lepak & Snell, 1998). According to Zhang and Yuan (2008), around 1990's information technologies (IT) enormously developed and entered business operations to cope with the advanced needs of business. As time passed, in this new era of globalization IT took over most of the manual task done by the HR department (Bondarouk & Ruël, 2009).

IT extremely infuses HRM in this global networking era. Digital possibilities have been challenging the traditional ways of delivering HRM services within business and public organizations for more than a decade now (Bondarouk & Ruël, 2009). In addition, the performance of human resource (HR) controls the organizational success in today's knowledge economy. Thus, to increase the effectiveness of HRM, organizations are becoming strongly dependent on HRIS (Lippert & Swiercz, 2005; Troshani *et al.*, 2011). HRIS is defined as a system which

is used to acquire, store, manipulate, retrieve and distribute pertinent information about an organization's human resources (Kavanagh *et al.*, 2012). The two important resources in organizations, people and information can significantly affect the overall performance of a business and the business success naturally requires the management of both (Martinsons, 1994; Teo *et al.*, 2007). According to Teo *et al.* (2007) given that HRIS combines these two resources, proper adoption and implementation of the system can drive the organization to a greater success by helping the HR department to deal with the growing challenges and opportunities provided by the technological advancement.

In previous days, HR process was done manually which was more like a paper based process. This inefficient paper based process consumes a lot of time and costs. As the reality of business world nowadays is to remain competitive and moving fast, many large companies around the world had taken the initiative to implement an integrated human resource information system within their organization. Though it is found that, so far only large companies have tried to implement HRISs of all three types, naming operational HRIS, relational HRIS and transformational HRIS. On the other hand, smaller and mid-sized company only tried to implement operational and relational HRIS as these two HRISs do not perform HR activities with a strategic character thus are less costly (Ruël *et al.*, 2011).

In the last two decades, researchers have started to show interest in the field of HRIS. These researchers focused more on areas such as conditions for successful usages of HRIS (Haines & Petit, 1997), use of HRIS (Ball, 2001), current usages patterns (Hussain *et al.*, 2007), areas in HRIS implementation (Ngai & Wat, 2006; Razali & Vrontis, 2010; Tansley & Newell, 2007), and achieving competitive advantage (Browning *et al.*, 2009). Lately, few studies have investigated HRIS adoption determinants in Singapore and Australia (Teo *et al.*, 2007; Troshani *et al.*, 2011). These authors agreed upon that there is a paucity of research in the area and especially Troshani *et al.* (2011) suggested further work is essential in addressing HRIS adoption in private sector organization. Recently, authors have investigated need of HRIS in healthcare sector in Sri Lanka (Mujeeb, 2013), transition of HRIS

and HRIS implementation process in healthcare sector in Uganda (Spero *et al.*, 2011).

According to Mujeeb (2013) effectively running HRIS is necessary within hospitals to ensure best HRM practices. Furthermore, Sekhar (2008) explained since the nature of the human element is dynamic, management of human resources in a hospital is a very challenging job. Thus, there is a need of systematized HRM department as the human resources decide the destiny of hospitals. The work of HRM department includes procuring, developing, compensating, integrating, maintaining and separating human resources in the hospital which also involves qualified professional, who understands the needs of personnel in the hospital, and plans the entire strategy. HRIS helps to make the job of HRM easier and more effective. As in health sector it is really important to keep updated data of workforce's; it opens an area to study determinants of HRIS in this particular area.

The prime minister of Malaysia Dato' Sri Mohd. Najib Bin Tun Abdul Razak in the tenth Malaysia plan explained about twelve national key economic areas (NKEAs) ("Tenth Malaysian Plan (2011-2015)," 2010). He mentioned a special unit (economic transformation unit) will be established to plan and coordinate the implementation and development of NKEAs. In the speech the prime minister also mentioned that by adopting strategies based on specialization as the main approach the economy will be transformed to a high income economy, given that strong and sustainable competitiveness is difficult to achieve without specialization. Among those twelve national key economic areas, number six is information and communication technology (ICT). Recently, researchers also mentioned that Malaysian government has made concerted efforts to improve the internal management of the government by focusing on the application of ICT since it can offer more flexible and convenient services to the public (Kassim *et al.*, 2012). Following prime minister's speech and previous literature (Sekhar, 2008; Spero *et al.*, 2011; Teo *et al.*, 2007; Troshani *et al.*, 2011) it is clear that beside developing ICT, it is important to adopt the system properly in order to benefit organization to reach its' goal thus assist the country's economy in the long run.

