

A Conceptual Framework for the Adoption of Electronic Records Management System in the Yemeni Oil and Gas Sector

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Abstract

Electronic records management system (ERMS) is an application that has the potential to serve as a central repository for the electronic records keeping and management in the oil and gas (O&G) sector in Yemen. The application of the system would trigger changes to the management of records and could enhance the business continuity. Although ERMS is identified as one of the top priorities for supporting the management of records, but its adoption faces tremendous challenges and barriers, ranging from technological, organizational, and environmental issues. This paper presents an investigation of the conceptual framework and the most critical factors that impact the adoption of in the O&G sector of Yemen> the conceptual framework has constructed by integrating two of information system adoption theories which are the Unified Theory of Acceptance and Use of Technology (UTAUT) model and technology, organization, environment (TOE) model.

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I. Introduction

Oil and gas (O&G) organizations are relied on information and communication technologies (ICT) for conducting businesses which will lead to generate electronic records in tremendous volumes. The electronic records consider

significant to organizations to achieve their organizational objectives and manage records systematically. Such records are usually created and kept to verify that certain task has been created by a given organization [1-3]. Therefore, records should be managed based on the concept of records lifecycle which essentially determines

three main phases including creation, maintenance, and disposal[4, 5]. The electronic records that constrained vital data must be managed effectively to avoid any change will causes problems particularly when organizations have involved in litigation cases and to avoid the circumstance of any hazard of fraud[4, 6]. In the digital era, the information contained in records is exposed to risks such as being tampered with or lost. Thus, records should be protected and maintained consistently according to the best standards [7-9].

In the digital era, the information contained in records is exposed to risks such as being tampered with or lost. Thus, records should be protected and maintained consistently according to the best standards [10, 11]. This can only be achieved by ERM which is a rigorous system for managing records to ensure that the embedded information is authentic, usable, reliable, accurate, trustworthy, and has integrity [12-14]. In addition, the principles of records management ensure the business continuity of the organization, support the decision making and enhance data security [15-17].

Without proper guidelines to adopt the system, organizations might encounter difficulties to implement an efficient and effective ERM initiative that directs the complete life cycle from creation through the disposal to conservation of records [3, 18-22]. Furthermore, ignoring the significance of ERMS will put Oil and Gas organizations at the risk of losing their records that contained important information such as drilling log files, production information and wells regulations information. The loss of this information affects the operations of Oil and Gas sector. Therefore, there is a need to manage records by using ERMS which is considered an existing challenge. The sector is not only one of the most complex and regulated sector but in a constant state of change with mergers,

procurement, acquisitions, and divestitures - the ease in which records can be tracked, managed, and audited is crucial[15, 23-25]. This paper aims to propose a conceptual framework for the ERMS adoption in the O&G sector in Yemen. This paper discusses the background of the study; the literature review; methodology; the conceptual framework, discussion and conclusion.

II. Background of the study

The economy in Yemen depends on O&G sector through production and exploration however the electronic records system and digitalization transformation in this sector still not implemented completely [23, 26]. Many organizations in the O&G sector of Yemen are managing their important records manually which causes several problems such as delays in transactions and consequent damages in information of organization[4, 14, 27]. In O&G sector in Yemen, records are managed manually and that will impede the improvement of business. Furthermore, managing records without ERMS has disadvantages such as cost organization physical filing storage, decreased portability, huge volumes of unmanaged records, slow response speed in providing services, untrustworthy information, and the absence of system to information and records management. The adoption of ERMS will improve the management of records that still function manually such as billing, imbursement, and other business-transaction records[4, 28].

