

# Construction of Extended Adoption Model of CRM systems at the Healthcare Organizational level in Malaysian Private Hospitals

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## ABSTRACT

*Customer Relationship Management (CRM) System is very important to enhance healthcare services, improve cost-effectiveness, and accessibility of the healthcare. Therefore, study of the adoption of the CRM in healthcare at organizational level is necessary to identify factors that influence the CRM adoption. Hence, this study aims at proposing an extended adoption model of CRM systems in Malaysian private hospitals. Finding from previous studies show that the adoption factors may be influenced by innovation, organizational, and environmental factors to the perception, adoption, and implementation of CRM system. The theoretical foundations of the model is based on Innovation Diffusion Theory (IDT) and Model of Information System Innovation (ISI). Survey and interview techniques were utilized to validate the proposed extended adoption model of CRM systems. The data collected were analyzed using Structural Equation Model (SEM). The model is beneficial to the healthcare at organizational level for the short and long term planning associating the adoption of CRM in organizations.*

### Keywords

*Customer Relationship Management System, Innovation Diffusion Theory (IDT), and Model of Information System Innovation (ISI).*

## 1.0 INTRODUCTION

Healthcare sector is one of the crucial sectors for the growth of any community. Also the healthcare industry is not out-of-the-way from the development and innovations. The roles of Information Technology (IT) and Information Systems (IS) are increasing in supports of the growth of the healthcare sector (Mantzana & Themistocleous, 2006). Among the roles of IT in healthcare organizations are enhancing the quality of services (Chao, Jen, Hung, Li, & Chi, 2007; Chiasson & Davidson, 2004) and improving the cost-effectiveness and accessibility of healthcare information (Chiasson & Davidson, 2004). Unfortunately, the implementation of IT in healthcare industry is still infancy (Hung, Hung,

Tsai, & Jiang, 2010; Raisinghani, 2005). This causes difficulties in adopting Customer Relationship Management (CRM) systems (Hung, et al., 2010). CRM System is defined by Gefen & Ridings, (2002) as "parameter-adjustable software packages that are intended to integrate and manage all aspects of customer interactions within the organization, and so considerably improve the ability of the organization to handle customer service, sales, marketing, online transactions and orders".

For healthcare organizations CRM is expected to optimize revenues and to improve patient health, relationships, and loyalty (Ginger & Nancy, 2004). It could deliver greater return on investments (ROI) to healthcare organizations and it seems to be the perfect solution for the major problems at the healthcare industry (Rebecca, 2007). Having a bad relationship with customers may have more serious ramifications for healthcare industry than for other industries (Alexandra, 2005). There are three characteristics that need to be considered in operating the CRM in healthcare industry; (1) customers have little power to decide how service or treatment will be provided, (2) the use of IT is a necessary condition for implementing CRM, and (3) the CRM in healthcare industry seeks to obtain customer loyalty and provide lifelong value (Hung, et al., 2010).

This paragraph highlights some situations in private hospitals; some hospitals do not know about CRM systems; other hospitals just have the orientation to be customer-centric; some have customer service department; some hospitals have software for managing customer feedbacks; and other hospitals enable their customers to do activities such as making appointments for treatment or medical tests and checkups, viewing the tests results, and even complaining of the services through the hospital's website.

There are many deficiencies in the relationships between healthcare providers and their customers. The deficiencies can be caused by: (1) long waiting time, and (2) unattended appointment (Chao, et al., 2007). For facing circumstances of the internal and external

environment, CRM has become a strategic reaction (Plakoyiannaki, 2005). In addition, CRM has become an essential cost-effective approach to maintain long-term customer relationships in healthcare industry (Kohli, et al., 2001). The adoption of CRM system will make the cost and resource allocation within the hospital more transparent (Raisinghani, 2005). The mapping of the documentation during the patients' treatment is one of the major cost reduction areas that the CRM systems have handled effectively in the hospitals (Raisinghani, 2005).

