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The Performance Analysis of SIKITO LLDIKTI Region II System using COBIT 2019 Framework: A Case Study

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ABSTRACT

In today's organizational landscape, information technology plays a critical role in supporting ongoing activities. Therefore, it is essential to conduct an analysis to determine the advantages and disadvantages of IT implementation. This research focuses on the Higher Education Service Institute (LLDIKTI) Region II, a government agency responsible for improving the quality of higher education in its working area. LLDIKTI Region II uses an information technology system that aligns with the Institute's vision and mission. However, the governance level of the Online Functional Position Information System known as SIKITO has never been assessed, highlighting the need for a maturity framework to measure SIKITO's level and align it with LLDIKTI's vision and mission goals. COBIT 2019 is a framework that aligns with the vision and mission of LLDIKTI and demonstrates how each stakeholder's differences affect the use of information technology based on the maturity level of the implemented system. This research applied the COBIT 2019 framework in LLDIKTI Region II, utilizing the APO07, BAI08, and MEA03 domains. The results indicate that SIKITO's maturity level is below the expected value of -2.33, indicating a need for further development. This research contributes to the field by providing insights into the importance of aligning IT governance with an organization's vision and mission, and the role of maturity frameworks such as COBIT 2019 in achieving this alignment.

1. Introduction

Higher Education Service Institute Region II known as LLDIKTI II is a government agency operating under the Ministry of Education, Culture, Research, and Technology [1]. The primary objective of LLDIKTI II is to represent the ministry in carrying out higher education activities in its working area, which encompasses the provinces of South Sumatra, Lampung, Bengkulu, and Bangka Belitung. The agency's main task is to facilitate universities in region II in enchancing their quality and performance, including managing the National Lecturer Identification Number known as NIDN, accrediting higher education institutions, conducting research by lecturers and students, providing community service, managing Academic Rank Level (JJA) for lecturers, and awarding scholarships for lecturers and students [2].

One of the essential services provided by LLDIKTI II is the proposal for Academic Rank Level, which is aimed at improving the careers of lecturers. The functional position of lecturers, referred to

as the Lecturer Academic Rank (JJA), represents a position that outlines the duties, responsibilities, authority, and rights of a lecturer. As a profession, being a lecturer offers a career path, and every lecturer has an equal opportunity to achieve the highest career level, which is determined by the lecturer's individual efforts. JJA represents a position of expertise, with a hierarchy of levels from the lowest to the highest, consisting of Assistant Professor, Associate Professor, and Professor. To obtain JJA, lecturers' credit score should be assessed by their respective institution first, while their should meet the minimum requirements for each of the three fields of tridharma, namely teaching, research and community services. In this case, the use of information technology (IT) in supporting LLDIKTI II services is very important and critical.

The utilization of IT in university and education sector was proven in enhancing their performance in providing services [3]. With the current advancements in IT, particularly in service delivery, LLDIKTI Wilayah II has incorporated and supported IT in its endeavors to enhance the services offered, in accordance with the vision and mission of LLDIKTI Wilayah II. One such initiative is the implementation of the Online Functional Rank Information System (SIKITO), which streamlines the process of managing the functional rank of lecturers or JJA. Previously, the JJA process required lecturers to carry all their rank-related documents to LLDIKTI. However, with the implementation of SIKITO, the process has been significantly improved, making it more efficient and convenient.

In the implementation of higher education services, the use of Information Technology (IT) has played a significant role in enhancing the quality of services provided by LLDIKTI Wilayah II. One of the IT systems employed is SIKITO, which facilitates the management of lecturers' functional rank. SIKITO is mandatory for all levels of lecturers, from Assistant, Associate to Professor, at the same time for Associate and Professor level, which are managed through the SIKITO and Credit Score Assessment (PAK) of Kemdikbud system. Despite the critical role of IT in improving services, there has been no assessment of the level of maturity of SIKITO based on the vision and mission of LLDIKTI II. Therefore, an IT audit is needed to evaluate and provide improvement recommendations for the SIKITO service.

To conduct the audit, an IT governance tool is necessary, and one such tool is the Control Objectives for Information and Related Technology (COBIT) 2019 framework. COBIT 2019, developed by the Information System Audit and Control Association (ISACA) and the IT Governance Institute (ITGI), comprises 5 domains with 40 core objective models that describe IT governance and management [3-6]. The framework provides values for the gap between technical, administrative, risk, and control issues, as well as infrastructure availability, which can help organizations optimize and improve IT governance. The objective of this paper is to analyze and to evaluate the use of SIKITO system in facilitating lecturer;s JJA process, covering services infrastructure and resources. We also provide the recommendations for LLDIKTI II in optimizing and improving their IT's system governance.

2. Method

We used mix-method as our reseach and study approach. The study employed a non-implementative descriptive research design, which is classified as a qualitative research method. Qualitative research methods aim to address questions surrounding what, how, and why with regard to a particular phenomenon [8]. In addition, the study collected quantitative data by administering questionnaires to respondents, which were used to calculate capability and maturity levels [8-10]. This study has several stage as shown in Fig. 1 .

2.1. Selecting COBIT 2019 Domain

In our study, we employed a design toolkit/design guide as a tool to help determine the objective domains of the COBIT 2019 process. We used a core model analysis, starting with an understanding of the context and strategy [12] of LLDIKTI Wilayah II. We then analyzed the initial scope of the governance system using design factors, filling in the importance weight (IW) for each value in DF 1-4 and improving the scope of the governance system in DF 5-11. The toolkit automatically calculated the IW for each process and produced a spider chart diagram [12-14]. We selected the process objective domain with the highest IW in LLDIKTI Wilayah II to summarize the design of

the governance system. This allowed us to focus on the most important objective domain and conduct data collection for the evaluated objectives.

