# Challenges in implementing digital records management in Arab countries

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*Abstract— DRM systems are increasingly generated worldwide; however there are several difficulties that make implementing as these systems a challenging task, particularly in Arab countries. The objective of this paper is to determine and rank the most significant challenges affecting DRM implementation in Arab countries. Several studies have reported the challenges that affect implementation of DRM in Arab world. Modal analysis of some selected of this selected studies showed that the execution of DRM is encumbered by barriers and limitations, with financial constraints and technical limitations being the most prominent. Therefore, Arab countries need to develop strategic plans to overcome on barriers in order to be applicable in the field of DRM. This study suggests that more consideration should be given to funding DRM projects as well as the provision of adequate information and technology (IT) infrastructure and training in order to ensure effective DRM implementation.*

*Keywords: Digital Records Management (DRM), implementation, developing countries, framework, challenges.*

## I. INTRODUCTION

Digital records management (DRM) is the practice of managing digital records of an organization from the time they are created, preserved up to their eventual disposal. The increasing awareness of the impact of technology has added momentum to the need to have a better implementation of records management policies. The Arab world has always garnered interest of researchers because of its slow acceptability of modern trends. However, this does not imply Arabs are lagging behind in terms of development, given that most Arab countries are currently evolving towards modernization. A review of related literature shows that organizations and governments all over the world are increasingly recognizing the importance of managing digital records for good governance [16]. According to [15], ICT is gaining more significance in transforming work styles to more reliable and fast ways, by employing novel and ground-breaking technologies in different sectors of works. For instance, Egypt has been relatively successful in accomplishing considerable progress in the medical records management. Despite the existence of DRMs like health information systems in Egypt, there remain constraints in the successful operation of the systems [15].

Although, DRM systems are increasingly generated worldwide, there are several difficulties that make implementing these systems a challenging task. These difficulties need to be surmounted if digital records are to be utilized for good governance and as evidence of organizational transaction. Among these difficulties are the lack of policies and legislation, limitation of standard, lack of training and human resource development and lack communication between information technology and records management personnel [16]. It is rare to find a comprehensive study that analyzed the challenges of DRM implementation. The aim of this study is to point out and review shortcomings in the implementation of DRM in selected Arab countries. This review will help in elucidating questions like: to what extent will new strategies help improve the management of digital records in the Arab world? What is the actual status of digital records management in Arab world? What are the factors affecting the management of digital records implementation in the Arab world? What are the challenges affecting the management of digital records implementation in the Arab world?

A key objective of this paper is to determine and rank the most significant challenges affecting DRM implementation in Arab countries.

## II. CHALLENGES FACING DRM MANAGEMENT IMPLEMENTATION IN ARABIAN COUNTRIES

Developing countries, particularly the Arab world, are typically lagging in the effective implementation of DRM. Certain challenges have been identified as setbacks to effective digital records management, such as the lack of digital records management policy; lack of funding directed towards proper digital records management; staff's lack of prerequisite knowledge and skills in records management, inability to keep up with constantly evolving technology [23]. In a study on the barriers to implementing Electronic Health Records (EHRs), [1] deduced that the most significant limitation that hinders the implementation of EHR is readiness and roadmap, willingness and educated staff. A similar study by [18]; [20]; [19] on the barriers to health information systems and electronic medical records implementation in Saudi Arabian hospitals outlined six categories of barriers: human barriers associated lack of awareness, knowledge, experience of using EMRs; professional barriers, related to the lack to the professional personnel; technical barriers, related to obsolescence of software and hardware, lack of maintenance, ease of use; organizational barriers pertaining to lack of guidelines, planning, training; financial barriers involving lack of funding; legal and regulatory barriers connected to absence of required laws, regulations and legislations. The study went further to conclude that human and financial barriers are the two main classes of challenges affecting the successful execution of electronic medical records (EMRs).

[6] Carried out a study to identify the current barriers of health information technology (HIT) within Arab countries, are mostly far behind in properly implementing HIT systems within healthcare sectors. Their findings showed that apart from access to financial resources, majority of Arab countries lagged behind in the implementation of HIT as a result of lack of dedicated finance resources and professional incompetency among staff. A number of other studies have also analyzed the effectiveness of implementing DRMs in the different sectors. For instance, [8] examined the challenges faced in carrying out electronic information health Saudi Arabia. The study concluded that organizational barriers related to change management lack of motivation for implementation; technical barriers included readiness of IT infrastructure; behavior barriers resistance to change.

