

The Significant Factors for the Implementation of Digital Records Management Initiatives in Yemen: A Conceptual Framework

WALEED ALKHOFANI¹, ZAWIYAH M. YUSOF², HAZURA MOHAMED³, and MUAADH MUKRED⁴

¹Faculty of Information Science and Technology, Universiti Kebangsaan Malaysia

²Faculty of Information Science and Technology, Universiti Kebangsaan Malaysia,

³Faculty of Information Science and Technology, Universiti Kebangsaan Malaysia,

⁴Faculty of Information Science and Technology, Universiti Kebangsaan Malaysia,

Abstract— *The current exponential increase in the volume of information has transformed the businesses of both public and private companies. One of the initiatives to handle information is known as Digital Records Management (DRM). DRM is a management program with the primary aim is to replace paper records with those in digital format. The implementation of DRM calls for the identification of factors that could contribute to the successful implementation of the initiative. Previous studies failed to integrate the factors required for the implementation of DRM Thus, this paper seeks to identify the significant factors for ensuring the success of DRM implementation in Yemen since the country is still lagging behind in the implementation of such an endeavor. The study was carried out by means of literature review and also the opinion of experts in the area. The analysis of the literature showed that there are 10 factors paramount to the implementation of DRM initiative in the developing countries while the experts opined recommended the extracted factors.*

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

1. INTRODUCTION

Digital records management (DRM) system manages organization's records and information to provide speedy and timely access other than to reduce the volume of conventional records in paper format. The DRM system has been widely used in organizations which provide information with the aim to enhanced efficiency and effectiveness [1-3] of service delivery, mitigation of expenses and enhancement of practices. But prior to the implementation of DRM, the factors that contribute to the success of the must be made known [4-6].

Yemen is a developing Arab country that is still plagued with several challenges when it comes to realizing their Millennium Development Goals, on account of its unstable political, economic and social systems. This limits the organizations enhancement of service delivery and provision of information to the people as a result of which, the country still lags behind when it comes to information management involving the use ICT or systems [7]. This is proven by studies carried out by [7-10], which assert that the Yemeni government organizations are still lagging behind in the implementation of DRM at a fragmented pace [11]. This is evidenced in the National Information Center (NIC), which shoulder the role for collecting and manages the ministries' records/information throughout the country. This information is to be provided to the entire organizations, academics, researchers and stakeholders upon request.

The management of records and information in Yemen still depends on traditional normative tools as opposed to strategic planning ones [7, 12]. In addition, the current framework by the public organizations is inappropriate to be applied to DRM initiative to be implemented in NIC since DRM is technology based project (e-project). The framework has its limitation because it was prepared to cater the conventional records format. Consequently, NIC is unable to manage records and information sent to the centre resulting in inability to provide access to records and information to the stakeholders. As such, the DRM implementation in the NIC requires fora new framework along with the identification of critical success factors [13].

According to [14]; [7]; [15] [8], digital records are able to distinguish between successful and failed organizations in terms of system effectiveness and efficient management. Since NIC generates multi volumes of records and information, it is therefore the requirement to have a framework appropriate for the centre is pressing. The framework should serve as a guide executing the DRM initiative

2. THE IMPORTANCE OF DRM

A review of studies on DRM implementation and IS models in both developed (Canada, the U.S., Australia, Britain, Norway) and developing countries (Pakistan and Kingdom of Saudi Arabia) was carried out to provide an overview of the implementation of information system (IS) with the aim to identify the challenges and obstacles embracing the initiative.

A. DRM Initiatives in the Developed Countries

The government of Canada, has launched and funded a DRM system project under InfoWay initiative geared towards developing, supporting and providing DRM implementation solutions [16] to enable organizations to choose the best software to be used [17] and to provide services [18]. Added to this, DRM implementation has core features, which are,

ample capacity for information and records maintenance, effective and efficient organizational performance, and authorized individuals accessing to the real-time information. DRM also furnishes inter-linked management system that supports the process of decision-making [18].

Comparatively, in Britain, as revealed by the National Health Service (NHS) in 2001, that DRM was established nationwide by 2005. Several problems were indicated by the NHS in their 2010 resolution, with which the Parliament made an inquiry to determine the reasons. It was found that it is the lack of consideration of user needs, the neglect of users' involvement and lack of consistent communication and reporting methods were among the persistent underlying problems [19].

In the U.S., a fully integrated DRM concept was first arose in the 1990s but the consequential adoption was rather slow. An initiative was taken to propose the DRM implementation for public and private sectors, leading to increased implementation by 2009. Nonetheless, issues and barriers still remained such as lack of high-speed Internet and hardware, lack of time and financial limitations [20].