Additionally, very few researches were conducted in Malaysia to investigate HRIS. For example, Razali and Vrontis (2010) investigated the reactions of employees toward the implementation of HRIS as a planned change program in MAS (Malaysian Airlines), Malaysia. Another very recent study was done to test some antecedents and outcomes of HRIS in local services companies and multinational companies in Penang, Malaysia (Kassim *et al.*, 2012). Furthermore, only two significant researches were done to investigate adoption of HRIS in companies in Singapore and public sectors in Australia (Teo *et al.*, 2007; Troshani *et al.*, 2011). Thus, this paucity of research in this area drives the researcher to investigate factors affecting actual use of HRIS. Hence, as the findings from this research can assist organization to achieve greater success, this research is greatly needed.

1.1.1   Background of KPJ Pasir Gudang Specialist Hospital

KPJ Healthcare Berhad is the leading healthcare service provider in Malaysia with 24 private hospitals operating in the country's largest network. It has been serving the community for past three decades since 1981. The company was given an award in recognition of its outstanding achievement and significant best practices in Human Resource Management. As a leading healthcare management and service provider this organization has adopted many recent technologies such as e-recruitment. According to the 2012 annual report, its staff strength stands at 8,992 employees, who support the medical services provided by 860 medical consultants specializing in various disciplines (KPJ Healthcare Berhad, 2012). In order to provide the best service in health line, KPJ have its own university offering Diploma and Degree in Nursing, Pharmacy, and Physiotherapy. Once the students are graduated, they are sent across KPJ hospital branches for clinical training to equip their self with theory and practical experience to be implemented in respected KPJ Hospital.

KPJ Healthcare Berhad is driven by innovation and technological advancement and inspires its staff members to observe best practices and empowers

them through various learning opportunities. Career development opportunities are also offered to employees based on their ability and initiative to assume greater responsibilities. One of the main activities was listed in their financial statement is providing HR training services and rental of HRIS. Therefore, it shows this healthcare organization really puts great effort on accelerating the health care service by adopting HRIS and at the same time providing training for the purpose of effective use of it.

In recent years, Pasir Gudang Specialist Hospital (PGSH) was established in the heart of booming industrial area of Pasir Gudang, Johor as the 23rd hospital under the flagship of KPJ Healthcare Berhad. This 136 bedded hospital is well equipped with modern facilities and includes 28 specialties across different medical services. The hospital manages patient information utilizing an integrated hospital information system that uses electronic medical records and digital radiology systems as PGSH supports the "Go Green Campaign" where they are implementing less paper usage in order to save the environment. In PGSH, 148 nurses give services to patients where 80 of them are care assistants (assistant nurse) and 68 of them are registered nurses. All employees in KPJ Pasir Gudang Specialist Hospital are expected to use their employee management system (EMS) which is a customized HRIS for the hospital for all HR related activities. PGSH aims to serve the nation as one of the leading regional private hospital with their modern medical facilities, community orientated, affordable medical services and environmental friendly. PGSH has also earned 5S certification from the Malaysia Productivity Corporation (MPC) in order to transform culture toward a more systematic management. In addition, PGSH is in pursuit for certification of 'Integrated Management System' (IMS) which includes the Quality Management System, Environmental System and Safety & Health to ensure customer satisfaction by the end of 2015. Furthermore, PGSH is the first hospital in Malaysia to introduce the 'Cloud Computing' system so that doctors and hospital employees can access the hospital information system anytime and anywhere. Through this system, consultants and employees can easily and quickly perform all the tasks without delay. The hospital's director in a speech assures that they will make every effort to provide the helpful environment and to

meet the local and international demand for healthcare needs ("Pasir Gudang Specialist Hospital," 2015).