The manual management of records in Yemeni's Oil and Gas sector has caused poor record keeping due to the inefficiency of manual process, for example, requesting materials processing which follow the traditional procedure. The request is created by the employee and printed out to be approved by department manager. Next, the request then routed to logistics which may goes to a specific user in the logistics department for

approval, and takes time to be served [29]. The process of material request was performed manually routed around an organization from one person to the next are time consuming and acquire a lengthy process to be completed. The process can also be unsecured and can put the confidentiality issue at risks [30-32]. Thus, ERMS has a valuable feature that accelerates the processes, creating them more well-organized, removing the paper trajectory supporting the accountability for each activity created by an individual[3, 27].

The existing manual practices in O&G sector in Yemen do not fully support the business requirement which comes in the form of poor information delivery, poor quality of decision-making, poor of quality of business activity, low quality of reporting and slow and inaccurate customer service [33]. In addition, manual records management could put the sector in hazard of losing information, which in turn, impedes the continuity of business[29, 34]. Therefore, records possessed by the O&G sector in Yemen need to be managed by ERMS because it has the ability of auto categorizing records and reduces the time of searching for specific records during any disturbing event. Further, ERMS makes the information continuously obtainable and available compared with physical records (records in paper), which cause delays in assisting users. Adopting ERMS increases effectiveness and efficiency and supports the business continuity (BC) which is emphasized the capability of operations during any emergency events[12].

A rigorous ERMS must be implemented in order to increase the efficiency and effectiveness of services in the organization because manual practices of records management is no longer suitable since the volume of records is growing and loss of records could lead to regulatory fines, business disruptions, lost productivity, failure to comply with organization requirements, damage to the brand, lost customers and more other

problems that could potentially be avoided with ERMS adoption[16, 17, 27, 35]. This leads to a change in work processes from manual to an electronic system

III. Literature Review

Literature review provides a comprehensive sight of previous work on ERMS as well as underlying theories relevant to the aim of the current study. Literature review discusses the use of ERMS to support business continuity in the Oil and Gas sector and the past related work with a focus on the factors that influence the adoption of ERMS.

1. Electronic Records Management System

ERMS is known as a records management system that aids the administrative staff to conduct their day-to-day business that rely on records, data organization, and account integration. ERMS is a software application for organizations that manage user's data with regard to the status of their records. ERMS reduces the time spent on administrative tasks and allows the management to access to users' records. It also processes and generates statements through the use of ID number which automatically shows the status of the records[36]. Furthermore, ERMS refers to a system that is intended for electronic records custody, archiving, storing, integrating records management capabilities[37]. Furthermore, ERMS provides functionality to capture, store, and process, circulate, preserve and dispose of electronic records [12, 38]. A reference[39]has defined ERMS as a management system for electronic and non-electronic records through computer and its applications according to acknowledged principles and performs. Moreover, ERMS was known as an electronic system used to manage all type of records.

An ERMS is known as an automated tool or software application designed to support the workflow processes of an organization since it

helps the organization to create, manage, use, save and dispose of its records. Furthermore, this system has the ability to enhance the amendment of the electronic documents and to develop an organizations' daily work to provide evidence of its activities in the case of litigation[39]. Therefore, the organization needs to adopt this system because of its advantages that differ from other systems. The adoption of ERMS is not an easy process that needs the support from top management.

A study by [34] stated that the adoption of ERMS in organization has several benefits for managing records and protecting information. These benefits include, improving quality of records, reducing the time of managing records and supporting decision making process. In addition, reference[40] declared that ERMS supports the accountability of the records in organization. Thereby, an ERMS provides accurate responsibility in terms of managing.

2. Business continuity

According to ISO 22301: 2019, business continuity is defined as “a corporate capability that exists whenever organizations can continue to deliver their products and services at acceptable predefined levels after disruptive incidents have occurred. The management in any organization should set the process that is used to ensure that operations continue and that products and services are delivered at predefined levels, that brands and value-creating activities are protected, and that the reputations and interests of key stakeholders are safeguarded whenever disruptive incidents occur. This is achieved by identifying potential threats, by analyzing possible impacts, and by taking steps to build organizational resilience”. The key driver for the management of records in the organization is business continuity Business continuity can be described as an organization's ability to continue conducting business in a proper way during a

substantial interruption that could affect its daily operation.

