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Guaranteeing the Productivity of Higher Learning Institutions through Electronic Records Management System (ERMS)

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ABSTRACT Although electronic records management system (ERMS) is important in bringing about the productivity of organizations, majority of them refuse to implement it, while a few embark on implementing it blindly, without guidance, which often results in failure. This study, therefore, proposed a model for ERMS adoption to support the productivity and performance of Higher Professional Education (HPE) institutions in the Yemeni context. This study used the Unified Theory of Acceptance and Use of Technology (UTAUT) and a mixed explanatory approach to gather quantitative and qualitative data. Data was then analyzed through the use of SPSS 21, with SEM and Smart PLS V3 software used to test the proposed model. The model was also confirmed by five experts who were interviewed to obtain qualitative data. Based on the analysis results, all the fit indices met the recommend values range that assumed the acceptability of the developed model. The model was found to be of good fit and the theory upon which the model was developed was stable. The quantitative findings showed that performance expectancy, effort expectancy, social influence, facilitating conditions, policy and training have a significant relationship with the ERMS adoption which in return has a significant relationship with HPE organizations' productivity. This was supported by the qualitative results, confirming the theoretical study and contributing to the understanding of ERMS adoption among HPEs. Such adoption ensures the educational institutions' productivity.

INDEX TERMS Organization's Productivity, UTAUT, Electronic Records Management System, Information System Management, Institutions of Higher Learning, and Adoption.

I. INTRODUCTION

Records management has been described as a bi-functional field in that it is a profession and an academic discipline. For the former, records management has been acknowledged and accepted, but for the latter, the development is still in its infancy. Regardless, both as profession and an academic discipline, records management originated from the US and the UK [1].

Records management has been evidenced to have a direct relationship with accountability, productivity and transparency, and thus it enhances the public service delivery quality and assists organizations in the acquisition of quality certification and as such, majority of organizations in both nation categories (developed and developing) have adopted

the program. Viewed from the professional aspect, despite the acknowledgment, many are still in the dark as to its importance, and from the academic discipline aspect, ambiguity abounds in terms of the movement from a theoretical to practical discipline. It is distinct from other academic disciplines that function on a theoretical framework prior to being applied in practice. Professionally, the field can be categorized into two based on its functions – first, records management tackles day-to-day operations/transactions and second, it manages national heritage for the purpose of research and historical preservation, which is a primary interest held by the archive institutions [1-3].

Based on the above background, technological advances have dynamically changed in terms of information format, medium and form, requiring the adoption of a novel management strategy. In times where stress is placed on online activities including online shopping and banking and electronic public service delivery (e-government), recorded information is now posed as a valuable resource that needs handling, management and administration in a systematic and effective way to prepare it for timely access at any place for decision-making. This is the core of the development of effective organizations because records have the information required for day-to-day business operations that distinguish a competent entity from its less competent counterpart [4-6].

However, regardless of the role and the value held by recorded information, majority of organizations still manage and administer their records in other ways owing to their ignorance, lack of knowledge and lack of perception of the advantages offered by records management, which is why it is relegated to less urgent tasks and given less priority [7-9].

In information driven society, recorded information is valuable in comparison to other resources like manpower, capital, land and building, and as such, recorded information as exemplified by the balance sheet should be managed and administered in an effective way based on international standards. In this regard, in the higher organizational echelons, it is valuable for strategic planning and decision making to steer clear of erroneous decisions. Aside from this, prior studies such as Yusof and Chell [1], Eusoff and Yusof [10], Galala and Yusof [11] and Mukred and Yusof [12] evidenced that recorded information can be utilized to indicate performance and to oversee the progress and development of the organization.

In today's organizations, efficiency lies in the use of information technology and communication (ICT); however, ICT on its own without an effective planning and management approach to recorded information is no guarantee of success. Thus, for the enhancement of competencies, it is crucial for organizations to use recorded information that requires management and administration for the following purposes;

Readily available – information stored and recorded has to be available and accessible for use at any time and place as required.

Relevant information – created, used, maintained and kept in storage has to be important to making decisions in order to achieve the objectives of the organization. Hence, information creation and maintenance has to be aligned to the organization's objectives and policies.

Updated information – recorded information has to be currently updated so that the organization can use timely and accurate information for decision-making.

Accurate information – information has to be characterized as error-free as the presence of error could lead to erroneous decisions made based upon the information recorded.

Fulfilling the needs of the user – the created and maintained information in the organization has to meet the user's needs and in this regard, users require different information on the basis of which of their functions and responsibilities are performed.

Ease of use and understanding – information has to take on a suitable medium and format and it has to be understood clearly.

Reliable information – reliable information is needed in order to ensure its reliability and validity in information processing as any unreliable and invalid information will turn clients away.

The information role has become increasingly important among organizations as the organizations may face risks when basing their decisions on inaccurate or incomplete information. This indicates that investment in information handling and management must be undertaken in light of qualified and trained workforce that is capable of managing, safeguarding and securing recorded information. In addition, information has to have efficient management, proper tools and appropriate environment for its preservation [13, 14].

On the above basis, organizations can employ professional individuals for records handling and management but in the current times, majority of organizations in developing nations refuse to do so, which is not the case in developed nations. Records management should fall under the responsibility of clerical staff under the supervision of the IS officer. Generally speaking, records management as a profession has yet to receive attention because organizations do not prioritize records management, but leave it to be done their spare time with the assumption that no professional is needed to handle it and that the organization can survive and function without using a proper and effective records management [1, 5].

Clerical staff is often involved in decision making and records management must adhere to international standards in alignment with the organization's policies and objectives and as such, records management has to be brought up and presented in board meetings by suitable personnel.

This paper is organized as follows: after introducing the topic, the placement of records management section is presented. Thereafter, related works on the ERMS and its relation with the organizations' productivity sections are outlined. Model development and hypothesis formulation are

presented followed by the methodology of the study. Then, the results are discussed and interpreted. The discussion and implication and the study are presented, followed by the last section which is dedicated to conclude the paper.

II. PLACEMENT OF RECORDS MANAGEMENT IN THE ORGANIZATION

In the organization, the records management placement is decided upon largely by the entity's political environment, although it is generally positioned in the administration department. This appears to be the most logical choice as records management does reinforce the administration of the smooth running of the organization through the determination of administrative and operational information and its dissemination whenever required. However, in some firms, records management is made a part of the information service unit that runs other information functions such as information resource center, while other firms place it under IT as it runs in parallel to that of the computer department [8, 15, 16].

This paper argues the location and placement of records management under the information management department as information is currently considered as a crucial organizational resource and its management will further enhance its value to the organization and facilitate its success. In fact, the incorrect placement of records management will only lead to its oversight and this could negatively impact the running of the organization. In this regard, an organization that fails to manage its records, and considers it to be insignificant to be discussed in the board level, fails to enhance its accountability, transparency, competency, efficiency and survival [1, 17].

This is why, in the U.S. organizations context, there is a related legal implication to those that fail to systematically and efficiently manage their records. This is particularly true after the introduction of Sarbane Oxley in the US, after which the majority of professional entities laid stress on records and the changes needed in the records management of organizations and the whole nation [5].

Comparatively, in the developing nations' context, the records management responsibility is placed under the Ministry of Unity, Culture, Arts and Heritage, or the Presidency. This fails to connote the authority and role of recorded information in identifying the organization's success/failure and it does not contribute to enhancing the organization's accountability and transparency, specifically in the public sector. Heritage is a term that indicates a historical relevancy and this is the major reason why organizations in developing countries are not that motivated to manage their records, when they should prioritize them to leverage and obtain the greatest advantage. This type of placement in developing nations goes against the government's efforts to motivate the development of knowledge society and e-government [10].

In the current times, information is deemed to be a valuable asset and power, which is much sought after by competitors and business intelligence agencies. Recorded information has to have correct placement and management in order to safeguard it, manage it, and to prevent access by unauthorized entities. The destruction of important records or its access by unauthorized parties could lead to chaos in the organization as it is the recorded information of the organization that distinguishes it from its rivals [10, 18-21].

From a profession perspective, records management is created and extended through two approaches namely, archival approach (in the U.K) and business orientation approach (in the U.S.). In the former approach, records are managed for the purpose of history, research, evidence as well as heritage, while in the latter, records management is for the purpose of competent business processes, decision-making processes, evidence in court, enhancement of excellence and efficiency for smooth organizational running, transparency, credibility and accountability, all of which contribute to enhancing confidence and trust among clients in the organization's products and/or services [5].

Owing to the variety of approaches adopted, records management has different effects. In the first approach, records management is not viewed as pertinent in that records are not as consulted often and retrieved for day-to-day business operations. Hence, majority of businesses ignore their creation, use, maintenance and disposal. Records are only used when there is need for the celebration of an event.

The second approach is more productive as records are used to enhance decision making and avoid past errors. Records, in this approach, also lead to enhanced competency, superior business transactions, and enhanced productivity, accountability and transparency and since it is crucial for academic institutions to improve their productivity, they are better off adopting this approach.

III. RELATED WORKS ON ERMS ADOPTION PREDICTORS

Studies devoted to ERMS, specifically among HPEs, are still lacking, with most of the studies concentrating on healthcare. The records in healthcare are managed using Electronic Health Records (EHR) and although such records are healthcare-specific, the concepts and methods as well as their management are suitable for other field records [3, 14].