Similar initiative has been launched in Australia to improve information delivery involving public and private sectors [21]. The initiatives was first in the form of the pioneering national e-record system 2010-2012 but because of issues related to e-organizational policy (e.g., environmental and technical support) ([22]), the system was delayed. The initiative was however successful in state-wide implementation of digital record in the public sector (DOHA, 2009). Issues relating to ease of use and the effectiveness of the system has prevented successful implementation. As a result an additional initiative in the form of Victoria initiative 2003 was introduced [20]. Initially, the initiative hit a roadblock in 2011 when the roadmap fell short of meeting the objectives [20] and extra budget was added to the initially appropriated one [23].

Norway was not exempted from barriers in the implementation of DRM systems [24]. The difficulties faced were primarily related to the appropriation of financial resources and provision of qualified human resource (HR) [25]. Moreover, lack of training among the workforce is also one of the hindrances to the implementation, making it significant for organizations to train their employees in computer and information management courses, particularly DRM use ([26]; [24]). Other barriers include costs of maintenance, technical support, software sustainability and system assistance [26]. Evidently, from the discussion above developed nations have faced with several issues in DRM implementation and that the system has to cater to the political and economic situation in the country, and the pertinent factors that contribute to successful implementation.

B. DRM Initiative in the Developing Countries

With regards to the developing nations, beginning with Pakistan, several difficulties have been noted in DRM system implementations in 2007. These were users' disinterest, lack of users' support stemming from lack of training on how to use the system, along with lack of system knowledge, lack of infrastructure, and unexpected breakdown [27]. Pakistani organizations indicated that the system is increasingly being accepted and used with the assistance of technicians that are available to provide training and achieve the implementation level at the initial phase. Also, involvement of users should be considered for implementation success [27].

In the Kingdom of Saudi Arabia context the government has yet to establish a national DRM as majority of public organizations still use the traditional way of managing records, with only a few using basic DRM systems for daily tasks [28]. In 2000, the government set up a reform committee to review the information systems in Saudi health institutions and discovered that lack of IT infrastructure, lack of alternative plans for downtime or maintenance periods, lack of qualified staff [28], lack of effective networks, haphazard, and uncoordinated and uncooperative system implementation to be the causes of failure [29].

Yemen is a developing nation in the East, with incompetent IS for generating quality information [30, 31]. The Ministry of Public Health and Population (MOPHP) of Yemen, the Central Statistic Organization, Civil Registration Department of the Ministry of Interior, the Health Metrics Network (HMN), the World Bank and other primary stakeholders have collaborated to assess IS in Yemen and has reported that the major challenges in IS systems are similar to those of other developing countries. In the past DRM implementations have been used as a benchmark in light of users' involvement, qualified and experienced IT staff and other factors that have a significant effect on the IS implementation [31].

In addition, the characteristics of DRM implementation in Yemen is similar to that of other developing countries whereby, the government invested greatly to embark on the initiative in the public sector. The main issues arose in Yemen include uncoordinated investments, lack of qualified staff and lack of IS value awareness as a result of which the country still employs traditional normative methods rather than strategic and strict planning [12].

3. METHODOLOGY

The first part of the paper determines the factors that influence the implementation of DRM initiative in public sector of Yemen. Second, factors extracted from the literature review were ranked according to the frequency the factors appear in the literature.

Thereafter, interviews were conducted with the experts who involved in the DRM initiative within public sector in Yemen. These experts were asked to rank the identified factors extracted through the first technique Fig. 1, shows the methodology used by of this study which was adapted from [8].

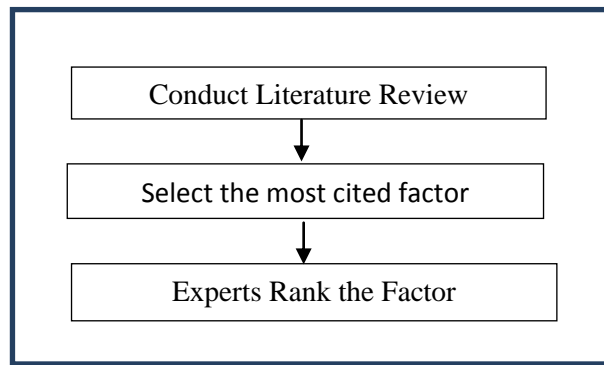


Fig. 1 Methodology for the study.

Figure 1 depicts the factors extraction by means of literature review, where over 100 related articles, journals and conference papers were reviewed. This is followed by ranking the extracted factors based on the number of appearance in the reference sources and the frequency of these factors were cited (see Table 1).

TABLE 1
FACTORS EXTRACTED FROM LITERATURE REVIEW

Factor	Reference
Top Management Support	[32-48]
Implementation team & user involvement	[31, 36-38, 40, 49-52]
Policy and Procedures	[36, 38-40, 53-58]
Training	[36-39, 41, 42, 46-49, 56, 59-63]
Inadequate Budget	[33, 37, 38, 40, 41, 43, 50, 54, 56, 57, 64, 65]
Commination	[4, 20, 36, 52, 66-71]
willingness	[6, 32, 36, 37, 56, 57, 65, 72, 73]
Ease of use	[36, 41, 43, 46, 47, 62, 74-76]
IT infrastructure	[38, 39, 43, 46, 56, 58, 62, 70, 71, 76-82]
Technical support	[39, 41, 56, 57, 62, 70, 72, 74, 76, 83-85]

The most cited factors were then presented to the selected experts in DRM to gain their opinion and consent the appropriateness of the factors considered as significant in the implementation of DRM initiative. The experts ranked the factors according to their priority in DRM implementation in the public organizations. Table 2 shows the list of factors recommended and ranked by experts.

