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Implementation of Information Technology Governance Using the Cobit 5 Framework

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Abstract: In response to the increasing use of information technology, organizations must implement an information technology plan aligned with company goals. Likewise, in education, information technology is used for business purposes. This research aims to look at the implementation of information technology governance by utilizing the COBIT 5 framework and using qualitative research methods with the initial stages of using survey techniques to collect data by distributing questionnaires to information technology managers and key users in various businesses. This descriptive study found that the governance and application of information technology in schools was still at level 3 on a scale of 0 to 5. This indicated that institutional behavior had been adequately recorded and internalized. This study aims to contribute to research on the utilization of information technology governance, especially for educational institutions and information technology managers, as input material in the management of information technology resources in other institutions. These related issues are an essential consideration for parents or students when choosing a school with high IT facilities.

Keywords: Information; Technology; Governance; COBIT 5

INTRODUCTION

The importance of information technology in educational disciplines, particularly in teaching and learning, cannot be understated. Today, successful education necessitates reliance on curricula and teaching strategies and the improvement of computerized learning management systems that can be biasedly monitored via information technology(Cristina et al., 2019). (Khairiyati et al., 2020) Almost all operations, from the corporate sector to schools and educational institutions, rely on online systems, with devices or gadgets connected to an internet connection accessing the appropriate websites and social networking applications, as happened during the current outbreak. (Ozkan et al., 2020) Information technology management solutions are beneficial in assisting human labor. However, not all systems have been running properly and are capable of meeting the needs of agencies or companies; thus, an audit of information technology governance used by these agencies is required to measure how well the system's ability to run and the capabilities of the employees or employees who use it (Molk et al., 2021).

According to (Svata, 2019) Governance of Technology and Information Information technology governance is defined as the structure of relationships and processes that direct and manage the organization to achieve its goals by providing added value from the use of information technology while balancing risks compared to the results provided by information technology and its processes.(Murad et al., 2018; Raharjana et al., 2018) The board of directors and senior management are responsible for establishing information technology governance, according to (Carolino & Nunes, 2019). IT Governance is a component of enterprise management that includes executives, all organizational structure members, and procedures to guarantee that existing IT supports and assists in fulfilling organizational plans and goals.

According to (Rooswati & Legowo, 2018) IT Governance is a precise specification of decision-making and accountability for supporting corporate IT behavior. Thus, IT Governance is extremely valuable to businesses because it may aid in developing and improving organizational performance. (Harefa & Legowo, 2017) IT Governance is a critical component in properly implementing sound corporate Governance. IT Governance guarantees that the effectiveness and efficiency of increasing the Organization's business operations through IT-related structures are measured by the Organization's strategic goals (Aprilia et al., 2019). IT Governance includes best practices and procedures for planning, managing, executing, and monitoring performance to ensure that IT effectively supports organizational goals (Yasin et al., 2020).

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COBIT Purpose Control for Information and Related Technologies is designed for business leaders, IT managers, and auditors (Putri et al., 2018). According to (Fuada, 2019) COBIT is a tool for analyzing whether company goals are aligned with organizational goals and is used to assess organizational performance. COBIT is also an IT Governance framework designed to secure the confidentiality, integrity, and availability of sensitive and crucial data and information for management, IT service people, control departments, audit functions, and, most importantly, business process owners. As a result, IT Governance is still crucial when evaluating an organization or firm .

LITERATURE REVIEW

Several studies on IT governance implementation in Indonesia have already been completed, for example, research on IT governance implementation at the National University (UNAS) employed COBIT to examine IT maturity level (Suryawan & Veronica, 2018). The investigation was conducted using two domains: Delivery Support and Monitoring and Evaluating. Furthermore, various studies at non-educational institutions have been done to audit the implementation of IT Governance in Sleman Regency (Widjajanto et al., 2018) using the COBIT Framework to demonstrate the implementation of IT Governance in Sleman Regency is not ideal. The organization that was carried out needed help to make IT Governance effective. Furthermore, system security and security are still vulnerable because there is no internal or external oversight mechanism. Furthermore, according to (Yudistiro et al., 2020) 's research on IT Governance at PT Timah (Persero) Tbk., there is strategic alignment between company strategies to increase team member productivity by conducting training by COBIT's goals for optimizing work to be effective and efficient. (Tridoyo & Wijaya, 2018) This study also looks at four domains in the COBIT framework 4.1: Plan and Organize, Acquire and Implement, Deliver and Support, and Monitor and Evaluate. COBIT assists in identifying areas of the business that require improvement.

