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The Technology Factors as Barriers for Sustainable Health Information Systems (HIS) – A Review

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Abstract

Information system is widely adopted in many fields including healthcare. Healthcare organizations now consider increased efficiency, improved patient care, quality of services, and safety. Hence Health Information System (HIS) is basically introduced to transform the traditional way of data collection and organization in hospitals, to a modern way of systematic collection, maintaining and dissemination of data. Its implementation is to support medical practitioners and administrative staff in securing patients' health information in a digital-based record, to efficiently and effectively improve performance in the health system or any of its component parts. However, despite its numerous benefits, some of barriers still hinder its successful implementation and adoption, which needs to be addressed. This study discussed these barriers related to technology using the IS Success Model. This review paper becomes necessary in order to highlight the barriers that led to technical difficulties facing HIS implementation in hospitals, so as to suggest possible solutions that will improve services rendered in health industry based on findings.

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Keywords: Technological Factor; Health Information System; Barriers; IS Success Model Benefits; Information Quality, Service Quality, System Quality

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1. Introduction

Today, the use of information systems provides a lot of opportunities through management of information in databases, providing computing and information to support the operations of many business fields, including the health industry. As a result, it is difficult nowadays to imagine a healthcare without an Information System, as health care all over the world is increasingly complexity [1], especially with handling of health information. Health information comprises of any medical or administrative related information that are recorded in any form, which is created or received by a health care provider, health care plan, public health authority etc.; or relates to the physical or mental health or condition of an individual, provision of health care to an individual, or payment for the provision of health care to an individual [2]. Hence, to handle these lots of information, an information system such as Health Information systems (HIS) is required to arrange these data, processes, and people. It is a system that captures, stores, manages or transmits health information of individuals or the activities of organizations that work within the health sector. It is also a mechanized document and information management system in hospitals [3].

2. The importance of health information systems (HIS)

HIS that are successfully developed and implemented can improve health care efficiency and effectiveness. For instance, a common deficiency in healthcare delivery services that happens in every hospital is struggling to reduce patient waiting time to receive treatment. Therefore, HIS is adopted in hospitals to improve the slow and inefficient services especially in retrieving patient's medical information for internal circulation within the organization [4][5][6]. As a result, patients' wait time especially during registration is reduced with medical professionals as well as administrative workers to attending to patients within a short time. HIS is a system that required users to insert patients' information directly to the system then printout when necessary. This approach reduces medication error as well as incorrect prescription due to medical personnel's bad handwriting [7][8]. HIS plays a vital role in planning, initiating, organizing and controlling the operations of the subsystems of the hospital and thus provides a synergistic organization in the process, and improves patient care by accessing data and making recommendations for care and enables a hospital to move from retrospective to a concurrent review quality and appropriateness of care [9]. Aside from the system improving the quality of care, it also lightens the routine of medical practitioners while enhancing service productivity to provide fast treatment to those in need [10][11]. Adopting HIS makes work routine much easier as papers is replaced by a system. With this, difficulty in retrieving patient information is resolved. Medical personnel can access directly into the system to view patients' medical history then update their information [12][13].

Despite the fact that organizations are always looking for ICT in general or specifically Information System as an enabler for them to improve their services and products [14], studies reported that technological barriers still cause a major roadblock to HIS implementation and adoption. In a study by [15], results revealed that technological barriers cause obstacle in the implementation of a HIS in 16 European countries and 14 US states, which includes; ineffective design, data loss caused by different errors that the system may have and the usefulness of the IT, an issue that has a big impact on their willingness on the adoption of a new HIS. Slow system speed and unexpected system outages are commonly experienced concerns by health care providers attempting to implement these systems [16]. Further, in [17] also reported that technological barriers, such as; inadequate equipment, lack of internet access, are associated with meeting information needs.

3. Health information systems (HIS) in Malaysia

In Malaysia context, The Ministry of Health (MOH) stated that its vision is to lead the nation to work together for better health well-being, services, and infrastructure through technological advances. Hence, [18] confirmed that the government has implemented HIS across the country to maximize the use of technology to improve healthcare delivery. Studies have shown that public hospitals are adopting either one the three types of HIS; Total, Intermediate and Basic. The selection of this system is based on the total number of bed, including the components of Information System installed in the hospital. In THIS environment for instance, users completely use the system all through; they record information related to the patients in their computer [5]. While, in BHIS and IHIS, users will

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