

The Role of Electronic Records Management (ERM) for supporting Decision making Process in Yemeni Higher Professional Education (HPE): A Preliminary Review

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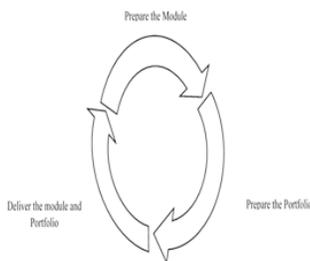
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Graphical abstract



Abstract

The importance of information has influenced many organizations especially in developed countries such as UK and USA to invest in their information management budget to ensure their survival and comply with the law requirement of their countries. Information could determine the organizations' success or failures since the process of decisions making mainly must be based on it. To be of value, information must be recorded. This recorded information which contains evident must be preserved. This is because records are evidence of organizational activities, transactions and decisions. Information embed in records supports business functions and are critical for the assessment of organizational performance. Records carry information created as the product of transactions carried out by organizations. Without reliable records agencies and governments could not manage their resources, its revenue or civil service and also cannot deliver services such as education and healthcare. Yemeni Universities and Community colleges where Higher Professional Education (HPE) is adopted to make full use of information embedded in records in any decision made. Yemen started introducing and implementing the HPE system which offers highly qualified specialists to the labor market with the help and support from Netherland government. The HPE project implemented more than five new outcomes based education (OBE) programs at three institutions namely the Industrial Technical Institute (ITI), Aden Community College and Sana'a Community College (SCC). OBE is a portfolio cantered system and the assessment method is depending on recorded information in the documents disclosed in the portfolio. The evaluation decision is based on the reliable information in the portfolio. It is impossible for an educational organization to function efficiently without proper ERM. However, there is not framework as guidance for managing these electronic records, thus making ERM ineffective and efficient leaving evaluation decisions not persuasive. To assess, evaluate and make decisions successfully Yemen's HPE system requires a framework for managing its electronic records in order to be relevant and trustworthy for making decisions.

Keywords: Records management; decision making; Sana'a Community College; higher professional education; Yemen

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1.0 INTRODUCTION

Higher education institutions like universities and community colleges are considered as significant organizations which deal with a large number of academic and administrative staff. These organizations play important roles in the development nations around the world.¹ The Yemeni government makes the best effort to pay attention to the universities and community colleges in order to help develop the country.²

To ensure Yemen develops into a modern society and economy in the 21st century, the government is revising its institutions and structures in parallel to the development of other countries. A series of strategies have been devised including technical education strategy as reflected in "Yemen's Strategic Vision 2025".³

Technical and vocational education (TVET) is defined as training provided by public and private sectors aimed at making the students gain practical knowledge and technical know how, which are essential for

securing employment in a specific field, which includes trade or group of vocations.⁴

The lack of practical skills among university graduates in Yemen, which hinder their ability to succeed in the job market, has led to the establishment of Ministry of Technical Education & Vocational Training (MTVET) in 2001. Moreover, despite its massive human resource potential and a great demand for training opportunities, Yemen has been forced to be dependent on workers from overseas due to the lack of potential graduates. Even though the Yemeni TEVT sector has a robust supply-driven strategy, it still suffers from a weak association among the TEVT system, labor market requirements, and private sector enterprises.⁵

In 2006, MTEVT implemented the HPE project aimed at establishing a HPE sector in Yemen, to act as a practical alternate for University Programs. This project has focused on enhancing Higher Professional Education Programs at various institutes such as: (i) the MTEVT, (ii) Sana'a Community College, (iii) the Industrial Technical Institute of Mualla, and (iv) Aden Community College. Nevertheless, it is crucial to accomplish

specific objectives and evaluate newly developed outcomes-based training programs in computer network engineering technology, business information management, and telecommunications engineering technology, electro-mechanical engineering technology and teacher training. Furthermore, it is also important to create a feasible distribution policy for the HPE sector and equivalent opportunities for those sectors, while escalating the involvement of woman in the programs and addressing the demands of labor markets.⁶