Generally speaking, the adoption of IT refers to the potential adopters' conviction that adoption of a specific IT tool would minimize task efforts [22]. Adoption was defined by Rogers [23] as the use of innovation that appears to be the best available course of action and by Proctor, et al. [24] as the initial decision and intention towards using an innovation. In the case of ERMS, adoption has a key role in delivering education services and ensures that effective services implemented positively affect such delivery. This begins

with the awareness of the adopters of technology and ends with the technology adoption and usage [25].

Attributes of technology such as performance expectancy and effort expectancy are the main attributes that bring about the positive behavior and attitudes among potential users [26-28]. A better insight into the way people perceive the possibility of information use and the reaping of its benefits is of utmost importance.

In literature concerning information systems, it is acknowledged that both performance expectancy and effort expectancy positively affect the intention of the users to use technology, and in turn, regular use and adoption [29]. Studies of this caliber indicated that performance expectancy and effort expectancy are related to behavioral intention and they are predictors of technology acceptance [30].

Social influence is another predictor of technology adoption, which is described as the effect of important others on the behavior of the individual [27]. The relationship between social influence and behavior assumes that the individual focuses on the opinions of the people that are important to him when using IS. In the face of mixed results, social influence has been deemed to be of significance when it comes to its effect on behavioral intention and when it comes to adopting technology [31, 32]. Works in the IS field indicated the variable's significance for adoption and use; for instance, Han, et al. [33] found that in the earlier phases of adoption, when the individual has little to no experience in technology, their behavior may be affected by their important other's opinions.

In addition, facilitating conditions are also related to IS use and the concept refers to the level to which an individual is convinced that the infrastructure of the organization and its technology support the system use. In past studies, organizations and managers were suggested to enhance their facilitating conditions to boost the acceptance and usage of new technologies [27]. In Ajzen [34] pioneering study, facilitating conditions was deemed as a determinant of the possibility of accepting technology in a certain company. Also, Compeau and Higgins [35] related that an organization that is able to support new technology through the other technology that it possesses would boost the acceptance of the former among users.

To complete both the effective and efficient functioning of records management calls for new policies. A policy is described as a statement serving as a roadmap/guidance directing the organization to make decisions and take actions when it comes to records management. It is a way to select from several choices to direct and determine current and future decisions and assists in organizing the new strategy to ensure long-term successes [36]. In other words, records management calls for a policy to establish an effective framework. A policy is important for records management as stressed by the ISO-15489 to direct the procedure and training and to determine the retention and management of records based on its statement declaring that "an organization

has to establish, document, maintain and promulgate policies for record management".

System creation needs to be first outlined to determine the needs for record-keeping (content type, medium, storage and process of business) at the stage of policy planning. The system has to be consistent with the laws, regulations and the audit requirements and it has to have an extendible and flexible nature to make sure that future requirements are accommodated. Access to information also has to be taken into consideration. In sum, an organization devoid of a policy when it comes to record management will be clueless as to which information has to be retained and which to discard.

In the U.S., a survey carried out in June 2006 by Xerox Global Services related that from 741 firms, 63% are unaware of the risk that awaits them as a result of mismanaging their e-information, 40% are ambiguous as to the approach/procedure to adopt with the legal requirement, and a mere 34% was of the consensus that an organization needs to understand e-records and its functioning [37]. Also, without policy, an organization may be clueless as to the related training and budget to be appropriated to the system.

In a related study, Asma'Mokhtar and Mohammad Yusof [38] revealed that despite the initiatives taken by the surveyed organizations (25 public entities) in the Klang Valley for the materialization of e-government, not all of the organizations have policies directing the program. This shows that the success of e-government initiatives has yet to be reached. In the case of developing countries, governments have to continuously seek for productivity, accountability, transparency and efficiency in delivering services and in this regard, a sound policy can make sure that records management is given top priority in administering processes and managing the organization.

Prior findings also showed that successful ERMS adoption calls for training the end-users through in-service programs, conferences, seminars and workshops as to how to handle ERMS and thus, this study included training as a study variable to be examined.

In a related study, Terry, et al. [28] examined the daily experiences of healthcare providers and staff when completing the e-medical records (EMRs) implementation. The study found factors that prevented the use of the system and they include IT challenges such as learning how to use the technology and computer. Two factors that were highlighted to promote the use and enhance efficiency of patient healthcare were patient care efficiency and confidence in using computers and EMR software. Also, the use rate of EMR should be boosted by assessing and enhancing computer skills, data entry consistency and EMR use should be covered wholly when providing training.

Training workers ensures the lessening of risks that could crop up to prevent successful adoption and implementation of system [39]. Lack of appropriate and sufficient training and support could hinder the adoption of EMRs among doctors as evidenced by Lorenzi, et al. [40] and Boonstra and

Broekhuis [41]. Moreover, according to Huryk [42], lack of training adds to the users' unfamiliarity and ambiguity with the system and computers use, which would in turn, lead to implementation failure.

IV. ERMS and Educational Productivity

The development of records management is a distinct field that involves multiple disciplines, sharing knowledge and skills from different fields such as management in terms of facilities, and staff and equipment, information science, archives management, legal studies, system analysis as well as information technology. For instance, library science and records management entail information management for the purpose of accessing and monitoring information location. However, library science is concerned mainly with published information, while records management is concerned with created and received records by the organization that bear value to its operations and legal issues, which in Yusof and Chell [1] and Mohd and Chell [5] study, is quite distinct from archives, emphasizing the preservation of document for the purpose of history and research.

Studies dedicated to the topic show that records management development is an academic discipline began in the 1970s but as a profession, it started at an earlier period that can even be traced to ancient times. As an academic field, records management lacks a robust supporting theory as it obtains theories from other disciplines (e.g., library science and archives).

Pech and Mathew [43] highlighted nine factors that significantly contribute to small-sized business failure including lack of financial planning, lack of creating business records, lack of awareness of business records or refraining from referring to them, poor financial management, poor debt management, poor inventory management, poor fixing of costs and price, poor marketing research and borrowing excess. Small-sized businesses frequently lack standard records management system as a result of which their records are not protected from both natural and man-made disasters such as fire or vandalism. Aside from this, such businesses lack practice records classification, distinction of archives from records and they do not keep vital records together under protected archives.

To promote effective corporate governance, businesses need to draw up their activities in a report and forward it to the government, shareholders and society to meet the legal requirements and be transparent to shareholders when it comes to their company investments.

Additionally, some businesses are still unaware that the creation and retention of records is a legal requirement and not merely required for planning and future business development. In actuality, records-keeping does more for the company than occupy space.

In the past, businesses perceived records as unwanted papers that are piled up in rooms and no loss is incurred if the records are lost or destroyed. This is a misleading perception because records are linked to both inactive and active information required for the survival of the organization. Consistent with the government efforts in developing e-government, k-society and k-economy, records management has to be given its due attention and considered in the shift in paradigm. In this regard, private and public agencies have to understand the correlation between efficiency and effectiveness and making well-informed decisions. Stated clearly, effective and efficient decisions are often facilitated by the acquisition of current, precise and reliable information within records [12, 15, 19].

Whether private or public, organizations generate documents, from which a considerable amount may not even be used despite their importance. This is why, more often than not, actual stories of a utility company failing to raise equipment maintenance records for a timely security check, an accountant department's failure to collect information for the processing of timely invoices, and the failure to restore destroyed engineering firm's computer-aided design files owing to the lack of backup copies. This also holds true for actual medical clinic's medical records destruction despite the need to safeguard them for evidence to support the ethical practice, and the inability to access distinct historical data concerning scientific experiment by universities because of their unreadable records. The above are merely examples of the lack of recorded information management and preservation [44].

Generally, information technology (IT) works to enhance educational institutions productivity in order to overcome the challenges faced including keeping up with IS that could affect the productivity of various transactions as evidenced in the studies by Kirschner and Karpinski [45] and Talirongan and Hernandez [46]. In the field of education, institutions are keen on exploring new technologies or enhanced ones in order to work on their productivity and ERMS is a highly useful management technology that the field has taken interest in.

Moreover, good governance largely depends on effective keeping of records although record keeping is still lagging behind in research compared to good governance [8]. Also, according to Adu and Ngulube [8], South African and Malawian universities have to examine recordkeeping places when creating an alternative framework for managing their records and documents. The author laid stress on the need to adopt digital preservation in order to reinforce the productivity of organizations and their standard level of digital preservation governance.

Literature on the topic indicates that most educational institutions in the developing nations are still behind when it comes to systematic record and document management, despite the efforts exerted for improvement. It was evidenced that such management are weak in several areas, which include policy, digital records capacity, records management department, senior management support, and education and training on records management, storage, retrieval and

disposition of records in light of the systems and procedures that are related to the software [47]. Although the implementation of ERMS is extensive in developed countries, there are still some factors that prevent implementation success that mimics some of those in the developing nations [3, 12, 13].

In Hanushek and Ettema [48] study, the authors revealed that education decision-makers have largely steered clear of focusing on productivity, with ample resources in the sectors, but the focus should be shifted to enhancing quality outcomes regardless of cost. Productivity discussions have rarely, if ever, been brought up in debates concerning policies in the educational sector.