The need to prevent records from change or deletion is necessary for organizations' business continuity[41, 42]. An organization without records typically cannot operate and any loss of these records will cost the organization or lead to business stoppage. An ERMS enables the organization to protect its records and business information and guarantee the continuity of operations' [43]. Business continuity guarantees that organizations are capable to continue conducting their business transactions after encountering substantial loss or disruption [5, 16, 36, 37]

In this perspective, businesses have to stay active during the catastrophe because if operations are closed for short term, there are many chances that the production in organization could be stopped. Organizations need records and information to be available in order to remain active, and losing such information will affect the business. Therefore, there is a requirement for supporting business continuity in the occurrence of disasters or changes which call for the rigorous technique of managing the availability of information permanently or temporarily until the normal operations are resumed[3, 6, 9, 13, 16, 37].

3. Previous work on the ERMS adoption

The previous work on ERMS observed a good view that we need to specify the different arrangements, differences, and inclinations of opinions on the subject of study. We have accurately chosen a good articles related to ERMS adoption and discussing the part of conceptual framework and its factors. Adopting ERMS through proposing a framework explains the natural progression of the problem of this study and has linked with the concepts, empirical research and important theories used in promoting and systemizing the knowledge. In order to

systemizing records in the Oil and gas organizations, there should be a new framework to help in adopting ERMS successfully. A framework is essential as it provides a guideline for the successful adoption of any system such as ERMS [3, 5, 24, 44]. ERMS devoted studies especially in the context of the Oil and Gas sector are scarce, but ERMS studies are widely available in the other public sectors. The findings of previous researches indicate that there is a need to adopt ERMS in the Oil and Gas sector in order to enhance business continuity.

One study by [45] indicated that there is a strong relationship between the significant adoption factors and the level of use of ERMS. This study declared that the significant contribution to the development of ERMS refers to the human and organizational factors that have been investigated. The study also identified technological aspects positively affecting ERMS adoption. In contrast, in developing countries including South Africa, records are still managed physically as stated by [46]. This leads to the need for an ERMS framework that helps organizations to develop information management. This leads to the need for an ERMS framework that helps organizations to develop information management. Another study was conducted in three Oil and Gas companies in the Niger Delta region of Nigeria [47]. According to this study, ERMS design and deployment reflects the organizational and environmental practices and expectations. Thus, data that is embedded within the organization is likely to assist the successful adoption of systems in work environments. The findings of the study revealed that ERMS helps Oil companies increasing the accessibility to their data to make decisions, and protect their data when destructive events will occur.

Table 1 indicates that most of the previous studies such as a study by [12], a study by [48] and [12] recommended that adoption of ERMS needs a new framework to be developed and more new factors to be investigated. These studies stated future studies should involve large organizations and a large number of respondents for ERMS adoption. However, no empirical study or case study was performed to test the behavior intention of Oil and Gas employees to adopt ERMS for enhancing the business continuity, this study conducts an online survey to measure the behavior intention of Yemeni Oil and Gas employees to adopt ERMS.

The previous studies discussed in Table 1 have implemented and adopted ERMS for supporting decision making and individuals performance and none of them addressed the adoption of ERMS to enhance business continuity which is the gap of the current study [49]. Table 1 also indicates that factors that influence the adoption of ERMS are discussed from different angles and largely focused on organizational-level adoption.

The results of the many previous studies had identified many factors influencing the implementation of EDRMS, ERMS, ERP, EDMS, and ECMS among users of such applications in the government sectors and there is no study discusses the factors in the Oil and Gas sector. However, no empirical study or case study was performed to classify the factors into TOE dimensions. Many previous studies have applied contents analysis to identify broad factors that were examined in a different context and cannot use in the context of Oil and Gas sector [50].