TABLE 2
LIST OF FACTORS THAT RANKED BY THE EXPERTS

No	Factor	Rank										Rank
		1	2	3	4	5	6	7	8	9	10	
1	Top Management Support									9	1	91%
2	Implementation team & user involvement									8	2	92%
3	Policy and Procedures							1	2	7		96%
4	Training						1	1		8		95%
5	Inadequate Budget							3	7			87%
6	Communication						2	2	6			84%
7	Willingness							3	7			87%
8	Ease of use						4		6			82%
9	IT infrastructure							4	6			86%
10	Technical support								8	2		92%
11	Readiness	6	4									14%
12	Functionality		9	1								21%
13	Motivation	3	4	3								20%
15	applicability		5	5								25%
16	Self-efficacy	5		5								20%
17	Social influence	4	1	1	4							25%

According to Mukred, Yusof [86], the percentage of validity belonging to questions can be calculated by the following equation:

$V_{Total} = \sum_{i=1}^{10} ViXi$, where i is the rank given from 1 to 10 and v_i is the number of experts for each rank value. For example, calculate the percentage of the question validity for IT infrastructure.

TABLE 3
FINAL LIST OF THE FACTORS

No	Factor	Rank
1	Top Management Support	91%
2	Implementation team & user involvement	92%
3	Policy and Procedures	96%
4	Training	95%
5	Inadequate Budget	87%
6	Communication	84%
7	Willingness	87%
8	Ease of use	82%
9	IT infrastructure	86%
10	Technical support	92%

Based on analyzing the experts ranking data, the following factors obtained the highest rank: top management support, Implementation team & user involvement, Policy and Procedures, Training, Inadequate Budget, Communication, Willingness, Ease of use; IT infrastructure; Technical support. The factors which got the lowest rank were excluded from the list, which are applicability, Self-efficacy, Social influence.

4. FRAMEWORK DEVELOPMENT

An understanding of the relevant theory(s) is fundamental in any research as it guides the researcher in producing a logical opinion of the relationship between several constructs when seeking to develop a framework. This study seeks to develop a framework of DRM implementation which identified interrelated variables for DRM classified into four dimensions. These are project management dimension, organizational dimension, human resource dimension and technological dimension (refer to figure 1).

This study examines employees' behavior intention to implement DRM as understood through the modified and extended TAM3 model in the overall social structure of the urban/rural hospitals regarding these systems. Although, the TAM3 model seems promising with regard to an understanding of behavioral intention to implement and use technology, the focus of the initial TAM3 study was on large organizations. Researchers have demonstrated it as a valid and reliable model for the implementation of information technology and regarded it as appropriate for large organizations than other models ([81]). Moreover, TOE model combine three main dimension that influence user implementation of technology, which are technological dimension, organizational dimension and environmental dimension.

Most previous studies have focused on identifying organizational dimension and technological dimension [31]. However, because project management dimension and human resource dimension are vital for the success of DRM implementation [41]; [61], this study includes those dimension named project management and human resource. The TOE uses to include four dimensions, which are project management, organizational, human resource and technological.

In this study, the top 10 factors critical for the DRM implementation are Project Management Factors (Top management support, Implementation team & users involvement); Organizational Factors (Policy and procedures, Training, Adequate budget); Human Resource Factors (Communication, Willingness); Technology Factors (IT Infrastructure, Technical Support, Ease of use) as shown in figure 2.

