International Journal on Advanced Science Engineering Information Technology

Vol.6 (2016) No. 6
ISSN: 2088-5334

Electronic Records Management System Adoption Readiness Framework for Higher Professional Education Institutions in Yemen

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***Abstract*— Electronic records (e-records) are used to provide proof of organizational activities. E-records are crucial in complementing business functions, an essential tool to assess organizational performance and are the core of good governance. E-records in Higher Professional Education (HPE) institutions contain valuable information in running the education business in an efficient and effective manner, supplying services consistently and in supporting effective performance evaluation and decisions. There are serious consequences and risk awaiting when the administrators of HPE are not based on information contained in e-records in making decisions. Well-informed decision makings would thus be impossible if electronic records are not efficiently and effectively managed the using system. Therefore, Electronic Records Management System (ERMS) is an effective and efficient tool to hinder such a problem. Voluminous electronic records are created every day in HPE. The record keepers inclusive of records managers, archivists, administrators and IT personnel, who are the people essentially involved in creating, maintaining and preserving the contents of the e-records. Thus, this personnel participating in the records keeping should identify the readiness of the HPE institutions to adopt ERMS. Therefore, the aim of this paper is to investigate the readiness of the Yemeni HPE institutions to adopt the ERMS. The study involves interviewing 20 specialists from Yemeni HPE institutions who are involved in ERMS. The findings showed that in order to promote effective ERMS readiness in the HPE institutions, there should be a framework to be used as guidance in such process.**

***Keywords*— Yemen; Electronic Records Management System; ERMS adoption; policy; Higher Professional Education**

I. INTRODUCTION

In this modern age, the exponential increase of information volume has transformed the manner in which organizations, both public and private in carrying out their businesses [1]. Significant changes have taken place in the nature of the information being generated [2], [3] stored, processed and distributed. Although technology can help to manage the creation and the processing of information, if used without understanding the records and information management principle, will only invite haphazard effect [4].

Research in electronic records management has received attention in the developed countries with investigations focusing on practical solutions to the management of e-records [6]. According to [7], the future directions of e-government would be closely connected to government business to support evidence-based governance and delivering services. Therefore, ERMS is crucial in this direction.

According to the International Organization for Standardization (ISO), ERMS is described as an electronic information system that has the functionality for capturing, managing, and providing access to e-records.

It is evident through the last decade that good ERMS is vital for good electronic recordkeeping. ERMS is replying the need for its users who are dependent on actions are taken through the e-records life cycle. Thus, organizations began to design and implement ERMS application that provides sufficient and effective functionality [5].

The trusted ERMS should be able to capture, maintain as well as offer access to transactions' evidence over time as required by the standards and requirements. In other words, the trusted ERMS is distinguished from other types of information systems by the fact that is organized to accomplish specific functions of creating, storing, and accessing records for evidential purposes. To be precise, the

ERMS has the capacity of deciding how long records should be retained [8].

The implementation of ERMS in the HPE institutions and universities in the developing countries is still limited as evidenced by the study of [2]. HPE is a portfolio-oriented system based on Outcome Based Education (OBE). The learning outcomes of a module implementation plan illustrate the knowledge to be gained by the student. The primary attribute of a learning outcome is that it ought to be designed with regard to a final output of learning. It is crucial for the learners to make a portfolio, which comprises facts, encompassing the learning outcome of all the modules. In HPE institutions, students might be using several portfolios, including numerous evidence records. These portfolios are used for generating information on a daily basis. Nevertheless, it is crucial to have accurate and reliable information for the purpose of evaluation and decision making. In HPE, there are many e-records generated periodically which need to be managed effectively and efficiently in order to increase the performance of the education. Since records can differentiate between successful and unsuccessful organizations, they should be managed effectively and efficiently and exploited optimally [9]. Thus, adopting ERMS for managing e-records in HPE institutions becomes an urgent issue.

Adopting ERMS calls for serious steps to be taken to guarantee that records are created, obtained, maintained and managed according to regulations and compliance with the policies. If this is neglected in higher education institutions in these countries, it will continuously encounter problems [57]. The adoption of ERMS should be monitored and continuously evaluated to reduce failure. Reference [4] assures that there should be many criteria to assess the organization's readiness for the adoption of ERMS. These are the legal and regulatory framework, the infrastructure, procedures for collecting, processing, storing and disseminating e-records, the staffing and training levels and issues relating to the policy and financial support. Thus, this paper assesses the challenges and the readiness in managing e-records among institutions throughout Yemeni HPE.

II. Materials And Methods

ERM is a challenge for many organizations due to the growing volume of e-records. Organizations should manage e-records effectively as they document the information necessary for the essential functions of the service delivery for the citizens [9], [56].

Problems of managing electronic records are common among the public-sector including HPEs. Although some institutions including universities already have basic ICT infrastructure but are still practicing paper-based records management [12]. Although records are a rich source of information, they often receive low priority and are not properly addressed in protecting organizations from risks [13].