The utilization of CRM systems in hospitals enables reduction of costs for provision of better services, increase of satisfaction and loyalty of patients, and increase of revenues. Therefore, with the existing and increasing extensive competition locally and globally, hospitals have to successfully adopt CRM systems to be able to compete, to have a competitive advantage over all the rivals, and to acquire all the benefits expected from the adoption of CRM systems.

### 1.1 Problems Background

There is scarce literature regarding the organization-level adoption of technological innovations in comparison to the literature of individual-level adoption despite of its substantial importance (Yu & Tao, 2009). The focus of this study is on CRM system adoption at the organizational level in healthcare organizations. Three phases of the CRM system adoption process are emphasized in this study; perception, adoption, and implementation.

In terms of perception Plakoyiannaki (2005) states that the evidence is lacking. However, a review of the literature reveals that a small number of studies have discussed the perceptions of organizational members of CRM (Reinartz, Krafft, & Hoyer, 2004). For example, a study by Richard, Thirkell, and Huff (2007) pointed out that there is a wide difference on the perception of CRM technologies among customers and organizations. Additionally, the perceived benefit of CRM influences the CRM strategy adoption significantly (Ko, Kim, Kim, & Woo, 2008). The failure to understand the business benefits of the CRM system is one of the major causes of CRM initiatives failure (Caldeira, Pedron, Dhillon, & Jungwoo, 2008).

On the other hand, there is a lack of CRM systems adoption in the hospitals. For example, Raisinghani (2005) reported that there was no hospital in Germany adopted CRM system until 2005. Also, there is an insufficient attention to adopt CRM systems and to the concepts and principles of CRM in the hospitals in China (Xiaoyun, Xuan, & Qiang, 2005). In addition, only 41% hospitals in Taiwan adopt the CRM systems and 59% do not (Hung, et al., 2010).

The implementation of CRM systems has been abandoned in the literature with regards to marketing and IS (Kristol, Koen, Malaika, Jerry, & Nicholas C. Romano, 2007). Many studies have indicated that the failure rate of CRM programs ranges from 35% to 75% (Rigby, Reichheld, & Schefter, 2002; Zablah, Bellenger, & Johnston, 2004). These CRM programs or systems is not only fail to achieve economic benefits, but also destroy the relationships between an organization and its customer (Lindgreen, Palmer, Vanhamme, & Wouters, 2006). Furthermore, other commercial market research studies by Gartner Group, (2003) provided that, approximately 70% of CRM projects result in either losses or no bottom-line improvement in company performance (Zhang, Chen, & Fu, 2006).

There are complex reasons or issues for the introduction of a new IS in an organization such as economical considerations and technology (Lehane & Huf, 2005). Additionally, Rebecca (2007) pointed out that there are a set of challenges that faced by the CRM adopters in healthcare such as the multiple data sets in multiple systems, customer data confidentiality concerns, and IT budget challenges. Moreover, Fitzgerald, Ferlie, Wood, and Hawkins (2002) indicated for the need to consider the technical and organizational factors to increase the IS adoption in healthcare industry. Furthermore, CRM adoption is strongly related to organizational and environmental contexts in which the introduction of CRM into organizations is closely relevant to internal organization culture and structure and also requires considering the possible competitive impact from the external environment (Wu & Wu, 2005). Therefore, this study focuses on three factors; innovation, organizational, and environmental factors that are related to the CRM system adoption.

For the innovation factor, the variation of adopting CRM in healthcare may refer to the fear of technology, the cost, the privacy concerns, or reluctance to change the status quo (Paddison, 2004). In addition, the more the system is intuitive and easier to use; the higher the adoption rate of it (Carter, 2009). Additionally, the failure of CRM initiatives are caused by lack of software flexibility (Caldeira, et al., 2008) and the nature of bad technologies (Trembly, 2007). Furthermore, at the organizational-level adoption of innovations, the effects of the innovation characteristics has not been studied extensively (Ramamurthy, Sen, & Sinha, 2008).