1.2   Problem Statement

This study seeks to address the research problem of the lack of HRIS adoption research in private organizations in Malaysia especially in health care sectors. Innovation adoption can be divided into organizational level of adoption and individual level of adoption. Generally, the adoption process is divided into three stages naming pre-adoption, adoption and post-adoption. Pre-adoption and adoption of a system take place under organizational level of adoption whereas post-adoption take place under individual level of adoption. This research particularly seeks to address the research gap at the post adoption phase of HRIS which is actual use of HRIS.

Over the past two decades, researchers has been citing importance of e-HR, e-HRM, HRMS/HRIS adoption in their work (Mujeeb, 2013; Ruël *et al.*, 2004; Ruël *et al.*, 2011; Shani & Tesone, 2010; Strohmeier, 2007, 2009; Strohmeier & Kabst, 2009; Teo *et al.*, 2007; Troshani *et al.*, 2011). So far, innovation adoption researches have been conducted mostly in fields such as e-government adoption (Carter & Belanger, 2004), internet banking (Nor *et al.*, 2010), e-HR adoption (Panayotopoulou *et al.*, 2007), e-HRM adoption (Burbach & Royle, 2010; Olivas-Lujan *et al.*, 2007; Ruël *et al.*, 2004; Strohmeier & Kabst, 2009). Most of the innovation adoption studies in Malaysia focuses on innovations such as internet, hospital information system, internet banking, e-HRM, e-government, information and communication technology (Alam, 2009; Lee *et al.*, 2012; Nor *et al.*, 2010; Ratnam *et al.*, 2014; Tan *et al.*, 2009; Yusliza & Ramayah, 2012; Yusoff *et al.*, 2010). Teo *et al.* (2007) and Troshani *et al.* (2011) suggested that, there is still a paucity of research in the area of HRIS adoption and diffusion within private sectors and further research is required.

Furthermore, Kassim *et al.* (2012) recommended that study among individuals working in other industries or sectors and by applying different methodological approach can provide richer set of data regarding determinants of HRIS actual use.

Recent studies in hospital context include importance of HRM in hospitals from a global context (Kabene *et al.*, 2006), HRM in hospital (Sekhar, 2008), prototyping hospital HRIS (Kadhim *et al.*, 2012), literature review on HRIS implementation processes in order to draw a baseline regarding their scope and capability around the world (Riley *et al.*, 2012), importance of best HRM practices and need for HRIS in public health sector in Sri Lanka (Mujeeb, 2013), and transition of HRIS and its strengthening process used to implement an HRIS in Uganda health care sector (Spero *et al.*, 2011). Sekhar (2008) suggested as HRIS makes the job of HRM much easier, organizations should adopt HRIS. Mujeeb (2013) argued in ensuring quality healthcare service effective use of HRIS is needed. Plus, the author mentioned the system should be sustainable and affordable by organizations. Other studies also suggest research in health care sector is needed to ensure successful adoption of HRIS in order to deliver quality health services to individuals (Kabene *et al.*, 2006; Mujeeb, 2013; Spero *et al.*, 2011).

In addition, through extensive literature review the researcher has found that both qualitative and quantitative methods are available in innovation adoption research, though qualitative approach was widely visible; see for example, (Carter & Belanger, 2004; Florkowski & Olivas-Luján, 2006; Moore & Benbasat, 1991; Oliveira & Martins, 2010; Parry & Olivas-Luján, 2011; Ruël *et al.*, 2004; Teo *et al.*, 2007; Troshani *et al.*, 2011; Yang *et al.*, 2007) and most of these studies were conducted in Europe and outside Asia. Among innovation adoption studies, a huge number of studies followed diffusion of innovation theory which was introduced by Rogers in 1995 (Carter & Belanger, 2004; Florkowski & Olivas-Luján, 2006; Parry & Olivas-Luján, 2011; Ruël *et al.*, 2004; Teo *et al.*, 2007). Using diffusion of innovation (DOI) theory, Rogers (1983) linked initial adoption decision to five specific attributes: relative advantage, complexity, compatibility, trialability and observability. Moore and Benbasat (1991) identified eight perceived characteristics

of innovation (PCI): relative advantage, compatibility, ease of use, result demonstrability, image, visibility, trialability and voluntariness. In another research five contextual factors were identified which influence innovation adoption: innovation characteristics, organizational characteristics, environmental characteristics, task characteristics and individual characteristics (Kwon & Zmud, 1987).