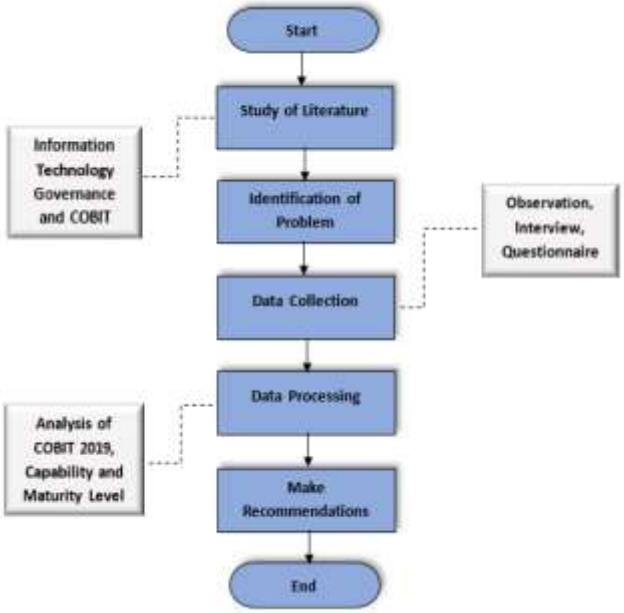

Fig. 1. Study Framework

2.2. Data Collection

In our study, we conducted a literature review using various sources, including books, journals, and other reference materials related to the COBIT 2019 information technology governance framework. We then identified suitable respondents within the LLDIKTI Wilayah II environment who were relevant or had a connection to the focus of each objective domain. Fig. 2 is ilustration of data collection domain in this study.

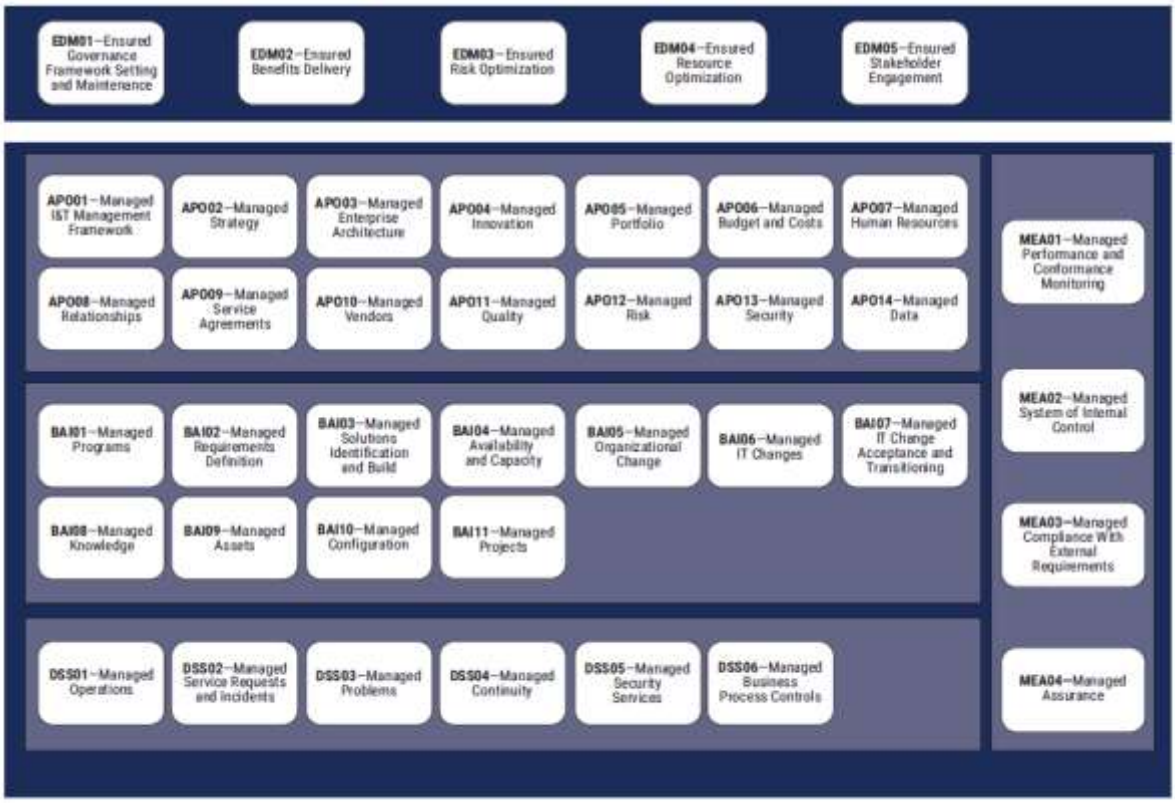

Fig. 2.COBIT 2019 Domain Process [16]

2.3. Data Analysis

This study comprises three stages for data analysis, including the current maturity level analysis, Capability Level analysis, and Gap analysis. The following is a brief description of each stage.

- The current maturity level analysis involved compiling and summarizing respondent answers from questionnaires distributed to LLDIKTI Wilayah II on IT management, performance, and governance. Respondents answered using a scale ranging from 1 to 4.
- After obtaining questionnaire results, the Capability Level analysis was performed and adjusted to the COBIT 2019 framework for assessing activities to determine the IT governance capability level of LLDIKTI Wilayah II, as well as the expected level.
- Following the determination of the current maturity level and expected capability level, the Gap analysis was conducted to identify the activities necessary for the company to undertake to improve IT management and achieve the expected maturity level.

2.4. Recomendation

The recommendations are provided as a plan for improvement that LLDIKTI II should undertake to ensure that IT management can achieve the target capability level for IT process..

3. Results and Discussion

The main objective of this study was to analyze and determine the objective domain of the LLDIKTI II process using the design toolkit/design guide provided by COBIT 2019. First, we collected data using questioner from targeted universities in our research area. Then we analyzed data using COBIT framework. Our Design Factor, as defined in this study, is a critical factor that influences the design of enterprise governance systems to ensure the successful use of information and technology. Our analysis focused in identifying the most critical design factors for the LLDIKTI II processes and determining how to optimize maximum effectiveness. The results of our study demonstrate that several critical design factors play a vital role in the successful implementation of the processes. These factors include effective communication, strong leadership, clearly defined roles and responsibilities, and the use of appropriate technology. By optimizing these design factors, organizations could effectively manage their information and technology resources in achieving their target outcomes. Details of our results obtained as follow:

3.1. IT Governance Design Factor

Before study, the template is designed so that our respondent affiliations are not repeated each time for multiple respondents of the same affiliation. We keep respondent affiliation as succinct as possible, ehre we did not differentiate among departments of the same institution.

