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Compliance with Functional Requirements for Electronic Records Management Systems in the Best Indonesian Academic Archives

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***Abstract*—**This study aims to review the implementation of functional requirements of electronic records management systems (ERMS) at the best Indonesian academic archive (LKPT), from the perspective of archivists and ERMS developers. This instrumental case study was conducted at three of the best academic archives in Indonesia using a checklist; the resulting data were examined and presented qualitatively. The findings show that the ERMS developed by LKPTs do not meet international functional standards, due to LKPTs and internal units are unprepared to implement the ERMS provided by the national archives. On the other hand, archivists and system developers demonstrate an acute awareness of the importance of functional requirements in building an ERMS, provided that the archivists can adapt to the organization's business processes and are user oriented. In other words, for implementing the functional requirements must first consider following factors: legal frameworks, readiness of resources, and user friendliness. Archivists and developers are also concerned with establishing effective records management by reviewing the underlying regulations. The results accurately reflect the application (or lack thereof) of functional requirements in academic archives in Indonesia. Therefore, this study establishes parameters for the development of an ideal ERMS that will be relevant to academic archive organizations' business. There is a suggestion for the National Archive of Indonesia in particular, and potentially other institutions if applied generally, should implement international standards for the internal environment of an archival institution to elaborate on the need to achieve effective record management and accurate administrative business.

Keywords— Functional requirements; Electronic records; Electronic records management system; Academic archives

I. INTRODUCTION

The growth of electronic records has been rapid and massive. According to Franks, as of 2011, digital files comprising 1.8 zeta-bytes have been created. Franks went on to predict that digital data in 2020 will increase by 50 times the number in 2011 [1]. This forecast also reflects the presence of organizations using the paperless office concept.

Unlike their paper counterparts, electronic records are invisible to the human eye and cannot be distinguished physically until the system produces an image or sound [1]. Consequently, a records manager may find it challenging to identify which electronic records are valuable. Difficulties also arise in terms of determining further handling of records. The phenomenon of managing electronic records differs significantly from the approach for paper-based records, which tend to be easier to handle because of their physical form. Therefore, managing electronic records requires special treatment to ensure that records are created, maintained, and discarded properly. Thus, the records manager/ archivist must implement an effective electronic records management system (ERMS) as part of the processes and procedures for ensuring sound records management.

ERMS types must selected appropriately to support records management and litigation issues. The requisite ERMS capabilities include identification, retrieval and records management when needed [1]. Consequently, to carry out records management optimally, the records manager or developer must adhere to the functional requirements as a guideline for establishing records management to facilitate ascertaining that the records being managed are accurate [2].

An ERMS that meets the functional requirements and is relevant to the organization's regulations, policies, laws and business processes will have a major impact on the efficiency and effectiveness of records management, such as storage efficiency, bureaucratic pruning (which is also related to time efficiency) and systematic procedural processing.

The massive growth of electronic records is also occurring in universities. Work units and archival units are generating electronic records related to a variety of business processes. This situation triggers the need for the presence of academic archival institutions to supervise all archiving activities in the academic environment.

The Indonesian institution that acts as an appraiser, evaluator and controller is the National Archives of the Republic of Indonesia (ANRI). As a non-ministerial government agency, ANRI has an obligation to carry out governmental duties in the archival field in accordance with applicable laws and regulations.

One form of control that ANRI carries out is the ANRI Awards, an annual regional competition in the field of archives in Indonesia. The assessment carried out by the ANRI Awards includes archival aspects for award categories ranging from human resources and management achievements to archival institutions. The participants and assessment categories are subject to change each year. The purpose of the ANRI Awards is to motivate the officers in the archival environment and improve the performance of records management towards effective records management.

This study was conducted at three academic archive institutions (abbreviated in Indonesian as LKPT). The selected LKPTs were the top winners of the ANRI Awards[1] from 2015 to 2017, namely Universitas Gadjah Mada (UGM) in 2015, Universitas Padjajaran (UNPAD) in 2016, and the Universitas Indonesia (UI), in 2017.