HPE is a portfolio-oriented system based upon OBE; furthermore 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 regards to a final output or learning. It is crucial for the learners to make a portfolio, which comprises facts, encompassing the learning outcome of all the modules.³⁻⁵

A portfolio can be defined as a record of student works, with a prevalent notion or objective; nevertheless, portfolios have been used for quite some time, whereas fine arts and performing arts have been using portfolios to record modifications or improvements in style and performance, or to gain admission to special schools. However, the use of portfolios was extended to the educational sector during the 1990s, as part of the movement towards performance assessment. Undeniably, this transformation was not welcomed by all the sectors, with particularly strong opposition from the section which opted for traditional evaluation techniques, particularly multiple-choice testing. Even though portfolios are mainly used for evaluation, they can still be used to accomplish other goals; for example, recording the diverse experiences of the learners in a course or class, presenting details for discussion between learner and teacher or among learners, and signifying periodic changes in the technique or skill of students.⁷⁻⁸

The contents of a portfolio are regarded as records, which includes information required for assessment. Information in records enables decision makers to make up to date decisions. Traditionally, records have been considered an essential element of decision making in educational sectors, since it includes information which empowers decision makers. Nevertheless, inadequately managed records will not facilitate the making of correct decisions.⁹

Records are defined as all those documents which assist the organization in carrying out its business and which are thereafter preserved as evidence of its transactions. Therefore, record management is the use of systematic and scientific control of recorded information that is required for the operation of the organization. The aim of record management is to achieve the best retrieval and exploitation of business records in the organization system and also to improve the efficiency of record making and keeping processes. The organizing steps that offer guidance to College staff on the management of key records documents such as policies, standards, tools etc. is known as framework.¹⁰⁻¹¹

A number of developed countries have focused on investigating electronic records management aimed at deriving practical solutions to the management of records. Nevertheless, in Yemen, there is a lack of studies related to electronic records management. Hence, it is crucial to conduct efficient performance assessments and consequent decision making in academic Yemeni institutions. These decisions and evaluations require efficient records management for supporting such process; if not, the objective of the desired decision might not be accomplished. The only means to get expected outcomes is by ensuring the accessibility of information in records by means of effective records management, maintained in accordance with a framework that guarantees the effectiveness of record keeping.¹²

2.0 DEFINITION OF CONCEPTS

The concepts to be discussed in this section are: records, electronic records, framework, electronic records management, decision making and higher professional education.

2.1 Records

Records are information prepared, received and maintained as evidence and information by an organization or individual in pursuance of legal obligations or for the operation of a corporation. This recorded information must be managed by the organization to provide evidence of their business activities.¹³

2.2 Electronic Records

Electronic records include all components of an electronic information system namely: electronic media as well as all related items such as input documents, printouts, programs and metadata, which is background and technical information on the information stored electronically.¹⁴

2.3 Electronic Records Management

The standard definition of ERM is the field of management responsible for the efficient and systematic control of the creation, receipt, maintenance, use and disposition of electronic records, including processes for capturing and maintaining evidence of and information about business activities and transactions.¹⁵

2.4 Decision Making

Decision making is the process of ranking feasible alternatives and selecting the best one by considering multiple criteria. It is comprised of four steps: (1) information acquisition; (2) decision-making models; (3) decision results acquisition; (4) ranking alternatives in a sequence.¹⁶ In some critical situations, it is not possible for a single expert to consider all the relevant aspects of a problem. Therefore, it is essential that the decision making process take place with many experts from various fields.¹⁷

2.4 Higher Professional Education

HPE is a practical education system intended to enhance the experience of graduate students to prepare and qualify them for satisfying the needs of the labor market. HPE is a portfolio-oriented system based upon Outcome Based Education (OBE); furthermore 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 regards to a final output or learning. It is crucial for the learners to make a portfolio which comprises facts, encompassing the learning outcome of all the modules.⁵