- **Enterprise Srategy**

Strategies that can be expressed through one or more strategy archetypes, which are basic patterns of strategy. Typically, organizations have a primary strategy and at most one secondary strategy. The enterprise strategy consists of four strategy archetypes, namely Growth, Innovation, Cost Leadership, and Client Service. After analyzing the strategy and vision of LLDIKTI II, the Enterprise Strategy was derived and depicted in Fig. 3. The Growth strategy archetype is focused on increasing market share, expanding product lines, and entering new markets. The Innovation strategy archetype emphasizes product and process innovation to stay ahead of the competition. The Cost Leadership strategy archetype focuses on reducing costs and improving efficiency to provide customers with products or services at a lower price. Finally, the Client Service strategy archetype prioritizes customer satisfaction and loyalty by providing high-quality customer service and personalized experiences. By identifying and implementing the appropriate strategy archetype, organizations can effectively achieve their goals and maintain a competitive advantage in the market. The Enterprise Strategy provides a framework for LLDIKTI II to develop and implement a strategy that aligns with their vision and mission. It is important to note that these strategy archetypes are not mutually exclusive and can be combined to create a hybrid strategy that meets the specific needs of the organization.

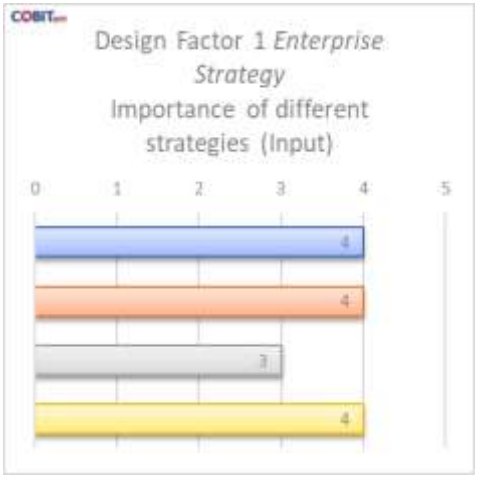

Fig. 3.DF1: Enterprise Srategy

- **Enterprise Goals**

The goals of an enterprise are integral to its strategy, as they guide its efforts towards achieving its desired outcomes. These goals are defined within the framework of COBIT 2019, which is organized according to the dimensions of the Balanced Scorecard (BSC). The BSC emphasizes that an organization's goals should be balanced across four perspectives: Financial, Customer, Internal, and Growth. In determining the value of enterprise goals for the design factor, a strategy and vision statement for LLDIKTI II were previously identified. There is one superior enterprise goal identified based on this strategy and vision. To illustrate, a sample input table and output graph for enterprise goals are provided in Fig. 4. The input table includes a list of enterprise goals, each aligned with one of the four BSC dimensions. The output graph presents a visual representation of the enterprise goals, showing the relative importance of each goal based on its alignment with the BSC dimensions. Through the use of the BSC and COBIT 2019 framework, LLDIKTI II can ensure that its enterprise goals are aligned with its strategy and vision, and that they are balanced across all four dimensions. By focusing on these goals, the organization can optimize its resources and achieve its desired outcomes. The sample input table and output graph provided below serve as a useful tool for visualizing and communicating the importance of these enterprise goals.

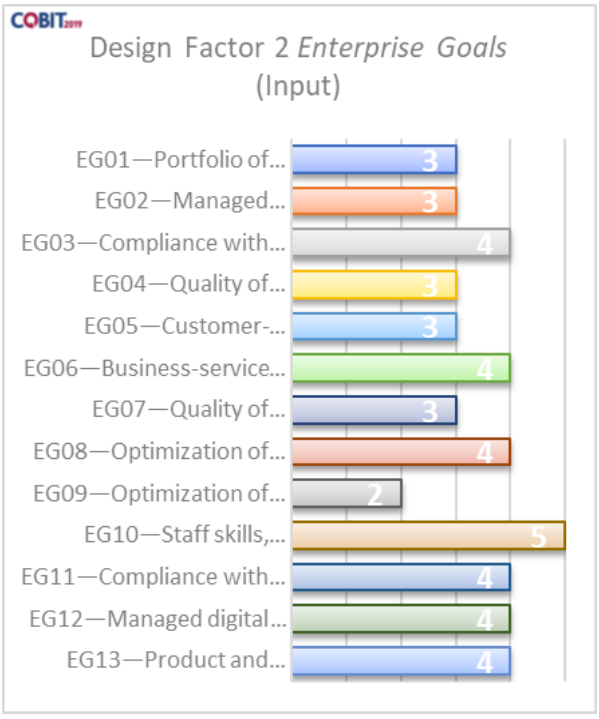

Fig. 4.DF2: Enterprise Goals

- **Risk Profile**

Based on the strategy and vision of LLDIKTI II, the risk profile of the organization was determined, as shown in Fig. 5. The analysis revealed the areas of IT-related risk that the organization is currently facing, and the extent to which these risks exceed the acceptable level. By identifying and assessing these risks, LLDIKTI II can develop strategies and allocate resources to mitigate them. The 19 categories of IT-related risks that should be considered include: availability, business continuity, change management, compliance, cybersecurity, data management, disaster recovery, financial, governance, human resources, information architecture, intellectual property, IT architecture, IT operations, legal, privacy, program management, project management, and third-party management. Each of these categories can have a significant impact on the organization's overall risk profile and should be carefully assessed and managed. The risk profile analysis serves as an important tool for organizations like LLDIKTI II to identify and address their IT-related risks. By implementing strategies to mitigate these risks, the organization can improve its overall performance and achieve its desired outcomes. The risk profile analysis can also be used as a basis for ongoing monitoring and evaluation of the organization's risk management practices.