Preliminary observations of the selected LKPTs revealed a tendency for ERMS application not to meet functional requirements, highlighting the need to explore the background of this phenomenon. The scope of this paper covers the policy of the LKPTs' chairmen regarding compliance with functional requirements in the development of ERMS to support the business processes of its parent institution (university).

Several similar previous studies underlie this investigation. The literature includes a study entitled "Evaluation of Information Systems and Records Management Practices of 22 State Universities of Turkey in the Framework of International InterPARES Project supported by TÜBİTAK", conducted by Külcü, 2014. The study result shown many problems persist on insufficient technical support, need of adaptation regulations in multi-level, need of instruction and socialization, need of national wide, need regularity committee on electronic records management.

A similar study, "Management of Court Records: Functional Requirements Framework for Electronic Recordkeeping System" was conducted by Johare (2011). The study aimed to develop a functional requirements framework for ERMS in the Malaysian High Court. The researchers' findings indicated that all civil records management functions that were identified met the functional requirements for electronic records management [4]. However, no comprehensive special functional requirements were found for court system records.

The difference between this research and the previous literature involves the research focus and methods. This research is unique and has not been studied within the scope of Indonesia. While this study limits its focus to reviewing the application of functional requirements to ERMS in the best LKPTs in Indonesia, it can also serve as the foundation for a similar study globally. Specifically, this study uses qualitative methods to explore the perspectives of ERMS developers and policymakers at LKPTs. Furthermore, the investigation limits the topic to the functional requirements of the retention and disposal functions, meaning that a discussion of other functional requirements is not included.

[1] The information was derived from official website of National Archive of Indonesia (https://www.anri.go.id/)

II. LITERATUR REVIEW

A. *Records*

In Indonesia records are defined as active dynamic archives, due to their use in daily business activities and maintained, in certain periods, retained in record unit creator (office)[2]. Generally, records are defined as recorded information that is created or acquired by an organization, containing important data from the results of the transaction process, product development and delivery, services, decision, law and legal compliance, and other interests. Records can legally be used as evidence [5]. Additionally, records consist of information that is "written" as opposed to memorized or verbally exchanged [6]. In this context, the term "written" means that records are created using various recording methods. Examples include handwritten, typed, pictures, computer data, photos, audio recordings and video recordings.

Moreover, Hudson cited Schellenberg's opinion that the term records refer to documents that are stored or are suitable to be stored by the administration as evidence of an organization's transactions for its functions, policies, decisions, procedures, operations or other activities [7]. Records are stored and maintained due to the value of the information contained within them. In other words, records are assets of their creators' organization because they contain high value in support of the organization's business processes.

In summary, records comprise recorded information obtained from the results of activities carried out by an organization, which are explicitly written in a specific medium and format. Records are also valuable assets for the organization that creates them, to support business processes and achieve the organization's mission. Another reason that records are kept is their legal value as they can be used as legal evidence in court in the event of problems found at later time.

B. *Format of Records*

The concept of records management directs that records are stored in various formats. Saffady divided record formats into three parts: paper documents, photographic records, and electronic records. Saffady further explained that paper documents might take the form of office files, business forms, technical drawings, graphics, maps, computer printouts and so forth. Photographic records include negative photos and slides, motion picture film, filmstrip, microfiche and so on. Meanwhile, electronic records include computer files and databases, word processing files, e-mails, voice messages, instant messages, audio recordings, etc [6].

Franks [1] and Stephen and Wallace [8] classified record-keeping media into two categories: visible media and invisible media. Visible media, such as records on paper and microfilm, can be touched physically and read by the human eye without the aid of machines. Invisible media require the assistance of a reader. Electronic records are a form of invisible media as they

[2] The record definition was acquired from National Archive of Indonesia regulations chapter 1 number 6, 2019 about archives supervision.

cannot be seen by the user until the system produces an image or sound. This study limits the discussion to a focus on electronic records.