3.0 SIGNIFICANCE OF ELECTRONIC RECORDS MANAGEMENT

ERM is the process of maintaining and controlling all of the steps involved in the life of an e-Record. It is essential that any business manages its e-Records efficiently and competently.¹⁸ Records must be managed from their creation to their disposal. Regardless of the medium on which they are created and stored, records document decisions and activities, and provide evidence of transactions in support of everyday business. There are many benefits for managing records:¹⁹

- i. Reduce costs by volume control and de-cluttering: By implementing a records management program and choosing an offsite storage facility for the safe storage of business records, organizations could reduce the amount of space up to 40%.
- ii. Speedy retrieval of information is important for the success of the organization. This would also provide better customer service.
- iii. Law compliance and reducing litigation risks: Effective ERM protects the organization against the risk of litigation and legal investigation. By having ERM initiative in place, organizations are protected from risks and pitfalls.

It is impossible for an organization to function efficiently without proper ERM. Thus, an efficient and effective ERM is essential to avoid problems which could cause operational failure.²⁰

Records are essential elements of good government. They help assure the accountability of government over time and provide a sound basis for historical research. By extending knowledge of past actions and decisions to inform future decision making, they provide a valuable repository of information for future administrations and help build trust.²¹

4.0 RELATED WORKS ON ERM IN EDUCATION

Mohammad and Zawiyah's study²² brought forward a framework for the management of students' e-records enrolled at Vocational Colleges in two zones namely Melaka and Negeri Sembilan. The study sample comprised

nine vocational colleges involving 117 lecturers and staff chosen via cluster sampling method. Data was gathered from the sample through questionnaires and the results revealed that the framework is important to keep track and manage students' electronic records in colleges. The result also showed that the colleges were still unaware of the significance of the concept of such records.

In addition, Egwunyenga²³ examined the issues related to management options of record keeping in Universities in South West Geo-Political Zone of Nigeria. He focused on the related problems and management options with regards to record keeping of universities in the South West Geo-Political Zone of Nigeria. The sample was comprised of 2471 staff consisting of 684 academic staff and 1787 non-academic staff. Data was gathered with the help of a structured questionnaire which was then analyzed through the mean scores and Z-test statistics to obtain answers to the research questions and to test the hypotheses. The findings showed that the related issues included negative staff attitude, improper record security, insufficient number of computer terminals, ineffective record retrieval methods, lack of record keeping policy, insufficient resources and lack of record retention and disposition schedule. Management recommended options directed at the requirement for the policy formulation for the entire staff, staff training requirements, full computerization of records and the provision of a records manual.

In a related study, Popoola²⁴ examined the socio-economic factors consisting of gender, age, marital status, educational qualification, job tenure, monthly salary, and job satisfaction as well as locus of control in their determination of the organizational commitment displayed by the personnel of records management in the private universities of Nigeria. The study employed an ex-post facto type of research design where a questionnaire was used for data collection from a total sample of 240 records staff chosen from a population of 310 in 24 Nigerian private universities. Of the 240 respondents, 220 responded and data obtained was deemed valid for analysis. The findings showed significant multiple correlations between socio-economic factors, job satisfaction, locus of control and organizational commitment of the respondents. Added to this, socio-economic factors, job satisfaction and locus of control were found to be significant determinants of the respondents' organizational commitment. The authors recommended that the administrators of private universities in Nigeria should take all the above factors into consideration when they draw up enhancement plans catering towards organizational commitment of the records management staff.

Moreover, Regina²⁵ carried out a study to examine the efficient management of school records by secondary school principals in the Nigerian Delta state. The study population was made up of 602 public secondary school principals and all 602 principals were considered as a sample. The author employed a structured questionnaire for data collection after which data was analyzed with the help of mean scores and z-test statistics to obtain the answers to the research questions and to examine the proposed hypotheses. According to the findings, secondary school principals are distinct in their efficient school records management in terms of their gender, experience, and school location. On the basis of the findings, the author recommended that it is pertinent for the government to provide sufficient training to principals through in-service programs, conferences, seminars and workshops to maintain their effective services.