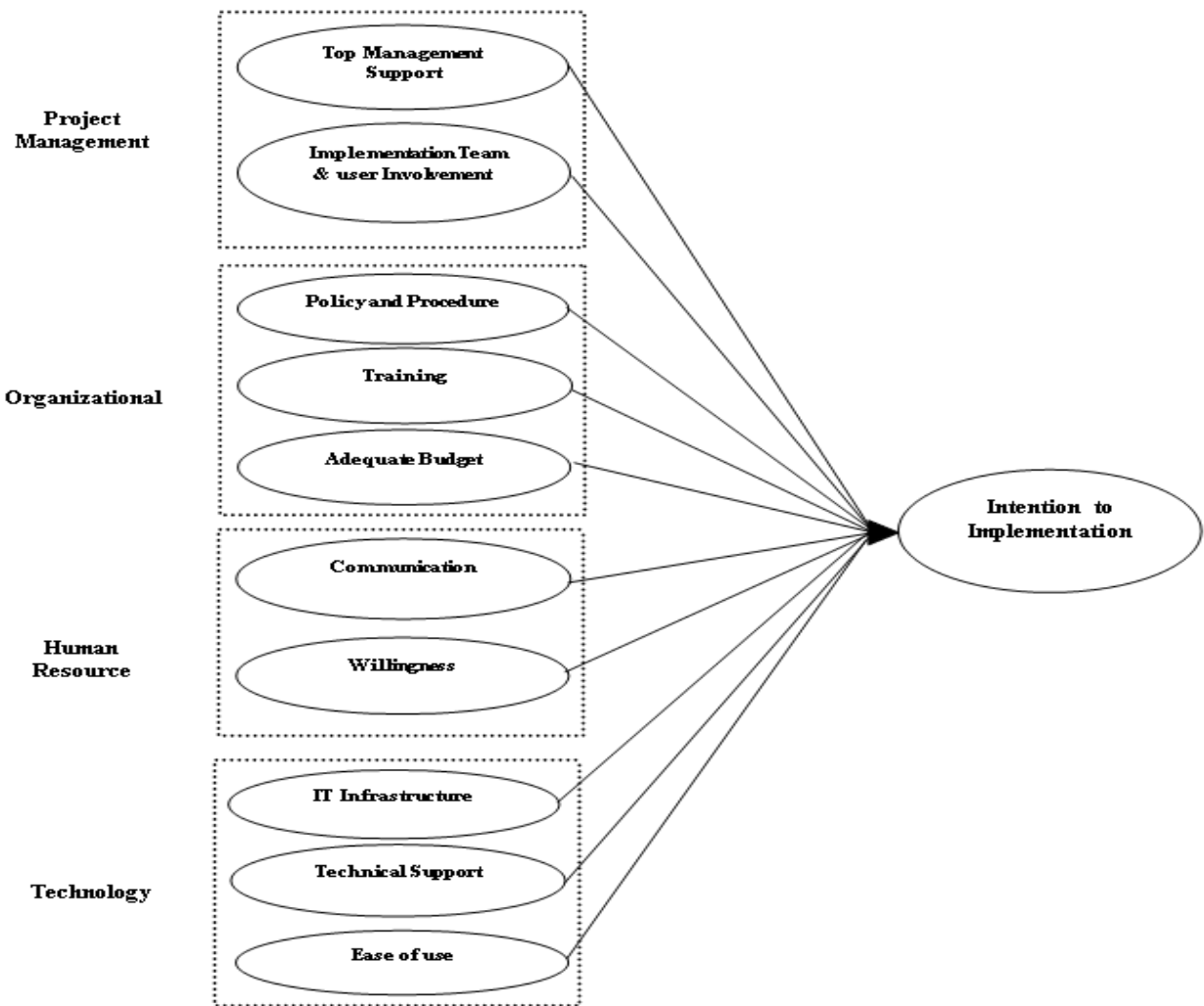


Fig. 2 Conceptual Framework of DRM implementation

5. DISCUSSION

The findings related to the extracted factors are discussed according to the dimension as follows:

Project Management Factors

The first factor under project management is top management support (TMS). It is important for the success of DRM implementation Ellis [35] as it guarantees project funding and employees' awareness [36]; [42]; [44]; [39]). Moreover, TMS was found to be important when governments have implemented DRM for enhanced operational effectiveness, storage and retrieval of documents, auditing, workflow facilities, searching and publication [39] and thus, the present study considers TMS as one of the major factors for successful DRM implementation.

Another critical success factor for DRM implementation is experienced and skilled project team [38]; [49]). Along with this factor is user involvement, a crucial consideration in successful implementation [27]; [38].

Organizational Factors

The first factor under the organizational factors is policy and procedure, where policy acts as a guide to facilitate activities in digital records management in a clear and extensive manner [53]; [36]; [54]. Majority of countries have established clear policies and guidelines for DRM system implementation [40].

Training serves as the other factor under organizational factors. Literature on DRM reveals that 80% of firm budget is allocated to training of staff ([87]; [38]), as it plays a major role in the success of new service implementation. Also, failure in DRM implementation has been attributed to lack of employee training [59]. This is because training improves the willingness of staff [60] and thus, has a significant effect on successful implementation [86]. Training allows users' effective and efficient operation of a new system [36]; [87] and therefore, this study takes it into consideration in the proposed framework.

Budget plays a key role in DRM implementation [38] in meeting the financial demands while improving the level of infrastructure, providing hardware and tools, software and maintenance and training [37];[50]. According to [64], lack of budget could prevent successful DRM implementation, and this was supported by [40] in the context of public firms. This study thus examines budget as a major factor in the study framework.

Human Resource Factors

Communication is categorized under the human resource (HR) factors that is essential for successful DRM implementation [66] facilitated through sharing of ideas, information and data among stakeholders [88]. This factor is deemed to be a change management tool in resolving issues [67];[36], ensuring timely sharing of information throughout the departments in the right format. Hence, it also resolves issues in the process of implementation [17]; [4];[89], with the opposite (lack of communication) evidenced to be related to implementation issues [70].