For the organizational factor, among the causes of CRM initiatives' failure are; lack of leadership and top management involvement in the CRM project (Caldeira et al., 2008; Kale, 2004), cultural problems (Caldeira et al., 2008; Trembly, 2007), and not managing organizational change properly (Caldeira et al., 2008; Kale, 2004). There is a lack of business knowledge and skills among managers and executives in healthcare industry in terms of full utilization of automation and

technology (Fok, Li, Hartman, & Fok, 2003). For the environmental factor, Kohli et al. (2001) pointed out that because of reasons such as limited competition and lack of pain in forcing a change, healthcare organizations have been very slow in adopting IT.

Therefore, this study tries to achieve the following objectives; to propose an extended adoption model of CRM systems in hospitals that associates the innovation, organizational, and environmental factors to the perception, adoption, and implementation of CRM system.

## 2.0 THEORETICAL BACKGROUND

The focus of the IT adoption literature can be subdivided into two folds; individual adoption and organizational adoption (Fichman, 1992). In this paper the focus is on the organizational adoption. Therefore, the IDT by Rogers (2003) and the model of IS innovation by Kwon and Zmud (1987) will be adapted for the purpose of this study.

The IDT has been widely used in the literature to investigate the adoption of innovations at different kinds of businesses and industries (Rogers, 2003). In addition, IDT is a very useful theory for studying different IS innovations (Moore & Benbasat, 1991). By intensively reviewing the literature, this study found solid theoretical foundations and consistent empirical support of the IDT such as Beatty, Shim, and Jones (2001) and Premkumar, Ramamurthy, and Nilakanta (1994). Kwon and Zmud, (1987) have suggested that the combination of IDT with market research will be highly necessary and useful for studying the IT effectively. They have added into Rogers's model with environmental and task factors. It was found that this model could provide an understanding for the adoption of IS innovations in organizations in a generic sense (Wu & Wu, 2005).

### 2.1 Innovation Diffusion Theory (IDT)

Rogers (2003) has defined an innovation as "an idea, practice, or object that is perceived as new by an individual or other unit of adoption". Therefore, CRM can be considered as an IS innovation because of its re-engineering for the traditional marketing activities and its contribution in maintaining the competitiveness of an organization (Wu & Wu, 2005). The innovation-decision process is an information-seeking and information-processing activity in which an individual (or other decision-making unit) obtains information in order to gradually decrease uncertainty about the innovation and consists of five stages: (1) knowledge in which the knowing of an innovation's existence and gaining some understanding of how it works by an individual or other decision making unit, (2) persuasion that refers to the forming of a positive or negative attitude towards the innovation by individuals or other decision making unit, (3) Decision in which it refers to the involvement of actions that ends with the adoption of or rejection of an

innovation by an individual or other decision making unit, (4) Implementation that refers to the beginning of using an innovation by an individual or other decision making units, and (5) confirmation that looks for enhancement for the adopted innovation by an individual or other decision making unit (Rogers, 2003). The focus of this paper is on the persuasion, decision, and implementation stages. The IDT attributes the usage of an innovation by organizations to the innovation characteristics (Kevin, Shutao, Sean Xin, & Kenneth, 2006). The innovation characteristics include the relative advantage, compatibility, complexity, observability, and trialability (Rogers, 2003).

### 2.2 The Model of IS Innovation

Kwon and Zmud (1987) developed the IS innovation model to provide a broad view of the IS innovations. They carried out extensive reviews of many studies regarding the organizational innovation and the IS implementation to identify the main forces/factors that contribute to the successful adoption of innovations (Kwon & Zmud, 1987). The model includes (1) Innovation factors or characteristics that include relative advantage, compatibility, and complexity, (2) Task factor or characteristics: including task uncertainty, autonomy, responsibility, variety, identity, and feedback, (3) Individual factor or characteristics: including job tenure, cosmopolitan, educational background, organizational role involvement, (4) Organizational factor or characteristics: including specialization, centralization, formalization, and informal network, and (5) Environmental factor or characteristics: including heterogeneity, uncertainty, competition, concentration/dispersion, and inter-organization dependence.