5.0 THE STRUCTURE OF YEMEN HIGHER PROFESSIONAL EDUCATION (HPE)

Education is perceived as one of the principal motivating factors behind national economic development and it is one of the most effective ways in which individuals can hope to achieve better opportunities and a higher standard of living.²⁶ For these reasons Yemen has invested in its education system over the past twenty years.

5.1 Outcome Based, Technical and Vocational Education

Outcome based education is an educational concept where students are measured by their acquired abilities. The assessment stage is a bottom up whereby the assessment of the course outcomes is used to assess the achievement of the program outcomes.²⁷

Technical and vocational education (TVET) includes training provided by public and private sectors aimed at making the students gain practical knowledge, and technical knowhow, which are essential for securing employment in a specific field, which includes trade or group of vocations.⁴

The lack of practical skills among university graduates in Yemen hinder them in the job market, which led to the establishment of Ministry of Technical Education & Vocational Training (MTVET) in 2001. Moreover, despite its massive human resource potential and a great demand for training opportunities, Yemen has been forced to be dependent on workers from overseas due to the lack of potential graduates. Even though the Yemeni TEVT sector has a robust supply-driven strategy, it still suffers from a weak association among the TEVT system, labor market requirements, and private sector enterprises.⁵

5.2 HPE Process and Life Cycle

The evaluation Life Cycle in HPE comprises several steps. The first step is the preparation of the module descriptions of the subjects in accordance with OBE format that relies on portfolio assessment mode. Depending on the module description, the portfolio contents must be set up and numerous facts for the students must be identified and organized to be included when required. At the beginning of each section of study, portfolio and module description must be delivered to both learners and trainers. Proof of evaluations that had been identified are accumulated to be included in the portfolio, and presented by the students based on the scheduled due date. Evaluation of the students is carried out based on the contents of their portfolios, which are viewed as records and evidence for the assessment. Figure 1 shows HPE Process.

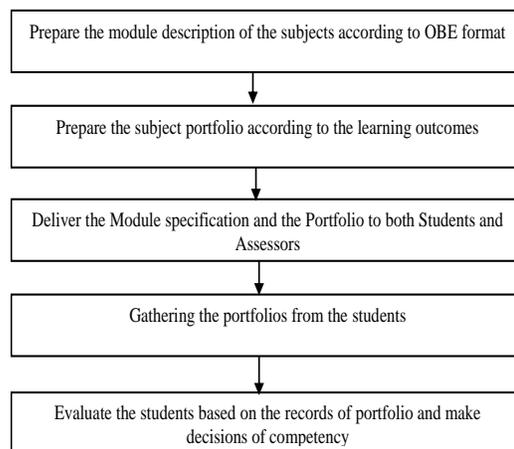


Figure 1 HPE process

Figure 2 shows the life cycle of the HPE which starts with preparing the module of the subject followed by preparing the portfolio for the module. Finally, the HPE life cycle ends with the delivery of the module to the instructors and portfolio to students.

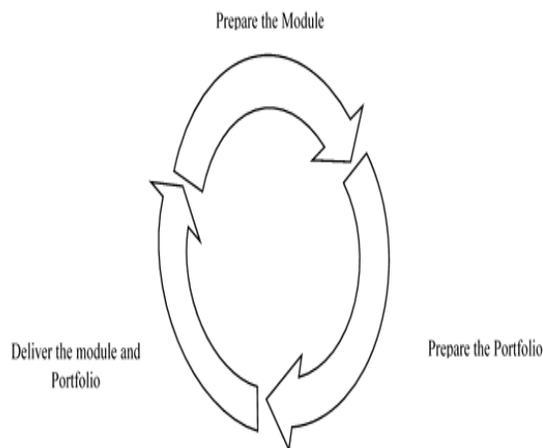


Figure 2 Life cycle in HPE programs

5.3 Module Specification

A module is a comprehensive block of learning in the program. It is the most basic component of a program related to approving credits. The learning module specification details the level, quality and scope of performance, knowledge and understanding to be accomplished by the students.²⁸

Credits can be obtained upon successful accomplishment of the module. These credits accumulate to be a collective record of accomplishment with other modules, which gradually leads to a qualification when all the modules (compulsory or optional) have been successfully accomplished.