For the measurement of education sector productivity, it is pertinent to define both the inputs and outputs and expectedly, this is a more challenging task within the sector in comparison to other sectors or to for-profit services industries (e.g., banks).

On the basis of the UK report commissioned by the government, Tony Atkinson and his colleagues conducted a review of output and productivity in several government areas, with the inclusion of education [49]. The report primarily aimed to carry out analysis of the productivity of government by establishing guidelines for government output to be gauged in a way that is similar to the private sector, which deviates from prior methods that basically viewed government services output as equal to the inputs. Lastly, three measures were developed by Boser [50] to measure the productivity in education and he applied them to over 9000 schools districts in 46 states, limited to districts that enrolled at least 250 students, including grades K-12, along with states with over a single district. All three measures made use of the percentage of 4th and 8th graders rated as proficient or above, based on reading and math tests as the outputs, while the inputs varied.

V. Model Development and Hypotheses Formulation

According to Sekaran and Bougie [51], the theory and hypotheses formulation should be carried out prior to research design and methodology selection. The following section is devoted to the development of the model and the formulation of the study hypotheses.

A. PROPOSED STUDY MODEL

Models refer to the gateway to conceptual framework, whereas theoretical frameworks are built on theories [7]. In social science studies, models are developed, after which, concepts are identified in the subject under study, followed by the understanding of data collection and establishment of the relationships among the concepts. In other words, concepts transform into theoretical structures as they are the ones that build theories and are measurable, with the measurement being the operationalization essence. In contrast to theories that explain and predict, models only

provide the phenomenological explanation. Moreover, theories are tested using propositions/hypotheses with the use of a methodology that is consistent with the model/theory. The conceptual framework, on the other hand, clarifies and makes things understood, as opposed to just explaining in light of the theory [52].

Researches devoted to the adoption, acceptance and use of IS by users were conducted soon after the computer and IT were introduced. According to Venkatesh, et al. [27], technology acceptance is a topic that is the most researched, particularly when it comes to the assessment of IT value to organizations and explaining the determinants of technology acceptance, integration and usage [53]. In fact, authors have proposed several theoretical theories to explain IT adoption and use, with the major theories being the Theory of Reasoned Action (TRA), the Technology Acceptance Model (TAM), the Motivation Model (MM), the Theory of Planned Behavior (TPB), the Combined Technology Acceptance Model (CTAM), the Model of Personal Computer Utilization (MPCU), the Innovation Diffusion Theory, the Social Cognitive Theory and the Unified Theory of Acceptance and Use of Technology (UTAUT). Moreover, IT and IS adoption and use studies have a veritable array of model choices to choose from that suit their objectives.

In the education sector, studies in literature extensively adopted UTAUT or TAM as their platform of theoretical models when it comes to adoption of technology (e.g., [54-57]). However, neither model is not accurate in predicting adoption and thus other theories should be adopted for examination [58]. While TAM can explain 40% of the variance in technology adoption in the workplace, UTAUT is capable of explaining 70% of the same [59].

Therefore, in this study, the author uses UTAUT as the theoretical model for several reasons that are mentioned under the next sub-sections explaining the study's conceptual framework development. The UTAUT has been largely used in literature as a framework to predict the intention of the user to use technology as well as the actual use of the same, and this includes ICTs [60], digital learning technology among instructors [61], online learning [62], e-records adoption and system adoption and acceptance as evidenced in Heselmans, et al. [63]'s and Maillet, et al. [64]'s studies.

This study did not assess the mediation effects of the behavioral intention variable as it used the original UTAUT model. It considered the identified factors as determinants of behavioral intention and examined the relationship between the behavioral intention to adopt ERMS and the perceived productivity of using the system.

As for the UTAUT model's performance, it is capable of explaining a larger percentage of user's adoption than the models that came before it, as revealed in the context of mobile library and staff preparedness context. Based on its consistent performance, UTAUT was recommended to examine pre-service teachers' intention towards using ICTs [65]. However, more studies need to be carried out to

integrate and add more variables to UTAUT to examine IT adoption and acceptance [27].

More importantly, TAM and UTAUT are incomplete models as they fail to take into consideration all the structures within the operations of the user [66]. On the basis of the Lewellen [66]'s results, TAMs perceived usefulness or UTAUT's performance expectancy may be narrowly adapted to distinct tasks in general circumstances.

Therefore, this study examines employee's behavioral intention towards ERMS adoption by using extended UTAUT model [67]. Although the UTAUT model is capable of explaining behavioral intention towards adoption and use of technology, prior studies using the model have been confined to top organizations, with authors illustrating the validity and reliability of the model in light of acceptance, adoption and use of technology and revealed it to be suitable for such organizations compared to its predecessors [27]. In addition, the UTAUT combines all the top factors of IS or IT adoption that cover technological, organizational and environmental aspects [27]. Only a few studies have examined ERMS adoption using UTAUT in the educational context but the model is still deemed suitable to be used for such examination. The proposed study model is depicted in Figure 1.

B. HYPOTHESES FORMULATION

The formulation of hypotheses establishes the independent-dependent variables relationship as proposed by the research. In this study, performance expectancy, effort expectancy, facilitating conditions, social influence, policy and training are the exogenous variables, user's intention towards adopting ERMS are endogenous variables, whereas the organization's productivity is the dependent variable.

The current study derives the hypotheses from these variables to form the platform upon which the research model is developed and the factors influencing ERMS adoption in HPE institutions are determined in the case of a developing country, Yemen. The next sub-sections present discussions on the relationships among the variables.

1) PERFORMANCE EXPECTANCY

The level to which an individual is convinced that system use will achieve job performance is called performance expectancy [27]. Performance expectancy is a UTAUT construct that was developed by aggregating performance-related constructs in the technology use prediction models.

The beliefs of employees concerning the advantages that an IS can provide and the way it can enhance job performance is a significant factor that could boost its adoption and new system use. On the basis of past studies, the relationships that UTAUT posit assumes a positive influence of performance expectancy on behavioral intention of employees towards IS adoption and thus, this study proposes the following hypothesis for testing;

H1: Performance expectancy has a positive effect on intention to adopt ERMS in HPE institutions.

2) EFFORT EXPECTANCY

The level of each related with system use is called effort expectancy [27]. The construct is a good predictor of behavioral intention as advocated by Davis [29] and Davis, et al. [68]. Additionally, effort expectancy is assumed to be significant in the initial stage of adoption but its significance lessens as the system is used over a long period [27]. In literature, effort expectancy is one of the top predictors of behavioral intention (e.g., [30, 69] and it directly affects attitude [70].

Following past studies, the present one proposes effort expectancy as one of the top determinants of intention towards IS (i.e., ERMS) adoption and thus, it proposes that;

H2: Effort expectancy has a positive effect on intention to adopt ERMS in HPE institutions.

3) SOCIAL INFLUENCE

The level to which an individual believes that people important to him think that he should use or refrain from using the new system is called social influence [27]. The construct is developed in UTAUT as the sum of the constructs of subjective norms and images and it has been examined in several contexts, with mixed results in light of its effects on behavioral intention towards using technology. More specifically, Mohamadali and Azizah [71] revealed that social influence has the least influence on user's acceptance, whereas Thomas [72] reported that it is a significant predictor of behavioral intention. Moreover, some other studies like Holtz [70] showed that social influence is the top predictor of behavioral intention, while in the healthcare sector, social influence was mentioned as one of the importance determinants of behavioral intention [73]. On the basis of the findings discussed above, this study proposes that a positive relationship exists between social influence and behavioral intention towards IS adoption. Therefore, the following hypothesis is proposed for testing;

H3: Social influence has a positive effect on intention to adopt ERM in HPE institutions.

4) FACILITATING CONDITIONS

The level to which an individual is convinced that organizational and technical infrastructure are present to support system use is called facilitating conditions [67]. Facilitating conditions have a direct positive influence on use but not on behavioral intention. Other past studies showed a positive influence between the facilitating conditions construct and behavioral intention (e.g., [74, 75]). Added to this, Nuq and Aubert [76] revealed that facilitating conditions have to be taken into consideration when examining behavioral intention towards use in the case of developing nations, on account of less resources. Hence, this study expects that a positive influence exists from facilitating conditions to the employees' intention towards ERMS

adoption in HPE. In other words, it proposes the following hypothesis for testing;

H4: Facilitating conditions have a positive effect on intention to adopt ERMS in HPE institutions.

5) TRAINING

Training studies indicated the constructs positive effects on the use and adoption of the system and this was evidenced by the findings reported by Ludwick and Doucette [39], Boonstra and Broekhuis [41] and Huryk [42]. This discussion leads to the following proposed hypothesis;

H5: Training has a positive effect on intention to adopt ERMS in HPE institutions.

6) POLICY

Empirical findings in the developing nations showed that policy has a positive influence on the adoption of technology [77, 78], policy has a positive influence on the intention towards adoption of technology [79]. This study thus proposes the following hypothesis for testing;

H6: Policy has a positive effect on intention to adopt ERMS in HPE institutions.