. Previous studies stated that ERMS adoption in the Oil and Gas sector still scarce and needs to be investigated.

Table.1 Previous Studies on ERMS adoption

Author	Aim of the Study	Method	Finding	Theory
[48]	Implement ERMS in Tlokweg land board (TLB)	Case study Research design	Adoption framework for the change management when implementing ERMS	Kotter's model
[4]	Develop framework for ERMS adoption to enhance the productivity and performance in Yemeni HPE	mixed explanatory approach	ERMS adoption framework	UTAUT
[51]	Propose a Framework for ERM Based on Blockchain	Literature content analysis	ERM framework	Evidence chain model
[12]	Develop a Framework for ERMS in support of e-government	Qualitative method	Framework for implementing ERMS in supporting e-government	MoReq
[52]	Develop ERP adoption model in Bangladeshi public sector	Quantitative survey	Factors and ERP adoption model	UTAUT
[53]	investigate the adoption and use of EDRMS	Qualitative/ multi-case study	Factors affecting EDRMS implementation in Namibia and Zimbabwe	DOI
Olefhile, Athulang [54]	Identify the factors influence EDRMS implementation in the ministry of trade in Botswana.	Mixed method (Case study and questionnaire)	Factors influence e EDRMS implementation	TAM
[55]	Develop a model for EDRMS implementation in nuclear power company in China	Case study	Process model for EDRMS implementation	Total process management theory
[56]	Identify the factors that influence the adoption of EDRMS in government sector in Malaysia	Quantitative approach and experts validation support	Factors influence EDRMS adoption in government sector in Malaysia. EDRMS adoption Framework	UTAUT
Mosweu, Bwalya [57]	investigate the factors that influence the adoption and usage of EDRMS in Botswana	Mixed method/ positivist approach	Factors influence EDRMS adoption	UTAUT

IV. Methodology

Contents analysis has been conducted to investigate the published articles on the field of records management and related to this study. Narrative analysis involves content and setting investigation of required data to identify the practices and purposes of ERMS in the developing countries specifically in the “O&G sector”. In this study, we have searched for articles that delivered a comprehensive information related to the ERMS implementation or adoption. We have included the articles that meet the main criteria of describing ERMS implementation or adoption in developing countries. We have reviewed articles from the literature that highlighted ERMS, EDRMS, EDMS, digital transformation initiative in the O&G sector, records management, electronic records and archives roles from different practice settings including O&G sector in the developing countries. We have carefully chosen those papers that were found significant for implementing of ERMS and/or involved related systems to the records management that conducted in public and private settings. We conducted literature search in 2018 from numerous sources including: Science Direct, Emerald Insight, IEEE, Jstor, ScienceDirect, Springer Link, Wiley and so on.

Initially, we have used specific keywords in searching terms which are autonomously joined by Boolean operators “AND” and “OR” such as “electronic records, records management, electronic records management system(ERMS), electronic documents and records management system (EDRMS), business continuity and characteristics of ERMS)”. These keywords were used in combination with a scope of equivalents that communicated the semantics 'obstruction'; for example, issues, obstructions, problems, success factors, obstacles, challenges, difficulties, Failure, supporting business continuity. Extra companion evaluated articles were additionally sourced utilizing Google Scholar to build the decent variety and extent of papers recognized in this search. Both

subjective and quantitative exploration were reviewed. Keywords related to the topics of adoption information system, records management policy, and the use of ERMS for supporting business continuity during any crisis were used in this contents analysis. Accordingly, keywords were selected based on its explanation and significance for the practices in the ERMS. Articles were identified as “related” or “citing” by the databases were also vetted for significance.

