



# Causes of EHR projects stalling or failing: A study of EHR projects in Saudi Arabia



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## ABSTRACT

**Background:** Electronic Medical Records (EMRs) are designed to automatically collect, store, and retrieve patients' information from healthcare providers within an organization. They assist clinicians in deciding the future course of treatment. The primary objective of this study is to investigate the practices of Electronic Health Record (EHR) project managers regarding the causes of EHR projects getting stalled or failing in Saudi Arabia.

**Methods:** Three focus groups were identified across three main cities of Saudi Arabia, namely Riyadh, Jeddah, and Dammam during the years 2013 and 2014. Each group consisted of 10–15 experienced EHR project managers. Qualitative analysis consisted of immersion and crystallization to develop a coding scheme that included both preconceived and emergent themes.

**Results and conclusion:** The findings of this study highlight the difficulties, which ensue between EHR and project management practice as well as the issues that can arise from the common use of these terms. It highlights how the aims of an EHR project and its management are transformed, and how the reputation of the project management is to achieve the exact and short-term objectives associated with the comprehensive aims of an EHR project.

## 1. Overview of Electronic Health Records

### 1.1. Introduction to Electronic Health Record

Health technology's primary goal is to support and improve patient care. One of the applications of health technology is conversion of paper-based patient medical records to Electronic Medical Records (EMRs). EMR was designed to automatically collect, store, and retrieve patients' information from healthcare providers within an organization [1]. EMR benefits have a direct impact on the safety and quality of healthcare of patients. It enables clinicians to easily access the medical history of a patient and monitor their present condition, thereby, helping them in deciding the future course of treatment [2]. However, it has been noted that its use is restricted to only some specific organizations. Therefore, the concept of Electronic Health Record (EHR) was introduced. It enables stakeholders to share medical information, which can be referred to at any point in time during treatment of patients among themselves [3].

EHR has the potential to transform the healthcare scenario. It enhances the delivery of high-quality care and allows the sharing of

documentation over a reliable network. The successful implementation of EHR will have a positive impact on healthcare providers, patients, and hospitals. The positive effects of EHR from the perspective of healthcare providers are as follows:

- It provides quick, accurate, up-to-date, and complete information about patients at the point of care.
- It allows easy navigation across the medical history of patients and leads to faster retrieval of lab or x-ray results.

Moreover, EHR helps reducing medical errors and adverse events with the help of decision support tool, clinical alerts, and reminders tools. In addition, EHR engages patients through patient portals, which negates the need to fill new forms during every visit and also allows patients to view their medical and lab reports at any point in time [4].

The above-mentioned advantages necessitate the complete adoption of EHR. However, according to Trites and Gelzer [5], there are some factors that may lead to getting EHR projects stalled or failing altogether. The first reason is leadership failure and/or poor project management.

*Abbreviations:* EMRs, Electronic Medical Records; EHR, Electronic Health Record; NGHHA, National Guard Health Affairs; CPR, Computerized Patient Record; HIMSS, Healthcare Information and Management Systems Society; KFSSHC, King Faisal Specialist Hospital and Research Center; KKESH, King Khaled Eye Specialist Hospital; EMRAM, Electronic Medical Record Adoption Model; CSF, critical success factors.

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Inadequacies in any of these properties might lead to complete failure of the project. Second, EHR/EMR software vendors must be chosen according to their capabilities, qualities, and commitment to work, and not on the idea of reaping personal benefits. Third, overcoming the shortage of health informatics (e-Health) specialist and IT specialists to lead the project managers, and selection of system or functionality to be implemented must be performed according to the requirements of the healthcare organization and not the technological techniques or capabilities available. The last factor would be the resistance to bring a change in the higher management or the end users because of their minimal involvement during the project selection or implementation.

1.2. Electronic Health Record in Saudi Arabia

The health care system in Saudi Arabia is a national system, which provides free healthcare services to citizens and, in some cases, residents as well. In Saudi Arabia, the Ministry of Health (MOH) is the major provider and financier of healthcare services. Other government agencies include Security Forces Medical Services, Army Forces Medical Services, National Guard Health Affairs (NGHA), and Royal Commission for Jubail and Yanbu health services, which provide services to a defined population, usually employees and their dependents. Moreover, there are referral hospitals (e.g., King Faisal Specialist Hospital and Research Center), Ministry of Higher Education hospitals known as teaching hospitals (e.g., King Abdulaziz University Hospital), health units in schools affiliated to the Ministry of Education, and the Red Crescent Society. All of them provide health services to residents during crises and emergencies. In addition, the private sector contributes to the delivery of healthcare services in the major cities [6]. The organizational structure of the healthcare system in Saudi Arabia is shown in Fig. 1.