A learner will be awarded the credit points assigned to a module when sufficient evidence is provided that all module requirements have been satisfied. All the modules of the subjects in HPE programs should be prepared according to the OBE formats shown below:

General module structure:

0	Heading
1	Module title
2	Module code
3	Date of last update
4	Level
5	Credit
6	Access statement
7	Module introduction
8	Learning outcomes
9	What you need to produce (evidence requirements)

Components for each learning outcome:

10	Module title
11	Learning outcome
12	What you need to do (performance requirements)
13	What you need to know (underpinning knowledge)
14	SUPPORT NOTES
	a) Purpose statement
	b) Notional design length
	c) Content
	d) Suggested approaches to facilitate learning
	e) Assessment procedure
	f) Exemplars
	g) Progression
	h) Learning and teaching resources
	<u>Equipment required</u>
	<u>Prescribed textbooks</u>
	<u>Recommended reading</u>
	<u>Video resources</u>
	<u>Computer software</u>

A portfolio should contain evidence which ensures the accomplishment of the learning outcomes of each module.³⁰

5.4 Characteristics of Portfolio

Generally, portfolios are defined as a more reliable assessment means, as opposed to conventional classroom test. Instead of expressing that the learner understands what has been taught, the portfolio illustrates that the student can practically apply what has been taught. For instance, we might recognize the component parts of a short story on an objective test; however, the inclusion of a short story in a portfolio document enhances the capability to write a short story. Nevertheless, outlining portfolio evaluation as a reliable one indicates that other forms of evaluation are less appropriate, or unsatisfactory.³⁰

In HPE, the portfolios of each module must be organized in accordance with the learning outcomes described in the module specification. The distinct parts of evidence in a portfolio need to be evidently defined. Nevertheless, the precise number of parts of evidence which have to be created depends on the professional development of the student and ultimately on the adequacy of all evidence provided.²⁹

Besides its immediate utilization in this program, the portfolio might also provide evidence of the proficiency with regards to Integrated Quality Management System (IQMS) appraisal requirements.³¹

According to South Africa Council Education (SACE), where OBE has been implemented and outcome based assessment (OBA) is employed, portfolio development undergoes eight steps which are: (1) planning, (2) creation and management of portfolio, (3) selecting contents of portfolio, (4) deciding upon the appropriate portfolio components, (5) compilation and generation the portfolio, (6) portfolio reflection process, (7) commencing individual professional development, and (8) upgrading portfolio. Figure 3 shows the overview of the portfolio update.²⁸

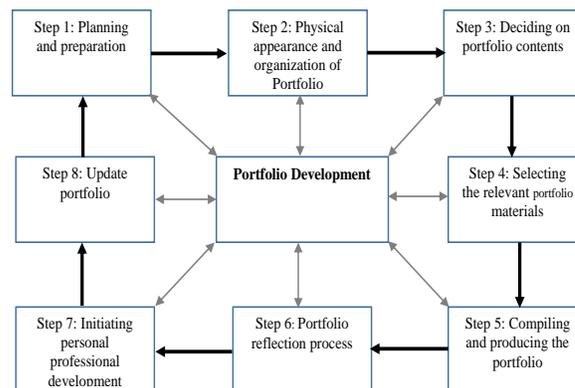


Figure 3 Overview of SACE guidelines on developing a portfolio.²⁸

After delivering portfolio to the students, HPE program coordinators should deliver a copy of each module specification to the instructors.

5.5 The Generation of Information and Evaluation of the Portfolios

In higher professional education institutions, students might be using several portfolios, including numerous evidences 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. According to, Clearinghouse⁷ evaluation is a methodical approach which facilitates collecting and evaluating evidence about the accomplishments of an individual with regards to specific learning outcomes for determining whether the individual has exhibited proficiency. The facts are used for making decisions about the achievements of the individual.