Successful DRM implementation depends on willingness to implement among staff [72] as they are the end-users. High level of staff willingness facilitates successful implementation [32] and reveals the top management commitment in the initiative [65]. The opposite of which (lack of willingness), was found to be a major implementation challenge by [37] and [73]. The importance of this factor was supported by [36] and [6] and thus, this study deems the factor significant in the framework.

Technology Factors

The first technology factor is IT infrastructure, which becomes the core for the DRM implementation ([38]). The factor incentivizes the implementation's performance of tasks, jobs and responsibilities. Implementation, according to [71], requires complex shift from legacy information systems and business process to an integrated one and has been stressed by both practitioner and researcher circles. IT infrastructure furnishes the basis upon which DRM system can be built and hence affecting the implementation of the system [78] ; [79]. It is also important for IT use [80]; [81], contrary of which, ineffective IT infrastructure can prevent IS implementation and use [76].

Second, technical support. New technology implementation affects both workplace environment and customer service for the better [85] and as such, good technical support is a must for successful implementation [74]. Lack of technical support during and after DRM implementation could lead to adoption challenges and ultimately, failure, necessitating technical support for successful implementation [76]. Hence, this study takes technical support into account in the study framework.

Third, the top frequent implementation factor that was found to be common to all groups of users is ease of use [74]. This is supported by [41], who revealed that the factor leads to higher tendency towards the use of the system. Ease of use also minimizes users' resistance and enhances successful technology implementation [47]; [36]. This factor influences perceived usefulness of system and actual use [76] and thus, ease of use of DRM is deemed to be essential for its successful implementation.

6. CONCLUSION

With the rapid advancement of technology, DRM has been changing the way businesses and consequently, the nature of records management has been transformed. The public organizations in the developing countries like Yemen, have multiplied the application of ICT in their operation resulting in the generation of significant volume of e-records. However, with lack of management strategy, digital records may lead to the provision of erroneous information. In light of this, DRM plays a major role in the management of records in terms of governance, auditing and risk management. In so doing, public organizations' competitiveness will be enhanced and fiduciary duty supported. This issue highlights the need to measure organizational performance via DRM implementation among public organizations.

REFERENCES

1. Thakkar, M. and D.C. Davis, Risks, barriers, and benefits of EHR systems: a comparative study based on size of hospital. Perspectives in Health Information Management/AHIMA, American Health Information Management Association, 2006. 3.
2. Mukred, M. and Z.M. Yusof. The DeLone–McLean Information System Success Model for Electronic Records Management System Adoption in Higher Professional Education Institutions of Yemen. in International Conference of Reliable Information and Communication Technology. 2017. Springer.
3. Mukred, M. and Z.M. Yusof, The Performance of Educational Institutions Through the Electronic Records Management Systems: Factors Influencing Electronic Records Management System Adoption. International Journal of Information Technology Project Management (IJITPM), 2018. 9(3): p. 34-51.
4. Nguyen, L., E. Bellucci, and L.T. Nguyen, Electronic health records implementation: an evaluation of information system impact and contingency factors. International journal of medical informatics, 2014. 83(11): p. 779-796.
5. Nilsen, P., Making sense of implementation theories, models and frameworks. Implementation Science, 2015. 10(1): p. 53.
6. Richardson, D., The successful implementation of electronic health records at small rural hospitals. 2016, Walden University.
7. Mukred, M. and Z. M. Yusof, The Role of Electronic Records Management (ERM) for supporting Decision making Process in Yemeni Higher Professional Education (HPE): A Preliminary Review. Jurnal Teknologi, 2015. 73(2).
8. Mukred, M., et al., Electronic records management system adoption readiness framework for higher professional education institutions in Yemen. International Journal on Advanced Science, Engineering and Information Technology, 2016. 6(6): p. 804-811.