[11] Developed and deployed a system of electronic medical record implementation in one of Cairo University's Hospitals in Egypt. There is a need to develop the policies and procedures of medical records, redesign medical records based on the requirements and needs, to emphasis the ease of use of the system, constructing IT infrastructure. All this will lead transforming the traditional unit of manual archiving to a complete electronic archiving unit. In a similar study, [12] examined the state of Egypt's electronic health records. The survey study involved using a survey questionnaire by distributing the questionnaire forms in selected hospitals. 60% of the responses were received out of which only 6.67% of hospitals had adopted EHR. 38.1% of the hospitals claimed that due to high costs and lack funding for adopt or implement EHR but were planning to adopt it in the future. However, the hospitals that had adopted EHR claimed that the system was effective in increasing the service quality, accelerating and improving performance and time efficiency.

[17] Asserted that the governments of Gulf countries have made solid attempts to develop the innovative and technological solutions for medical records problems of the patients and to transform the whole health care sector so that most tasks are realized according to international standards. For instance, the government of UAE is trying to implement technology for manage their population records and boost the health sector to lofty standards. However, the study pointed out that challenges plaguing the health sector of UAE include high costs of the health information systems services, and the lack of a centrally integrated ICT system. Similarly, [14] recognized certain barriers that negatively impact on the adoption of DRMs like HIT in hospitals of Arab countries, and they comprise financial constraints, low IT proficiency among staff, lack of qualified IT professionals and deficiency in the HIT knowledge and value among hospital managers. Nonetheless, the authors proposed that these barriers can be resolved with short and long term policies and by increased funding to hospitals. Staff and professionals should also be properly trained on the significance and mechanism of respective DRMs.

In addition, [13] earlier revealed that HIS in northern Sudan was ineffectual at providing quality information for managers to use to support decision making. The main problem of the system was found lack of infrastructure, insufficient skilled personnel and lack of coordination. Other reported constraints include inconsistencies of data management procedures, and absence of decentralized information management.

In a study conducted by [21], several challenges were found in information systems in health sector of Yemen, which may account for the low adoption of information systems in public health sector in the country [9]. The challenges include unreliable and underutilized system, inaccurate data collection and health indicators due to lack of uniform statistical registers and collection tools. Moreover, the same study revealed that current data collections are used for reporting purposes only, and only 36% of facilities use data for decision-making. Weak and unreliable health information system contributes to misinformed decisions. Other challenge related to lack of mechanism of exchanging health information at governorate. Neither is there a system of compiling data from all sources and producing comprehensive annual nor other periodic reports [2]. Yemen also does not have adequate and up to date legislation providing the framework for health information. More recently, a number of different challenges encountered in achieving recently proposed strategies and plans in enhancing health information system in Yemen have been reported. These challenges are lack of IT budget, lack of IT skills, lack of leadership, and resistance to change, lack of infrastructure and the disruption of the structure of the national economy lack of clear policy [9]. And the absence of a proper framework to implement DRMS initiatives [25]

[5] identified three categories of factors that influence initiative implementation of information systems in e-government sector in Kuwait which represent challenges in implementation process, the factors include: political factors (awareness/strategy, leadership, desire/support, financial/cost); technological factors (IT infrastructure, IT qualified staff, resistance to change); and organizational factors ( IT training, legislations and regulations). Furthermore, [10] pointed out that the main barrier facing the implementation of information systems in government sector in Egypt is organizational issue which include (legal, regulatory, planning and standard. The study asserted that lack of a legislative framework leads to low implementation. Another challenges pointed out in the study is technological issue like communication network lack of maintenance. The implementation also faces great challenges regarding social and economic issues as lack of awareness, skills computer illiteracy, leadership and training.

[24] Also identified factors that affect DRM management in Oman, and they include improper planning and management, legal framework, poor strategy and project plans, usability, inadequate staff training, high operational cost, lack of expert computer policies and poor IT infrastructure. Although several Gulf countries embraced computerization, the implementation of Electronic Health Records (EHR) is hindered by lack of coordination, lack of policies and procedures, insufficient trainers, unwillingness of staff to undertake training, computer literacy, inadequate IT staff, lack of guidelines for end users, delay in budgetary and inadequate IT support and maintenance [22]. The various challenges reported in related studies are outlined in Table 1.

