ANALYSIS OF ACQUIRE AND IMPLEMENT OF LIBRARY INFORMATION SYSTEM USING COBIT 4.1 FRAMEWORK

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Abstract: College libraries are built and designed based on the needs of the academic community to support learning, research, and community service. Management of higher education institutions in Indonesia refers to Organizing libraries in Indonesia is regulated in National Library Director Regulation No. 13 of 2017. College libraries currently use information technology to support operations. To assess the alignment of a university's goal of providing a library that complies with information technology regulations and management, library management needs to be audited. At the ISB Atma Luhur library, audits were carried out using the COBIT 4.1 framework. especially in the Acquire and Implement (AI) domain. The AI domain is a domain that assesses whether plans have been successfully acquired and implemented. This research uses interview and questionnaire methods as primary data source data collection media. The respondents involved were the head of the library and the ISB Atma Luhur library staff. The results of data processing show that the AI domain is at 2,754 with a maturity level of 3-Define Process. Of the 7 control objectives under the AI domain, AI4 Anable Operation and Use is the highest control objective with 3.28. Meanwhile, the lowest control objective is AI2 Acquire and maintain application software with 2.50.

Keywords: acquire and implement COBIT 4.1; college library ; information systems audit.

Abstrak: Perpustakaan perguruan tinggi dibangun dan dirancang berdasarkan kebutuhan civitas akademika untuk menunjang pembelajaran, penelitian dan pengabdian kepada masyarakat. Pengelolaan perguruan tinggi di Indonesia mengacu pada Penyelenggaraan perpustakaan di Indonesia diatur dalam Peraturan Kepala Perpustakaan Nasional Nomor 13 Tahun 2017. Perpustakaan perguruan tinggi saat ini sudah memanfaatkan teknologi informasi untuk menunjang operasionalnya. Untuk menilai keselarasan tujuan perguruan tinggi dalam menyediakan perpustakaan yang sesuai dengan regulasi dan pengelolaan teknologi informasi, maka pengelolaan perpustakaan perlu dilakukan audit. Pada perpustakaan ISB Atma Luhur, audit dilakukan dengan menggunakan framework COBIT 4.1. khususnya di domain Acquire and Implement (AI). Domain AI adalah domain yang menilai apakah rencana telah berhasil diperoleh dan diterapkan. Audit sistem informasi perpustakaan ini bertujuan untuk menilai keselarasan rencana dan akuisisi impelentasi sistem untuk meningkatkan layanan perpustakaan. Penelitian ini menggunakan metode wawancara dan angket sebagai media pengumpulan data sumber data primer. Responden yang terlibat adalah kepala perpustakaan dan staf perpustakaan ISB Atma Luhur. Hasil pengolahan data menunjukkan domain AI berada pada angka 2.754 dengan tingkat kematangan 3-Define Process. Dari 7 tujuan pengendalian dalam domain AI, AI4 Anable Operation and Use merupakan tujuan pengendalian tertinggi dengan nilai 3,28. Sedangkan tujuan pengendalian terendah adalah AI2 Memperoleh dan memelihara perangkat lunak aplikasi dengan nilai 2,50.

Kata kunci: acquire and implement COBIT 4.1.; audit sistem informasi; perpustakaan perguruan tinggi.

INTRODUCTION

Based on the Regulation of the National Library of the Republic of Indonesia Number 2 of 2024 concerning National Standards for Public Libraries, a library is an institution that manages collections of written works, printed works, and/or recorded works professionally with a standard system to meet the educational, research, preservation, information, and recreational needs of library users[1].

The National Standards for higher education libraries are used as a reference in organizing, managing, and developing higher education libraries for institutes, colleges, and polytechnics, academies and community academies. the national standards for higher education libraries include: library collections; library facilities and infrastructure; library services; library personnel; library organization; and library management[2].

To support the smooth operation of libraries, the government has also issued the Republic of Indonesia National Library Regulation Number 6 of 2023 concerning work quality standards and guidelines for assessing the quality of librarians' work results[3].