Society of American Archivists defined the electronic records as data or information that has been captured and provides a means for permanent storage and manipulation of data in an automated system. Society of American Archivists stated that in reading electronic records requires the use of a system to allow the user to comprehend their contents [9]. Electronic records have the characteristics of authenticity, reliability, integrity, and usability [10].

Their invisible nature makes monitoring every creation, management, and destruction of electronic records necessary. Therefore, the presence of records management system and capable personnel are crucial elements in maintaining electronic records to create effective record management without lessening the value of the data they contain. Mismanagement of electronic records may harm an organization.

C. Electronic Records Management

Record-keeping/ records management refers to all activities related to the creation and maintenance of complete, accurate, and reliable evidence of business transactions [11]. In principle, systematic record-keeping focuses on five aspects of information management: "determining how long the recorded information should be stored; ensuring compliance with recordkeeping laws and regulations; managing inactive records; setting active records for retrieval when needed; and protecting vital records" [5].

Initially, records management practitioners viewed records as having "life cycle" stages, including creation, active use, intermediary storage, and disposal [11]. In Australia, several experts have proposed the records continuum as an alternative. However, in Indonesia, electronic records management still uses the concept of a life cycle, treating records as living things undergoing an active–inactive–static life phase.

Along the lines of a life cycle, William argued that after being created, records have an active life in adulthood, less active life in old age, eventually die, and are either disposed of (hell) or transferred to archives (heaven) [12]. The concept of a life cycle also represents Schellenberg's view of the division of duties between records managers and archivists, where records managers are responsible for managing current and semi-current records, while archivists perform their responsibilities at the archive [12].

D. Records Retention and Disposal

Retention is the determination of how long the recorded information will be stored. To achieve effective record management, an archival agency needs to develop effective procedures for implementing retention policies [6]. Because this research focuses on the electronic records environment, the following discussion of retention will reflect this facet of records management.

In electronic record-keeping, retention is defined as the act of maintaining computer-based records in digital storage media for a specified period of time in accordance with the value of the records, which results in the disposal or permanent preservation by referring to the organization's official policies [8]. Retention and disposal policies are major components of a systematic records management program. Thus, this study will focus on the retention and disposal of electronic records.

E. Academic Archives Institution

Purcell explained that traditionally, an academic archive institute (LKPT), also known as university archives comprised a unit on campus, sometimes merged with a university library and in a special collection department [13]. Cox also conveyed that academic archives have an origin and similar purpose to those of special libraries, which have limited collections and users as well as a focused purpose [14]. However, in their development, university archives conceptualize themselves as a separate unit from the university library [13].

LKPT as an internal academic institution has various crucial values for the institution and society [14], proven by the role of archivists who collect vital historical records related to their institutions, either from the internal or external university environment. Based on that role, LKPT closely relates to the academic management system, either through cooperation with several university units or holding authority over the academic archive management system [13].

The primary program academic archives institute obtains student administrative records [14]. In its current development, LKPT has currently begun to respond to the demands of its parent institution, serving researchers and other academics by providing the collections they need. The LKPT collection is not limited to the vital records of its parent institution but also actively collects records from other departments, organizations, faculties, alumni and even sources outside the university. For example, collected records may include history relating to the nearest town/community and the field of science, which directly supports the mission of the university as the parent institution [13].

In 1979, the guidelines of the Society of American Archivists stated that *the main mission of the university archive unit is to assess, collect, organize, explain, provide, and keep records of historical, legal, fiscal, and/or administrative values of their institutions*. Cox also state that the main mission of the LKPT is to build adequate facilities, provide information services, research, and learning resources, and conduct efficient records management [14]. The expansion of viewpoints regarding academic archives has made it increasingly considered for its contribution via collecting comprehensive resources, documenting broader academic activities, providing researchers with a comprehensive view of history and supporting the unique collections of a university for research purposes [13].