V. Results and Discussion

The results of this analysis is represented in the conceptual framework and factors that influence the adoption of ERMS in O&G sector of developing countries including Yemen. A conceptual framework is a structure that can be used for guiding this study and practice which can be best to explain the natural progression of the situation to be studied. The results reveal that this study proposes an ERMS framework that depends on three main dimensions: technological, organizational, environmental, the process (ERMS adoption), and the output (business continuity). The conceptual framework is constructed from integration of UTAUT and TOE theories. In this study, the conceptual framework is constructed based on the UTAUT and TOE models. UTAUT is considered a unique model that was empirically validated by many studies in developed and developing nations and UTAUT has a potential to measure behavior intention of individuals since it was combined from eight major models of system adoption and acceptance. The potential of UTAUT appears on the important factors that might be crucial for the accomplishment of ERMS adoption in the O&G sector. The results indicated that the UTAUT is appropriate for this study because of the validity, viability, and stability of the model which have been proven in many studies in several contexts such as education, health, trading, and government sector.

The conceptual framework proposes TOE theory to classify the factors into three dimensions namely “technological, organizational and environmental (TOE)”. The classification of dimensions applied to make the respondents aware of the importance of constructing their own answer to the questionnaire to take into account all possible feedback. The TOE theory includes important factors such as availability and policy influencing the adoption of ERMS and would be used to support the business continuity in Yemeni O&G sector. TOE is providing a richer theoretical lens to understand the categorizing factors into dimensions, provides beneficial guidance for researcher and practitioner in the IS adoption.

The technological dimension contains 6 factors were selected to influence ERMS adoption in the O&G sector. As illustrated in Figure 1, technological factors are “availability, compatibility, effort expectancy, performance expectancy, security and system quality”. The organizational dimension includes 5 factors which are “accountability, change Management, facilitating conditions, social influence, and training”. Additionally, the environmental dimension contains 3 factors including “legislation and laws, policy, and trust in New System”. The conceptual framework is presented in Figure.

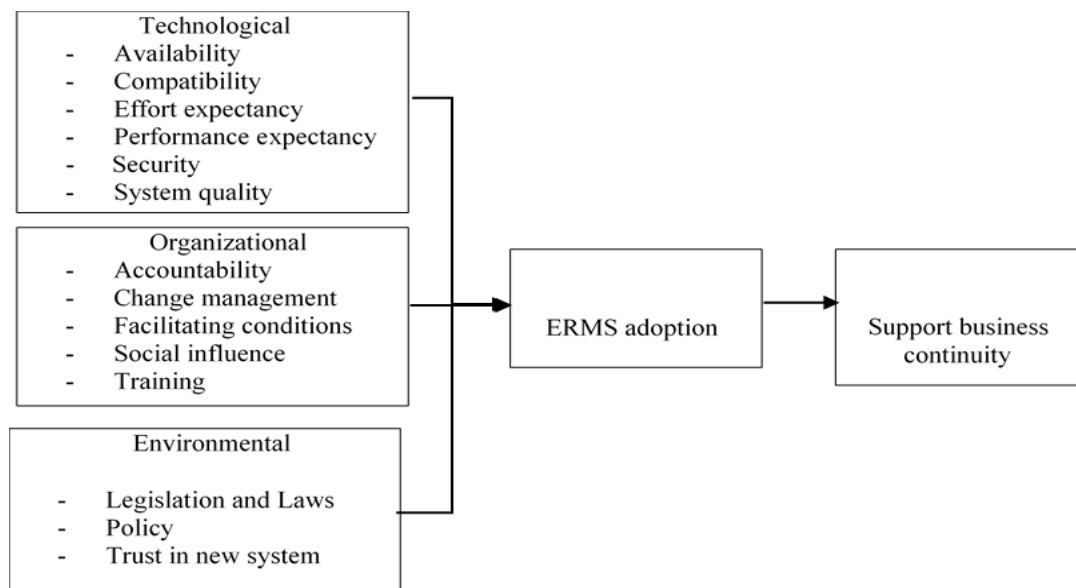


Figure 1. ERMS adoption Conceptual Framework

VI. Conclusion

This study has confirmed the need to adopt an effective ERMS to protect and manage tremendous records generated by the O&G sector employees in their workplace. This article introduces a proposed conceptual framework for adopting ERMS that will change the manual records practices to systematic which considers a major need for O&G sector. ERMS conceptual framework integrated from the