In conclusion, the combination between these two theories will provide a robust base for the development of the research model. This paper focuses on three phases of the CRM system adoption process which are perception, adoption, and implementation over three factors; innovation, organizational, and environmental that might influence the CRM system adoption process.

## 3.0 METHODOLOGY

This section describes the methodology to attain the research objectives. It includes research design, research model, research questionnaire design, and finally, sample selection, and data collection.

### 3.1 Research Design

Quantitative approach was utilized and survey method was used as the tool. It is a cross-sectional field study in which the researcher collected the data at one point in the time (Creswell, 2008).

### 3.2 Research Model

The Research model is developed based on a synthesis of two theoretical perspectives; the IDT (Rogers, 2003) that emphasizes on the adoption process and the characteristics of an innovation and the model of IS innovation (Kwon & Zmud, 1987) that emphasizes on a broader context of IS innovations. The research model

consists of two parts. The first part is constructed based on the IDT by Rogers, (2003) emphasizing on three stages of the CRM system adoption process; perception, adoption, and implementation. The second part is the factors that might influence the CRM system adoption process. Figure 1 depicts the research model.

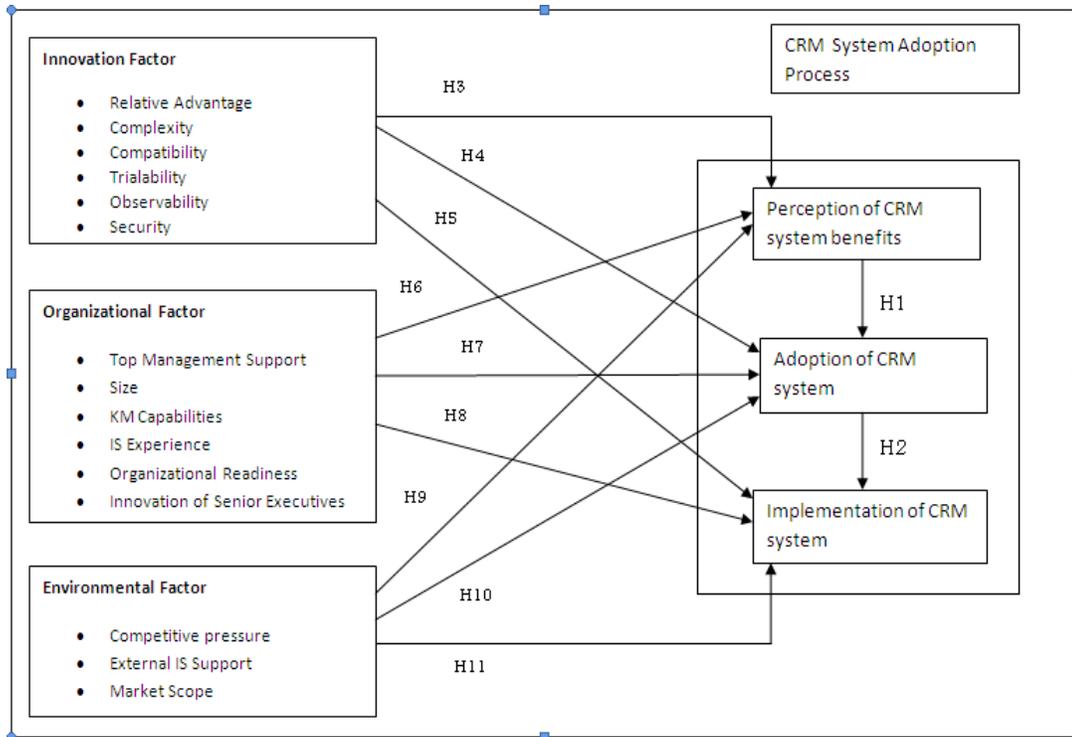


Figure 1: Research Model

### 3.2.1 CRM Adoption process

As it is indicated by Rogers (2003) before the decision of the adoption of an innovation is made, one must understand the potential benefits and challenges of the innovation. After the decision of adopting an innovation is made, the implementation of the innovation comes into view and the actual use begins.

