

Improving Information Technology Management Capabilities of Institutional Level Financial Application Systems (SAKTI) Using the COBIT 5 Framework

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Abstract

The purpose of this research was to measure the performance level of the financial application system "SAKTI" at UIN Mahmud Yunus Batusangkar. The evaluation was carried out using the COBIT 5 framework and focused on the DSS domain, including DSS01, DSS02, DSS03, DSS04, DSS05, and DSS06. The data was collected through questionnaires distributed to 150 employees of UIN Mahmud Yunus as respondents. The results showed that UIN Mahmud Yunus has an IT governance capability level in the established process. This was indicated by the capability index value of 3,83, where the results in the DSS01 process domain were 3.91, DSS02 was 3.91, DSS03 was 3.71, DSS04 was 3.78, DSS05 was 3.72, and DSS06 was 3.95. The lowest index was the DSS03 subdomain, which was caused by the SAKTI application, for which it was not fully able to provide assistance in identification. The highest value was the DSS06 subdomain due to the IT governance process that aimed to ensure that business processes in UIN Mahmud Yunus operate effectively, efficiently, and in accordance with established regulations and policies. UIN Mahmud Yunus Batusangkar had done and was able to implement the defined process, or was quite capable of achieving the objectives of the process. Furthermore, recommendations were given that were useful for improving the performance of the SAKTI Application. This analysis was expected to enable UIN Mahmud Yunus Batusangkar to implement the necessary improvements to improve the efficiency, effectiveness, and security of the SAKTI application in accordance with COBIT 5 standards.

INTRODUCTION

The development of information technology has become a key driver in various sectors globally, including the education sector. In Indonesia, this advancement is reflected in the increasing sophistication of public education

management systems. As part of this transformation, higher education institutions are expected to innovate by integrating technology into institutional governance.

Education is a fundamental aspect in society, and public education in Indonesia is

more organized and sophisticated, allowing Indonesian society to further develop existing knowledge. Higher education is a source of innovation and solutions for the development of a country in line with the development of the times. According to the UNESCO Declaration (Ludeman, 1998), the important vision and mission of higher education is to contribute to sustainable development and the development of society.

One of the challenges faced by higher education institutions is developing a system that can integrate information needs and plan the optimal use of institutional resources (Amelia, 2022). A study conducted by Destriani & Putra, (2023) shows that strategic governance and planning activities carried out related to information system resources in an institution can provide several positive benefits to the institution. Further studies also showed that the positive benefits of strategic governance of information systems are influenced by several factors, one of which is the alignment between planning aspects and ongoing business processes in the institution (Ismail & Sasmito Jati Utama, 2022). The demand for good governance is the organization and regulation of the state that is in line with the progress of knowledge due to the influence of globalization. Therefore, the Indonesian government is trying its best to produce so many new legal regulations and government implementing organizations.

One form of regulation in state administration is regulation regarding the management process of state finances in accordance with regulations and Law Number 17 of 2003 concerning state finances. Regulations contain all mechanisms related to everything that has assets sourced from state revenues. To improve efforts to support the implementation of financial accountability, the Indonesian Government, together with the Ministry of Finance utilize the development of information technology by implementing the concept of the Integrated Financial Management Information System. This concept is useful for making the use of integrated information into one system to reduce problems in the accounting process. The plan to optimize this integrated system aims to facilitate the planning, execution, and supervision of each budget that plays a role in the process of reporting income and expenditure of budget funds.

Related to this issue, the Directorate General of Treasury innovated to create an application container by simplifying the very large number of systems in each work unit into one application in one database, namely the Agency-Level Financial Application System (SAKTI). In Article 1 of the Minister of Finance Regulation No. PMK-159 / PMK.05 / 2018, it is defined as an application to support the budget and treasury system in government agencies. This system is supported by the main features, including used by all Ministry or Institution work units, accompanied by data security and a simple system concept design. After the existence of SAKTI, UIN Mahmud Yunus uses SAKTI from financial planning to financial reporting.