According to Teo *et al.* (2007) in their study of 500 companies in business sector (through random sampling), five major important factors were found that influenced the decision to adopt HRIS. Among those five factors, size of the organization showed most significant influence followed by HRIS expertise. Furthermore, top management support as well as compatibility of the system was found to be influencing factors. In addition, the findings of Teo *et al.*'s (2007) study based on discriminant analysis showed relative advantage as an influencing factor that impact decision to adopt HRIS. Interestingly, in the same study the factor "competition" was found as a significant one in influencing the extent of HRIS adoption, whereas it was not found significant in influencing the decision to adopt HRIS. Beside competition, size of organization and top management support were found as important variables that influence the diffusion or the extent of HRIS adoption. Teo *et al.* (2007) also suggested that it is necessary to further look into the extent of HRIS adoption. Troshani *et al.*, (2011) in their qualitative research among 11 Australian public sector organizations confirmed that adoption of HRIS depends on environmental, organizational and technological factors. These authors recommended that further work is needed in addressing HRIS adoption in private sector where research is currently lacking. Similar set of factors (technological, environmental, organizational) were found influential in innovation adoption studies by other authors as well (Parry & Olivas-Luján, 2011; Ruël *et al.*, 2004; Strohmeier & Kabst, 2009; Teo *et al.*, 2007; Troshani *et al.*, 2011). Moreover, according to Teo *et al.* (2007) it is required to further look into factors influencing the extent of HRIS adoption and determine if the same or different set of factors is relevant in explaining the extent of HRIS adoption. It was also recommended for the researchers to adopt different research methodologies which may provide a richer set of data.

More recently, in a theoretical study by Hameed *et al.* (2012), they proposed a conceptual model of IT innovation adoption which includes both organizational and individual level of adoption. In this study DOI theory and TOE framework was combined for organizational level of adoption, this provides four attributes to evaluate naming innovation/technology characteristics, organizational characteristics, environmental characteristics, and CEO characteristics. Based on literature review Hameed *et al.* (2012) listed down a set of factors considered in innovation adoption and number of studies that found those factors as significant predictor. Authors identified in organizational level IT adoption consists three stages which are initiation (awareness of innovation, attitude formation of adoption, proposal of adoption), adoption decision (adoption decision, resource allocation for implementation) and implementation (acquisition of innovation).

Furthermore, Nor *et al.* (2010) in their Internet banking study listed four factors (relative advantage, compatibility, ease of use, trialability) that influence user's attitude towards the system and intention to use the system. Zhang and Guetierre (2007) in their study of homeless management information system (HMIS) explained perceived usefulness, perceived resources, self-efficacy, and management support are significant factors that influence IT usage. Zhang *et al.* (2011) investigated e-government adoption using TAM model and listed similar sets of factors to be signification at individual level of adoption. These researchers recommended investigating innovation adoption determinants in other sectors might give a rich empirical result that can help organizations to ensure successful adoption and use of the system.

In order to make the scope narrowed and specific only the individual level of adoption was investigated in this study. Hence, this study aims to focus on investigating determinants of individual level of HRIS adoption thus, actual use of HRIS by combining DOI theory, TOE and TAM model, and the conceptual IT innovation adoption model provided by Hameed *et al.* (2012). It is hoped to provide some significant empirical data from this research.

In a nutshell, HRIS is a type of IT innovation which benefits organization to manage its human resource more effectively. Researchers have confirmed that importance and benefits of HRIS in organization is very crucial (Aggarwal & Kapoor, 2012; Hendrickson, 2003; Krishna & Bhaskar, 2011; Ruël *et al.*, 2011; Sadri & Chatterjee, 2003). Therefore, by adapting innovation adoption models and theories, this study investigates the critical success factors (CSFs) influencing the actual use of HRIS in a private hospital in Malaysia. In addition, this study also aims to seek which of the identified CSFs are most influential to the actual use of HRIS. Thus, this research hopes to benefit the organization in better and effective adoption of the system and ensure efficient system usage.