9. Mukred, A., D. Singh, and N. Safie, Investigating the impact of information culture on the adoption of information system in public health sector of developing countries. *International Journal of Business Information Systems*, 2017. 24(3): p. 261-284.
10. Bilbao-Osorio, B., S. Dutta, and B. Lanvin. The global information technology report 2013. in *World Economic Forum*. 2013. Citeseer.
11. Saleh, S.S., et al., The path towards universal health coverage in the Arab uprising countries Tunisia, Egypt, Libya, and Yemen. *The Lancet*, 2014. 383(9914): p. 368-381.
12. Lafond, A. and R. Field. The Prism: Introducing an analytical framework for understanding performance of routine health information systems in developing countries. in *A Workshop on Enhancing the Quality and Use of Health Information at the District Level*. 2003.
13. Moh'd Al-adaileh, R., An evaluation of information systems success: A user perspective-the case of Jordan Telecom Group. *European Journal of Scientific Research*, 2009. 37(2): p. 226-239.
14. Mohammad Yusof, Z., Nurturing attitudes for records management in Malaysian financial institutions. *Records Management Journal*, 2009. 19(3): p. 218-230.
15. Mukred, M. and Z.M. Yusof, The DeLone–McLean Information System Success Model for Electronic Records Management System Adoption in Higher Professional Education Institutions of Yemen. 2018. 5: p. 812-823.
16. Rozenblum, R., et al., A qualitative study of Canada's experience with the implementation of electronic health information technology. *Canadian Medical Association Journal*, 2011. 183(5): p. E281-E288.
17. Deutsch, E., G. Duftscheid, and W. Dorda, Critical areas of national electronic health record programs—Is our focus correct? *International journal of medical informatics*, 2010. 79(3): p. 211-222.
18. Wegener, J. and A.J. Woodman, Critical Success Factors in Establishing the Electronic Health Record: the Experience of St. Michael's Hospital, Canada. *Critical Success Factors in Establishing the Electronic Health Record: the Experience of St. Michael's Hospital, Canada/AHIMA, American Health Information Management Association*, 2004.
19. Committee, H.o.C.P.A., The National Programme for IT in the NHS: progress since 2006. London: The Stationery Office Ltd, 2009.
20. Hasanain, R.A., Development of an EMR implementation framework for public hospitals in Saudi Arabia. 2015, Queensland University of Technology.
21. Goodchild, A., et al., The Brisbane southside healthconnect trial: Preliminary results. *HIC 2004: Proceedings*, 2004: p. 29.
22. Carnall, C.A., *Managing change in organizations*. 2007: Pearson Education.
23. Davey, B. and K.R. Parker, Requirements elicitation problems: a literature analysis. *Issues in Informing Science and Information Technology*, 2015. 12: p. 71-82.
24. Lium, J.-T., A. Tjora, and A. Faxvaag, No paper, but the same routines: a qualitative exploration of experiences in two Norwegian hospitals deprived of the paper based medical record. *BMC medical informatics and decision making*, 2008. 8(1): p. 2.
25. Tanko, A., Implementing EHR in a developing country: potential challenges and benefits. 2009, Universitetet i Tromsø.
26. Huryk, L.A., Factors influencing nurses' attitudes towards healthcare information technology. *Journal of Nursing Management*, 2010. 18(5): p. 606-612.
27. Malik, M.A. and H.R. Khan. Understanding the implementation of an electronic hospital information system in a developing country: a case study from Pakistan. in *Proceedings of the Third Australasian Workshop on Health Informatics and Knowledge Management-Volume 97*. 2009. Australian Computer Society, Inc.
28. Alanazy, S., Factors associated with implementation of electronic health records in Saudi Arabia. 2006: ProQuest.
29. Altuwaijri, M., Supporting the Saudi e-health initiative: the Master of Health Informatics programme at KSAU-HS/Promotion de l'initiative saoudienne en matière de cybersanté: le programme de master en informatique médicale de la Faculté de médecine de l'université des sciences de la santé Roi Saoud ben Abdelaziz. *Eastern Mediterranean Health Journal*, 2010. 16(1): p. 119.
30. Mukred, M. and Z.M. Yusof, Electronic Records Management and Its Importance for Decision making Process in Yemeni Higher Professional Education (HPE): A Preliminary Review, in *1st International Conference of Reliable Information and Communication Technology*. 2014: Johor Bahru.
31. Mukred, A., D. Singh, and N. Safie, A review on the impact of information culture on the adoption of health information system in developing countries. *Journal of Computer Science*, 2013. 9(1): p. 128-138.
32. Fui-Hoon Nah, F., J. Lee-Shang Lau, and J. Kuang, Critical factors for successful implementation of enterprise systems. *Business process management journal*, 2001. 7(3): p. 285-296.
33. Biehl, M., Success factors for implementing global information systems. *Communications of the ACM*, 2007. 50(1): p. 52-58.
34. Palos-Sanchez, P.R., F.J. Arenas-Marquez, and M. Aguayo-Camacho, Cloud Computing (SaaS) Adoption as a Strategic Technology: Results of an Empirical Study. *Mobile Information Systems*, 2017. 2017: p. 1-20.
35. Ellis, J., Implementing a solution for electronic recordkeeping in the public sector. *Managing Electronic Records*, 2005: p. 163-86.