Information Technology governance provides a variety of tools that can be used to better measure and manage a company's operational activities. COBIT 5 provides a process model that is commonly used in Information Technology activities. This model includes five interrelated process domains, namely EDM (Evaluate, Direct, and Monitor) which consists of five (5) Information Technology processes; APO (Align, Plan, and Organize) which consists of thirteen (13) Information Technology processes; BAI (Build, Acquire, and Implement) which consists of ten (10) Information Technology processes; DSS (Deliver, Serve, and Support) which consists of six (6) Information Technology processes; and MEA (Monitor, Evaluate and Assess), Each Information Technology technique has a specific control objective (Tinus & Setiawan, 2022).

As for the audit research of information systems that support Information Technology governance, such as Talab & Flayyih (2023) researched banks in Iraq, where this research was conducted to provide an Information Technology governance system that complies with the COBIT 5 standard, so that it can provide solutions for the implementation of Information Technology governance related to financial performance. According to Moonda & Norita (2020), the Information Technology Governance Audit of PT Jamkrida, Central Java Province, found that most operations in the domain had adopted Information Technology procedures and met their objectives using the COBIT 5 Framework. Investigations were conducted by Bahari et al., (2018) and Bahari & Ahsin (2023)

using COBIT 4.1, where the identified Information Technology Processes showed that the Information Technology activities in the hospital supported the achievement of its strategies and objectives well.

However, no previous study has specifically evaluated the governance of the SAKTI application at UIN Mahmud Yunus Batusangkar using the COBIT 5 framework. This reveals an important research gap, as UIN Batusangkar is a newly upgraded institution with expanding administrative and financial complexity.

UIN Mahmud Yunus Batusangkar is one of the universities located in Tanah Datar Regency, precisely in Batusangkar (previously named IAIN Batusangkar and STAIN Mahmud Yunus Batusangkar). Based on Presidential Decree No. 147 of 2015 and became the State Islamic Institute (IAIN) Batusangkar on December 23, 2015. State Islamic University (UIN) Mahmud Yunus Batusangkar was inaugurated on June 8, 2022, in accordance with Presidential Decree No. 84 of 2022. UIN Batusangkar has five faculties, consisting of 11 Tarbiyah and Teacher Training departments, 3 Sharia departments, 7 Islamic Economics and Business departments, 7 Ushuluddin, Adab, and Da'wah departments, and 6 postgraduate programs. As the number of programs and students at the university increases, the management needs to balance management patterns with service quality. In this case, optimal information system governance must be implemented so that academics and other users can work well.

The extent to which the information system has been operating well and performing well, as well as the individuals involved in it, is an indicator of the success of the implementation of information system governance at UIN Batusangkar. SAKTI is a financial application system used by all government agencies in Indonesia, including UIN Mahmud Yunus Batusangkar. This system has an important role in the financial management of government agencies, so it needs to be managed properly. So, from the background of this study, there is a motivation to conduct related research evaluating the implementation of SAKTI using the COBIT 5 framework is essential because COBIT 5 offers a comprehensive, process-based approach that aligns IT governance with

institutional goals. The SAKTI system, being a national financial application, requires structured evaluation to ensure optimal performance, accountability, and alignment with government regulations that can help the University in evaluating and assessing the implementation and development of the SAKTI application information system governance at UIN Mahmud Yunus Batusangkar.

Therefore, the novelty of this research lies in its focus on evaluating the SAKTI system at UIN Mahmud Yunus Batusangkar using the COBIT 5 framework, which to date has not been applied in this specific institutional and regional context. This study provides new insights into how national financial systems operate within the governance structure of Islamic higher education institutions.

Based on the above context and identified research gap, this study aims to analyze and evaluate the implementation of SAKTI governance at UIN Mahmud Yunus Batusangkar using the COBIT 5 framework. The research seeks to answer: to what extent is the SAKTI system implemented effectively, and what areas require improvement in accordance with COBIT 5 standards.

METHOD

Research Design

The quantitative approach was chosen because it enables the researchers to objectively measure perceptions related to the implementation of SAKTI across a large number of users. A case study design was used to obtain an in-depth understanding of how the SAKTI system is applied specifically at UIN Mahmud Yunus Batusangkar as a single, bounded institution. This combination allows for both generalization and contextual interpretation of findings. This study was Quantitative, a case study approach. It was done by combining the results of observations, literature reviews, and document studies of the company's business objectives. The research data was primary. The primary data is data obtained or collected directly in the field by researchers from the person concerned, namely by distributing questionnaires to respondents. Respondents in this study were staff who had a direct relationship with the use of the SAKTI financial

application, namely, several staff at UIN Batusangkar.