The following are some research results that pay attention to the suitability of library management in tertiary institutions, namely, the UNINUS Library makes maximum efforts to implement the standards implemented by the Director of National Library Regulation no. 13 of 2017, although it is still hampered by extensive the room and the room temperature are not yet ideal[4]. The national standard for higher education libraries (SNPPT) implemented at the National Development University (UPN) "Veteran" East Java (UPNVJT) reached 76.6%. The results of the processed data show that the obstacle is the lack of library service standards[5].

College libraries currently need information technology support. The use of information technology in library management is an effort to align the library's goals according to national library guidelines, the vision, and mission of higher education, and the need for adequate and appropriate technology.

The development and needs of organizations for ensuring the alignment of business and information technology goals are currently also driven by the need to make systems capable of facing prolonged threats. Cobit as a framework that assesses governance continues to develop following the needs and changes in organizational conditions[6].

The Atma Luhur Institute of Science and Business Library is one of the supporting facilities for academics, research, and community service in the tertiary environment. Currently, the library unit has several main services such as circulation services, references, periodicals, final assignments/thesis, and information retrieval. Existing library services are also supported by information systems that can be accessed online such as a library.atmaluhur.ac.id, opac. atmaluhur.ac.id,library.atmaluhur.ac.id, repository.atmaluhur.ac.id[7].

The importance of using the COBIT 4.1 framework to measure the level of maturity and suitability of IT governance in higher education libraries has been carried out by the following research:

The results of a literature study measuring the maturity level of information technology governance in educational and health institutions in the 2015 - 2020 period show that the maturity level assessment using the COBIT 4.0 and 4.1 framework for the

Plan and Organize (PO) and Delivery and Support domains are at levels 2 and 3[8].

The Karawang Regency Library information system audit results using the COBIT 4.1 framework were 2.84 at level 3 (Defined). These results show that the implementation of the process has gone well with limited use of automatic tools[9].

The maturity level of information technology governance in the Bandung Polytechnic Digital Library is assessed using the COBIT 4.1 framework. is at level 2 (Repeatable but Intuitive) which shows that the digital library system is not yet effective and efficient[10].

The audit results on the MTSN 1 Tangerang library system conducted using the COBIT Framework can be used as a barometer to improve the service and reliability of the library system for use by users. Several domains that still have less value can be improved so that they can be maintained in terms of availability, integrity, and security of an information system[11].

Audit with COBIT 4.1. can be implemented in various agencies that utilize information systems to support operational activities, including the Central Lombok Population and Registration Services[12].

One of the purposes of conducting an audit is to help an organization monitor and review its procedures for conducting business and protect all parties involved in the organization[13].

METHOD

This research uses COBIT as a reference for assessing the maturity level of information technology governance in the ISB Atma Luhur library service. Cobit is a framework that provides a process model found in information technology processes and links IT governance and business requirements, Cobit 4.1 is a governance assessment framework that focuses on IT values and IT risks. In Cobit 4.1, the results of measuring information technology maturity refer to the system maturity level on a scale of 0-5. Cobit 4.1 has four domains, namely Plan Organize (PO), Acquire and Implement (AI), Deliver and Support (DS), and Monitor and Evaluate (ME).

Plan Organize (PO) which discusses organizational planning and the supporting capacity of tools to improve the quality of information technology services. Acquire and Implementation (AI) which assesses the implementation process of previously made plans to improve services. Deliver and Support (DS) is a domain that discusses the service process to system users. Monitor and Evaluate (ME) domain which discusses monitoring and evaluation of planning, service implementation, and the process of providing these services to users.

COBIT is a best practice framework that is widely used in the implementation of corporate IT governance, also used to measure the level of IT maturity (IT Maturity Assessment). COBIT supports IT governance by providing a framework for managing IT alignment with the business. This framework also ensures the benefits of IT to the business, IT risks are managed appropriately, and IT resources are accountable. COBIT is a complete and comprehensive standard as an IT audit framework because it is continuously developed by ISACA, a professional auditor institution spread across almost all countries[14].

