Enterprise Resource Planning Systems in Healthcare: A Qualitative Review

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ABSTRACT

The aim of this article is to present an analysis of literature on the views, experiences and challenges of enterprise resource planning systems in healthcare. At the moment there is very limited systematic evidence on the role of these systems in healthcare. The PubMed, Emerald, CSA Engineering Research Database, ScienceDirect, ISI Web of Knowledge and Cinahl databases were searched, covering the period from January 2000 to April 2009. Studies were included if they concerned enterprise resource planning systems integrated into healthcare. The selected studies were analyzed with the thematic synthesis technique. The 135 articles were analyzed on the basis of the titles, abstracts, and full texts. At every phase, a number of articles were rejected for not meeting the inclusion criteria, and finally, 9 articles were accepted for deeper analysis. Three areas of views and experiences were identified from the reviewed studies. Furthermore, two challenge classes were identified when implementing enterprise resource planning systems.

Keywords: Enterprise Resource Planning, Healthcare, Literature Review, Qualitative Study, Thematic Synthesis Technique

INTRODUCTION

Hospitals were traditionally organized as a complex of strong functional units, but are today moving towards process-oriented models (van Merode, Groothuis, & Hasman, 2004). There are many indications that process-oriented organizations would run customer-friendlier, safer, and more efficiently. Increasing costs due to new therapeutic possibilities and growing service demands create a challenge for productivity. The ageing population presents additional new challenges for healthcare. A special focus should be placed on work productivity since personnel costs make over 60 percent of the total costs in hospitals.

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One possible way to meet these challenges is information and communication technology that offers tools to improve healthcare processes and productivity. Healthcare organizations are already using information systems for clinical purposes to improve patient care (Andersson, 1997; Chaudhry et al., 2006; MacDonald, Bath, & Booth, 2008). An information system is a system of persons, data records, and activities that process the data and information in a given organization, including manual and automated processes. Traditionally, information systems have been classified into different categories such as transaction processing systems, knowledge management systems, management information systems, decision support systems, and enterprise resource planning (ERP) systems. (Begg & Connolly, 2005) In the field of healthcare, these forms of information systems can be identified as well. For example, computerized clinical decision systems are information systems designed to improve clinical decision making (Garg et al., 2005). The term ‘healthcare information systems’ can be used to refer to these and all other information systems operating in the area of healthcare.

During the past two decades, several types of healthcare information systems have been developed. These include order entry systems, patient flow systems, patient records systems, an administrative information system, pharmacy and materials management information systems, a human resources management information system, a personnel presence card system, financial and cost accounting information systems, patient relationship management systems, picture archiving and communication systems, laboratory information systems, operation theatre systems, an e-procurement system of medical supplies, telemedicine systems, e-learning systems, and web-based supply chain management information systems. (Stefanou & Revanoglou, 2006). A simplified grouping of these information systems includes healthcare order systems, healthcare scheduling systems, healthcare reporting systems, and healthcare administration systems (Chen, 2001).

Unfortunately, healthcare information systems often operate individually without being effectively integrated with one another; there are, however, steps being made to integrated healthcare information systems and enterprise resource planning systems in healthcare (van Merode, et al., 2004). Actually, ERP systems are increasingly used in modern hospitals both for strategic and operative administration of the organization, as healthcare services are increasingly designed along process-oriented organizational lines. Planning and managing the day-to-day running of a hospital requires a thorough understanding of the system, together with detailed information for decision-making (Holsapple & Sena, 2001). Technological and business processes offer a new way to view healthcare. Therefore, there is actually a need to take a more technological and business process oriented view of healthcare delivery, and to identify the appropriate organizational and information infrastructures to support these processes (Epstein & Dexter, 2000).

The fundamental idea of an ERP system answers these needs while it provides integrated comprehensive software, which can be used to manage and co-ordinate all business functions within an organization. These sets usually include mature applications and tools for different business functions. An ERP system can deliver data across all business functions in real time. Typically, it includes various modules such as materials management, quality management, human resources, project management, financial & accounting and sales & distribution. (Boykin, 2001; Chen, 2001; Nah, Lau, & Kuang, 2001) Furthermore, the whole system is usually based on a central database (Shehab, Sharp, Supramamiam, & Spedding, 2004).

An ERP system has also been proven to enable organizations to achieve decision support benefits such as improved knowledge processing, enhanced decision making reliability, and better ability to gather corporate evidence to support the decisions made (Holsapple & Sena, 2001). However, there is very limited systematic evidence on the precise role of ERP systems in healthcare.
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