Research Location and Time

The location of the research was at the State Islamic University of Mahmud Yunus Batusangkar. The location was chosen by the researcher as the object of the research because this institution is one of those that contributed to and used the SAKTI application. The research was conducted for approximately 2 months, namely from November to December.

Research Population and Sample

According to Sugiyono (2018), population is a generalization area in which some objects/subjects have different qualities and characteristics that are selected by researchers to be studied, and then conclusions are drawn. The population in this study was all staff who had a direct relationship with the use of the SAKTI financial application at UIN Mahmud Yunus Batusangkar, consisting of 150 staff. The sampling technique used was purposive sampling, where the informants used as samples were employees of the finance and planning sub-section, general section, faculty, and postgraduate sections at UIN Mahmud Yunus Batusangkar. The samples obtained in this study were 33 samples, which came from several respondents who had filled out the questionnaire.

Data Collection Technique

Data collection was carried out by distributing questionnaires guided by COBIT 5. This questionnaire was created using the DSS domain because this study wanted to see whether the application performance was running effectively and efficiently to help universities improve the decision-making process. This study used a questionnaire from research (Santiago et al., 2021). The questionnaire was created with an ordinal measurement model using a Likert scale. The ordinal measure given contains levels to measure objects from the lowest to the highest level. The measure given is only for ordering (ranking) and does not provide an absolute value of an object (1 = Strongly Disagree, 2 = Disagree, 3 = Undecided, 4 = Agree, 5 = Strongly Agree).

To ensure the quality of the questionnaire instrument, a content validity test was conducted

by consulting with experts in information system governance and COBIT 5. Their feedback was used to revise several indicators to ensure their alignment with the DSS sub-domains. Reliability testing was carried out using Cronbach's Alpha method, where the score exceeded the minimum threshold of 0.7, indicating that the questionnaire items were internally consistent and reliable for measuring the intended constructs.

Data Analysis Methods

The DSS (Deliver, Service, and Support) domain in COBIT 5 includes six sub-domains, each with process indicators that reflect the maturity level of IT governance. In this study, Level 3 (Established Process) was used as a benchmark, characterized by well-defined, documented, and communicated procedures consistently followed across the institution. For example, DSS01 evaluates the extent to which operational procedures are documented and followed; DSS02 measures the consistency of service request handling; and DSS06 assesses the alignment of business process controls with institutional objectives. These indicators were translated into questionnaire items adapted from Santiago et al. (2021), ensuring contextual relevance.

In this study, the data were analyzed using the ordinal method. This measurement method model is used to create a questionnaire with a Likert scale. Ordinal is a measure consisting of numbers that indicate the level of each number given, and its nominal ranks objects from the lowest to the highest level. Furthermore, the absolute value (Capability Model) and ranking value are obtained through index calculations using the following formula:

$$\text{Index} = \frac{\sum (\text{DSS01.01} + \text{DSS01.02} + \text{DSS01.03} + \dots)}{\sum (\text{Questionnaire Questions})}$$

Where:

Σ total score = number of answers per domain

Σ respondent = number of questions

ISACA (2012) capability level assessment is divided into several levels. Those levels are:

- Level 0 - Incomplete Process, the process has not been implemented or has failed to achieve its objectives. This means that there is no formal control or activity established for the process.

- Level 1 - Performed Process, the process exists and is performed, but is performed in an ad-hoc, undocumented, and inconsistent manner. Basic controls may exist, but are not well defined or effectively implemented.

- Level 2 - Managed Process, i.e. Work products are now well defined, organized, and maintained, and the procedures mentioned earlier have been integrated into management (planned, monitored, and adjusted).

- Level 3 - Established Process, the process for the purpose of organizational efficiency, processes are communicated and documented; in other words, everyone in the organization follows the same protocol when executing a particular process within it.

- Level 4 - Predictable Process, the process to ensure that the processes are performing the intended process correctly from the start, they are tracked, measured, and predicted to produce results.