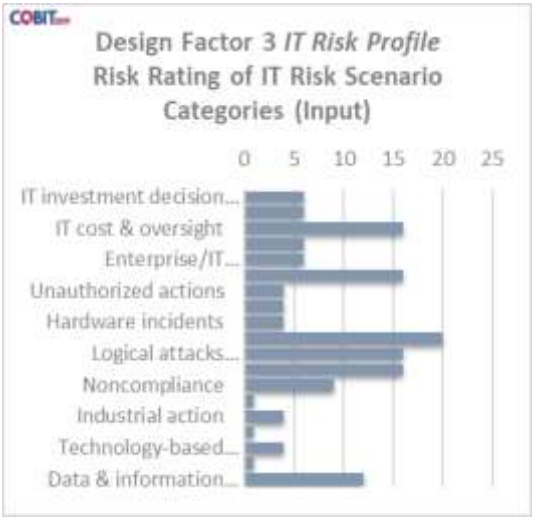

Fig. 5.DF3: Risk Profile

- **I&T Related Issues**

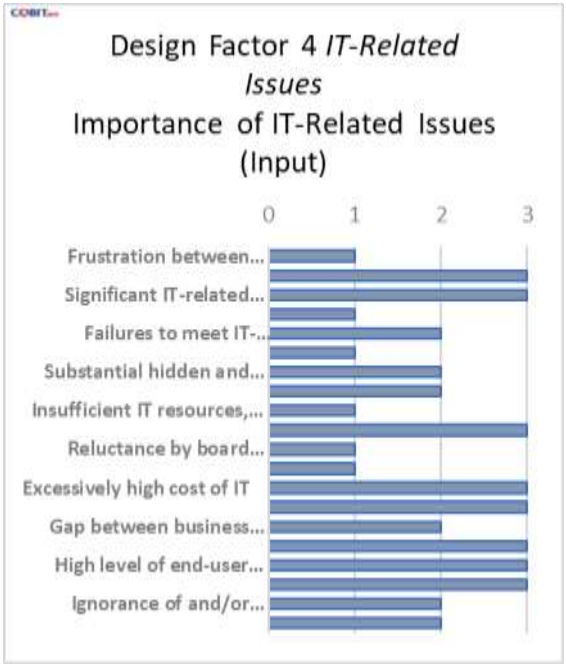

Fig. 6.DF4: I&T Related Issues

COBIT 2019 identifies several crucial I&T-related issues that organizations may face, such as cybersecurity threats, compliance issues, technology obsolescence, and operational inefficiencies. These issues can have a profound impact on an organization's operations and overall performance. Therefore, it is crucial for organizations to take proactive measures in addressing these issues by implementing effective IT governance and management practices. By doing so, they can ensure the ongoing security, reliability, and efficiency of their IT systems and infrastructure. The I&T-related issues faced by LLDIKTI II are depicted in Fig. 6.

- **Threat Landscape**

The Threat Landscape is defined as the overall landscape of potential threats and risks that an organization faces in its operations. This landscape is typically categorized into two types: normal (where the organization operates under regular threat levels) and high (where, due to specific circumstances or conditions, the organization operates in an environment with elevated threat levels). To better understand the threat landscape and its potential impacts on LLDIKTI II, Fig. 7 presents an analysis diagram detailing the range of threats and risks that the organization faces.

Fig. 7.DF5: Threat Landscape

- **Compliance Requirement**

Compliance requirements refer to the compliance standards that serve as the foundation for an organization. Compliance requirements can be classified into the following categories: low compliance requirements, which means that the company is subject to a series of minimal regular compliance requirements that are lower than average; normal compliance requirements, which means that the company is subject to a set of common regular compliance requirements; and high compliance requirements, which means that the company is subject to compliance requirements that are higher than average. Fig. 8 shows the analysis diagram of LLDIKTI II's compliance requirements that have been classified and generated.

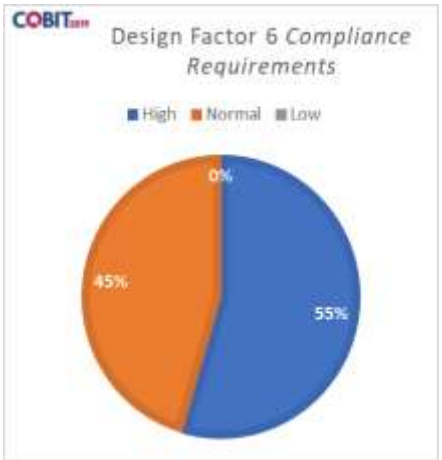

Fig. 8.DF6: Compliance requirement

- **Role of IT**

The Role of IT refers to the function of IT within an organization, which can be classified into four categories: Support, Factory, Turnaround, and Strategic. Support means that IT is not critical to the operation and continuity of business processes, services, or innovation. Factory means that IT failure can have a direct impact on processes and services, but IT is not considered a driving factor for innovation in business processes and services. Turnaround means that IT is seen as a driving force for innovation in business processes and services, but there is currently no critical dependence on IT. Strategic means that IT is vital for running and innovating business processes and services within the organization. Fig. 9 presents an analysis diagram of the role of IT in relation to LLDIKTI II.

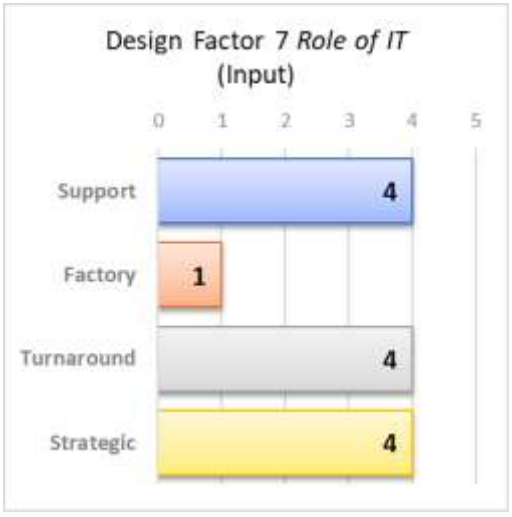

Fig. 9.DF7: Role of IT

- **Sourching Model of IT**

The sourcing model adopted by a company plays a critical role in the success of its IT operations. There are four commonly adopted models for IT sourcing, which include outsourcing, cloud computing, insourcing, and hybrid. Outsourcing involves the procurement of IT services using third-party services, whereas cloud sourcing model involves the procurement of IT services using cloud services. Insourcing refers to a company's establishment of its IT service with the presence of IT staff. A hybrid model is a combination of two or more sourcing models. The adoption of any of these models can significantly impact an organization's IT operations, security, and performance. In this context, Fig. 10 presents the analysis results of the IT sourcing model for LLDIKTI II.