UTAUT and TOE models which considers a comprehensive because the factors that shape the TOE dimensions are combined together in one framework. Furthermore, the framework is proposed to understand the factors related to the ERMS adoption and enhancing the business continuity. Therefore, the framework proposed in this study shows the key factors that influence adoption of ERMS. In addition, the conceptual

framework would be used to examine the relationship between the first level of the framework that contains technological, organizational and environmental factors and the intention to adopt ERMS.

REFERENCES

1. Demirtel, H. and Ö.G. Bayram, *Efficiency of electronic records management systems: Turkey and example of Ministry of Development*. Procedia-Social and Behavioral Sciences, 2014. **147**: p. 189-196.
2. Azlina, A.A., et al., *A Conceptual Model for Electronic Document and Records Management System Adoption in Malaysian Public Sector*. International Journal on Advanced Science, Engineering and Information Technology, 2018. **8**(4): p. 1191-1197.
3. 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.
4. Mukred, M., Z.M. Yusof, and F.M. Alotaibi, *Ensuring the Productivity of Higher Learning Institutions Through Electronic Records Management System (ERMS)*. IEEE Access, 2019. **7**: p. 97343-97364.
5. Mukred, M., et al. *A Framework for Electronic Records Management System Adoption in the Higher Professional Education: Individual, Technological and Environmental Factors*. in *International Conference of Reliable Information and Communication Technology*. 2018. Springer.
6. Mukred, M. and Z.M. Yusof, *The performance of educational institutions through the electronic records management systems: factors influencing electronic records management system adoption*, in *Data Analytics in Medicine: Concepts, Methodologies, Tools, and Applications*. 2020, IGI Global. p. 1578-1598.
7. McLeod, J. and S. Childs, *A strategic approach to making sense of the “wicked” problem of ERM*. Records Management Journal, 2013. **23**(2): p. 104-135.
8. Walsh, G.M., *The disconnect between archival descriptive technique and records management taxonomies*. Comma, 2019. **2017**(2): p. 35-42.
9. Mukred, M., *Framework For Electronic Records Management System Adoption In The Higher Professional Education In Yemen*. Universiti Kebangsaan Malaysia (UKM), 2017.
10. Ngoepe, M. and P. Ngulube, *A framework to embed records management into the auditing process in the public sector in South Africa*. Information Development, 2016. **32**(4): p. 890-903.
11. Ambira, C.M., *A framework for management of electronic records in support of e-government in Kenya*. 2016.
12. Ambira, C.M., H.N. Kemoni, and P. Ngulube, *A framework for electronic records management in support of e-government in Kenya*. Records Management Journal, 2019.
13. Mukred, M., *Records Management Initiative Framework for Supporting Decision Making Process in Higher Professional Education of Yemen*, in *SOFTAM Postgraduate Seminar*. 2014, UKM: Faculty of Information Science and Technology, UKM.
14. Mukred, M. *Framework for Adopting Electronic Records Management System to Support Decision Making Process in Institutions of Higher Learning: A Case Study in Yemen*. in *SOFTAM Postgraduate Seminar, Research Center for Software Technology & Management, FTSM*. 2015. Faculty of Information Science and Technology, Universiti Kebangsaan Malaysia.
15. Mukred, M., et al. *The Role of Cloud Electronic Records Management System (ERMS) Technology in the Competency of Educational Institutions*. in *International Conference of Reliable Information and Communication Technology*. 2019. Springer.
16. Mukred, M. and Z.M. Yusof, *Factors Influencing the Adoption of Electronic Records Management (ERM) for Decision Making Process at Higher Professional Education (HPE)'s Institutions*, in *1st ICRIL-International Conference on Innovation in Science and Technology (IICIST 2015)*. 2015: Kuala Lumpur. p. 399-403.
17. 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 Recent Trends in Information and Communication Technologies (IRICT 2014)*. 2014: Johor Bahru. p. 105-114.
18. Umi, A., Mokhtar, and M. Zawiyah, Yusof, , *Records management practice: The issues and models for classification*. International Journal of Information Management, 2016. **36**(6): p. 1265-1273.
19. Asma'Mokhtar, U., et al., *Development of function-based classification model for electronic records*. International Journal of Information Management, 2016. **36**(4): p. 626-634.