7) ERMS ADOPTION AND PRODUCTIVITY

In this study, intention to adopt is considered as the independent variable and behavior intention was proposed in TRA model as a measure of the level of the individual's intention to behave a certain way. The construct has a direct effect on the actual technology use [27, 80]. This study defines behavioral intention as the level to which employees intend to use IS in performing their tasks. For the use of specific technology, it appears that behavioral intention is often measured compared to its actual use [81]. Similarly, majority of past studies were noted to measure the construct as opposed to measuring actual usage [82]. Added to this, behavioral intention towards IS adoption has become a top issue in the field of IS science [81].

On the other hand, the UTAUT advocates the influence of behavioral intention on system use (a variable that meets productivity construct of the current study) and the model is quite a robust one extended to include constructs that are valuable in providing insight into the adoption of technology (e.g., ERMS), at the level of the individual [67]. This study proposes the following hypothesis for testing;

H7: ERMS adoption has a significant relationship with the productivity of education in HPE institutions.

Table 1 contains the proposed hypotheses of the present study.

TABLE 1 THE RESEARCH HYPOTHESIS

Hypotheses	
H1	Performance expectancy has a positive effect on intention to adopt ERMS in HPE institutions
H2	Effort Expectancy has a positive effect on intention to adopt ERMS in HPE institutions
H3	Social Influence has a positive effect on intention to adopt ERMS in HPE institutions
H4	Facilitating conditions have a positive effect on intention to adopt ERMS in HPE institutions
H5	Training has a positive effect on intention to adopt ERMS in HPE institutions
H6	Policy has a positive effect on intention to adopt ERMS in HPE institutions
H7	ERMS adoption is significantly related with the productivity of education in HPE institutions

Figure 2 displays the hypotheses according to the model that was developed.
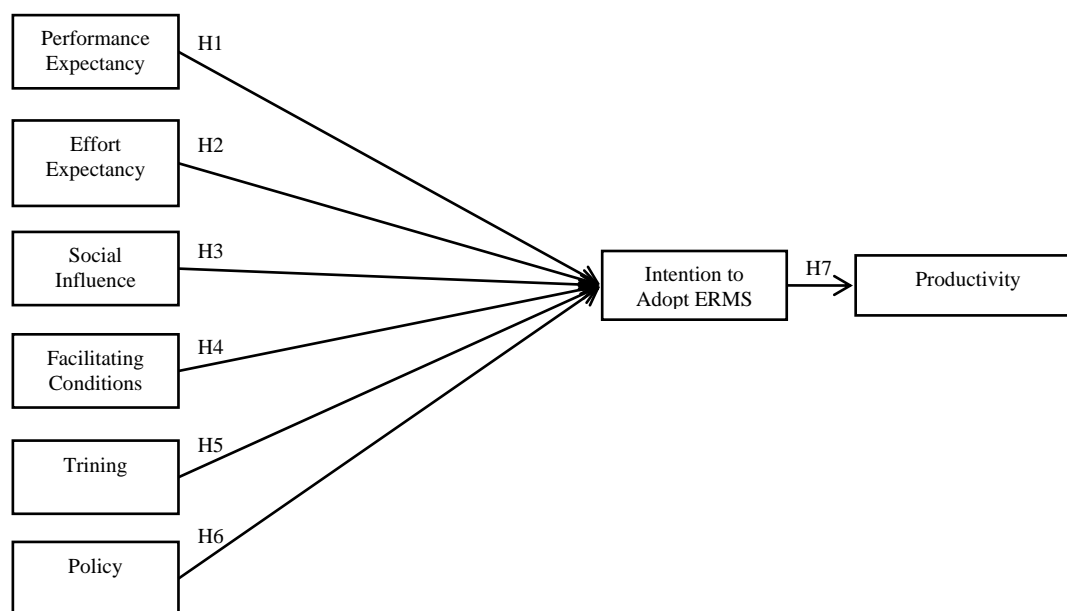
Figure 1. **The proposed model of the study with the hypotheses**

VI. Methodology

According to Mingers [83], a research method refers to a structured set of guidelines that facilitate valid and reliable research outcomes. Despite the fact that it is more feasible to choose a method that increases generalizability, realism and accuracy [84], all methods are deemed to have inherent flaws in one way or another [85]. In this regard, the weaknesses of one research can be tackled by employing an alternative approach that counters them because there is no one approach that can enrich IS studies owing to the discipline's continuous advancement [86].

In order to determine the answers to the research questions, it is important to use a suitable research perspective and in this study, a combined approach of data collection methods is employed that consists of qualitative and quantitative methods represented by questionnaire survey and interview sessions, respectively.

There are three major issues that have to be taken into account when designing a mixed-method approach, which are priority, implementation and integration of the chosen methods. Priority is concerned with basing the research on the objectives – and in this study, the objective is achieved through the quantitative approach. Thus, priority is given to the questionnaire survey as the primary data collection method. Barnes [87] related that qualitative findings are often relegated secondary to the quantitative findings.

Creswell [88] related that there are three main categories of mixed method and they are the triangulation method, the explanatory method and the exploratory method. The triangulation category utilizes qualitative as well as quantitative obtained data for simultaneous data interpretation, the explanatory mixed method conducts a follow-up qualitative study after a quantitative study whereas the exploratory mixed method is based on a quantitative study that is based on the results obtained from the qualitative study. This study used explanatory mixed method with interviews to support the findings of the questionnaire and to contribute enriching information to the data gained through the questionnaire. Implementation is concerned with the used data for the collection methods in that they may be utilized in sequence or in parallel to each other [88]. This study used the sequential mixed method, the quantitative data collection followed by the qualitative one. Finally, integration is concerned with combining the quantitative and qualitative methods [89], and in the present study, integration was carried out at the stage of confirmation.

A. POPULATION SCHEME

In this study, the target population is comprised of 346 employees of HPE institutions using OBE programs that depend on ERMS for storing and protecting classified data and information and depositories. In any study, the success of sampling largely depends on how the sampling is prepared.

This study mainly focuses on determining the factors that influence the adoption of ERMS and to investigate the relationship between such adoption and the organization's productivity. As such, the individuals that were chosen for the sample comprised HPE managers and academics, to which the survey questionnaire was administered to.

The sample consisted of lecturers holding PhD, masters or bachelor's degrees that are full-time employees as they are the ones that makes decisions and evaluate performance of

students through the use of e-resources in the institutions. Managers are individuals that are in the hierarchical positions in the institutions who are responsible for providing education and managing subordinates and they occupy top-level, middle-level and executive level of the organizational hierarchy. More specifically, first level managers are senior managers and they are the dean, deputy dean, head of divisions, corporate head, general manager, office manager and department manager – all of whom have a hand in the executive decision making process. The institutions are governmental educational institutions under the oversight of the Ministry of Technical Education and Vocational Training (MTEVT).

Therefore, a frame consisting of the employees of HPE institutions was drawn up using stratified random sampling based on the three different positions of the respondents. Stratified random sampling was adopted because in so doing, different groups comprise the whole study population [88].

B. Sampling Technique

The purest type of probability sampling is random sampling, where every population member has equal probability of being chosen. According to Xie, et al. [90], with large-sized populations, the challenge lies in determining every population member and thus, the pool of subjects may contain some bias.

Hence, this study elected to use random sampling technique to collect data, where the target participants are those that use ERMS in Yemeni HPE institutions. Probability sampling enables the calculation of sampling error – which is the level to which a sample may be distinct from the population. According to Sekaran and Bougie [51], results inferred from the population can be added or subtracted to rectify the sampling error.

C. QUANTITATIVE DATA COLLECTION METHOD

1) ONLINE SURVEY QUESTIONNAIRE

In this study, the survey method is employed to describe the phenomenon under study and to examine the specific activity's causes [91]. Through this method, the research can gather data from many respondents in order to measure the variables and test the proposed hypotheses [92]. The questionnaire and the interview method, the two data collection methods used in this explanatory mixed method study, are meant to achieve the most accurate outcomes.

Owing to the objective behind the quantitative part of the study, the survey instrument was found to be appropriate as it is one of the top methods extensively utilized among researchers in the field of information systems. More importantly, a survey research refers to a research that systematically collects data from the respondents in order to provide an insight into or predict behavioral aspects of the population [93]. This type of research is a method of inquiry that entails gathering of systematic data and the outcome of

their statistical analysis [94]. Survey research involves a large number of respondents selected as representatives of the population as a whole. It is a systematic questionnaire or interview procedure that obtains information from the respondents in a way that is reliable and unbiased and it uses sophisticated statistical methods for data analysis [95].

There are several reasons that justify the suitability of using the survey method; first, the quantitative part of the study aimed to test the proposed research model and test the hypotheses to provide deeper insight into the factors influencing ERMS adoption to support the institution's productivity. It was thus required to use a method that enabled the testing of theoretical prepositions objectively. The survey research is beneficial as it provides the researcher a chance to establish the relationships and to generalize them to the target population.

The second reason lies in the testing of the proposed hypotheses, where it was of significance that a method is used that enables the constructs' values and relationships to be identified systematically. According to Creswell [88], survey study is among the top techniques employed to examine attributes, values, beliefs and motives and it is the only method whereby generalized data could be gathered in a systematic way from the institutions.