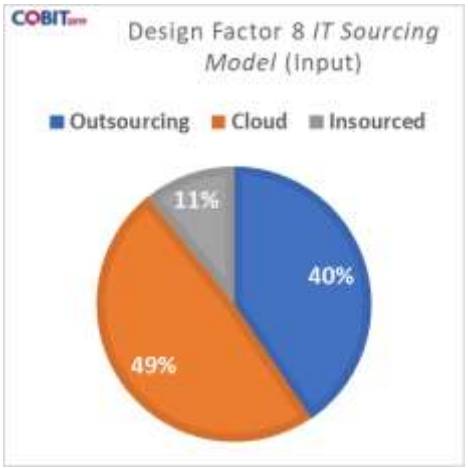

Fig. 10. DF8: Sourching Model of IT

- **IT Implementation Methods**

The IT implementation methods can be evaluated based on the guidelines provided by COBIT 2019, which provides a comprehensive framework for the governance and management of enterprise IT. This framework includes a set of best practices and recommendations that can be used to optimize the implementation of IT within an organization. By aligning their IT implementation methods with the COBIT 2019 framework, companies can ensure that their IT initiatives are well-governed, risk-aware, and provide value to the organization. The implementation of IT in LLDIKTI Region II can be observed through Fig. 11.

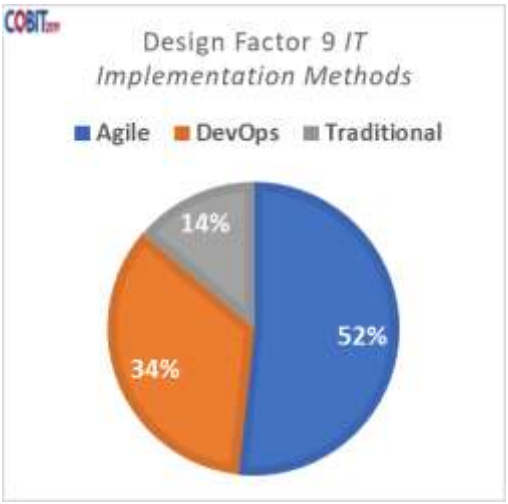

Fig. 11. DF9: IT Implementation Methods

- **Technology Adoption Strategy**

In the realm of technology adoption, institutions typically follow one of three strategies, namely:

1) First mover: adopting the latest technology at the earliest opportunity and being among the first to utilize it for competitive advantage.
2) Follower: waiting for a new technology to become widespread and commonly used before adopting it, often to minimize the risks associated with new and untested technologies.
3) Slow adopter: being very cautious in adopting new technology, waiting until the end before implementing it to avoid any potential risks and costs.

Fig. 12 depicts the Technology Adoption Strategy diagram in LLDIKTI II, which sheds light on how companies in the region adopt and implement new technologies.

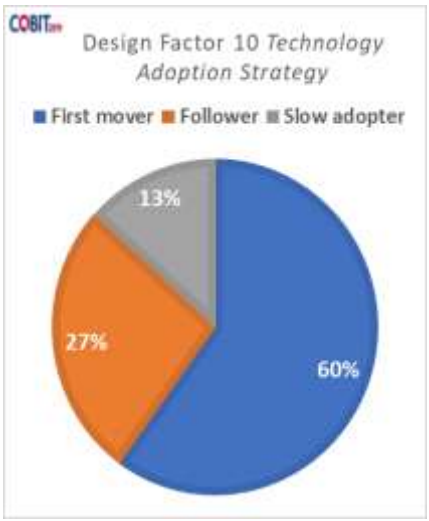

Fig. 12. DF10: Technology Adoption Stategy

3.2. Governance Design

After analyzing the process objective domains using the design toolkit/guide provided by COBIT 2019 and assigning weight values to each Design Factor (DF1-10), a summary of the domains to be evaluated was obtained. Based on the summary, the process objective domains with higher values were identified as:

1) APO07 - Managed Human Resources
2) BAI08 - Managed Knowledge
3) MEA03 - Managed Compliance with External Requirements

These three domains require a level 4 proficiency compared to other objectives that serve as a benchmark in concluding the objectives to be evaluated in the core model. Therefore, APO07, BAI08, and MEA03 are the process objectives that will be further evaluated in the core model stage. The results are presented in Fig. 13.