20. Mokhtar, U.A. and Z.M. Yusof, *Records management practice: The issues and models for classification*. International Journal of Information Management, 2016. **36**(6): p. 1265-1273.
21. Zawiyah, M., Yusof, and A. Umi, Mokhtar, , *Records and Information Management: The Requirement for Functional Classification*. Open Journal of Social Sciences, 2015. **3**(03): p. 215.
22. Asma'Mokhtar, U. and Z.M. Yusof, *The requirement for developing functional records classification*. International Journal of Information Management, 2015. **35**(4): p. 403-407.
23. Hawash, B., et al., *The adoption of electronic records management system (ERMS) in the Yemeni oil and gas sector: Influencing factors*". Records Management Journal, 2020: p. <https://www.emerald.com/insight/search?q>.
24. Hawash, B., et al., *Intention to adopt electronic records management system in the oil and gas sector in Yemen*. International Journal of Advanced Trends in Computer Science and Engineering, 2020. **9**(5): p. 6959-6971.
25. Mukred, M., et al., *Taxonomic framework for factors influencing ERMS adoption in organisations of higher professional education*. Journal of Information Science, 2018: p. 0165551518783133.
26. Hawash, B., U.A. Mokhtar, and Z.M. Yusof. *The primarily study of Electronic Records Management System (ERMS) for Yemen Oil and Gas Corporation (YOGC) Subsidiaries*. in *2019 International Conference on Cybersecurity (ICoCSec)*. 2019. IEEE.
27. 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.
28. Mukred, M., et al., *Taxonomic framework for factors influencing ERMS adoption in organisations of higher professional education*. Journal of Information Science, 2019. **45**(2): p. 139-155.
29. Luyombya, D. and J. Bukirwa, *Records management practices in oil marketing companies in Uganda*. Information Development, 2014. **30**(1): p. 70-79.
30. Abuzawayda, Y.I., Z.M. Yusof, and M.A. AZIZ, *ELECTRONIC RECORDS MANAGEMENT IN INSTITUTIONS OF HIGHER LEARNING IN LIBYA: ADOPTION OF DIRKS MODEL*. Journal of Theoretical & Applied Information Technology, 2013. **53**(3).
31. Abuzawayda, Y.I., M. Zawiyah, and M. Ab Aziz, *Automated Retention Schedules: The Importance of Its Implementation by Universities in Malaysia*. Journal of Theoretical & Applied Information Technology, 2013. **54**(1).
32. Hawash, B., et al., *DIGITAL TRANSFORMATION IN THE OIL AND GAS SECTOR DURING COVID-19 PANDAMIC*. International Journal of Management (IJM). 2020. **11**(12): p. 725-735.
33. Ochieng, E.G., et al., *Utilising a systematic knowledge management based system to optimise project management operations in oil and gas organisations*. Information Technology & People, 2018(just-accepted): p. 00-00.
34. Mukred, M., et al., *The key factors in adopting an electronic records management system (ERMS) in the educational sector: A UTAUT-based framework*. IEEE Access, 2019. **7**: p. 35963-35980.
35. 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.
36. Tsabedze, V.W., *Managing Electronic Records in Higher Education Institutions*, in *Management Training Programs in Higher Education for the Fourth Industrial Revolution: Emerging Research and Opportunities*. 2020, IGI Global. p. 36-61.
37. 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): p. 117-122.
38. Hawash, B., Mokhtar, U and Yusof, Z. , *Users acceptance of electronic record management system in the context of the oil and gas sector in Yemen: an application of ISSM-TAM*. International Journal of Management and Enterprise Development 2021. **20**(1).
39. Taiwo, B.I., *Electronic Records Management Implementation: Factors Affecting Organizational Readiness*. 2019.
40. de Mingo, A.C. and A. Cerrillo-i-Martínez, *Improving records management to promote transparency and prevent corruption*. International Journal of Information Management, 2018. **38**(1): p. 256-261.
41. Gaid, A.S., et al. *Compact and Bandwidth Efficient Multi-band Microstrip Patch Antennas for 5G Applications*. in *International Conference of Reliable Information and Communication Technology*. 2019. Springer.
42. Gaid, A.S., et al. *Small and Bandwidth Efficient Multi-band Microstrip Patch Antennas for Future 5G*