F. Electronic Records Management System (ERMS)

Based on the International Council on Archives [2], an ERMS offers specific functions that encourage the characteristics of properly managed records, such as (1) creating records according to context; (2) managing records; (3) maintaining primary records as long as required; (4) providing configurable records management metadata; (5) supporting the ability to transfer, close and, if necessary, duplicate and extract records; (6) ensuring the availability of an implemented report feature and (7) carrying out a process of security and safeguarding of data and information from the parent institution.

An ERMS must be able to store records over a predetermined time periods, conform to the nature of electronic records and destroy the records when their storage period has expired [15]. Thus, an ERMS implements record retention and disposition policy according to a defined retention schedule, for a specified time, and cannot be changed. Afterward, a record can be archived or disposed of in a way that allows ascertaining that the archives stored do not have the potential to risk legal problems [16].

In defining an ERMS, it is necessary to conduct a comprehensive review to achieve adequate electronic record maintenance. For example, Bettington, Eberhard, Loo and Smith asserted that archivists must be proactive in ensuring that the records management system is correct (including applicable policies and practices) and that records are available for management [11]. Efficient maintenance also depends on ERMS compliance with policies, regulations, and functional requirements. Observing this requirement helps ensure records can be maintained properly, throughout the creation, process, and storage to destruction.

G. ERMS Functional Requirement

ERMS functional requirements are technical prerequisites used to guarantee that records are managed properly, regardless of the ERMS that an organization may apply. Fulfillment of the ERMS functional requirements can also be used as ideal parameters for appropriate ERMS criteria In the field, however, functional requirements do not have to be fulfilled as a whole but can adapt to the business processes and needs of each organization in achieving its mission [2].

Several functional requirements must be identified before deciding which ERMS is appropriate, according to Frank [1]. These include the following abilities:

1) mark electronic documents as read-only electronic records,
2) protect records against modification or tampering,
3) organize records according to the organization's file plan or taxonomy for classification purposes,
4) mark records as vital records,
5) carry out disposal of records,
6) guarantee availability of disposal and freezing-unfreezing rules,
7) apply access and security controls; carry out disposal processing,
8) keep organizational or historical metadata containing business context records in case of organizational changes, and
9) provide a historical/ audit trail.

The International Council on Archives, (the newest was regulated in ISO 16175-2: 2011), classifies four scopes regarding the functional requirements of an ERMS in a high-level model: creating, maintaining, disseminating, and administering. Creating includes capturing, identification, and classification. Maintaining refers to control and security, hybrid records, retention, migration, and disposal [17]. Disseminating comprises search, fetch, and render. Administering involves administrative functions. Meanwhile in Indonesia, ANRI issued the regulation [19] of data standard elements for record and archive for implementation of National Archive Information Systems (abbreviated in Indonesia SIKN)[3].

Furthermore, ANRI has an ERMS that has been issued gradually, named SIKD (records information system), all around Indonesia. The purpose of SIKD was for equating the ERMS all around archive institutes in Indonesia and simplifying the control in JIKN (national information archives networking).

The discussion in this research is limited to the requirement regarding maintenance, especially in terms of the retention and disposal functions, because these functions are a fundamental aspect of records management. The retention function of electronic records serves to control records related to the period of record-keeping through the process of assessment and the final/ disposal decision. Meanwhile, disposal is the result of a decision stemming from the retention process: records will be stored, destroyed, or their storage period extended. Disposal, in an electronic context, closely relates to the storage media for electronic records and must be considered as a strategy for reducing the burden of storing records that have no value and need to be permanently destroyed.