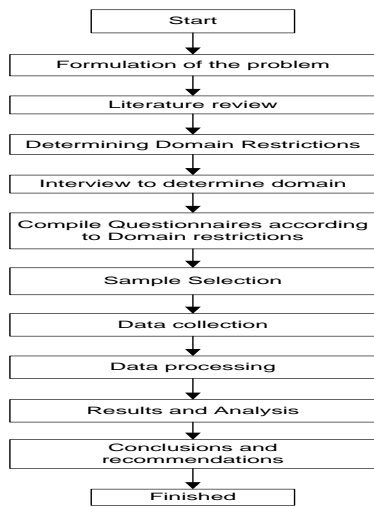The following are the research steps

Image 1. Research Methodology

Based on this Research Methodology, then: This research takes the theme of information system audits carried out by the ISB Atma Luhur Library. Problem formulation was carried out using the COBIT 4.1 framework, to assess the maturity level of the library system.

Researchers conducted a literature study to determine the domains that are currently most important for auditing information technology management. Researchers interviewed the Head of the Library Department and the librarians involved. Researchers prepare question naires according to predetermined doma ins.Determine the sample that will fill out the questionnaire. Researchers collect data from questionnaires and interviews.

Researchers process data according to the stages in Cobit 4.1.

The data processing results are in the form of domain maturity value tables and maturity level diagrams.

The conclusion will be displayed in the form of a maturity gap diagram.

The respondents involved in this research were the Head of the Library and staff.

Table 1. Table Respondents

No.	Respondent's Name	Position
1	Nuryani SIP	Head of Library
2	Meily Anilia	Afternoon Library Staff
3	Ronianingsih Novianti, Ama.Pust	Morning Library Staff

The domain that is the focus of this research is the Acquire and Implement (AI) domain. This domain is important because it is a sign of whether the plans made are going according to plan or not. The Acquire and Impleme ntation (AI) Domain focus consists of:

Table 2. Control Objective Domain AI

Control Objective	Process
AI1	Identify automated solution
AI2	Acquire and maintain application software
AI3	Acquire and maintain technology infrastructure
AI4	Enable Operation and Use
AI5	Procure IT resources
AI6	Manage changes
AI7	Install and accredit solutions and changes

Based on [15], maturity model in the Cobit 4.1 framework, is on a scale of none (0) to optimal (5). This scale refers to the maturity model. The Software Engineering Institute (SEI) defines maturity as the ability to develop software.
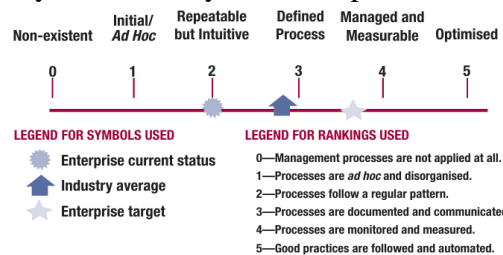

Image 2. Graphic Representation of Maturity Models

The maturity level groupings are

described in the table below:

Table 3. IT Governance Maturity Level

Maturity Index	Maturity Levels
0 – 0.49	0 – Non-Existent
0.50 – 1.49	1 – Initial/Ad Hoc
1.50 – 2.49	2 – Repeatable But Intuitive
2.50 – 3.49	3 – Define Process
3.50 – 4.49	4 – Manage and Measureabel
4.50 – 5.00	5 – Optimized

The six levels of maturity are:

Table 4. Maturity Level Description

Level	Category	Description
0	Non-Existent	Non-Existent is the stage where the organization has not yet defined the problem, so it does not need IT governance.
1	Initial/Ad Hoc	Initial/Adhoc is the stage at which the organization realizes there is a problem, so it requires a solution with information technology even though the handling of the problem is still not well organized or informal.
2	Repeatable But Intuitive	Repeatable but intuitive is the stage at which the organization has carried out planning, management, and implementation of computer-based systems in a more focused manner. IT governance already exists but is not yet formally structured.
3	Define Process	The defined process is the stage where the organization has an IT process with good governance and all rules have been made formally.
4	Manage and Measure abel	Managed and measurable is the stage at which an organization has a good monitoring process. Organizational leaders can monitor IT processes and governance and continuously evaluate them to improve services.
5	Optimized	Optimized is the highest stage, when an organization can run IT processes automatically in the right way that supports service success

RESULT AND DISCUSSION

As a data collection tool, researchers try to develop tools or instruments in the form of questionnaire questions. The questionnaire was designed by asking several questions for each level of maturity in the AI domain. Each Control Objective of the AI domain at each level has several questions so each Control Objective in the domain and AI has many questions.