This part of the research model provides an illustration for the sequence of the stages of CRM system adoption process. The understanding of CRM system benefits and the belief of its assistance to hospitals will lead to the decision of the adoption formation, and then will lead to the implementation and use of the system. The understanding of how organizational members perceive CRM may enable organizations to adopt, and implement CRM initiatives more efficiently (Plakoyiannaki, 2005). Therefore, this study investigates the three phases of CRM system adoption process in healthcare setting and identifies the influence of these phases on each other.

### 3.2.2 Factors of CRM system Adoption

In understanding the adoption of CRM systems in hospitals, this study focuses on three factors including innovation factor, organizational factor, and environmental factor.

The innovation factor represents the technology characteristics. The researcher defines the innovation factor in this research as the CRM system characteristics that might determine the likelihood of its adoption by organizations and might stimulate organization to adopt it. Relative advantage, complexity, compatibility, trialability, observability, and security are the characteristics of the CRM system that determine its plausibility by organizations.

The organizational factor represents the organizational characteristics. The researcher defines the organizational factor in this research as the characteristics of the hospital that determines its abilities and capabilities to adopt the CRM system. Top management support, size, knowledge management capabilities, information system experience, organizational readiness, and innovation of senior executives are the characteristics of the hospital

that determines its abilities and capabilities to adopt the CRM system.

The environmental factor represents the environmental characteristics. The researcher defines the environmental factor in this research as the characteristics of the arena in which the hospital runs its business that may contribute in creating the need for and ability to adopt the CRM system. Competitor pressure, external information system support, and market scope are the characteristics of the environment that may contribute in creating the need for and ability to adopt the CRM system.

The research model provides a broad view for the adoption of CRM systems at hospitals. It explains the adoption of CRM system as a process consisting of three stages; perception, adoption, and implementation, rather than looking at it as a single stage decision. The research model deals with three factors; innovation, organizational, and environmental factors. These factors cover comprehensively the different aspects of the CRM system, hospital, and environment characteristics that influence the CRM system adoption process.

In the model as shown in Figure 1, the hypotheses are stated. Each hypothesis is addressed in the following:

H1: The perception of CRM system benefits will positively influence the decision of CRM system adoption.

H2: The adoption of CRM system has a significant relationship with the implementation of CRM system.

H3: The CRM system characteristics have relationships with the perception of the CRM system's benefits.

H4: The CRM system characteristics have relationships with the adoption of the CRM system.

H5: The CRM system characteristics have relationships with the implementation of the CRM system's technologies.

H6: The hospital characteristics have relationships with the perception of the CRM system's benefits.

H7: The hospital characteristics have relationships with the adoption of the CRM system.

H8: The hospital characteristics have relationships with the implementation of the CRM system's technologies.

H9: The environmental characteristics have relationships with the perception of the CRM system's benefits.

H10: The environmental characteristics have relationships with the adoption of the CRM system.

H11: The environmental characteristics have relationships with the implementation of the CRM system's technologies.

After constructing the research model and formulating relevant hypotheses, a questionnaire has been designed based on the observed factors in the research model.

### 3.3 Questionnaire design

The questionnaire developed in this study consists of five sections. The first section has two parts; the first part is regarding the general information of the respondents including their job title, experience, education, sex, and age; the second part is regarding to the general information of the hospital such as the number of beds, and number of employees.

The second section asks about the perception of the top management of the hospital towards the benefits of the CRM system. This section consists of 18 items. The items from 1 to 17 are constructed based on extensive review of the literature to measure the perception of CRM system benefits among the hospital's top management, while item number 18 is purposely constructed to identify the influence of the perception of CRM system benefits on its adoption.