III. METHODS

The research used an instrumental case study approach, which aims to provide an insight into an issue of functional requirements compliance that was mostly unseen and neglected by common people. The study was conducted at the three best academic archives institutes in Indonesia, namely Universitas Gadjah Mada (UGM), Universitas Padjajaran (UNPAD), and Universitas Indonesia (UI). The research steps involved preliminary observation, initial interview, preliminary analysis, core interview, and cumulative analysis of all data, then drawing conclusions.

Data were collected from observations using observation sheets and interview sheets as research instruments. The

[3] Regulation of Head of National Archive of Indonesia. Number 21, 2011 about standard for record and archive data elements in implementing National Archives Information Systems. This regulation provides functional requirements of data that must be accommodated on developing an ERMS of archive institutes in Indonesia. In minimum, the data elements of ERMS could provide following elements: precise, simple, unique, portable, effective.

instrument was based on the international standard item ISO 16175-2 part 2 “Guidelines and functional requirements for digital records management system”. The instrument, in the form of checklists, consisted of 47 items regarding retention and disposal in the scope of electronic records. The list was further divided into 73 sub-items as indicators. Interviews were conducted in two stages: the first stage consisted of 29 closed-questions items, and the second stage comprised 21 open questions.

The selected respondents were IT staff who maintained ERMS and/or ERMS developers (4 respondents), the heads of LKPT (3 respondents) and the archivists who had authority over archiving policies at the university (4 respondents). For research purposes, respondents were identified by numbering the respondents 1 to 9. Data analysis was carried out in three steps, following the example of Miles, Huberman and Saldaña consisting of condensing the data, displaying data, and drawing conclusions [18].

The process of data condensation involved setting aside data that were less relevant to the research objectives and retaining those that were relevant for the next stage of analysis: data display. After all relevant data had been collected, the data were categorized into two groups of aspects – retention and disposal – to answer the research question. Data were presented in tabular form. Then, a process of drawing conclusions and formulating interpretations took place based on the results of field data and according to various study aspects.

IV. Result and Discussion

This study focused on the implementation of ERMS functional requirements, which was explored qualitatively from the perspective of ERMS archivists and developers. The discussion was limited to the retention and disposal functions, in accordance with the international standard ISO 16175-2 part 2 “Guidelines and functional requirements for digital records management system”.

A. Best Academic Archives (LKPT) Overview

In Indonesia, the processing of records or archives conforms to the concept of a life cycle. As mentioned, records experience three phases (active–inactive–static) then transferred/stored as an archive (heaven) at the end of the day.

This life cycle phenomenon can be seen in the concept of records management that is decentralized at the unit level and separated from the LKPT. Records that still have value (active) will be maintained/stored or managed at the creation unit (office), but if the records still have valuable use after the storage period has expired, they will be moved to the central level (LKPT) as an archive/repository or organizational memory.

As stated by Cox [14], the best LKPTs in Indonesia function also as compilers of vital historical records related to universities, originating both from the internal and external university environment. Therefore, the LKPTs have a close relationship with having authority over the records office unit and records management system within the university.

In practical terms, regulation and law are fundamental factors of records management concerning both electronic and printed form. All actions taken at LKPT require them as an umbrella in carrying out archiving activities. Without regulation, the archival institution is at risk of losing legal guidance in achieving its mission. Thus, the first step in building adequate records management is to formulate policies in accordance with applicable laws, then issue them officially for use throughout the organization. The subsequent steps will follow the first step has been completed.

Overall, at first glance, the best LKPTs in Indonesia apply the basic aspects of archiving in accordance with applicable laws and regulations. Archivists and stakeholders assume that even though the record management technology is sophisticated, all records management activities must remain in line with policies and in accordance with standard operating procedures. Along those lines, Franks suggested that effective records management when the records management is parallel with policies and procedures, in order to minimize risk [1].