E-records created and held in systems are vulnerable. Unless they are protected by a clearly defined regulatory framework [10], their value as evidence diminishes rapidly from the point that they are created. In particular, unless computerized systems are designed to systematically capture records along with the metadata that describes their context, content, structure and management, the information will lack the legal value because the authentication is questionable. There is a low awareness among governments' stakeholders of the importance of ERMS to create records as evidence as well as a lack of full functionality needed to deal with records. There are serious consequences in case e-records are not well managed and protected. These e-records might be deleted or damaged through technological or an insufficient control framework [14], [15].

In the developing countries, which share many similarities at social, political and economic levels as well as problems related to managing ERMS, the increasing tendency to use computers to streamline administration has highlighted a requirement for access to information contained in e-records [12]. However, many of those countries currently lack the frameworks that could assist in the proper adoption of ERMS [54], [55] which reflects the lack of readiness to implement such a system. Therefore, it is crucial to examine the readiness and capability of adopting ERMS especially in the education area where the electronic records are generated daily and need efficient and effective management systems.

A. Electronic Records and Higher Professional Education

Education is considered as one of the primary inspiring factors beyond national economic development and is one of the most effective ways in which individuals can ever hope to achieve better opportunities and a higher standard of living.

Rapid developments in technology have made tremendous changes in the way of life and the demands of society. In recognizing the impact of new technologies on the workplace and everyday life, today's teacher must try to restructure their education programs and classroom facilities in order to minimize the teaching and learning technology gap between today and the future [16], [17].

In educational organizations, e-records are important in the achievement of their objectives. Records management could give untold advantages in the form of improved effectiveness, increased standardization, cost reduction, and help organizations comply with legislation, standard and guidelines as well as decision-making process [18].

Educational organizations' records, whether physical or electronic should be properly kept and managed for utilization and future retrieval. Information and data generated from effective and efficient records management program aid the educational organizations to plan and make useful decisions, preserve facts and figures for future reference, thereby enhancing the efficiency and effectiveness of the organizations and their administration [19], [20]. However, without proper planning and implementation, electronic records created through modern Information Technology (IT) are likely to become inaccessible in the future [4].

B. The Importance of Electronic Records Management System

ERMS enables easy and efficient search and retrieval of records and provides sophisticated electronic records management capabilities to ensure that e-records can be

captured, found, accessed, secured, tracked, shared, and managed over time.

Electronic records contain information that is a unique and invaluable resource and important operational asset [22]. Thus, a systematic approach to the management of the HPE institution's electronic records is essential for many reasons such as: Ensuring that information in electronic records is reliable, available and of high quality; Preserving the records for future evidence in any actions; Supporting the institutions to achieve their objectives by encouraging openness, creativity, participation and innovation; Facilitating the creation and dissemination of knowledge and information assets; Supporting staff, students and stakeholders in the management of records, compliance, and risk; Applying the best ethical standards; Ensuring that the institutions conduct themselves in an orderly, efficient and accountable manner; Realizing best value through improvements in the quality and flow of information and greater coordination of records and storage systems; Supporting core institutional functions, teaching and research, providing evidence of conduct and the appropriate maintenance of associated tools, resources, and outputs; Meeting legislative, regulatory, funding and ethical requirements; Delivering services to staff and stakeholders in a consistent and equitable manner; Assisting and documenting policy formation and managerial decision making; Providing continuity in the event of a disaster; Protecting the interests of the organization and the rights of employees, clients, students, research participants, and present and future stakeholders.

Students' records are a form of strategic resource for educational institutions to set strategy, improve performance, assess, evaluate and protect vital information securely [21].

C. E-Readiness

A review of the literature provides no consensus on the definition of e-readiness. On the other hand, there is consensus in the literature that the tools employed to assess e-readiness can be divided into two main types: those are the ones which mainly assess the basic infrastructure or the readiness of a country for business or economic growth; and those that mainly assess a nation's ability to benefit from ICTs [4].

E-readiness is the degree of willingness of a country to be a part of the networked world by evaluating its progress in various aspects of ICT adoption. E-records readiness, however, refers to the capacity of organizations to have the necessary institutional, legal framework and ICT infrastructure based on systematic records and information management program [49], [58].

D. ERMS in Developing Countries

Dawood et al. [23] explored the electronic management system adoption in the largest university in Iraq. The participants in this study included employees who have experience with computers or any modern technologies. With regard to data collection, the key instrument for gathering data was the questionnaire. The findings showed that system quality, service quality, a trust of the organization, and usefulness were found as significant factors that affect the employees' adoption of e-administration services in University.

Reference [24] conducted a preliminary evaluation regarding measurable benefits of an ERMS in the example of a public institution in Turkey. The finding showed the positive attitude toward the adoption of ERMS.

To assess records management system of the higher education institutions in Nigeria, a study conducted by [25] revealed that the project had been plagued by ineffectiveness in record management practices, incompetent personnel, inadequate infrastructural facilities, and constant power failures. Although findings showed that records management contributed to effective administration at the university, and consequently to the effective and efficient delivery of services to the students, lecturers and the community but records management at university was not receiving the attention it deserved. The study recommended that the Records Manager be provided with adequate training to ensure that this official would be able to undertake the full responsibilities of the post.