The third reason is the survey's ability to obtain data from a large-sized sample to statistically test the research model and hypotheses, and to enhance the possibility of accurate findings. The survey research enables the researcher to describe large and heterogeneous populations in an efficient and economical way. Thus, to determine the answers to the research questions and to examine the research framework and test the hypotheses, a survey study is the most appropriate to be adopted.

2) QUESTIONNAIRE DESIGN AND CONTENTS

The ERMS examination needs to take into account the definition and measurement of the dependent variable aspects and the measurement of potential interactions among the dimensions to differentiate the effect of each independent variable on the dependent one and its dimensions [96]. This study addresses exogenous, endogenous and dependent latent variables.

Moving on to the questionnaire survey's contents, the questionnaire is divided into four sections. The first and second sections contain the factors measurement and the items pertaining to intention towards ERMS adoption, respectively. The third section is devoted to the measurement of ERMS role in productivity enhancement and the fourth section is devoted to the general information of participants (demographic characteristics). The constructs sources are shown in Table 2 and the items of each construct are tabulated in Table 8.

TABLE 2 THE SOURCE OF THE CONSTRUCTS

Construct	No. of Items	References
Performance Expectancy	5	[29, 97, 98]
Effort Expectancy	5	[29, 97, 98]
Social Influence	5	[27, 99]
Facilitated Conditions	5	[27, 100, 101]
Training	5	[102]
Policies	5	[36, 103-105]
Intention to adopt ERMS	5	[106]
Organization's Productivity	5	[107]

3) VARIABLES MEASUREMENT

A set of structured questions developed for the purpose of collecting data from the respondents is known as a questionnaire, and under this sub-section, the constructs included in the research model are examined in terms of their measurement in the questionnaire.

To begin with, performance expectancy, adopted from TAM [68] is the use of technology that is determined by the perception of its usefulness by the user. In the questionnaire, the construct was measured using five items covering the IS benefits. The items were adopted from the study by Holden and Karsh [98] and were tweaked to suit the study objectives. Moving on to effort expectancy, it is the level to which an HPE employee is convinced that ERMS use in performing tasks will be effort-free. The construct was measured by five items adopted from Holden and Karsh [98], which were modified to suit the study objectives.

Social influence adopted from the UTAUT model is a construct that facilitates high intention towards IS use as evidenced by [70, 73, 108]. It was measured by five items in the questionnaire that were modified to suit the study objectives.

Facilitating conditions construct is a combination of resource and technological facilitating conditions [53] and it was measured by five items derived from Venkatesh, et al. [27], Duyck, et al. [101] and Zhou, et al. [100]. The items focused on the information sources availability and accessibility.

With regards to training, it refers to the process of providing management and employees with knowledge and information on the ERMS system. Training provides a better understanding of the way the jobs are related to functional organizational areas [102, 109]. In addition, managers tend to be trained in IT, specifically when it comes to using computers and systems [28]. The priorities of training cover the archive and records management use in the database management systems, managing the requirements for both in terms of e-mail systems and the development of a microcomputer-based system to support the archives and records management initiatives, its objectives and the related processes, including search aids and statistical reports.

Moving on to policy, a policy for the creation of records (what to be included or exclude in the system), retention and security of records (e.g., back-up storage) retrieval of records (preserved authenticity) and destruction of records has to be established. Failure of preservation measures of the digital evidence (e-records) may lead to legal proceedings and incurred fines, with business transactions disrupted as evidenced by Kasper and Laurits [110], who indicated the importance of management policies. Similarly, Hsiao, et al. [77] and [78] revealed a positive influence of policy on the adoption of technology, and thus, policy has a significant influence on intention towards adopting technology [79].

Lastly, behavioral intention is the dependent variable in the present study and it was obtained from TRA, as the individual's intention to perform or refrain from performing a specific behavior. It was measured by five items adopted from prior studies.

D. QUALITATIVE DATA COLLECTION

1) INTERVIEW DESIGN

The qualitative data collection instrument, namely, the interview, has been extensively used in studies concerning ERMS adoption owing to its thorough examination of the environment [111].

Moreover, qualitative research methods were developed to enable the deep examination of social and cultural phenomena in the social sciences field as per the findings by Myers and Avison [112]. According to the authors, qualitative methods assist in understanding the social and cultural aspect of the individuals' environment. They are beneficial in obtaining the perceptions and behaviors of people via observations and interviews [113].

Moreover, the purpose behind the collection and analysis of qualitative data is to shed light on the phenomenon (i.e., ERMS adoption and its role in organization's productivity). Qualitative data collection methods include observation, documentation and interviews [112]. More importantly, interviews are used to collect data in qualitative research and are sometimes combined with the quantitative data collection method to ensure that the findings are supported. This study used the interview method to gather data from the interviewees.

According to [114], the interview method is an appropriate method for gathering the interviewees' experiences. Majority of interviews offer open-ended questions about the topic,

with the answers recorded [88], and the participants motivated to provide their personal experiences freely. Interviews also allow the telling of the nuances of the phenomenon, which is distinct from quantitative data that is more static. They guarantee consistency of their counterpart's (quantitative) results in a combined approach.

Interviews can be conducted in several ways, among them being through telephone, email, focus groups or face-to-face [88]. Regardless of the high resource consumption in terms of time and expense for face-to-face interviews, it is the most effective and thus, extensively utilized method. Thus, this study made use of the semi-structured interview method to gather qualitative data by sending the questions to the participants and recording their answers using VOIP applications. This allows the interviewees to elaborate on their answers. More importantly, semi-structured interviews are appropriate to determine the answers to the research questions [115] in the present study.

On the whole, both the semi-structured interviews and the survey questionnaire were the instruments used to gather data for the examination of the conceptual validity of the study model and to shed more light into the outcomes. These instruments work towards understanding the factors influencing the adoption of ERMS in HPEs and to conduct an analysis of the responses provided by the participants regarding the institutions' productivity. The interview design was developed by conducting a review of prior ERMS adoption studies in developing countries.

The semi-structured interviews were a secondary data collection method used by the researcher [116] to gather data on the phenomenon under study.

2) DATA COLLECTION PROCEDURE THROUGH INTERVIEWS

In qualitative research, data collection requires gathering data from a small pool of individuals [88] and the techniques utilized have to be consistent with the research questions in light of the answers being determined [117]. This study directly examined the research questions to determine accurate answers.

In a mixed-method research, like the present one, qualitative data is often collected from a sample that is selected through purposive sampling [118], where units/cases are chosen based on a specific purpose as opposed to chosen at random. More specifically, interviewees are chosen for the knowledge and information they hold concerning the topic of the study on the basis of their characteristics. In relation to this, the participants and sites were identified based on places/individuals that understand the phenomenon under study as demonstrated by Creswell [88]. The standard guide used in the participants' selection is the information they hold and their knowledge on the subject matter as well as the local environment.

ERMS adoption studies in developing countries have laid emphasis on selecting interviewees from different levels of

management based on the notion of dialectical and subjective successes based on the selected individuals' perspectives [119].

The interview was initiated by explaining the topic's purpose and scope to the interviewees. The interview questions were based on themes revolving around the ERMS framework validation. Data was collected with the help of the interviews to validate the study framework's credibility and validity. There were 5 experts interviewed with the help of semi-structured interviews to gather their feedback and knowledge on ERMS adoption. The questions in the interviews were open-ended to allow the experts to explain their opinions in detail. The questions were also targeted towards the determination of the factors that affect ERMS adoption success and the relationship with organization's productivity. The interview method was geared towards achieving the following objectives;

  i. To confirm the factors validity and their suitability to examine the ERMS adoption and to take into account the context and terminology, particularly as the questions were translated into Arabic language;
  ii. To determine the relevance of the study model in light of its researchable nature or otherwise;
  iii. To highlight the importance of the factors affecting the ERMS adoption;
  iv. To identify if other factors were known to the interviewees that were not mentioned among relevant studies; and
  v. To support the items from the questionnaire design.

VII. Results

This section is devoted to the findings presentation on the basis of the followed approach chronology, beginning with the quantitative data analysis results, followed by the qualitative data analysis results.

A. Quantitative Data

1) CONSTRUCT VALIDITY OF MEASUREMENTS

The level to which specific items measure the concepts that they were developed to measure is known as construct validity. In this regard, items were adopted from other researches that already established the items validity.

The items and their loadings are demonstrated in Table 5 and it is evident that all of the items loaded highly on their constructs as recommended by [120] and as shown in Table 5.

2. Convergent Validity of the Measurements

The composite reliability test generated outcomes that exceeded 0.70 (satisfactory) ranging from 0.882 to 0.923. Meanwhile, the Cronbach's alpha values ranged between 0.835 and 0.969, also ensuring satisfactory outcomes. In addition, the values of average variance extracted were all

higher than 0.50 (0.600-0.897). The confirmatory factor analysis (CFA) results are tabulated in Table 5.

3. DISCRIMINANT VALIDITY OF THE MEASUREMENTS

The set of concepts and their indicators distinction from each other is represented by discriminant validity. In this study, the discriminant validity of all constructs exceeded 0.50 at the level of significance of p=0.001 [121]. Discriminant validity is also ensured by calculating the square root of the average variance shared by the single construct's items and they all remained lower than the correlations between the two constructs items as suggested by [122] (refer to Table 6 for results).