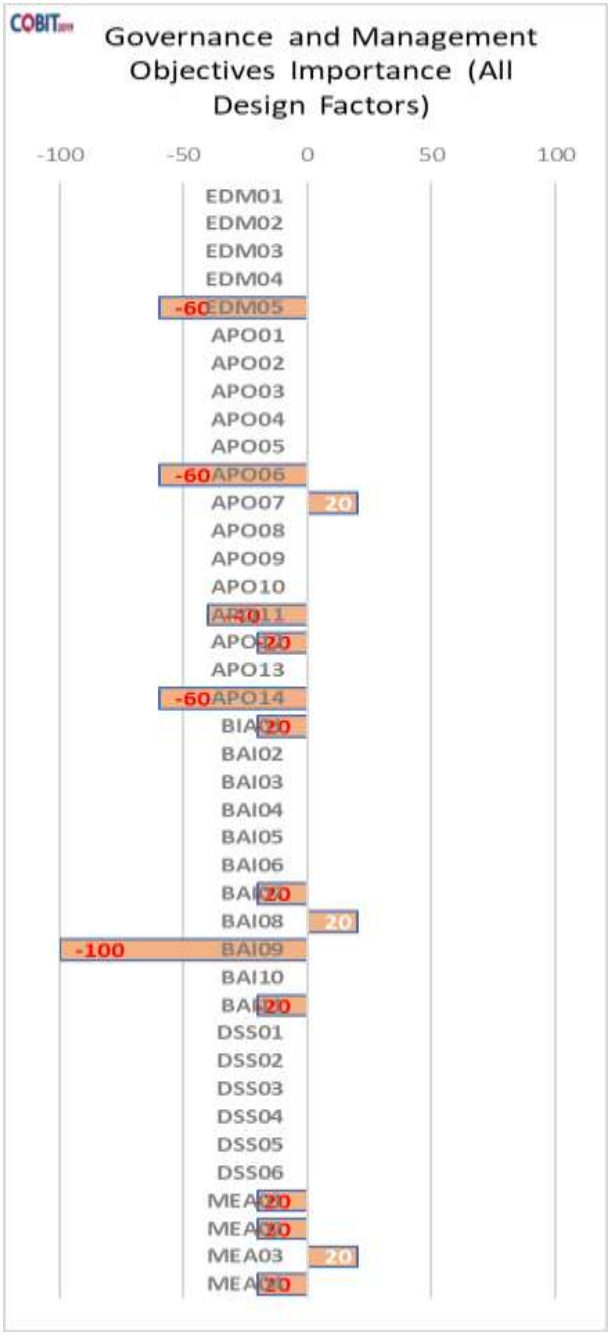

Fig. 13. DF10: Technology Adoption Stategy

3.3. RACI Chart

In this study, a RACI chart was utilized to identify the involved respondents based on their respective tasks and responsibilities. The chart defines four roles, namely Responsible, Accountable, Consulted, and Informed, each of which has specific tasks and responsibilities assigned to them. The main respondents who are considered as references typically have the roles of Responsible and Accountable in the RACI diagram. If there are multiple respondents, the primary reference is assigned to the Responsible role. The statement provided by the Accountable role is considered as supportive. Table 1 displays the respondents for the Manage Human Resources process in APO07.

Table 1. RACI Chart AP007

No	Component	Role	Position Organization
1	Responsible	Chief Information Officer	Head of General Section, Coordinator and LLDIKTI Region II Lecturer Career Working Group
2	Accountable	Board	

Table 1 depicts the results of the RACI mapping that has been adjusted to the organizational structure in LLDIKTI II. Furthermore, the respondents for process BAI08 can be illustrated in Table 2.

Table 2. RACI Chart BA108

No	Component	Role	Position Organization
1	Responsible	Head IT Operations	LLDIKTI Region II IT Development Team

Table 2 presents the suitable respondents for the research on the SIKITO system, namely IT developers. The subsequent respondents for process MEA03 can be found in Table 3.

Table 3. RACI Chart MEA03

No	Component	Role	Position Organization
1	Responsible	Chief Information Officer	Chancellor, Dean, Head of Higher Education Study Program
2	Accountable	Service Manager	TPAK College/University

In this study, the RACI mapping results were adjusted to the organizational structure of LLDIKTI II and are presented in Table 1. Table 2 displays the appropriate respondents for process BAI08, which are IT developers related to the SIKITO system. Table 3 shows the suitable respondents for process MEA03, evaluated based on their roles in the RACI chart. To assess the process capability level, data was gathered using various methods, including field observations, interviews, and questionnaires. During the field observation phase, evidence was collected in the form of basic activities (best practices, generic practices) and supporting process implementation documents (work product, generic work product). Interviews were conducted to determine the target level and compare it with the achieved capability level from the study's results to analyze the gap. Process capability is expressed in process attributes grouped into capability levels. Each level has several achievement attributes, which determine the process's capability level. The measurement of each process attribute can be defined using the standard rating scale adopted from ISO/IEC 15504, called the Rating Scale. The assessment is classified into several rating categories based on the process achievement, including N (Not Achieved), P (Partially Achieved), L (Largely Achieved), and F (Fully Achieved). An overview of the rating scale can be seen in Table 4.

Table 4. Rating of COBIT Process

Category	Description	Achievement (%)
N	Not Achieved	> 15%
P	Partially Achieved	15% - 50%
L	Largely Achieved	50% - 85%
F	Fully Achieved	> 85%

Based on the results obtained from the questionnaire distributed via a Google form created by the researcher to the predetermined respondents, the data were then processed according to the COBIT 2019 domains that were defined, namely APO07, BAI08, and MEA03.

3.4. Assessment Process

The purpose of a Process Assessment is to provide a clear understanding of the organization's current process maturity level and performance. It helps organizations identify their strengths and weaknesses and provides guidance on areas for improvement. The report also serves as a baseline for future assessments, allowing organizations to track their progress over time.

- **Capability Level**

The achievement of capability level for a process is determined by calculating the average score of activities within the process and dividing it by the number of respondents. This results in the capability level value for each process domain. This approach is used in the COBIT 2019 process assessment methodology to provide a quantitative assessment of a process's capability level. The calculated capability level values can then be compared against the target capability levels to identify any gaps and areas for improvement as presented in Eq. (1). This process assessment report provides valuable information for organizations to identify opportunities to improve their processes and achieve their business objectives.

$$Capability\ level = \frac{\sum Average\ activity\ score}{Total\ repondent} \quad (1)$$

- **Maturity Level**

The achievement of the capability level focus area is obtained by dividing the total domain process score, which is the sum of the average scores of all activities in each process domain using Eq. (2) , by the number of process domains.

$$Maturity\ level = \frac{\sum Total\ average\ activites\ score}{Total\ domain\ process} \quad (2)$$

a) APO07 - Managed Human Resources

The calculation was performed using the formula in Microsoft Excel. Domain APO07 consists of 6 sub-domains and has 34 activities. In the questionnaire survey, there were 9 respondents consisting of the Head of General Affairs, Coordinator, and the Career Development Team at LLDIKTI II.