In Saudi Arabia, the utilization of EHR projects in healthcare has increased. Some health organizations are expanding their IT infrastructure and applications to advanced stages. The advancement in healthcare IT projects such as implementation of patient-carried record (PCR), electronic patient record (ECR), digital medical record (DMR), and Electronic Medical Record (EMR) combined with other factors such as

strong infrastructure, knowledge, organization awareness, and trained people have proved the worth of these systems in the hospitals. In 2010, the Arab Health Conference awarded the Middle East Excellence Award in electronic health records to National Guard Health Affairs (NGHA) [7]. In 2012, the Healthcare Information and Management Systems Society (HIMSS) recognized King Faisal Specialist Hospital and Research Center (KFSHRC) as a Stage 6 hospital in the deployment and use of clinical information technology [8]. Recently, King Khaled Eye Specialist Hospital (KKESH) has achieved Stage 7 on the Healthcare Information and Management Systems Society's (HIMSS) Electronic Medical Record Adoption Model (EMRAM). KKESH becomes the first hospital in the Middle East to achieve this global recognition. However, there are a lot of variations in the healthcare organizations in terms of EHR projects. Even though a majority of Saudi healthcare organizations are in their early stages of adopting e-Health projects, there are still many hospitals and medical care centers that maintain paper-based records. Also, human errors are becoming more common in medication administration due to many reasons, including the shortage of well-trained staff in these hospitals. The reasons behind the failure of adoption of the EHR include the absence of national policies and standards, poor electronic health strategies, insufficient understanding of the technology, and lack of required skills and tools for selecting the right vendor [9,10]. The confusion associated with implementing and using these new technologies is also prevalent, which could be solved through an efficient project management plan.

In Saudi Arabia, there is an urgent need to adopt EHR for two main reasons. The first reason is the rapid growth of Saudi population across the country's wide geographical spread. The second reason is the vast amount of health information generated by different health sectors using multiple systems with poor interoperability among them. Unfortunately, there has been no significant progress in this area. A study conducted in Saudi Arabia shows that the rate of failure of healthcare EHR projects is extremely high [11].

To cope with the resistances in the implementation of EHR systems in Saudi Arabia, it is necessary to devise an industry standard system comprising of wide-ranging quality management principles and

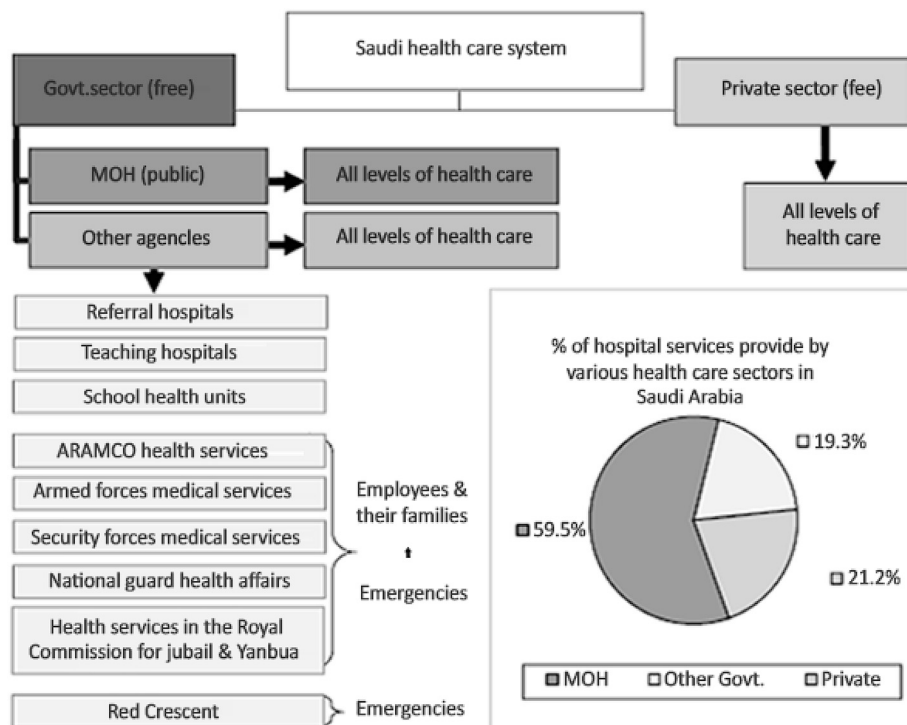


Fig. 1. Structure of healthcare system in Saudi Arabia [6].

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