In Pakistan, ERMS implementation has been limited, even though the ERMS has led to increased efficiency and effectiveness of the government, increased transparency and accountability in decision-making, and enhanced delivery of efficient and cost-effective public services to citizens. Furthermore, the case indicates that IT implementation challenges are universal rather than dependent on the nature of the country. Lack of adequate training and design of user interface are key indicators of the limited success of implementation of ERMS in the department under investigation [26].

In Botswana labor organizations, e-records readiness is examined by [27]. The examination was done based on a mixture of components including the use of ICT, records management practice, the selected tents of existing e-records readiness tools and the integration extent of organizations with national and framework of readiness. Results indicated the low adoption rate of e-records.

In the developed countries, electronic systems to manage documents and workflow are very relevant to the public sector (especially to universities) since nearly 50% of the universities plan to use or plan to expand those systems usage. This proportion of the universities is on the right track to get the hang of working efficiently regarding their processes and document management. The other universities should catch up with these universities in these areas of process improvements and efficiency enhancements [28].

The following sections discuss the factors which have been used as criteria for assessing the e-record readiness among HPE institutions in Yemen.

1) IT Infrastructure: Most developing countries are characterized by poor infrastructure [29]. As a result, IT infrastructure is expected to be a significant predictor in determining the readiness of institutions for the adoption of ERMS in such developing countries. As confirmed by previous studies, IT infrastructure is one of the most important factors that play a significant role in the successful implementation of systems [30].

Reference [31] defined IT infrastructure as the IT resources that are shared and which consist of a technical

physical base of hardware, software, communications technologies, data, and core applications and the human input of skills, expertise, competencies, commitments, values, norms, and knowledge that in total constitute IT services that are invariably unique to an organization. These IT services made available a basis for the exchange of communication within an organization and for the purpose of developing and implementing current and planned business applications.

The suitability of IT infrastructure is investigated as a basis for the creation of successful systems and their empirical study confirmed the validity and reliability of the IT infrastructure services construct for measuring the success of systems [32].

2) Top Management Support: Top management support is defined as the extent to which the top management appreciates the important role of Technology function and the content to which it is involved in the activities [33]. Organizational facilitation or facilitating conditions refers to the extent to which an employee believes that an organization exists to support the use of the technology [34].

Top management support in the organization has either positive or negative effects on technology adoption [35]. Lack of organization support could prevent end-users from using a particular system [36]. Conversely, if management support exists in the organization, technology acceptance would materialize [37].

Top management support could be in the form of direct or indirect support. Indirect support is when vendors and consultant are hired in efforts to adopt the system in the organization, while direct support is reflected in the positioning of the IS staff in the planning and developing stages [38].

On the other hand, it should be noted that in the majority of developing countries, a gap exists between what should be done and what is actually done. Previous studies have recognized the importance of the support in the instructional use of computers and systems as crucial to the success of facilitating staff development in the universities. Therefore, the current study supports the notion that top management support can positively affect ERM adoption. In the absence of such support, the organization is unlikely to succeed in the development, planning and use of ERMS. Therefore, the study tests the effects of top management support on the readiness of ERMS adoption.

3) Financial Support: In order to successfully administer an e-records management system, there must be sufficient and on-going funds. An e-records management program, similar to any system for the management of records, will require adequate funding for the long term. Management must, therefore, make plans for this and ensure allocations for the purpose are made to the recurring budget.

Financial support including monthly salary is a firm indication that the organization is committed measure as evidenced by records management personnel in the private universities of developing countries. This is particularly true according to the study conducted by [22] in Nigeria. The study examined the socio-economic factors including monthly salary as an indication of the organizational commitment displayed by the personnel of records management in Nigeria's private universities. The findings showed significant multiple correlations between socio-economic factors, and respondents' organizational commitment, including, for example, the payment of a monthly salary.

In a study by [39] which examined the current practice of electronic health records (EHRs) in Korea, financial support was found to be an important factor that either facilitated or impeded the adoption of EHRs. Korean hospitals had to ensure the availability of long-term financing before they could consider adopting and implementing the EHRs.

On the other hand, a study by [40] indicated that organizations have to make a considerable effort by way of financial resources for the management of the various activities according to a system. It is expensive to implement a successful system as it entails substantial resources and numerous costs such as those incurred for initial setup, maintenance, and upgrading. Thus, such high costs could impede the adoption and implementation of an e-records management system [41]

With the increasing dependence on financial support in adopting the technology, there is no doubt that a positive and effective support of finance for ERMS aligned with the organizational objectives remains the essential factor of success in the improvement of future efforts in information. Hence, this factor is a good determinant of the adoption readiness of EMS.

4) Training: On the basis of the previous studies findings, it is recommended that it is pertinent for the successful adoption of ERMS to provide sufficient training to principals by way of in-service programs, conferences, seminars, and workshops to cover the whole range of ERMS functions. The training factor is, therefore, crucial to be included in this study as a measure of readiness [42].