- Level 5 - Optimising Process, the continually updated process to help them meet current and future business objectives.

RESULT AND DISCUSSION

Results

DSS Domain Distribution Results Acquisition

The following are the results of the questionnaire distributed to respondents using the DSS domain, including using a rounded scale to achieve the level of maturity and harmonization of IT governance available at UIN Mahmud Yunus Batusangkar, and through this DSS domain, the author can provide recommendations for improvement. To calculate the level of maturity after the questionnaire was distributed and the questionnaire was completed by 33 respondents, the results were entered into the distribution result table to make it easier to calculate the maturity index.

Calculating current maturity is done by dividing the total number of respondents' answers by the number of respondents to produce the current maturity and maturity level of each question item. From the calculation results of the maturity value analysis on the 6 DSS domains, the achievement of the maturity level of the SAKTI application is obtained based on the capability model recapitulation Table 1.

Table 1. Recapitulation of Capability Models

	DSS Sub Domains	Maturity Index	Total Index	Explanation
DSS01 (Managing Operations)	DSS01.01 (Performing Operational Procedures)	3.82	3.91	<i>Established Process</i>
	DSS01.02 (Managing outsourced IT services)	4.21		
	DSS01.03 (Monitoring IT infrastructure)	3.85		
	DSS01.04 (Managing the environment)	3.91		
	DSS01.05 (Managing facilities)	3.76		
DSS02 (Managing Service Requests and Incidents)	DSS02.01 (Defining incidents and service requests classification scheme)	3.94	3.91	<i>Established Process</i>
	DSS02.02 (Recording, classifying, and prioritizing requests and incidents)	3.79		
	DSS02.03	4.00		

	(Verifying, approving, and fulfilling service Request)			
DSS03	DSS03.01	3.73	3.71	<i>Established Process</i>
(Managing problems)	(Identifying and classifying problems)			
	DSS03.02	4.12		
	(Investigating and diagnosing problems)			
	DSS03.03	3.27		
	(Disclosing known errors)			
DSS04	DSS04.01	3.85	3.78	<i>Established Process</i>
(Managing sustainability)	(Determining business continuity policy, objectives and scope)			
	DSS04.02	3.73		
	(Maintaining sustainability strategy)			
	DSS04.03	3.94		
	(Developing and implementing business continuity responses)			
	DSS04.04	3.61		
	(Training, testing and reviewing BCP)			
DSS05	DSS05.01	4.24	3.72	<i>Established Process</i>
(Managing cost process control)	(Protection against malware)			
	DSS05.02	3.00		
	(Managing Network and Connectivity Security)			
	DSS05.03	3.61		
	(Managing endpoint security)			
	DSS05.04	4.03		
	(Managing user identity and access)			
DSS06	DSS06.01	4.21	3.95	<i>Established Process</i>
(Managing business process control)	(Aligning control activities embedded in business processes with enterprise objectives)			
	DSS06.02	4.03		
	(Controlling information processing)			
	DSS06.03	3.61		
	(Manage roles, responsibilities, access privileges and authority levels)			
Amount			22.98	
Assess the cabability level			3.83	<i>Established Process</i>

It can be seen in the table that the level of maturity achieved by SAKTI is 3.83. In these results, it is included in the category of maturity level 3, namely the Established process. That here UIN Mahmud Yunus Batusangkar has carried out and can implement the defined process, or is quite able to achieve the objectives of the process.

Discussion

From Table 1. Recapitulation of the capability model, there are 6 DSS sub-

domains used in this study. In the DSS01 subdomain, there are 5 process domains used, where the results in DSS01.01 are 3.82, DSS01.02 is 4.21, DSS01.03 is 3.85, DSS01.04 is 3.91, DSS01.05 is 3.76; the total overall process index in the DSS01 domain is 3.91. In the DSS02 subdomain, there are 3 process domains used, where the results in DSS02.01 are 3.94, DSS02.02 is 3.79, and DSS02.03 is 4.00; the total overall process index in the DSS02 domain is 3.91.