TABLE I
: CHALLENGES AFFECTING THE IMPLEMENTATION OF DRMs

| Challenges | Related studies |
|---|---|
| Lack of funding/financial | Al-nassar et al (2009), Al-marabeh & Abu Ali (2010)  Khalid & Ahmad (2011), Nasieku (2012), Al-rashidi (2012), Hayajneh & Zaghloul (2012), El-lawindi et al., (2012), Al-wazir & Zheng (2012),  El-din et al, (2013), Khalifa (2013), El- Badawy & Attia, (2014), Al-sadan et al.(2015) , Sarrayrih & Sriram (2015) |
| Lack of  IT infrastructure | Al-tuwaijri (2008), Farah (2010), Al-marabeh & AbuAli (2010), Mogli (2011), Al-wazir & Zheng (2012), Al-rashidi (2012), El-lawindi et al (2013), Khalifa (2013), Sarrayrih & Sriram (2015), |
| Lack of training | IRMT (2003), Al-nassar et al (2009), Mogli (2011),  Hayajneh &Zaghloul (2012), Al-rashidi (2012),  Khalifa (2013), El-Badawy & Attia (2014), Sarrayrih & Sriram (2015), Al-shibly et al (2016) |
| Lack of policy | IRMT (2003), Mogli (2011), Nasieku, 2012, El-lawindi et al (2012), Hayajneh & Zaghloul (2012), Al-wazir & Zheng (2012) Sarrayrih & Sriram (2015) |
| Lack of professional staff | Mogli (2011), Nasieku, (2012), Al-rashidi (2012), Hayajneh &Zaghloul (2012), Sarrayrih & Sriram (2015), Al-sadan et al.(2015) |
| Lack of legal & regulatory bodies | Al-marabeh & Abu Ali (2010), Al-wazir & Zheng (2012), Khalifa (2013),El- Badawy & Attia (2014), Sarrayrih & Sriram (2015) |
| Improper planning | Al-marabeh & Abu Ali (2010), El-din et al, (2013), El- Badawy & Attia (2014), Sarrayrih & Sriram (2015), Khalifa (2016) |

*A.  Modal analysis*

Based on the reviewed papers, the most recurring (reported) challenge affecting the implementation of DRM was determined. This was done by modal analysis, i.e. how frequently is a particular factor mentioned or reported based on related studies. The modal analysis of the various challenges is shown in Table 2. From the Table (2), lack of funding/financial constraint is the most reported challenge affecting DRM implementation in the Arab world. Another major challenge is lack of IT infrastructure and training followed by the absence of policies which is considered guidelines necessary for DRM management. Also professional staff which are represents one of the main challenges for the implementation of digital records management in the Arab world Followed by legal and regulatory, Lastly improper planning. The related studies were analyzed into a chart (Fig. 1).:

TABLE III
MODAL ANALYSIS OF THE CHALLENGES AFFECTING THE IMPLEMENTATION OF DRMs

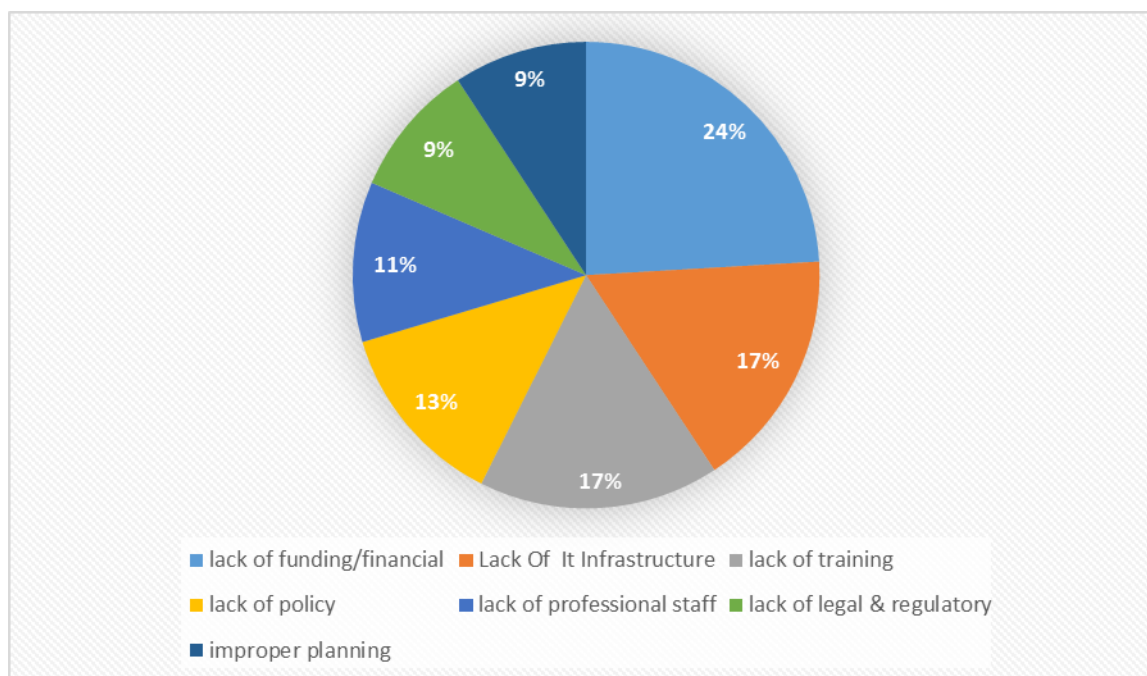| CHALLENGES | NUMBER OF TIMES REPORTED (FREQUENCY) |
|---|---|
| LACK OF FUNDING/FINANCIAL | 13 |
| LACK OF  IT INFRASTRUCTURE | 9 |
| LACK OF TRAINING | 9 |
| LACK OF POLICY | 7 |
| LACK OF PROFESSIONAL STAFF | 6 |
| LACK OF LEGAL & REGULATORY | 5 |
| IMPROPER PLANNING | 5 |