Training of staff will help to eliminate any risks that may compromise the implementation and adoption success [43]. For successful adoption of EMRs, there must be proper technical training and support [44], [45]. Moreover, insufficient training results in the probability of implementation failure [46], [50].

An organization shows its readiness to adopt and implement an ERMS if it has trained personnel and resources available.

5) Policy: Past researches have stated that it is vital for policy to be included as a factor that influences the adoption of ERMS [11], [47]. A research conducted by [12] indicated that public institutions of higher learning in Libya have no policy and guidelines for implementing the ERM initiative. This has resulted in difficulties when personnel has to handle and manage e-records. The policy is the main factor that mediates his relationship between records management (RM) and accountable and efficient governance. According to a study of [48], organizations should adopt and implement a policy for RM for the purpose of creating and managing authentic, reliable, complete and useable records that can support business functions for as long as needed.

Thus, the policy factor should be one of the criteria regarding the ERMS adoption.

E. Assessment of Electronic Records Management System Readiness

While e-readiness may be the degree to which the organization participates in an e-environment, e-records readiness assesses the degree to which organizations have e-records management systems that capture, managed and are in line with the required recordkeeping practices that assures the security of the records for informational and evidential purposes.

Most assessments tools for e-records readiness focus on the assessment of physical infrastructure including high-speed access to ICT in government, with integration and use of ICT in daily life; the existence of government policies, legislative and regulatory framework; guarantee of user confidentiality and online security; global access by all citizens with freedom of access to all kinds of information [27].

E-records readiness assessments provide benchmarks to compare and gauge progress in organizations in understanding the full implications of e-records management. The readiness assessments help organizations to establish and prioritize e-records and information management needs for the present institutional capabilities, thus illuminating the potential opportunities and challenges that the electronic and information age [51].

As such, e-records readiness assessment frameworks are therefore instruments for the evaluation of the e-records readiness of organizations by assigning numerous measurement criteria to address the necessary institutional, legal and ICT framework, and also the records and information management infrastructure, in an e-environment [27], [51].

The adapted definition of ERMS readiness in this paper is the availability of the mentioned related factors in the HPE institutions that have been found to be important in proper adoption.

F. Methodology

The first part of the paper determines the measurement variables for the purpose of assessing the ERMS readiness among HPE institutions in The Republic of Yemen. Thereafter, interviews are conducted with the respondents involved in the ERMS within HPE institutions. As shown in Fig. 1, the methodology of this study consists of four stages: determining the factors and criteria of the readiness assessment, reviewing the factors, interviewing the experts regarding the readiness of the ERMS adoption and conducting a thematic analysis to explore the results of the study.

Taylor [52] identified five types of interviewing for qualitative research: survey interviewing, qualitative interviewing, in-depth interviewing, life-story interviewing, and focus group interviewing. For various reasons, this paper has chosen to use qualitative interviewing, with open-ended questions that allow the interviewees to freely express their opinions regarding the readiness of ERMS adoption in their institutions.

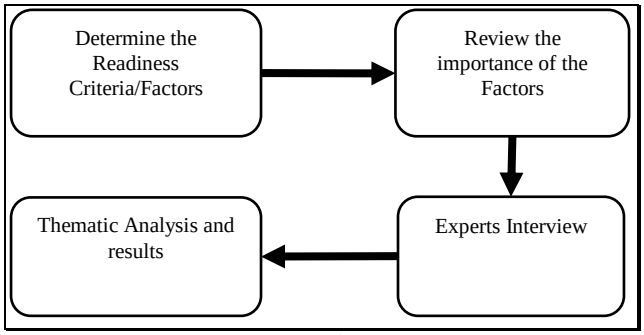

Fig. 1 The steps of the methodology

The study was conducted to investigate the readiness of the HPE institutions in Yemen as a developing country where an ERMS needs to be adopted. It was conducted through HPE specialists from seven community colleges with the intention of creating greater awareness among the HPE community of issues that may facilitate the adoption of ERMS in similar settings.

HPE institutions were selected for the study because they have a good reputation, and also because they were in the process of implementing the ERMS. Additionally, the HPE institutions are based on OBE education where e-records are the basis of the evaluation process and a huge amount of e-records results daily. This presented the opportunity to disseminate knowledge about the ERMS, and also about the on-going implementation process, and issues related to the successful adoption of ERMS.

Semi-structured interviews were conducted with 20 different participants, including deans, deputy deans, managers, IT staff, academic lecturers and administrative staff. Interviews lasted between 20 and 40 minutes, for an average of 30 minutes per interview. Recordings were made of all the interviews with the exception of those with the consultants who requested not to be recorded.

The interviews were carried out using VOIP applications. Each interview began with a self-introduction by the interviewer and an explanation of the purpose of the study. Confidentiality and privacy of the participant were ensured.

On receiving the participant's consent, an interview time and place was arranged at the convenience of the participant. Besides the formal interviews, there were also informal conversations when they were possible. These informal sessions proved to be rather informative as the participants speared to be more relaxed and more forthcoming with their responses.

Focus was on the issues that either facilitated or hindered the readiness to adopt of ERMS as well as the strategies of the HPEs to ensure the successful adoption and implementation of the system. Commonalities of ideas and opinions of the participants were prioritized.