The questions in this questionnaire use a yes and no scale [Guttman], from the results of the questionnaire a value conversion will then be carried out for each respondent's answer. Conversion is carried out using a value of 0 for a no

answer (T) and a value of 1 for a yes answer (Y). From the conversion results, normalization is then carried out by dividing the total conversion value by the number of questions at each level, then after normalization the average is calculated by dividing the total answer value by the number of respondents, from these results, the author can find out what the maturity level is for each Control Objectives in each AI domain.

Table 5. Table of Domain Maturity Level Values AI1 – AI7

Control Objective	Current Maturity Index	Current Maturity Level
AI1	2,55	3-Define Proccess
AI2	2,50	3-Define Proccess
AI3	2,61	3-Define Proccess
AI4	3,28	3–Define Process
AI5	2,91	3–Define Process
AI6	2,58	3–Define Process
AI7	2,85	3–Define Process
Average		
	2,754	3-Define Proccess

Table 6. Table Gap Analysis

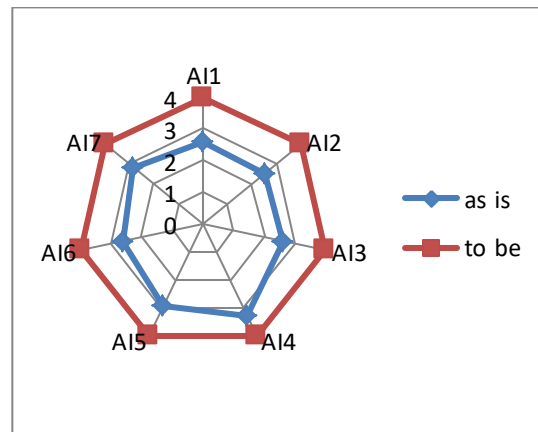| Control Objective	Level of Maturity		
	As is	To be	Gap
AI1	2,55	4	1,45
AI2	2,50	4	1,50
AI3	2,61	4	1,39
AI4	3,28	4	0,72
AI5	2,91	4	1,09
AI6	2,58	4	1,42
AI7	2,85	4	1,15

Image 3. Graphic Representation of Maturity Models

CONCLUSION

An information system audit with the COBIT 4.1. The ISB Atma Luhur Library aims to assess the harmony of achieving the goals of building a university library and the management of information technology used in its operations. The ISB Atma Luhur Library currently has a physical library and a digital library, all of which use information systems as the main support for operational activities. This audit of the management of information systems in libraries uses the COBIT 4.1 framework, focusing on the AI Domain (Acquire and Implement). The AI domain is the first benchmark for whether a library has successfully implemented information system planning. This research involved all personnel involved in library operations. The Head of the Library and library staff are the primary sources in interviews and questionnaires.

The results of this study indicate that the level of system maturity in the AI domain is currently at level 3 (define process). In general, the implementation and acquisition of planning have been carried out well and IT governance has

been running well. The level that is the goal for the future is level 4 (Manage and Measurable) which means moving towards a better system of service management with tighter monitoring from the leadership.

Data processing produces the current level of information system maturity and the expected level of maturity. The information system maturity level is currently at 2.754, which means it is at level 3 Defined Process, namely the stage where the organization has an IT process with good governance and process management rules have been created formally. Meanwhile, the expected level of maturity is level 4 Manage and Measureable, which means that system governance has been managed and measured with good supervision, including supervision from the organization's leadership. Leadership supervision aims to monitor IT processes and evaluate them to improve services.

So to achieve the future maturity level at level 4, the library must pay attention to the condition of acquisition and maintenance of application software.

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