4. ANALYSIS OF THE STRUCTURAL MODEL

This stage is dedicated to testing the research hypotheses that indicate the relationships among the constructs. This is conducted through the use of Smart PLS 3.0. The path coefficient results are presented, with the hypotheses results depicted in both Figure 2 and Figure 3.

Starting with the first hypothesis, the results showed a significant relationship between performance expectancy and behavioral intention towards ERMS adoption in the positive direction (β= 0.137, t = 2.890, p < 0.001), indicating support for the first hypothesis. As for the second hypothesis, the analysis results evidenced a positive and significant relationship between expectancy and intention towards ERMS adoption (β= 0.154, t = 3.537, p < 0.001), indicating that the second hypothesis was also supported. This held true for the third hypothesis that revealed a positive and significant relationship between social influence and intention towards ERMS adoption (β= 0.101, t = 2.059, p < 0.001), which supported the third hypothesis.

Moving on to the fourth hypothesis, which proposed a significant and positive relationship between facilitated conditions and behavioral intention towards adopting ERMS, the result supported the hypothesis at (β= 0.126, t = 2.181, p < 0.001). The fifth hypothesis that proposed a significant and positive relationship between training and intention towards adopting ERMS was also supported at (β= 0.361, t = 7.818, p < 0.001).

In the sixth hypothesis, a positive and significant relationship was found between policy and intention towards ERMS adoption (β= 0.113, t = 2.293, p < 0.001), which indicated support for the hypothesis. Finally, the seventh hypothesis that proposed a positive and significant relationship between intention to adopt ERMS among HPEs and their productivity was also supported at (β= 0.471, t = 9.544, p < 0.001). The hypotheses testing results based on quantitative data analysis are enumerated in Table 7.

Additionally, in the present study, the effect size (f^2) was also obtained to determine if the exogenous latent construct has significant, moderate or weak effect on the endogenous latent construct [123]. According to [122], this is possible by testing the (R^2) value change, while Cohen [124] recommended f^2 values rule of thumb as follows; 0.35 illustrates large effects, 0.15 illustrates medium effects, while 0.02 illustrates small effects. Table 3 contains the f^2 values obtained in this study.

TABLE 3 EFFECT SIZE F²

Factor	Intention to Adopt	Effects organizations' productivity
Performance Expectancy	0.030	
Effort Expectancy	0.031	
Social Influence	0.013	
Facilitated Conditions	0.023	
Training	0.073	
Policies	0.016	
Intention to Adopt		0.285

To assess the level of multicollinearity, Variance Inflation Factor (VIF) and tolerance are both widely used measures of the degree of multicollinearity [125]. The tolerance represents the amount of variance of one construct' indicator not explained by the other indicators in the same block. A related measure of collinearity is the variance inflation factor (VIF), defined as the reciprocal of the tolerance (i.e., VIFx1 = 1/TOLx1)[122]. The tolerance and VIF are both provided in the regression analysis output of most popular software packages SPSS.

If the largest VIF is greater than 10 then there is cause for concern [122]. And according to [122], if the largest VIF is greater than 5 then there is cause for concern. In addition, Tolerance below 0.1 indicates a serious problem, and below 0.2 indicates a potential problem [122]. Table 4 shows multicollinearity diagnostic that indicates that there is no evidence of significant multicollinearity among the research predictor variables because all VIF values are below 5. It means that the variance of the predictor variables explained in the dependent variable is not overlapping with each other.

TABLE 4 MULTICOLLINEARITY TEST VIA VARIANCE INFLATION FACTOR (VIF)

Independent variable	dependent variable	
	Intention to Adopt	Productivity

Performance Expectancy	1.188	
Effort Expectancy	1.442	
Social Influence	1.493	
Facilitated Conditions	1.27	
Training	1.371	
Policies	1.49	
Intention to Adopt		1.000

TABLE 5 CONSTRUCTS, ITEMS, AND CONFIRMATORY FACTOR ANALYSIS RESULTS

No	Variable	Code	Factor Loading	Cronbach Alpha	Composite Reliability	AVE
1		PROD1	0.755			
2		PROD2	0.829			
3	Productivity	PROD3	0.827	0.874	0.909	0.666
4		PROD4	0.832			
5		PROD5	0.833			
6		ADOP1	0.823			
7		ADOP2	0.847			
8	Intention to Adopt	ADOP3	0.732	0.868	0.905	0.656
9		ADOP4	0.817			
10		ADOP5	0.826			
11		EEXP1	0.761			
12		EEXP2	0.788			
13	Effort Expectancy	EEXP3	0.912	0.895	0.923	0.707
14		EEXP4	0.821			
15		EEXP5	0.910			
16		FSCN1	0.811			
17		FSCN2	0.811			
18	Facilitated Conditions	FSCN3	0.823	0.863	0.901	0.644
19		FSCN4	0.795			
20		FSCN5	0.773			
21		PEXP1	0.766			
22		PEXP2	0.868			
23	Performance Expectancy	PEXP3	0.838	0.867	0.904	0.654
24		PEXP4	0.765			
25		PEXP5	0.801			
26		PLCY1	0.782			
27		PLCY2	0.841			
28	Policy	PLCY3	0.881	0.882	0.914	0.682
29		PLCY4	0.855			
30		PLCY5	0.762			
31		SINF1	0.734			
32		SINF2	0.799			
33	Social Influence	SINF3	0.787	0.835	0.882	0.600
34		SINF4	0.785			
35		SINF5	0.767			
36		TRIN1	0.981			
37		TRIN2	0.985			
38	Training	TRIN3	0.984	0.969	0.977	0.897
39		TRIN4	0.784			
40		TRIN5	0.985			

TABLE 6 DISCRIMINANT VALIDITY

|	Productivity	Intention to Adopt	Performance Expectancy	Effort Expectancy	Social Influence	Facilitated Conditions	Training	Policy
Productivity	**0.816**							
Intention to Adopt	0.471	**0.810**						
Performance Expectancy	0.244	0.365	**0.808**					
Effort Expectancy	0.347	0.444	0.342	**0.841**				
Social Influence	0.332	0.435	0.251	0.433	**0.775**			
Facilitated Conditions	0.355	0.393	0.230	0.226	0.255	**0.803**		
Training	0.375	0.572	0.248	0.338	0.411	0.370	**0.947**	
Policy	0.386	0.423	0.261	0.429	0.458	0.364	0.321	**0.826**
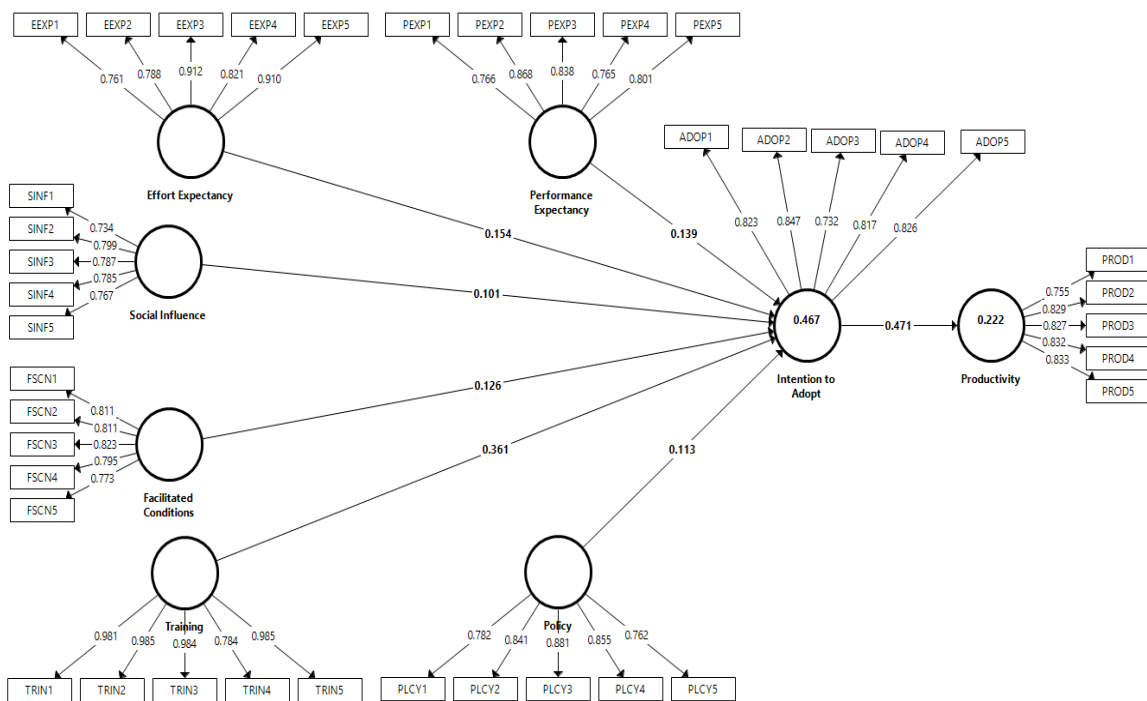
Figure 2. The Measurement Model of the Study (PLS algorithm results (regression weights))
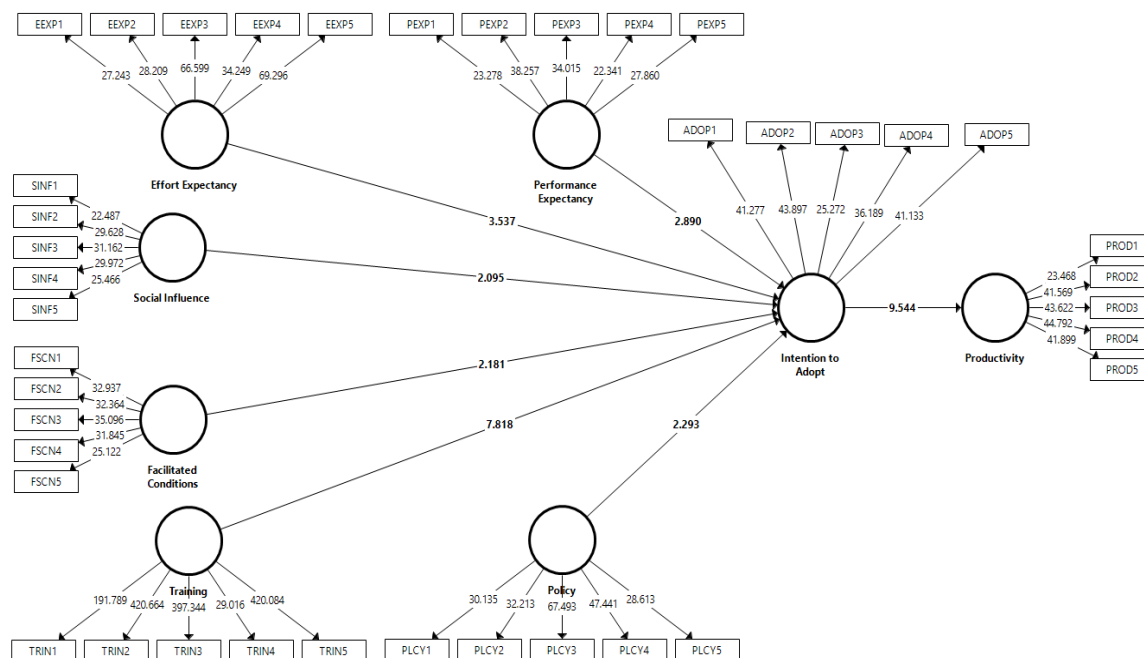
Figure 3 the Structural Model of the Study (PLS bootstrapping (T Statistics))