*Fig. 1 Pie chart showing the % distribution of challenges affecting DRM implementation in the Arab world (1=lack of funding/financial; 2=lack of IT infrastructure, 3=lack of training; 4=lack of policy; 5=lack of professional staff; 6=lack of legal & regulatory; 7= improper planning)*

### III. DISCUSSION

#### A.  Overcoming the challenges

Several studies have pointed out challenges that negatively affect the implementation of DRM, as shown above. Based on the review, the root constraint is the lack of a universal DRM that can be effective for all fields. Each individual DRM that has been developed with a specific framework and parameters that is suitable to fulfill a specific need. For instance, electronic health records (EHR) was developed for managing medical records based on specific health framework, hence it cannot be suitably or alternatively applied in other fields such as financial or government records. The implementation of the same DRM scheme in different fields results in contrasting outcomes. Therefore, effective implementation of DRM requires developing the right framework to satisfy a specific needs. Factors such as personnel, training, record type should be properly identified and managed into a DRM to suit a particular need.

One of the ways to overcome the challenges of implementing DRM is to boost the users' perception as regards the ease of operating DRM. [4] Revealed a positive and significant relationships exist between organization leadership, training, cost and new technology with perceived ease of use. This shows that providing extensive and in-depth training programs on the use of DRMs, effective cost management and improved funding, deployment of innovative and cutting edge technology as well as a focused administration will effectively improve the implementation of DRMs. [7] pointed out six classes of factors crucial for DRM success, and they include technological, high management support, training and participation, resource accessibility, system related factors, and environment. All the classes of factors were determined to be very vital to successful DRM. [3] Suggested that each Arab country should take in consideration all aspects of DRM, and make serious effort on improving them in such a way, that will bring about an all-inclusive and effective electronic government. Achieving this will entail improved planning and monitoring mechanisms to meet a predefined objectives within a prudently designed timetable, or else DRM implementation will trail behind, considering the accelerating advances in the field of ICT.

Prior to the implementation of DRMs, assessment studies should be carried out to fully evaluate current human and financial resources, skills, ICT, legal and regulatory framework and other features in order to accurately develop strategies for effective DRM implementation. There should also be increased awareness among all the citizens by disseminating the benefits, importance and opportunities that DRM has to offer. This is achievable by organizing workshops, seminars, conferences and symposiums for respective government agencies and private companies. It is highly recommended and vital to initiate pilot projects with high versatility and comprehensiveness [10]. The success of pilot projects provides an insight of the real projects and elaborate possible challenges that might come up in real projects. Moreover, the use of pilot projects will save time and money and time. Besides, simulating synchronization among governmental departments and agencies will increase the effectiveness and productivity of future developed DRMs. The sharing of databases will prevent the duplication of records and improve the performance of related governmental agencies. Also, given that the success of DRM is significantly dependent on human skills and competences more than any physical infrastructure, as asserted in the study by [10], there is the need for intensive education and training sessions together with incentives to encourage people to study and expand their knowledge base.

IV. CONCLUSIONS

Regardless of the likely benefits of digital records management (DRM), the execution of DRM is encumbered by barriers and limitations, which are mostly financial constraints, technical limitations/lack of professionals, standardization limits and lack of policies, as well as poor training and regulation constraints. The reviewed studies also pointed several challenges that limit the successful implementation of DRM. Modal analysis of some selected of this selected studies showed that lack of funding, inadequate IT infrastructure, and poor training programs and policies are the key challenges. Therefore, Arab countries need to develop strategic plans to surmount the financial, human and organizational barriers in order to ensure viability of DRM. This study suggests that more consideration should be given to funding DRM projects as well as the provision of adequate training in order to ensure effective DRM implementation.

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