$$Capability\ Level\ for\ Process = \frac{837}{9} = 93$$

$$Capability\ Level\ Focus = \frac{93}{34} = 2{,}74$$

Table 5. Process Domain AP007

Subdomain AP007	Question	Respond	Average		Sub Process	Avg. Provess
APO07.01	APO07.01 (1)	22	2,44	2,61	93,00	2,74
	APO07.01 (2)	24	2,67			
	APO07.01 (3)	24	2,67			
	APO07.01 (4)	24	2,67			
APO07.02	APO07.02 (1)	26	2,89	2,56		
	APO07.02 (2)	23	2,56			
	APO07.02 (3)	22	2,44			
	APO07.02 (4)	21	2,33			
APO07.03	APO07.03 (1)	25	2,78	2,50		
	APO07.03 (2)	22	2,44			
	APO07.03 (3)	21	2,33			
	APO07.03 (4)	23	2,56			

Subdomain AP007	Question	Respond	Average	Sub Process	Avg. Provess
	APO07.03 (5)	22	2,44		
	APO07.03 (6)	22	2,44		
APO07.04	APO07.04 (1)	25	2,78		
	APO07.04 (2)	24	2,67		
	APO07.04 (3)	22	2,44		
	APO07.04 (4)	25	2,78		
	APO07.04 (5)	26	2,89	2,68	
	APO07.04 (6)	22	2,44		
	APO07.04 (7)	24	2,67		
	APO07.04 (8)	25	2,78		
APO07.05	APO07.05 (1)	27	3,00		
	APO07.05 (2)	23	2,56	2,67	
	APO07.05 (3)	22	2,44		
	APO07.05 (4)	24	2,67		
APO07.06	APO07.06 (1)	30	3,33		
	APO07.06 (2)	30	3,33		
	APO07.06 (3)	31	3,44		
	APO07.06 (4)	31	3,44		
	APO07.06 (5)	28	3,11	3,15	
	APO07.06 (6)	26	2,89		
	APO07.06 (7)	25	2,78		
	APO07.06 (8)	26	2,89		

The calculation process of the capability and maturity level of APO07, as explained in the formula and Table 5, resulted in a score of 2.74, placing it at level 3 on the scale of 2.51-3.50. This level is classified as "Defined," meaning that established guidelines exist within LLDIKTI II to define the process. However, more detailed guidelines are required to clarify the IT organization, the functions and duties of each IT user in a structured manner, and the necessary strategies to be implemented to improve IT development that aligns with the vision and mission of LLDIKTI II.

b) BAI08 - Managed Knowladge

A questionnaire was used to survey Domain BAI08, which comprises 4 sub-domains and 15 activities. The survey was conducted with the participation of 3 respondents, who were all members of the IT Development Team at LLDIKTI II.

$$Capability\ Level\ for\ Process = \frac{97}{3} = 32{,}33$$

$$Capability\ Level\ Focus = \frac{32{,}33}{15} = 2{,}16$$

Table 6. Process Domain BA108

Subdomain BA108	Question	Respond	Average	Sub Process	Avg. Provess
BAI08.01	BAI08.01 (1)	2,00			
	BAI08.01 (2)	2,00	2,00		
	BAI08.01 (3)	2,00			
	BAI08.01 (4)	2,00			
BAI08.02	BAI08.02 (1)	2,00		32,33	2,16
	BAI08.02 (2)	2,00	2,00		
	BAI08.02 (3)	2,00			
	BAI08.02 (4)	2,00			
BAI08.03	BAI08.03 (1)	2,33	2,33		

Subdomain BA108	Question	Respond	Average	Sub Process	Avg. Provess
	BAI08.03 (2)	2,33			
	BAI08.03 (3)	2,33			
	BAI08.03 (4)	2,33			
	BAI08.03 (5)	2,33			
BAI08.04	BAI08.04 (1)	2,33	2,33		
	BAI08.04 (2)	2,33			

After conducting the capability and maturity level calculation process for Domain BAI08, as explained in the formula and Table 6, the resulting score of 2.16 falls within level 2 (with a scale of 1.51-2.50), indicating that the domain is "Managed" (where planned and measured performance is underway, though not yet standardized). Despite having a maturity level of 2 and having regulated SIKITO's implementation processes in accordance with the Supplementary Regulations and PO PAK 2019, there are still several challenges present in the business processes and performance. Therefore, further improvements are required by the IT Development Team at LLDIKTI II.

c) MEA03 - Managed Compliance with External Requirements

Domain MEA03 comprises of 4 sub-domains and 20 activities. A questionnaire survey was conducted, with the participation of 137 respondents consisting of academic leaders such as heads of institutions, deans, heads of study programs, and TPAK officials from various universities.

$$Capability\ Level\ for\ Process = \frac{8568}{137} = 62{,}54$$

$$Capability\ Level\ Focus = \frac{62{,}54}{20} = 3{,}13$$

Table 7. Process Domain MEA03

Subdomain MEA03	Question	Respond	Average	Sub Process	Avg. Provess
MEA03.01	MEA03.01 (1)	425	3,10	3,13	3,13
	MEA03.01 (2)	437	3,19		
	MEA03.01 (3)	426	3,11		
	MEA03.01 (4)	412	3,01		
	MEA03.01 (5)	418	3,05		
	MEA03.01 (6)	443	3,23		
	MEA03.01 (7)	443	3,23		
MEA03.02	MEA03.02 (1)	427	3,12	3,19	
	MEA03.02 (2)	446	3,26		
MEA03.03	MEA03.03 (1)	427	3,12	3,08	
	MEA03.03 (2)	415	3,03		
	MEA03.03 (3)	428	3,12		
	MEA03.03 (4)	410	2,99		
	MEA03.03 (5)	430	3,14		
MEA03.04	MEA03.04 (1)	423	3,09	3,14	
	MEA03.04 (2)	425	3,10		
	MEA03.04 (3)	433	3,16		

Subdomain MEA03	Question	Respond	Average	Sub Process	Avg. Provess
	MEA03.04 (4)	436	3,18		
	MEA03.04 (5)	435	3,18		
	MEA03.04 (6)	429	3,13		

According to the calculation process for the capability and maturity level of MEA03, as explained in the formula above and Table 7, the resulting score of 3.13 falls within level 3 (with a scale of 2.51-3.50), indicating that the domain is "Defined" (where LLDIKTI-defined standards provide guidance across all universities). As a result, each university can control the submission process carried out by their respective proposing lecturers, and the proposing lecturers can also view the status of their submissions, from the determined requirements to the desired targets. Regarding the IT maturity level score of the SIKITO governance framework in LLDIKTI Region II, the current score for domains APO07 and BAI08 is at level 2, while MEA03 is at level 3. Furthermore, based on the expected score of 5, which is determined from the gap score of 2 for domains APO07 and BAI08, and 1 for domain MEA03, as shown in Figure 14.