1.3   Purpose of Study

The main purpose of this study is to investigate the critical success factors (CSF) influencing actual use of HRIS in individual level. Ruel *et al.* (2004) provided the first theoretical framework for adoption of HRIS. In addition, two other research framework were proposed by Troshani *et al.* (2011) and Teo *et al.* (2007) to understand the determinants of HRIS adoption at organizational level. Recently, Hameed *et al.* (2012) proposed a conceptual model of IT innovation which integrates DOI theory, TAM model and TOE framework for both organizational level and individual level of IT adoption. Other researchers have investigated individual level of innovation adoption and provided research framework (Nor *et al.*, 2010; Zhang *et al.*, 2007). Now, the purpose of this study is by utilizing innovation adoption models and theories identify CSFs influencing adoption of HRIS at individual level in private health care sector in Malaysia. In addition, this study also intends to investigate the degree of influence of CSFs on actual use of HRIS.

1.4   Research Questions

Summarizing the background of the study and problem statement, it becomes obvious that there is a scope to study the critical success factors which influence the actual use of HRIS. Thus, the research questions are:

1.   What are the CSFs influencing actual use of HRIS?
2.   Which of the CSFs contribute most to the actual use of HRIS?

1.5   Research Objectives

The research questions are related to the objectives of the study. The study has two main objectives to achieve:

1.   To examine the critical success factors (CSFs) influencing the actual use of HRIS.
2.   To determine which CSFs are contributing the most to actual usage of HRIS.

1.6   Significance of the Study

Findings of the study have both academic and practical value in the areas of (1) information systems technology adoption in organization, and (2) higher education research in developing countries. The results of this study are expected to facilitate the organization (private hospital) to ensure actual use of HRIS efficiently

and effectively. IT is an important innovation within HRM, which has led to the development of computer-based HRIS (Hendrickson, 2003). This research used factor analysis and multiple regression analysis to achieve objective 1 and 2. By examining the objectives of this study, it is hoped that the identified critical success factors will contribute in helping organizations to effective usage of HRIS. In addition, the results of this study will also reveal the success factors that contribute most to the actual use of HRIS and organizations can be benefited by focusing on these factors to ensure system usage. Results of the study are expected to yield empirical data and a research framework for use in future studies of HRIS adoption in private sectors in Malaysia and elsewhere.

1.7   Scope of the Study

The respondents of this study were employees more specifically nurses who are aware of HRIS within Pasir Gudang Specialist Hospital, Johor, Malaysia. This is because majority of the nurses use the system regularly in this particular hospital, thus these nurses can provide data regarding actual use of HRIS in the hospital context. Plus, it was more convenient to collect data from this hospital due to time limit and availability of hospital in that particular time. The population involved 148 nurses in the selected branch of KPJ Healthcare Berhad in Johor Bahru, Malaysia. The sample size was selected using convenience sampling, 114 properly filled out questionnaires were used for data analysis. This research used questionnaire as a research instrument under quantitative research approach to conduct the survey. From an extensive review on innovation adoption literatures, factors such as relative advantage, complexity, compatibility, management commitment, perceived resources, and training were selected to further examine their effect on actual use of HRIS.

1.8   Definition of Terms

Definition of terms provides a platform of understanding regarding the terms used in this research. Definition of key terms of this research will be elaborated below.

1.8.1   Human Resource Information System

HRIS is mainly a known as a computerized system for HRM purposes that utilizes the information technology to acquire, store, manipulate, analyze, retrieve, and distribute information about an organization's human resources (Kavanagh *et al.*, 2012). It can be briefly defined as integrated systems used to gather, store and analyze information regarding an organizations human resources (Hendrickson, 2003). HRIS includes all IT-based information systems and applications either stand alone or networked, for human resource management purpose, be it for facilitating HR practices, policies or strategies (Ruël *et al.*, 2011).