III. Results And Discussion

This subsection presents the discussion of the findings obtained through a qualitative analysis of the data collected from the series of interviews with the specialists in HPE institutions. The qualitative data obtained through the interview were analyzed by using a thematic analysis approach. The sequence of steps used in this thematic analysis of the interviews is shown in Table 1.

Each interview was translated separately from Arabic to English. All the transcripts were read many times to ensure that all the linkage statements were highlighted. Having all analyzed transcripts provided the basis for the final analysis and writing up in conjunction with the findings obtained from the qualitative analysis. Then, the data were examined on the basis of keywords and linking phrases which form codes. Following this, substantive themes were identified through each translated interview and data replications were ignored. Finally, five themes constitute the structure of this section concerning the research aim which is assessing the readiness for ERMS among HPE institutions. These are IT infrastructure, top management support, financial support, training, and policy.

TABLE I
CRITERIA FOR GOOD THEMATIC ANALYSIS, (SOURCE: [53])

Transcription	1	The data are transcribed to a suitable level of detail, and the transcripts are checked against the original audio recording for accuracy
Coding	2	Each item of the data is given equal attention in the coding process.
	3	Themes are not generated from a few vivid examples (an anecdotal approach), but rather the coding process is thorough, inclusive and comprehensive
	4	Relevant extracts for all themes are collated
	5	Themes are checked against each other and back to the original data set
	6	Themes are internally coherent, consistent, and distinctive
Analysis	7	Data are analyzed – interpreted, made sense of - rather than just paraphrased or described
	8	Analysis and data match each other – the extracts support the analytic claims.
	9	The analysis reveals a convincing and well-organized story about the data and topic.
	10	A good balance between analytic narrative and illustrative extracts is presented
Overall	11	Sufficient time is provided for the completion of all phases of the analysis adequately; no phase is rushed or merely glossed over.
Written Reports	12	The assumptions about, and specific approach to thematic analysis are clearly explained.
	13	The consistency of language and concepts used in the report, with the epistemological position of the analysis.
	14	The researcher is active in the research process; themes do not just emerge.

A. IT Infrastructure

The majority of the respondents indicated that IT Infrastructure provides a high degree of interconnectivity and is sufficiently flexible to incorporate ERMS. Five respondents only mentioned that the IT infrastructure needs to be upgraded and should be able to easily incorporate software applications and useable across multiple platforms.

B. Top Management Support

All of the respondents who answered the question regarding top management support confirmed the vital impact of the role of cooperation on proper adoption. Top Management Support promotes participation and fast adoption. In other words, all the HPE institutions in Yemen have a positive attitude from the top management to support ERMS adoption.

C. The Financial Report

According to the information gathered from the interviews, financial support is important for ERMS adoption but it is lacking among the HPE institutions. There is a lack of incentive payments and the financial resources to secure infrastructure and equipment, technical assistance cost and maintenance. Therefore, HPE institutions should have sufficient resources and support for the financial requirements to adopt ERMS. Having a positive toward ERMS adoption is good but without the necessary financial resources and support, the adoption of ERMD cannot be a reality.

D. Training

In answering the question on training, all the interviewees agreed that with few or non-existent trained and qualified personnel in ERMS, and the low regard for e-records work, the need to have an efficient e-records system and its very concept are given low priority and often do not feature in the organization's strategic planning. Therefore, HPE institutions must ensure proper training for all involved staff and must be prepared to invest both time and money to embrace new technologies for greater organizational efficiency and to be more competitive.

E. Policy

Some institutions of HPE have the policy which stipulates clearly that it covers the whole system functions. The majority of the respondents indicated that policy is either available but not implemented or unavailable. In addition, all the interviewees confirmed the importance of policy in the adoption of ERMS.

The data gathered from all respondents concern ERMS as one of the significant tools in empowering HPE institutions to carry out their mandate effectively because of the following: ERMS ensure systematic and efficient flow of information that enables college officials to successfully and efficiently perform their functions; Institutional memory enhances the way things are done; Records form the basis for the formulation of policies, future plans and making informed decisions; Consultation, with records available, is crucial in good service delivery; An organization cannot function well without records. Having up-to-date and accurate information is a prerequisite for good service delivery.

F. Electronic Records Managements System Readiness Framework

The discussed empirical findings involve that in order to uphold effective ERMS readiness in HPE organizations; it is recommended that there is a need for ERMS adoption and use; offering top management support, IT infrastructure, financial support, training, and policy.

In this regard, this article, based on literature and empirical research on HPE organizations in Yemen, provides a contextual framework for examining ERMS readiness in HPE organizations in Yemen. As depicted in Fig. 2.