In the DSS03 subdomain, there are 3 process domains used, where the results in DSS03.01 are 3.73, DSS03.02 is 4.12, and DSS03.03 is 3.27; the total overall process index in the DSS03 domain is 3.71. These findings are in line with Moonda & Norita (2020), who also found variability in domain maturity across IT governance audits using COBIT 5. Similarly, (Bahari et al., 2018) reported challenges in DSS03 in healthcare systems, which suggests that problem management remains a complex area even in different sectors. In the DSS04 subdomain, there are 4 process domains used, where the results in DSS04.01 are 3.85, DSS04.02 is 3.73, DSS04.03 is 3.94, and DSS04.04 is 3.61; the total overall process index in the DSS04 domain is 3.78. In the DSS05 subdomain, there are 4 process domains used, where the results in DSS05.01 are 4.24, DSS05.02 is 3.00, DSS05.03 is 3.61, DSS05.04 is 4.03; the total overall process index in the DSS05 domain is 3.72. In the DSS06 subdomain, there are 3 process domains used, where the results in DSS06.01 are 3.82, DSS06.02 is 4.03, and DSS06.03 is 3.61; the total overall process index in the DSS06 domain is 3.95.

After being added up and divided by the number of sub-domains, the capability level value of SAKTI is 3.83. The lowest index was found in DSS03, which pertains to problem management. This indicates that although the SAKTI system is generally effective, it faces challenges in systematically identifying and resolving IT-related issues. This may suggest a lack of proactive mechanisms or standard procedures for troubleshooting within the institution, which could lead to inefficiencies or recurring problems.

Implications and Limitations

The findings of this study provide practical insight for UIN Mahmud Yunus Batusangkar and similar institutions in managing their financial systems. Specifically, efforts should be directed

toward improving problem management protocols, reinforcing documentation procedures, and aligning IT controls with business processes. However, this study has limitations. It focuses solely on the DSS domain and uses a quantitative questionnaire-based assessment, which may not capture deeper qualitative issues in user experience or system design. Future research may benefit from a mixed-method approach and exploring other COBIT 5 domains, such as APO or MEA, for a more comprehensive evaluation.

Recommendation

From the results of the analysis and research findings, there are several recommendations. The recommendations are as follows:

1. UIN Mahmud Yunus Batusangkar must conduct monitoring and evaluation of the performance of the Sakti application periodically. So that later it can be used to find out the extent of the performance of the SAKTI application. If there are deficiencies or weaknesses, improvements and enhancements can be made to improve the performance of the SAKTI application.
2. UIN Mahmud Yunus Batusangkar should conduct periodic evaluations to achieve strategic plans. Periodic evaluations are needed to ensure that the Sakti application has achieved the goals and objectives set by the organization.
3. Regularly hold meetings or gatherings to discuss results, problems, and ways to improve the system or device.
4. Monitoring various matters and reminding users or operators about using equipment in accordance with data security requirements still needs to be done.

Governments and institutions should provide security training to people who use IT systems, emphasizing data confidentiality and being prepared for unexpected.

CONCLUSION

Based on the results obtained from the calculations above, it can be concluded that the State Islamic University of Mahmud Yunus Batusangkar has an established process IT governance capability level. This is indicated by the capability index value of 3.83, which is in the established process range. Overall, UIN Mahmud Yunus has implemented the IT governance processes needed to achieve its business goals. These processes have been well defined, documented, and have adequate controls.

Among the assessed subdomains, DSS03 (Managing Problems) showed the lowest maturity index, indicating that the institution needs to prioritize developing structured procedures for identifying, analyzing, and resolving system issues. This area should be the primary focus for improving the SAKTI application's capability level.

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It is expected that there will be additional or use of other domains from COBIT 5.0 to measure the level of IT governance maturity at UIN Mahmud Yunus Batusangkar in further research. In addition, alternative calculation approaches other than the Likert method can be used. In addition, it is expected to use frameworks other than COBIT 5.0 to measure the level of IT maturity at UIN Mahmud Yunus Batusangkar such as COSO, ITIL, and others. It is expected that UIN Mahmud Yunus can use the results of this study as a roadmap for development and modification in the implementation of SAKTI. This study is expected to improve written SOPs, reports, and discussions, all of which will contribute to better employee performance

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