1.8.2   Adoption of Innovation

Although there is no clear definition of technological innovation adoption due to tremendous variability in types of technology and circumstances under which people adopt them; however, technology adoption has been widely recognized as a three stage process of initiation or evaluation, adoption-decision and implementation or integration. The initiation process includes activities related to recognizing a need for adoption such as acquiring knowledge or awareness, forming an attitude towards the innovation, and proposing innovation for adoption. This is similar to evaluation stage where organizations collect and evaluate information about the possible efficiency and effectiveness that the organizations can achieve from adopting the innovation. The adoption decision stage includes decision to accept the idea and allocation of resources for its acquisition and implementation. Finally, in

organizational level of adoption, acquisition of innovation falls under post-adoption or implementation stage. This is similar to integration stage under individual level of adoption where the innovation becomes a part of organization's daily routine and the organization members utilize it in day to day life (Hameed *et al.*, 2012; Kim & Garrison, 2010).

1.8.3 Adoption of HRIS

Adoption of HRIS within an organization can occur in three stage process naming initiation, adoption decision and integration. Research on adoption of technological innovation can be divided into organizational level of adoption vs. individual level of adoption, process approach vs. factor approach. Thus, research investigating critical success factors that influence adoption of HRIS can be categorized under factor approach.

1.8.4 Actual use of HRIS

Actual use of HRIS occurs at the integration level of adoption. At the integration level, organization integrates their internal and external process with the innovation leading to its adoption, this leads to acquisition of innovation where the innovation becomes a part of an organization's daily routines and the innovation becomes ubiquitous. Organizational members no longer consider the innovation as being novel, as it is completely immersed into the firm's daily activities (Hameed *et al.*, 2012; Rogers, 2003).

1.8.5 Critical Success Factors

The critical success factors in this study refer to the reasons that encourage or influence users to use HRIS in organization. Understanding the factors that influence

HRIS adoption can help us to predict and manage who adopts, when, and under what conditions. These factors affect the decision to adopt technological innovation, to integrate the system in organizations and actual use of the system.

1.8.6   Technological Characteristics

Technological characteristics focuses on the manner where technology factors can influence adoption (Yang *et al.*, 2007). For instance, relative advantage, complexity, compatibility etc. are some of the technological factors that influence adoption of IT innovation within an organization.

1.8.7   Organizational Characteristics

Organizational characteristics are those that represent organizational factors which influence adoption of HRIS. Organization size, management commitment, perceived resources, supporting organization settings including a skilled workforce are some of the important organization factors in successful innovation adoption (Troshani *et al.*, 2011).

1.8.8   Relative advantage

Relative advantage is the degree to which an innovation is perceived as better than the idea it supersedes (Rogers, 2003). Relative advantage relates to whether an individual perceives the innovation as advantageous. The greater the perceived relative advantage of an innovation, the more rapid its rate of adoption is going to be.

1.8.9   Complexity

Complexity is the degree to which an innovation is perceived as difficult to understand and use (Rogers, 2003). New ideas that are simpler to understand will be adopted more rapidly than innovations that require the adopter to develop new skills and understandings.

1.8.10 Compatibility

Compatibility is the degree to which an innovation is perceived as being consistent with the existing values, past experiences, and needs of potential adopters (Rogers, 2003). If the technology is consistent with the current practices of the organization it has a higher chance of being adopted as well as accepted by the employees.

1.8.11 Management support

Management support provides supportive environment and adequate resources for new technologies to be adopted in an organization; it can also ensure the continued success of HRIS. A major barrier during implementation is the resistance of users to change and the conflict between HR departments and IS departments over the implementation and maintenance of the HRIS; these issues can be mitigated through management support (Teo *et al.*, 2007).

1.8.12 Perceived resources

Perceived resources are associated with the availability of IT knowledge and expertise in the organization (Ifinedo, 2011). According to Kim and Garrison (2010)

perceived resources refers to the availability of financial resources and technological knowledge.

1.8.13 Training

Training can be described as the action of teaching a person or a group a set of particular skills or type of behavior. In other words, training is developing in oneself or others, any skills and knowledge that relate to specific useful competencies. Training has specific goals of improving one's capability, capacity, productivity and performance (Troshani *et al.*, 2011).

1.8.14 Nurse

Nurse refers to a professional body within the health care sector focused on the care of individuals or communities so they may attain, maintain, or recover optimal health and quality of life. The nurses in Pasir Gudang Specialist Hospital are referred to as registered nurse and care assistants.

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