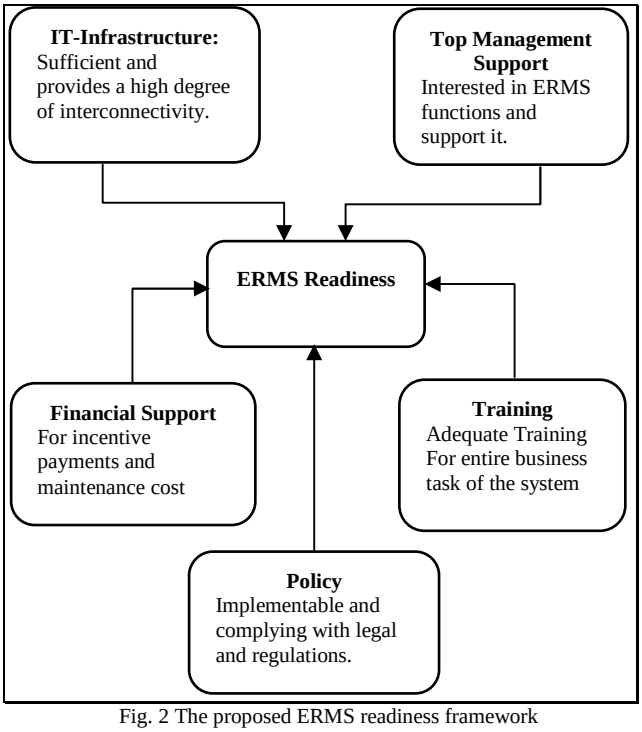

Fig. 2 The proposed ERMS readiness framework

IV. Conclusions

The empirical findings discussed suggest that for the successful promotion of effective ERMS readiness among HPE institutions, there must be a strong, clear policy for ERMS; sufficient IT infrastructure, implementation of security practices, conducting training for the personnel involved in using and maintaining the system, and allocation of a financial budget to cover the successful implementation of the ERMS.

This study confirmed that ERMS readiness is currently low and evolving as demonstrated by the slow adoption of ICTs; low records management standards and practices; and little integration in the national e-readiness framework. To address this situation, there is an urgent need to seriously consider various recommendations that could lead to the adoption and use, of best records management practices that could be effectively integrated into HPE organizations national ERMS strategies.

Despite the various inadequacies highlighted above, the adoption and proper implementation of the proposed ERMS could have a lasting and beneficial impact on the quality of electronic records management, and serve to promote trust and confidence in the Yemeni HPE system.

In conclusion, the results of this study have established that institutions of higher education must be involved in the development of strategies and formulate guidelines for employees' acceptance and consider the inclusion of all critical success factors for the sustainable adoption of ERMS. The findings of this study can offer an insight into some of the important factors that should be taken into account for the proper adoption of such a system in higher education.

Acknowledgment

The author would like to thank Faculty of Information Science and Technology, Universiti Kebangsaan Malaysia by giving the author an opportunity to conduct this research. ThThe author would like to thank Faculty of Information Science and Technology, Universiti Kebangsaan Malaysia by giving the author an opportunity to conduct this research. This research is funded by Universiti Kebangsaan Malaysia under the GUP-2014-007 research grant scheme is research is funded by Universiti Kebangsaan Malaysia under the GUP-2014-007 research grant scheme.

References

[1] C. Turney, D. Robinson, M. Lee and A. Soutar, “Using technology to direct learning in higher education: The way forward?, “Active Learning in Higher Education., vol. 10, pp. 71-83, 2009.

[2] B. E Asogwa,”The readiness of universities in managing electronic records: A study of three federal universities in Nigeria,” Electronic Library, vol. 31, pp. 792-807, 2013.

[3] M. Muaadh and M. Y. Zawiyah, “Factors Influencing the Adoption of Electronic Records Management (ERM) for Decision Making Process at Higher Professional Education (HPE)’s Institutions," in Proc. IICIST 2015, pp. 399 – 403.

[4] N. Mnjama and J. Wamukoya, “E-government and records management: an assessment tool for e-records readiness in government,” The Electronic Library, vol. 25, pp. 274-284, 2007.

[5] A. Cunningham, “Going global: Developing globally harmonised software specifications for records,” Archives & Social Studies, vol. 2, pp.349−362, 2008.

[6] M. Keakopa, “A Critical Review of the Literature of Electronic Records Management in the ESARBICA Region,”, ESARBICA Journal, vol. 28, pp. 78-104, 2009.

[7] X. An, S. Sun and W. Zhang, “Managing electronic records in e-government: Current trends and future directions internationally”, in Proc. MASS 2011, pp. 1-5.

[8] N. Hussin, R. Johare and A. Jamaludin, “The functional requirements for trusted electronic records management systems,” Journal of Information and Knowledge Management, vol. 3, pp. 105-116, 2013.

[9] M. Muaadh and M. Y. Zawiyah, “The Role of Electronic Records Management (ERM) for supporting Decision making Process in Yemeni Higher Professional Education (HPE): A Preliminary Review,” Jurnal Teknologi, vol. 73, pp. 117-122, 2015.

[10] M Afshar and K. Ahmad, “A New Hybrid Model for Electronic Record Management,” Journal of Theoretical & Applied Information Technology, vol. 81, pp. 489-495, 2015.

[11] A. Warland, A.M. Umi and M.Y Zawiyah, “Do Policies for Managing Electronic Records Matter, and Do They Work?: A Malaysian and Australian View,” IQ: The RIM Quarterly, vol. 26, pp. 46-49, 2010.