TABLE 7: HYPOTHESES TESTING RESULTS

	Hypothesis	ß	T-value	Support	R²
	Intention to Adopt				0.850
H1	Performance Expectancy → Intention to Adopt ERMS	0.139	2.890	Supported	
H2	Effort Expectancy → Intention to Adopt ERMS	0.154	3.537	Supported	
H3	Social Influence → Intention to Adopt ERMS	0.101	2.095	Supported	
H4	Facilitated Conditions → Intention to Adopt ERMS	0.126	2.181	Supported	
H5	Training → Intention to Adopt ERMS	0.361	7.818	Supported	
H6	Policy → Intention to Adopt ERMS	0.113	2.293	Supported	
	Organization's Performance				0.649
H7	Intention to Adopt ERMS → Organization's Productivity	0.471	9.544	Supported	

TABLE 8 QUESTIONNAIRE'S ITEMS

No	Factor	Item	Question
1		PEXP1	ERMS enhances my work effectiveness
2		PEXP2	ERMS increases my efficiency in my work
3	Performance Expectancy	PEXP3	ERMS enables me to accomplish tasks more quickly
4		PEXP4	ERMS makes my work easier
5		PEXP5	ERMS gives me greater control over my work
1		EEXP1	ERMS is easy to use
2		EEXP2	My interaction with the ERMS is clear and understandable
3	Effort Expectancy	EEXP3	ERMS is flexible
4		EEXP4	It is easy to get information using ERMS to do what I want to do
5		EEXP5	It is easy to detect and correct errors in student records using ERMS

1		SINF1	People who influence my behavior think that I should use the ERMS
2		SINF2	People who are important to me think that I should use the ERMS
3	Social Influence	SINF3	My colleagues encourage me to use ERMS
4		SINF4	My manager influences my intention to use ERMS
5		SINF5	In general, my organization has supported the use of ERMS
1		FSCN1	I have the resources necessary to use ERMS
2		FSCN2	I have the knowledge necessary to use ERMS
3	Facilitated Conditions	FSCN3	The ERMS is compatible with other systems I use
4		FSCN4	ERMS has availability of technical assistance "a specific person (or group) is available for assistance with ERMS difficulties"
5		FSCN5	I have access to a computer/internet whenever I need it
1		TRIN1	There is a lack of security rules, policies, and privacy laws
2		TRIN2	Because of differences in legislation, organizations might lose control of data if ERMS provided by a supplier hosting data outside the country are used
3	Training	TRIN3	There is no legal protection in the use of ERMS
4		TRIN4	The laws and regulations that exist nowadays are sufficient to protect the use of ERMS
5		TRIN5	Legislations and rules are essential to comply with government requirements
1		PLCY1	Helps the system in complying with legal and regulatory requirements
2		PLCY2	is easy to understand
3	Policies	PLCY3	covers all system functions
4		PLCY4	implementable
5		PLCY5	cost-effective
1		ADOP1	I would use an ERMS for gathering information
2		ADOP2	I would use the services provided by the ERMS
3	Intention to Adopt	ADOP3	I would not hesitate to provide information to ERMS system
4		ADOP4	I would use an ERMS to inquire about online service
5		ADOP5	I would strongly recommend others to use ERMS and IT services
1		PROD1	Using the ERMS would improve my ability to work more
2		PROD2	Using ERMS will save me more time
3	Organization's Productivity	PROD3	Using ERMS will absolutely increase the output of my work
4		PROD4	I can accomplish more tasks if I could use ERMS
5		PROD5	ERMS definitely will increase the overall productivity of the institution

Qualitative Data

After the statistical model was validated using SEM (Smart PLS 3), the model was further validated with the help of IS expert, who confirmed the development of the model on the basis of the study aims in order for the model to achieve the purpose it was developed for.

The interviewees' provided data was analyzed using thematic analysis to obtain the answers to the research questions. Braun and Clarke (2006), in this matter, related that thematic analysis entails steps to be followed sequentially, which are translation of data, familiarization of data, initial codes generation, determination of themes, report generation, themes definition and naming/labeling, and lastly, themes revision.

Eight major themes were found to be significant for model verification and validation and they are tabulated in Table 9.

TABLE 9: THE QUALITATIVE THEMES AND SOURCES

No	Theme	Source
1	Performance expectancy	UTAUT
2	Effort expectancy	UTAUT
3	Social Norm	UTAUT
4	Facilitating Conditions	UTAUT
5	Training	UTAUT + Literature
6	Policy	UTAUT + Literature
7	Adoption of ERMS	UTAUT + Literature
8	Productivity	UTAUT + Literature

The research highlighted themes and the key outcomes within each theme are detailed in the next sub-sections.

1) PERFORMANCE EXPECTANCY

A technology's performance expectancy is one of the values that can be garnered and in this study, majority of the respondents from the HPE institutions were of the consensus that while ERMS is still in its infancy, it still adds value to the institutions. A few managers indicated that in the first phase of use, some of the users took time to learn the

system's workings and they were skeptical of the systems assistance in their tasks achievement.

On the basis of Expert 1's statement;

"I hope to see the adoption of ERMS in the HPE institutions in the near future in order to benefit the institutions. It seems that the system is easy to use and it facilitates the detection of errors in a timely manner".

Moreover, the system's ease of use is expected to boost the motivation of employees towards using it in the completion of their tasks and business process enhancement. This was indicated by Expert 2;

"We always encourage our employees to provide their developmental suggestions and feedback concerning work processes to facilitate system adoption and acceptance".

In this regard, the institutions make use of workshops and meetings to modify the attitudes of the employees regarding the system's performance expectancy as related by Expert 3;

"Meetings and workshops are important strategies to use in order to improve the staff's attitude towards the adoption of ERMS".

On the basis of the qualitative data analysis, performance expectancy is referred to as the way ERMS can assist in the task performance of employees, and the benefits obtained through its use. Moreover, the interviewees held positive views about the ERMS offered opportunities. In other words, performance expectancy was considered to be significant for the adoption of ERMS as it assists in task completion and in job performance enhancement. This finding is consistent with that found in quantitative results.

2) EFFORT EXPECTANCY

IS also provides the advantage of easing the effort of the individual in achieving performance [27]. In this regard, the interviewed experts laid stress on the ERMS adoption in the institutions. They supported the importance of effort expectancy in such adoption. According to them, the employees have to understand the way ERMS can make their work easier to achieve their work obligations. Expert 1 related;

"We all know the importance of ERMS and the advantages that it offers".

This was supported by Expert 3;

"ERMS adoption is important and the effort expectancy factor can boost its adoption".

The qualitative data analysis indicated that ERMS should assist the employee in task completion and offer benefits to them. They had positive views of the opportunities that can be reaped from the system. This result is consistent with the results obtained from the quantitative analysis outcome.