The third section asks the top management of the hospital about the adoption of CRM including the adoption of customer orientation, the adoption of customer-centric strategy, and the adoption of a CRM system. This section consists of four parts; the first part is to measure customer orientation of the hospital with four items adopted from (Narver & Slater, 1990); the second part is to identify the existence of a customer-centric strategy in hospitals through three items adopted from (Parvatiyar & Sheth, 2001); the third part is to identify the existence of a CRM system in hospitals containing one item adopted from (Sharma & Iyer, 2007); the last part is proposed to identify the relationship between CRM system adoption and the implementation of CRM system technologies by through item.

Section four asks the top management of hospitals about the extent of CRM system technologies implementation. This section consists of two parts with 40 items; the technical part in the implementation of CRM system technologies which is covered by the items from 1 to 27; and the managerial part in the implementation of the CRM system technologies which is covered by the items from 28 to 40. The fifth section asks the hospitals' top management regarding sixteen variables to identify their influence on the CRM system adoption process. This section consists of three parts; regarding the CRM system characteristics, the hospital characteristics, and the environment characteristics.

The first part has six variables; (1) The relative advantage which is measured with four items; (2) Complexity which is measured with three items; (3) Compatibility which is measured with only one item. (Premkumar & Roberts, 1999); (4) Trialability which is measured with two items; (5) Observability which is measured with three items (Moore & Benbasat, 1991); and (6) Security which is measured with two items (Kevin et al., 2006).

The second part also consists of six variables. (1) Top management support which is measured by four items from (Premkumar & Roberts, 1999); (2) Size which is measured with one item adapted from (Kimberly & Evanisko, 1981); (3) Knowledge management (KM) capabilities which is measured with six items from (Croteau & Li, 2003); (4) IS experience which is measured with three items adapted from (James, 1999); (5) Organizational readiness which is measured with two items (Grandon & Pearson, 2004); and (6) Innovation of senior executives which is measured with three items (Thong & Yap, 1995).

The third part consists of only three variables; (1) Competitor pressure which is measured with two items; (2) External information system support which is measured with five items. The items of these two variables are adapted from (Premkumar & Roberts, 1999); and (3) Market scope which is measured by one item (Buonanno et al., 2005).

For the sections from two to five, a 5 point Likert-scale is used; in which 1 is strongly disagree up to 5 which is strongly agree; to measure the responses of the hospitals' top management. The 5 point Likert-type scale is recommended to be used to increase the response rate and the response quality, and decrease the frustration level of the respondents (Babakus & Mangold, 1992).

### 3.4 Sampling and Data Collection

The target population of this study is the Malaysian private sector hospitals' top management and senior management including such as CEO, CIO, COO, CFO, marketing managers, and IT managers. The private hospital in this study is defined as any hospital in Malaysia that is owned or managed by individuals or groups for the purpose of profit.

The area sampling method is used to determine the target population. Two geographical areas are selected; Kedah and Penang. Then, simple random sampling method is conducted to define the research sample. Next, a pilot study will be conducted to identify the reliability and validity of the questionnaire. After revising the questionnaire based on the pilot study, the questionnaire will be distributed to the study sample. Each person will be given a month to complete the questionnaire. The researcher will collect the questionnaires at the end of the month. A Statistical Package for Social Science

(SPSS) V18 and Structural Equation Modeling (SEM) using Amos V18 will be used to analyze the collected data.

### 4. Conclusion:

This paper proposes to develop an extended CRM system adoption model for the hospitals that is composed of innovation, organizational, and environmental factors as independent factors and the perception of CRM system benefits, adoption of CRM system, and CRM system implementation as dependent factors. This model provides a broader view for the important factors that might play crucial roles in the CRM system adoption process. This model needs to be validated and tested empirically. The researcher intends to validate the model in private hospitals in Malaysia. This model is expected to provide a great help for the IS innovation adopting hospitals. Guides towards successful adoption and implementation will also be provided.

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