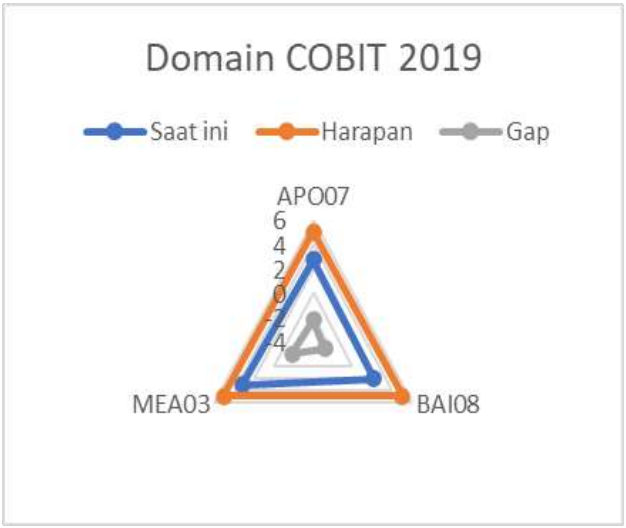

Fig. 14. Maturity level in the objective domain of the process

Figure 14 illustrates the scores for each domain, with the MEA03 domain having the highest current score of 3.13 and a gap score of 1.87. This suggests that the objective of SIKITO to control the promotion process has not been fully realized, as there are still gaps between the information provided and the intended targets. Moreover, the APO07 domain has a current score of 2.74 with a gap score of 2.26, indicating that the management structure provided by SIKITO has yet to be fully implemented in compliance with applicable regulations, such as granting access to university leaders and credit point evaluation teams from each university.

Lastly, the BAI08 domain has the lowest current score of 2.16 and the highest gap score of 2.84, suggesting that IT developers have yet to fully address the challenges encountered during the implementation of SIKITO, such as business processes and constraints. These scores do not meet the expected target levels. The results of measuring the IT maturity level scores, along with their gap scores and target level expectations, are presented in Table 8.

Table 8. Gap Domain Analysis

Domain Process	Current Condition	Expectation (Target)	GAP
APO07	2,74	5	2,26
BAI08	2,16	5	2,84
MEA03	3,13	5	1,87

- **Rating Process**

After assessing the maturity level of the three domains in the IT service of SIKITO at LLDIKTI II, the next step is to provide a rating process based on the following calculations and provisions.

$$Rating\ process = \frac{Capability\ level\ achievement}{bMaximum\ score}$$

$$= \frac{APO07 + BAI08 + MEA03}{3}$$

$$= \frac{2{,}74 + 2{,}16 + 3{,}13}{3} = 2{,}67$$

After conducting the rating process mentioned above, it has been determined that the current maturity level of SIKITO in LLDIKTI II is 2.67, which falls short of the expected value of 5, resulting in a gap score of -2.33. Results ilustration as shown in Fig. 15.

Fig. 15. IT maturity level of SIKITO in LLDIKTI II

The results of the IT maturity level measurement for SIKITO at LLDIKTI Region II are displayed in Figure 15, which indicates that the current level is at 2, managed process. Nevertheless, the expected value and gap score suggest that there is still a need for repeated efforts to improve SIKITO, as there are deficiencies and ineffectiveness in the promotion process for academic positions of lecturers (JJA).

3.5. Recomendation

To optimize the achieved level and reach the expected target level, recommendations have been provided for each process. The proposed recommendations are based on fulfilling base practices and work products to achieve capability levels ranging from 1 to 5. The recommendations are a combination of the following aspects:

- Evaluate the effectiveness of applying SIKITO service in proposing academic position promotion (Jenjang Jabatan Akademik/JJA) for lecturers.
- Continuously improve and innovate to enhance governance of the service regularly towards better-integrated processes and performance.
- Enhance the performance of SIKITO management, starting with the IT development program by the development team, HR support system both internally and externally, and other service users.
- Update regulations, policy directions, and guidelines related to the structured and detailed academic position promotion (Jenjang Jabatan Akademik/JJA) proposal process in each field and process.

4. Conclusion

The result's assessment of the IT governance maturity level of SIKITO at LLDIKTI II shows that the current capability level of various processes was not as the target level. There is a gap of 2-3 levels in the capability levels of APO07, BAI08, and MEA03 processes. The lack of detailed guidelines for IT organization and functions, as well as structured tasks for each IT user, hinders the improvement of IT development in line with LLDIKTI II's vision and mission. Moreover, some challenges still exist in the business processes and performance of SIKITO, requiring further improvement by the IT development team. Effective monitoring of performance and compliance in the SIKITO process is also essential for achieving the desired target level for the MEA03 process. Thus, implementing the proposed recommendations and continuously improving and innovating governance can lead to more effective IT development and ultimately improve the overall IT governance maturity level of SIKITO at LLDIKTI II.

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Declarations

Author contribution. conceptualization, IFW and MIH; methodology, IFW, MIH, and MA; software, IFW and MA; validation, MIH, YNK, and WC; formal analysis, IFW; investigation, IFW; resources, IFW; data curation, IFW; writing—original draft preparation, IFW; writing—review and editing, IFW and UE; visualization, IFW and UE; supervision, MIH; project administration, IFW.

Conflict of interest. The authors declare no conflict of interest.

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