3) FACILITATED CONDITIONS

The interviewed managers reported that there was lack of resources in the institutions; for instance, Expert 1 related;

"Lack of resources is one of the top challenges that prevent the suggestions of system adoption acceptance by the administration".

This was also confirmed by Expert 4;

"Administration is exerting efforts to satisfy the proposals related to the matter based on the financial resources appropriated".

Resources are required to facilitate the integration of the ERMS system successfully and this was evidenced by the statement provided by the experts;

Expert 4 stated;

"The level of sufficient IT infrastructure represents the system quality level that affects successful adoption".

Integration of the system like ERMS reflects the quality of the resources and the IT infrastructure present in the institutions. Expert 2 stated,

"Successful adoption of ERMS is assessed by the system's integration level, rather than what the IT resource can provide".

The participants highlighted issues during the interviews that were linked to the facilitating conditions, primarily the availability of the organizational support for ERMS adoption. According to Schaper and Pervan [69], lack of infrastructure is one of the challenges faced by organizations when it comes to adoption of IS. In the present study, lack of organizational support was evidence to result in the employees' refusal to adopt ERMS and this result supports those found in the quantitative findings.

4) SOCIAL INFLUENCE

In human behavior and decision-making, social influence has a key role to play. It is clear from the transcript's analysis that the experts believe that social influence has a significant influence on the ERMS adoption in the HPE institutions. Social influence is the employees' influence on each other as the influence they perceive from their social surroundings in the form of attitudes and actions towards IS adoption. Expert 1 contended that friends and managers do have a role in affecting the ERMS adoption among employees.

"The manager of information and database influences the attitudes and behavior of other employees when it comes to ERMS adoption".

Expert 3 supported his statement;

"We opted to deal with external organizations for activating workshops, training initiatives and lectures to assist in familiarizing the employees with the system adoption".

The interviewees deemed social influence to be one of the main issues in the adoption of ERMS and they advocate its importance in boosting the employees' acceptance of ERMS and their use of it in their day-to-day tasks. From the transcripts analysis, the participants were clear about receiving social support of friends to accept and use ERMS in the institutions, which was consistent with the quantitative results.

5) POLICY

The requirements and mandate for adherence to the legal and regulatory rules are established through a policy and it

references the adoption and implementation of the system. According to Expert 1;

"There should be a policy to assist in having ERMS comply with the legal and regulatory requirements".

An effective and formal policy needs to be implemented, understood and one that is cost-effective is essential – one that encapsulates the whole ERMS functions and rules. Expert 2 stated;

"People should be made aware of the policy governing ERMS in light of its value, and such policy has to be clear and implementable".

The responses provided by the participants showed that ERMS has to be governed and guided by a policy, particularly when it comes to its adoption. Employees will positively view such policy and it will assist in their performance of day-to-day tasks. In other words, a policy would enable the smooth adoption of ERMS.

6) TRAINING

Training provision through workshops led by qualified trainers who are members of the HPE is superior to employing external trainers and consultants as the former is more familiar with the day-to-day tasks. According to Expert 2; "The involvement of the users as trainers in the training workshops can be leveraged on account of its value to the staff, as opposed to consulting external trainers, because internal trainers are more familiar with the institution's tasks compared to the external ones".

Based on the obtained results, employees of the institution illustrated a high inclination towards adopting ERMS and in this regard, such inclination can result in the smooth implementation of the system, and eventually enhanced provision of the educational services. It is suggested that senior managers in the education sector develop an extensive all-encompassing strategy to enhance the abilities of the employees to use computer programs, particularly ERMS.

For the future implementation of the system, senior managers have to take into account the ineffective theoretical and practical training programs, determining the benefits that can be obtained from the system, addressing the difficulties, and increasing their support towards their employees and the latter's awareness of the system, bringing about access to information resources, maximizing the information sharing level in a suitable way and determining the employees that can influence others in their acceptance and use of the system. Such concerns ought to be taken into account when implementing the system, otherwise changes will not take place. This result is aligned with that obtained from the quantitative data analysis method.

7) ORGANIZATIONS' PRODUCTIVITY

ERMS eases the limits of time and space for education activities. A state with an extensive distance learning program reports that many faculties have discovered that good communication between teachers and students remains important but direct physical contact is less so. IT will bring

the best lecturers to students via multimedia anytime and anywhere so that, like the recordings of the country's most celebrated artists, those of the best will drive out those of the merely good. This sort of access is especially important for the increasing numbers of nontraditional students in higher education, who often have job or family responsibilities limiting their possible school hours. This is supported by all experts who assured the importance of ERMS adoption.

ERMS is crucial to successful HPE institutions in terms of academic and managerial activities. This is evidenced by the statement provided by Expert 1;

"Electronic records management system is important for successful evaluation process in the outcome-based education. The system's adoption will help in saving cost, time and effort from the academic viewpoint. From the viewpoint of administration, the system enables administrative processes depending on the system's generation of relevant information".

Moreover, ERMS adoption factors are crucial to its successful implementation – these factors are divided into three groups, with the factors integrated. Organizational factors have to be present for the system adoption, the technological factors are crucial for proper adoption, and lastly, the system characteristics factors should be present otherwise the adoption would be useless. According to Expert 3;

"ERMS is important and it has a high impact on and contribution towards achieving success, increasing performance, productivity and competitiveness".

As a whole, the experts are convinced of the framework's validity judging from their statements – they are in consensus as to the completeness of variables, the relationship among them, the correlations and strength of the relationships within the framework. They were also in agreement as to the framework's focus on ERMS adoption in supporting decision making process

VIII. Discussion and implication of the Study

This study primarily aimed to develop and propose a new ERMS adoption model built on UTAUT to identify the determinants of employees' behavioral intention towards ERMS adoption in institutions of higher learning. The research attempts to innovatively contribute to literature concerning ERMS adoption by extending the UTAUT. On the basis of the proposed model, the study investigated the relationships among seven factors, with performance expectancy, effort expectancy, social influence, facilitating conditions, policy, training, behavioral intention towards ERMS adoption and the productivity of the institutions. In the present times, the ERMS adoption may appear to be in its infancy but it is increasingly developing given the considerable investments made to launch technologies and techniques relating to it.

The research findings provide a clear insight into the adoption factors that influence behavioral intention towards

ERMS adoption for the purpose of improving the institution's ability to enhance the productivity of education. More specifically, based on the findings, performance expectancy, effort expectancy, social influence, facilitating conditions, policy and training influenced ERMS adoption, while the adoption had a direct influence on the productivity of the learning institutions.

In addition, the study's methodologies, hypotheses, and employed measurement tools also provide a complete and detailed explanation of the research design and organization. The integration of the survey questionnaire and the survey for data collection ensured accurate findings. The research also justified the choice and selection of tools for the study achievement. The structural model was validated using structural equation modeling (SEM), in a way that the study also extended SEM literature in the field of technology acceptance.

Moving on to the study's implications to practice, the study findings hold specific significance to the higher authority of higher professional educational institutions in Yemen. As for its implications to theory, literature is in need of ERMS adoption models, specifically in the educational sector and this research has ample contributions to theory, beginning with the bringing forward of an ERMS adoption model for HPE institutions in order to enhance their productivity. The variables were empirically tested for their effects on ERMS adoption in such institutions, providing a clear picture of e-records management use in the institutions in light of their ability, effectiveness and efficiency.

Furthermore, this study contributes to literature on ERMS and its role in enhancing productivity in the educational sector, particularly in developing nations, like Yemen, where such studies are still few and far between. Therefore, this study contributes to extant information and knowledge about ERMS implementation and can be used as a guide for the same purpose. As for its practical contributions, they can be categorized into two; first, this study practically contributes to educational administrations practices and second, it contributes to the ERMS developers and practitioners who employ it. In this regard, the educational administrators and policy makers can take some guiding notes from the study for the successful ERMS adoption achievement in order to enhance their productivity, while the practitioners and ERMS developers can avail themselves of the information on the study factors in order to enhance system design and add system features that are crucial to achieving the design expectations.

IX. Conclusion

ERMS is connected to the day-to-day operations of the organizations and its application and compliance with the regulations can play a role in organizational survival. A thorough review of literature showed that ERMS studies in the education sector are still scarce, particularly in supporting the process of decision making. Similarly, studies addressing the factors influencing ERMS adoption in support of the process of decision making are still few and far between, with an evident lack of models that could guide in ERMS proper adoption, and in the system's role in increasing the productivity in the HPE institutions.

In this paper, the researcher attempts to minimize the gap by developing a model for ERMS adoption to increase the productivity in HPE institutions with the help of UTAUT model. The model has its basis on a review of literature and robust adopted theories. The model was validated through the use of SEM with Smart PLS 3, with modeling carried out with actual collection of data (quantitative method) through survey questionnaire. The respondents comprised of HPE workforce who had been working in the institutions in the Yemeni public sector. The researcher employed proportionate sampling method to obtain data from 364 respondents. The process of validation entailed the help of expert feedback obtained through interviews (qualitative method) to support the results. The findings validated ERMS model as reliable and applicable in HPE institutions. The validity of the proposed model and the support on all the hypotheses are largely attributed to the involvement of experts. This paper represents an effort to understand the factors affecting the adoption of the ERMS from the perspective of Yemen HPE.

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