36. Kwatsha, N., Factors affecting the implementation of an electronic document and records management system. 2010, Stellenbosch: University of Stellenbosch.
37. Swaminathan, S., Critical success factors of ERP implementation. 2011, University of Toledo.
38. Abdulkadhim, H., et al., Exploring the common factors influencing electronic document management system(EDMS) implementation in government. *ARNP Journal of Engineering and Applied Sciences*, 2015. 10(23).
39. Alshibly, H., R. Chiong, and Y. Bao, Investigating the Critical Success Factors for Implementing Electronic Document Management Systems in Governments: Evidence From Jordan. *Information Systems Management*, 2016. 33(4): p. 287-301.
40. Cucciniello, M., et al., Understanding key factors affecting electronic medical record implementation: a sociotechnical approach. *BMC health services research*, 2015. 15(1): p. 268.
41. Farzandipur, M., F.R. Jeddi, and E. Azimi, Factors Affecting Successful Implementation of Hospital Information Systems. *Acta Inform Med*, 2016. 24(1): p. 51-5.
42. Alzubi, K.N., F.M. Aldhmour, and H.B.A. ALattraqchi, An Investigation of Factors Influencing the Adoption of Electronic Management based on the Theory of Reasoned Action (TRA): A Case Study in the University of Technology/IRAQ. *International Journal of Computer Applications*, 2015. 123(18).
43. Safdari, R., M. Ghazisaeidi, and M. Jebraeily, Electronic health records: Critical success factors in implementation. *Acta Informatica Medica*, 2015. 23(2): p. 102.
44. Boyton, J., et al., Suboptimal business intelligence implementations: understanding and addressing the problems. *Journal of Systems and Information Technology*, 2015. 17(3): p. 307-320.
45. Lakbala, P., M. Lakbala, and K.D. Inaloo, Factors Affecting Electronic Medical Record Acceptance by Specialist Physicians. *Lecture Notes on Information Theory*, 2015. 2(4).
46. Meiyanti, R., et al. Systematic review of critical success factors of E-government: Definition and realization. in *Sustainable Information Engineering and Technology (SIET)*, 2017 International Conference on. 2017. IEEE.
47. Dezdar, S. and S. Ainin, The influence of organizational factors on successful ERP implementation. *Management Decision*, 2011. 49(6): p. 911-926.
48. Alshehri, M. and S. Drew. Implementation of e-government: advantages and challenges. in *International Association for Scientific Knowledge (IASK)*. 2010.
49. Shatat, A.S., Critical success factors in enterprise resource planning (ERP) system implementation: An exploratory study in Oman. *Electronic Journal of Information Systems Evaluation*, 2015. 18(1): p. 36-45.
50. Mahmood, H.B.A., An Investigation of Factors Influencing the Adoption of Electronic Management Based on the Theory of Reasoned Action (TRA): A Case Study in the University of Technology/IRAQ. 2013, Mu'tah University.
51. Tuzcu, A. and N. Esatoglu, Factors of success in information technologies projects: evidence from capital of Turkey, Ankara. *Problems and Perspectives in Management*, 2011. 9(2): p. 71-79.
52. CHEPKWONY, M.C., FACTORS INFLUENCING THE ADOPTION OF ELECTRONIC MEDICAL RECORDS TECHNOLOGY IN PUBLIC HEALTH INSTITUTIONS IN KENYA: A CASE OF HOSPITALS IN NAIROBI COUNTY.
53. Asma'Mokhtar, U. and Z. Mohammad Yusof, Electronic records management in the Malaysian public sector: the existence of policy. *Records Management Journal*, 2009. 19(3): p. 231-244.
54. Durlak, J., The Importance of Quality Implementation for Research, Practice, and Policy. *ASPE Research Brief*. US Department of Health and Human Services, 2013.
55. Durlak, J.A. and E.P. DuPre, Implementation matters: A review of research on the influence of implementation on program outcomes and the factors affecting implementation. *American journal of community psychology*, 2008. 41(3-4): p. 327-350.
56. Asogwa, B.E., The challenge of managing electronic records in developing countries. *Records Management Journal*, 2012. 22(3): p. 198-211.
57. Hage, E., et al., Implementation factors and their effect on e-Health service adoption in rural communities: a systematic literature review. *BMC health services research*, 2013. 13(1): p. 19.
58. Luyombya, D., Framework for effective public digital records management in Uganda. 2010, Department of Information Studies University College London Supervisor: Dr. Elizabeth Shepherd and Dr. Andrew Flinn, Department of Information Studies, University College London.
59. Grange, M. and M. Scott, An investigation into the affect of poor end user involvement on electronic document management system (EDMS) implementation. 2010.
60. Leikums, T., Managing human factors in implementing electronic document system in the public sector. *Romanian Review of Social Sciences*, 2012(2).
61. Safdari, R., M. Ghazisaeidi, and M. Jebraeily, Electronic health records: critical success factors in implementation. *Acta Inform Med*, 2015. 23(2): p. 102-4.
62. Lakbala, P., M. Lakbala, and K.D. Inaloo, Factors Affecting Electronic Medical Record Acceptance by Specialist Physicians. *Lecture Notes on Information Theory Vol*, 2014. 2(4).