Trustworthy records contain reliable evidence of decisions taken, rights acquired and commitments made. Without records, no assessment can be made of whether individuals and public organizations have actually carried out the actions and transactions that they had to execute, whether they have performed these actions and whether they have done things which they were not supposed to do.³²

Assessment is a structured process for gathering and weighing evidence about an individual's achievements in relation to specified learning outcomes in order to determine whether he/she has demonstrated competence. The evidence is used for making judgments and making decisions about the learner's achievements and/or non-achievements.³³⁻³⁴

Making decisions particularly in educational organizations⁷ depends on records either physical or electronic. This is the reason why records should be managed. Information and data generated from an effective and efficient records management program aids the educational organizations to plan and make useful decisions, preserve facts and figures for future reference, and help assessors to evaluate the students easily thereby enhancing the efficiency and effectiveness of the organization and administration of the organizations.¹⁹

6.0 THE IMPORTANCE OF RECORDS MANAGEMENT IN HPE IN YEMEN

Organizations create their own records and records management system are considered as a memory for organization. Records document an organization's accountability, preserve the evidence of an organization's activities, enable timely access to current administrative information and ensure that records of archival value are marked for preservation at the time of creation and not accidentally destroyed. These records are kept as evidence that transaction has been carried out.³⁶

According to MTEVT in Yemen, there are 48 new institutes and 12 new community colleges under construction. These have a combined capacity of between 80,000 and 90,000 students, on top of the 79 institutes and seven community colleges that already exist. HPE and OBE will be the base for majority of the programs and according to local manager of HPE in Yemen the new plan will include three new community colleges for adopting HPE. OBE is a portfolio dependent system where many student records will be created.

Student records are a form of strategic resource for education institutions to set strategy, improve performance, assess, evaluate and protect vital information securely.³⁷ However, records management in education setting in Yemen (according to personal communication with the local manager of HPE project) is yet to be based on framework which normally includes policy, technology and strategy.

During recent years, higher education institutions have become more and more dependent on the collection, storage and processing of educational data. Decision-makers try to apply new strategies and use new tools to convert this data in useful information that would contribute to managerial problem solving. Good decisions involve using some software tools that support decision making process to maximize the performance of universities and minimize the negative impact of faults.³⁸ Decision making in the university system is an administrative function and invariably requires information in the form of records.

The decision support services in Yemeni higher education are crucial and would help in making decisions and eventually make effective performance evaluation. The decision-making process across the institutions of the higher education sector in Yemen is complex. In order to make sound decisions, reliable access to specific information in multiple functional divisions and stakeholders is required. Decision are made based on judgment of those in charge and experienced in a particular area, and those who are more or less rely on what they would believe is true to base a decision.³⁹

Therefore, there should be a study undertaken to propose records management initiative framework for educational organizations, one that will act as a foundation and reference to develop the electronic records management system in Yemen. This framework should focus on the functions involved and represented in HPE evaluation techniques to assist developers, records managers, professionals, and scholars in developing the system and managing records effectively.

7.0 CONCLUSION

Records are important for their value in providing evidence and heritage. Records can be considered valuable and worthy if they are authentic, reliable, usable, and have integrity. Because records are a product of actions, it is crucial to provide a framework that is based on functions so that the action involved in creating records remain intact and trustworthy, and to ensure that records are reliable. However, records are only valuable if they are accessible and available when needed. In HPE many records are generated periodically and need to be managed effectively and efficiently in order to increase the performance of the education. Since records can differentiate between successful and failed organizations, they should be managed effectively and efficiently and exploited optimally. This asset is strategic in nature and must be carefully protected so as to not fall into the hands of unauthorized parties. Framework is required at all phases of a record's lifecycle to ensure records are arranged systematically in context and to maintain their integrity and trustworthiness. It is also crucial to undergo a Framework as, without it, a records management initiative is incomplete and puts organisations at risk because valuable and vital records could be managed ineffectively. HPE in Yemen has produced a tremendous volume of records awaiting a framework to guide its management to help boost the performance and quality of education. In this regard and for

effective management of the electronic records, there should be a framework to guide the entire process.

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