- Communications. in *International Conference of Reliable Information and Communication Technology*. 2019. Springer.
43. An, X. and W. Wang. *The Integrated Use of Business Continuity Management Systems, Records Management Systems and Knowledge Management Systems*. in *Management and Service Science (MASS), 2010 International Conference on*. 2010. IEEE.
 44. Hawash, B., et al., *The adoption of electronic records management system (ERMS) in the Yemeni oil and gas sector*. *Records Management Journal*, 2020.
 45. Haraldsdottir, R.K. and J. Gunnlaugsdottir, *The missing link in information and records management: personal knowledge registration*. *Records Management Journal*, 2018(just-accepted): p. 00-00.
 46. Ngoepe, M., *The role of records management as a tool to identify risks in the public sector in South Africa*. *South African Journal of Information Management*, 2014. **16**(1): p. 1-8.
 47. Stephen, A.B., *Electronic Records Management (ERM) in Three Oil and Gas Companies in Niger Delta Region of Nigeria*. 2017.
 48. Shonhe, L. and B. Grand, *Implementation of electronic records management systems*. *Records Management Journal*, 2019.
 49. 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.
 50. Özdemirci, F., Ö.G. Bayram, and M.A. Ünal, *ERM Implementation and Future Directions at Ankara University: A Case Study*. *International Journal of Knowledge Society Research (IJKSR)*, 2013. **4**(1): p. 1-11.
 51. Xue, S., et al. *A Trusted System Framework for Electronic Records Management Based on Blockchain*. in *International Conference on Web Information Systems and Applications*. 2019. Springer.
 52. Alam, M.S. and M.A. Uddin, *Adoption and implementation of enterprise resource planning (ERP): An empirical study*. *Journal of Management and Research*, 2019. **6**(1): p. 1-33.
 53. Nengomasha, C.T. and A. Chikomba, *Status of EDRMS implementation in the public sector in Namibia and Zimbabwe*. *Records Management Journal*, 2018.
 54. Olefhile, M., M. Athulang, and K.J. Bwalya, *Electronic Document and Records Management System (EDRMS) Implementation in a Developing World Context*. *Technology Adoption and Social Issues: Concepts, Methodologies, Tools, and Applications: Concepts, Methodologies, Tools, and Applications*, 2018: p. 389.
 55. Wang, X., *Implementing an EDRMS: case study of a nuclear power company in China*. *Comma*, 2018. **2016**(1-2): p. 209-214.
 56. Azlina, A.A., et al. *The determinant factors of electronic document and records management system (EDRMS) adoption in public sector: A UTAUT-based conceptual model*. in *Electrical Engineering and Informatics (ICEEI), 2017 6th International Conference on*. 2017. IEEE.
 57. Mosweu, O., 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*, 2017. **33**(1): p. 97-110.