[12] K.A Galala and M.Y Zawiyah, “Electronic Records Management in Institutions of Higher Learning in Libya: A Case Study,” Journal of Information Knowledge Management, vol. 12, pp. 1350001-1 - 1350001-21, 2013.

[13] Y. I. Abuzawayda, M. Y. Zawiyah and Ab Aziz, Mohd, “Automated Retention Schedules: The Importance of Its Implementation by Universities in Malaysia,” Journal of Theoretical & Applied Information Technology, vol. 54, pp. 155-161, 2013.

[14] A. Davies, R. Bergami and S. J. Miah, “Implications of managing health related records and relevant information systems within intergovernmental agencies,” in Proc. of Australasian Conference on Information Systems, 2015.

[15] J. R. Baron and A. Thurston, “What Lessons Can Be Learned From the US Archivist's Digital Mandate for 2019 And Is There Potential For Applying Them in Lower Resource Countries?,” Records Management Journal, vol. 26, pp. 206-217, 2016.
[16] B. F. Skinner, The technology of teaching. BF Skinner Foundation, 2016.
[17] N. D. Oye, N. A. Iahad and N. A. Rahim, “The history of UTAUT model and its impact on ICT acceptance and usage by academicians,” Education and Information Technologies, vol. 19, pp. 251-270, 2014.
[18] R. Eusoff and M. Y Zawiyah, “Development of Records Management System for Matriculation Colleges in Malaysia,” Asia-Pacific Journal of Information Technology and Multimedia, vol. 1, pp. 23 – 28, 2011.
[19] R. N. Osakwe, “The Efficiency of Managing School Records by Secondary School Principals in Delta State Nigeria,”. Annals of Modern Education, vol. 5, pp. 72-80, 2013.
[20] D.C. Force, and J. Zhang,”Knowledge discovery from within: an examination of records management & electronic records management syllabi”, Records Management Journal, vol. 26(3), paper 2, 2016.
[21] N. Mohammad and M. Y. Zawiyah, "Nurturing knowledge management initiative base on students' electronic records: A study in vocational colleges in Melaka and Negeri Sembilan zones," in Proc. of ICRIIS, 2013, pp. 236-240.
[22] S. O. Popoola, “Organizational commitment of records management personnel in Nigerian private universities,” Records Management Journal, vol. 19, pp. 204-217, 2009.
[23] S. K. Dawood, J. S. Allawi and N. J Al-Khafaji, “Employee’s Attitude toward Electronic Administration Adoption: A Case Study of Al-Mustansiriyah University”, International Journal of Advanced Engineering, Management and Science, vol. 2, pp. 124-134, 2016.
[24] H. Demirtel and Ö. G. Bayram, “Efficiency of electronic records management systems: Turkey and example of Ministry of Development,” Procedia-Social and Behavioral Sciences, vol. 147, pp. 189-196, 2014.
[25] J. Udensi and P. U. Akor, “An Assessment of Record Management System in Establishment Division of Two Universities in Nigeria,” International Letters of Social and Humanistic Sciences, vol. 13, pp. 97-109, 2014.
[26] H. Zinner Henriksen and K. Viborg Andersen, “Electronic records management systems implementation in the Pakistani local government,” Records Management Journal, vol. 18, pp. 40-52, 2008.
[27] T. Kalusopa and P. Ngulube, “Developing an e-records readiness framework for labour organizations in Botswana,” Information Development, vol. 28, pp.199-215, 2012.
[28] S. Gröger, J. Decker and M. Schumann, “Do Universities Get the Hang of Working Efficiently?–A Survey of the Influencing Factors on the Adoption of Electronic Document and Workflow Management in German-speaking Countries,” in Proceeding of the Twentieth Americas Conference on Information Systems, pp. 1-15, 2014.
[29] N. Bitsini, ”Investigating ERP Misalignment between ERP Systems and Implementing Organizations in Developing Countries,” Journal of Enterprise Resource Planning Studies, vol. 2015, Article ID 570821, 2015.
[30] S. Petter, W. DeLone and E.R. McLean, “Information systems success: The quest for the independent variables,” Journal of Management Information Systems, vol. 29, pp.7-62, 2013.
[31] T.A. Byrd and E.D. Turner, “An exploratory analysis of the information technology infrastructure flexibility construct,” Journal of Management Information Systems, vol. 17, pp. 167-208, 2000.
[32] A. Y. Alsabawy,A. Cater-Steel and J. Soar, “IT infrastructure services as a requirement for e-learning system success,” Computers & Education , vol. 69, pp. 431-451, 2013.
[33] B. S. Ragu-Nathan, C. H. Apigian, T. S. Ragu-Nathan and Q. Tu, “A path analytic study of the effect of top management support for information systems performance,” Omega, vol. 32, pp. 459-471, 2004.
[34] M. Islam Nofal and M. Y. Zawiyah, “Taxonomy framework of erp success usage in smes in middle east region,” Journal of Theoretical & Applied Information Technology. Vol. 86, pp. 420-431, 2016.