All aspects of norms, standards, procedures, and Criteria (NSPK) in the best LKPTs in Indonesia have been implemented and controlled. The NSPK includes archive retention schedules, official script management, archive classification guidelines, security classification systems and archive access. All of these regulations have been officially issued in the form of a rector’s regulation under the supervision of ANRI. Thus, all filing processes, whether within the record creation unit (office) or LKPT, are obliged to comply.

The retention policy at the best LKPTs in Indonesia was applied in records management through the Archive Retention Schedule instrument issued in the rector’s regulation. The retention aspect is an activity/regulation that is related directly to record disposal, requiring serious consideration in the form of issuing policy regarding the technical retention period of records [2], in this case, the rector’s regulation.

Technically, the record retention period at LKPT was determined by the Archive Retention Schedule (JRA). This schedule was used as a guide for storing records using storage media. When the retention period of a record ends, the next step is to evaluate the record’s value for use to determine further treatment: permanent storage as organizational memory, having its retention period extended, or disposal.

Based on respondent 2 from LKPT UGM, *the Archive Retention Schedule was published based on Forum Group Discussion, then formulated to be submitted to ANRI. After being approved, the draft will be issued as rector’s regulation of UGM. The bureaucratic procedures used by the other two best LKPTs in Indonesia in issuing the JRA were the same. In all cases, all official written policies must be thoroughly discussed before they are implemented in the institute.* This requirement was in line with Stephens and Wallace’s assertion that retention of electronic records must have two main principles, determining retention policies and implementing retention policies [8].

B. ERMS at the Best LKPTs in Indonesia

The best LKPT parent institutions in Indonesia (in this study) have varying ERMS that was partially developed and used in the creator's unit (office). In each case, the ERMS, mostly, was developed by internal staff of LKPT to manage records that fit the organization's business process unit. The ERMS names for the study object included SIKI, e-office and inventory records.

SIKI (Inactive Archival Information System)

This system was developed by the internal IT unit of LKPT – UGM. Based on the explanation of respondent 4 at UGM, *SIKI was designed to store hybrid records, to manage physical metadata records for retrieval when needed. Basically, this system was built to bridge active records before they are stored as static records/ archive*. Thus, it can be concluded that SIKI was developed to manage static electronic records with low usage value.

e-office (Electronic Office)

This ERMS was developed by the Directorate of Technology and Information Systems of Universitas Padjajaran (DTSI-UNPAD) in 2015. Historically, according to respondent 7, *e-office was developed partially in the department of the finance unit, but in its development, the e-office was acquired by DTSI. Finally, now, it was implemented thoroughly within UNPAD and was used by all units. In fact, the e-office is combined with SIAT (Integrated Administration Information System)*. It can be concluded that functionally, the e-office was built to manage records concerning active correspondence between units in Unpad.

Inventory Records System

This system, developed by the Archive Office of UI, was still in prototype form and on a trial period in a limited environment (Internal Archives Office of UI). The ERMS was developed for correspondence purposes throughout all units and integrated a system that was previously built partially. Respondent 8 LKPT UI stated that *this (inventory system) will be a medium that bridges all partial systems in units. It was our responsibility because we have an interest in doing control records at the unit level. Our interest was to ensure that records/archives transferred to the Archive Office of UI were 'digitally' well organized*.

C. Compliance with Functional Requirements

Each ERMS implemented by the best LKPTs in Indonesia was developed based on the needs of the respective organization in supporting business processes and meeting administrative needs. Therefore, the components, coverage, and flow of an ERMS may be different for each unit. These observations revealed a tendency for the applied ERMS not to consider the functional requirements of record management in ERMS planning and development.

The archivist, as the user (operator) of the ERMS system, explained that ERMS should have made it easier for users in terms of the interface, process, and conciseness. On this note, respondent 7 in Unpad stated that *we hope that application users want a user-friendly ERMS and not too many data fields that do not work*. This means ERMS must provide the fundamental records management principles as simple as possible. Results in the field indicated that archivists want a user-friendly ERMS, but the accompanying development of ERMS has not been maximal and complete until the official launch of the ERMS.