63. Hwang, M.I., C.T. Lin, and J.W. Lin. Organizational factors for successful implementation of information systems: Disentangling the effect of top management support and training. in Proceedings of the Southern Association for Information Systems Conference, Atlanta, GA, USA. 2012.
64. Ismail, N.I.B. and N.H.B. Abdullah. Developing electronic medical records (EMR) framework for Malaysia's public hospitals. in Humanities, Science and Engineering (CHUSER), 2011 IEEE Colloquium on. 2011. IEEE.
65. Zhang, L., et al. Critical success factors of enterprise resource planning systems implementation success in China. in System Sciences, 2003. Proceedings of the 36th Annual Hawaii International Conference on. 2003. IEEE.
66. Alsahafi, Y.A., Studies of EHR implementation and operation in different countries with particular reference to Saudi Arabia: a thesis presented in partial fulfillment of the requirements of degree of Master in Information Science at Massey University, Albany campus, Auckland, New Zealand. 2012, Massey University.
67. Luisa Di Biagio, M. and B. Ibricu, A balancing act: learning lessons and adapting approaches whilst rolling out an EDRMS. Records Management Journal, 2008. 18(3): p. 170-179.
68. HIMSS, Electronic Health Records: A Global Perspective. Healthcare Information and Management Systems Society, 2010: p. 1-105.
69. Standing, C. and H. Cripps, Critical Success Factors in the Implementation of Electronic Health Records: A Two-Case Comparison. Systems Research and Behavioral Science, 2015. 32(1): p. 75-85.
70. Sánchez, J.L., S. Savin, and V. Vasileva, Key success factors in implementing electronic medical records in University Hospital of Rennes. L'Ecole Nationale de la Santé Publique (National School of Public Health), Rennes, Rennes, France, 2005: p. 1-59.
71. Bhatti, T. Critical success factors for the implementation of enterprise resource planning (ERP): empirical validation. in the second international conference on innovation in information technology. 2005.
72. Hassibian, M.R., Electronic health records acceptance and implementation in developing countries: Challenges and barriers. Razavi International Journal of Medicine, 2013. 1(1): p. 6-11.
73. Vaughan, P.J. System implementation success factors; it's not just the technology. in CUMREC Conference. 2001.
74. McGinn, C.A., et al., Users' perspectives of key factors to implementing electronic health records in Canada: a Delphi study. BMC medical informatics and decision making, 2012. 12(1): p. 105.
75. Lee, C.C. and H. Lee, Factors affecting enterprise resource planning systems implementation in a higher education institution. Issues in information systems, 2001. 2(1): p. 207-212.
76. CHEBOLE, G.C., FACTORS INFLUENCING ADOPTION OF ELECTRONIC MEDICAL RECORD SYSTEMS IN PUBLIC HEALTH FACILITIES IN KENYA: A CASE OF NAKURU COUNTY, in thesis Master. 2015.
77. Fixsen, D.L., et al., Implementation research: A synthesis of the literature. 2005.
78. Ouma, S. and M. Herselman, E-health in rural areas: case of developing countries. International Journal of Biological and Life Sciences, 2008. 4(4): p. 194-200.
79. Qureshi, Q.A., et al., Infrastructural barriers to e-health implementation in developing countries. European Journal of Sustainable Development, 2013. 2(1): p. 163.
80. Seymour, L., W. Makanya, and S. Berrangé. End-users' acceptance of enterprise resource planning systems: An investigation of antecedents. in Proceedings of the 6th annual ISO/EWorld conference. 2007.
81. Venkatesh, V., et al., User acceptance of information technology: Toward a unified view. MIS quarterly, 2003: p. 425-478.
82. Leonard, K.J., Critical success factors relating to healthcare's adoption of new technology: a guide to increasing the likelihood of successful implementation. Electronic healthcare, 2004. 2(4): p. 72-81.
83. Durlak, J.A. and E.P. DuPre, Implementation matters: a review of research on the influence of implementation on program outcomes and the factors affecting implementation. Am J Community Psychol, 2008. 41(3-4): p. 327-50.
84. Edwards, N. and P.M. Barker, The importance of context in implementation research. JAIDS Journal of Acquired Immune Deficiency Syndromes, 2014. 67: p. S157-S162.
85. Al Haderi, S.M., The influences of government support in accepting the information technology in public organization culture. International Journal of Business and Social Science, 2014. 5(5).
86. Mukred, M., et al., Taxonomic framework for factors influencing ERMS adoption in organisations of higher professional education. Journal of Information Science, 2018. 0(0): p. 0165551518783133.
87. Asogwa, B.E., The challenge of managing electronic records in developing countries: Implications for records managers in sub Saharan Africa. Records Management Journal, 2012. 22(3): p. 198-211.
88. Hasanain, R.A., K. Vallmuur, and M. Clark, Electronic medical record systems in Saudi Arabia: knowledge and preferences of healthcare professionals. Journal of Health Informatics in Developing Countries, 2015. 9(1).
89. Standing, C. and H. Cripps, Critical success factors in the implementation of electronic health records: A two- case comparison. Systems Research and Behavioral Science, 2015. 32(1): p. 75-85.