[35] Y. M. Chae, K. B. Yoo, E. S. Kim and H. Chae, “The adoption of electronic medical records and decision support systems in Korea,” Healthcare informatics research, vol. 17, pp. 172-177, 2011.
[36] E. T. Wang and J. H. Chen, “Effects of internal support and consultant quality on the consulting process and ERP system quality,” Decision Support Systems, vol. 42, pp. 1029-1041, 2006.
[37] J. H. Wu, W. S. Shen, L. M. Lin, R. A. Greenes and D. W. Bates, “Testing the technology acceptance model for evaluating healthcare professionals' intention to use an adverse event reporting system,” International Journal for Quality in Health Care, vol. 20, pp. 123-129, 2008.
[38] K. Rouibah, H. I. Hamdy, and M. Z. Al-Enezi, “Effect of management support, training, and user involvement on system usage and satisfaction in Kuwait,” Industrial Management & Data Systems, vol. 109, pp. 338-356, 2009.
[39] D. Yoon, B. C. Chang, S. W. Kang, H. Bae and R. W. Park, “Adoption of electronic health records in Korean tertiary teaching and general hospitals,” International journal of medical informatics, vol. 81, pp. 196-203, 2012.
[40] E. S. Chan, “Implementing environmental management systems in small-and medium-sized hotels: Obstacles,” Journal of Hospitality & Tourism Research, vol. 35, pp. 3-23, 2011.
[41] J. Scholl, S. Syed-Abdul, and L. A. Ahmed, “A case study of an EMR system at a large hospital in India: challenges and strategies for successful adoption,” Journal of Biomedical Informatics, vol. 44, pp. 958-967, 2011.
[42] T. Wright, “Information culture in a government organization: Examining records management training and self-perceived competencies in compliance with a records management program,” Records Management Journal, vol. 23, pp. 14-36, 2013.
[43] A. L. Terry, J. B. Brown, L. B. Denomme, A. Thind and M. Stewart, “Perspectives on electronic medical record implementation after two years of use in primary health care practice,” The Journal of the American Board of Family Medicine, vol. 25, pp. 522-527, 2012.
[44] A. Boonstra and M. Broekhuis, “Barriers to the acceptance of electronic medical records by physicians from systematic review to taxonomy and interventions,” BMC Health Services Research, vol. 10, p. 231, 2010.
[45] N. M. Lorenzi, A. Kouroubali, D. E. Detmer and M. Bloomrosen, “How to successfully select and implement electronic health records (EHR) in small ambulatory practice settings,” BMC Medical Informatics and Decision Making, vol. 9, p. 15, 2009.
[46] L. A. Huryk, “Factors influencing nurses’ attitudes towards healthcare information technology,” Journal of Nursing Management, vol. 18, pp. 606-612, 2010.
[47] E. J. Egwunyenga, “Record Keeping in Universities: Associated Problems and Management Options in South West Geo-Political Zone of Nigeria,” Int. J. Educ. Sci, vol. 1, pp. 109-113, 2009.
[48] A. Dikopoulou and A. Mihiotis, “The contribution of records management to good governance,” The TQM Journal, vol. 24, pp. 123-141, 2012.
[49] D. Little and A. Bose, “Botswana’s National ICT Policy: Assessment of e-readiness and e-potential at the local community level,” Gaborone: DIT, 2004.
[50] A. A. El Mahalli, “Electronic health records: Use and barriers among physicians in eastern province of Saudi Arabia,” Saudi Journal for Health Sciences, vol. 4, pp. 32-41, 2015.
[51] J. Wamukoya and S. M. Mutula, “E-records management and governance in east and southern Africa,” Malaysian Journal of Library and Information Science, vol. 10, pp. 67, 2005.
[52] S.J. Taylor, R. Bogdan and M. DeVault, Introduction to qualitative research methods: A guidebook and resource, John Wiley & Sons, 2015.
[53] V. Braun and V. Clarke, “Using thematic analysis in psychology,” Qualitative Research in Psychology, vol. 3, pp. 77-101, 2006.
[54] A. B. Abdulrahman, “Management of university records for effective administration of universities in North Central Nigeria,” International Journal of Library and Information Science, 7(3), pp. 47-54, 2015.
[55] O. Mosweu, K. J. Bwalya and A. Mutshewa, “A probe into the factors for adoption and usage of electronic document and records management systems in the Botswana context,” Information Development, pp. 1-14, 2016.
[56] M. Muaadh and M. Y. Zawiyah, “Electronic Records Management and Its Importance for Decision making Process in Yemeni Higher Professional Education (HPE): A Preliminary Review,” in Proc. IRICT, pp. 105 – 114, 2014.
[57] M. B. Muhenda and E. K. Lwanga, “Managing Records in Higher Education Institutions in Uganda: Can Human Resource Policies Salvage the Situation?,” World, vol. 2, pp. 74-83, 2012.
[58] L. Rabii and D. Abdelaziz, “Comparison of e-readiness composite indicators,” in Proc ISDA, 2015, pp. 93-97.