Guidelines and Functional Requirements for Electronic Records Management Systems [2] classify records management processes into four categories: creation, maintenance, dissemination, and administration. This study focused on the maintenance process, which consists of retention and disposal. Thus, the analysis was carried out on these two aspects.

In practice, the three ERMS that were observed in this study showed results that tended to be poor and had not fully met the ERMS functional requirements published in ISO 16175-2: 2011. The following chart reflects this finding regarding the results of observations.

TABLE I. FUNCTIONAL REQUIREMENTS OF ERMS COMPLIANCE

No.	*Electronic Records Management Systems*	Compliance with Functional Requirement Aspects (%) [a]	
		Retention	***Disposal***
1.	SIKI	33	44
2.	e-office	0	0
3.	Inventory Record System	0	2

[a.] The data were acquired when research was conducted (Dec 2018 - June 2019)

Table 1 shows that SIKI has the highest percentage compared to other samples, which is 44% in the disposal function and 33% in the retention function. The result means that SIKI was developed with considering the standard functional requirements of ERMS, especially on retention and disposal, although less than half rate of entire aspects assessed. The rate acquired reflects that SIKI capable of destroying the unused records manually. Moreover, with a 33% rate of retention function, SIKI could retain the records along the time has been set, although not in maximum function.

Meanwhile, the e-office has 0% of compliance in the aspects of retention and disposal. The results of this chart are concerning, but they reflect real-life situations in the field, in that the e-office was built without considering aspects of functional requirements. According to this finding, the development design was based on organizational needs but neglected the international standards of ISO 16175-2: 2011 as guidelines in developing ERMS.

The inventory records system demonstrated 2% on the retention aspect and 0% in the disposal function aspect. The lack of assessment scores is due to the factor of the inventory records system is still prototype design or in experimental stage and has not been widely used in the record unit (office) environment.

From these data, reflected that the three ERMSs in the best LKPTs have not met the ERMS functional requirements. Furthermore, the data inform many factors lie behind the lack

of attention to the functional requirements of ERMS in planning and developing ERMS for developers, archivists, and stakeholders which the process should match with their expectations.

Table 1 also obviously illustrates that SIKI has the highest rate of compliance, followed by the inventory records system and, last in the group, e-office. Thus, it can be concluded that the three ERMSs in the best LKPTs are not complying with the functional requirements for ERMS.

However, various factors underlie the lack of functional requirements in planning and developing ERMS by developers and archivists, along with the expectations of the individuals involved in planning and developing an ERMS. In summary, the three ERMSs in the best LKPTs have not met the ERMS functional requirements.

1) SIKI (Inactive Archive Information System) – LKPT UGM

The lack of attention to the ERMS functional requirements at SIKI is due to functionality. SIKI was built to accommodate metadata and act as a bridge for users in the retrieval of inactive printed records owned by LKPT UGM. In addition, the relevant parties have not issued policies related to the Archive Retention Schedule, which should be the main legal guideline, due to policy changes at the central government level. This situation goes on to inhibit the issuance of any UGM rector's policy regarding retention.

Functionally, SIKI allows users to access an inactive collection of printed records. The system provides metadata descriptions that help users find the physical location of a record in the collection. In a library, this function is called the Online Public Access Catalogue (OPAC). The initial purpose of developing SIKI was to act as a bridge when records were moved. In other words, the records that are kept or stored/managed at SIKI are temporary. The absence of a retention feature in SIKI due to the legal printed document is not published yet. For the next development, they will implement a retention function when the printed legal documents is issued.

However, system developers have future expectations to develop ERMS functionality by accommodating the retention function attached to each different classification involving records, disposal, and reporting. The system developer expressed enthusiasm that the minimum percentage does not matter because it can be a correction to improve it better. In contrast, respondent 2 believed that *SIKI will improve the function of internal archives, including retention, reporting, and disposal functions. That can be done when the policy is approved.* Based on the statement, it was found that in real practice, SIKI as an ERMS is not yet ideal because has a constraint on policies/ legal sources that underlie ERMS development.

2) e-office (Electronic Office) - LKPT UNPAD

The e-office was developed for correspondence purposes and involved maintaining active records. However, the observations show that regarding compliance in disposal and retention, e-office does not have these features, yielding a percentage rate of 0%.

Furthermore, respondent 6 at LKPT UNPAD said that *in the future, I expect that e-Office will have a 'magic button', which serves the user to choose the complexity of the features displayed. So, users can adjust according to their business. I believe it is possible. Actually in developing records management system, we (archivists) are leaders, we have substantive ideas; after that, we can realize it to the IT staff as tailors.* According to the respondent's explanation, in developing archival software, archivists play a role in establishing substantive guidelines that must always be involved in ERMS development.

3) Inventory System - LKPT UI

As a prototype product, the inventory system in the UI Archives Office has met the criteria for compliance of 2% in the disposal aspect and 0% in the retention aspect. This minimum result was because *the UI Archive Office has not focused on electronics. Rather, its function is oriented towards the implementation of the rector's regulations, prioritizing archive awareness at the unit level towards effective records management.*

In addition, the Head of Archives Office of UI was committed to the idea that *ERMS Inventory records will be a medium to bridge the records system at the unit level. The archive office perceives that they have the responsibility to participate in developing ERMS it will be implemented in the records unit (office), to ensure records have been managed properly before entering the static phase in the Archive Office*. This approach was taken to achieve organization's goals and create effective record-keeping.

The overall results of the analysis of three different ERMS implemented by the best LKPTs in Indonesia demonstrate that electronic records managed by ERMS have not met the ERMS functional requirements issued in ISO 16175-2: 2011. That said, in reality the use of ERMS functional requirements as the basis for ERMS is arguably not an easy task. Many internal and external aspects remain to be considered and require further elaboration. Even though a system has been implemented, it still must be evaluated periodically. This outcome is in line with the findings of Külcü which noted flaws in the organization's records management system and the academic information system, requiring improvement in terms of processes [3].

Therefore, in developing an ERMS, conducting periodic evaluations is needed to update and develop the ERMS in accordance with the conditions, interests, and administration of an organization (which may very well change at any time).

V. CONCLUSIONS

The results of the discussion support the assertion that the functional requirements of ERMS have not been the focus of developers, archivists, or other stakeholders in developing ERMS in the best LKPTs in Indonesia. Data from the field

revealed a negative trend in the implementation of the functional requirements of retention and disposal aspects, implying a lack of attention to the necessity of the functional requirements that are applied to each ERMS by the National Archives Institution. Although ERMS (SIKD) has been officially published by ANRI, its implementation did not obtain a good response because the system was too complex and not user-friendly. There is a high awareness by archivists, archive officials, archive management, and the head of LKPT were noted regarding the importance of implementing functional requirements in the records management system. The goal was to optimize the performance of LKPT with a simple, integrated process that complies with international standards. Improvements and evaluations by the best LKPTs in Indonesia will continue to be carried out by reviewing the applicable regulations, procedures, and laws.

One problem arose at the records management unit level, revealing unreadiness concerning system changes and suggesting a need for socialization, training, and assistance in implementing ERMS gradually and thoroughly. The recommendation concerns ANRI as the parent archives in Indonesia particularly, and potentially other institutions if applied generally, it is necessary to provide a simple ERMS but having international standards in developing, making it easier to integrate and exchange data globally, then implement it for supporting the effective record management. Other suggestion for ANRI is to establish supervision of the ERMS function that was developed by each LKPT to achieve effective record management and accurate administrative records. The results of research could be used as a starting point for further researchers to conduct similar research regarding the functional requirements of ERMS in other aspects.

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