METHOD

This research was carried out at Madrasah Aliyah Negeri 1 Medan, data was collected by conducting interviews with IT Administrators as well as the Supervision of the Madrasah Head, and data were analyzed in four steps as follows:

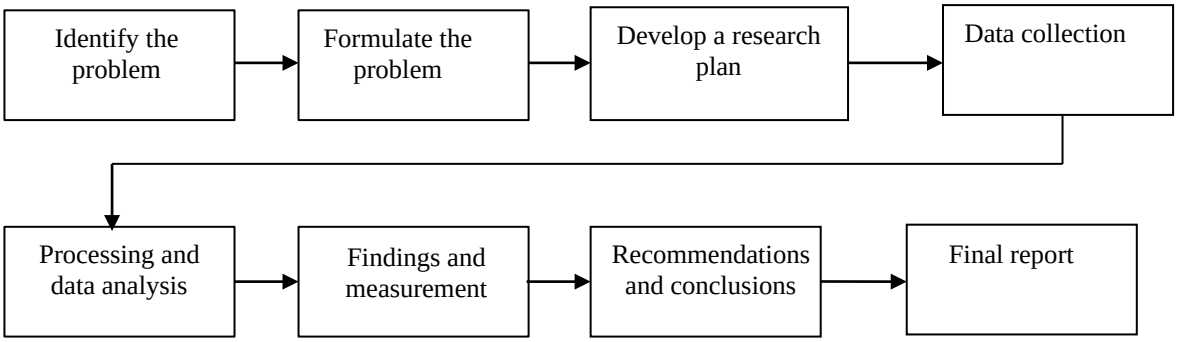

Figure 1. Research Stages

The first steps of research were carried out by first identifying the problem, which was accomplished by recognizing what difficulties existed at MAN 1 Medan to be examined. The difficulties that will be used for the study must be generally understood as to whether these problems can be used as research material. The problem was identified through direct conversations with the supervisor or administrator of IT MAN 1 Medan. The problem identification method then produces a formulation based on identifying existing problems for further investigation and problem boundaries or the scope of problem-solving. Next, create a study plan containing the research objectives and advantages, the types of data required, and data management strategies. Data collection procedures appropriate for the research approach, notably qualitative research methodologies.

Qualitative research entails gathering information through interviews. Data management and analysis were derived from observations and interviews conducted by the existing IT governance framework at COBIT 5. The benefits of G Suite for Education include data management and analysis results, including the simplicity of cooperating in terms of creating, altering, and sharing data in real time. Everyone may access the same website, and any modifications are automatically saved in the cloud. Second, it is compatible with any device. You may easily access this service from a laptop, tablet, or mobile phone because it has been designed to work with all devices, and, of course, it can be accessed at any time and from any location. Finally, customers do not need to pay for G Suite for Education because it is a free service.

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The gap and difference between Man 1 Medan's governance framework and Google Workspace for Education. In this instance, we used one of the tools, Google Forms. When a teacher administers a test and uses Google Gorm as a testing medium, a student may commit fraud if the system's integrity is not monitored. This will be built later to strengthen the integrity of the test system, which is done with Google Forms. So, if Man 1 takes the Odd Semester and Even Semester Exams, they do not use the Google Form exam system but rather an application called Exambro. This will later become a standard for teachers when comparing student results between test scores obtained through the Google form system and test scores obtained through the Exambro application system.

RESULT

In this section, the vision and mission used to achieve organizational goals, such as development activities and IT governance maturity level measurement at MAN 1 Medan, are qualitatively examined. Data was collected from the field through interviews and observations and then processed and altered by the standard COBIT 5 methodology. The analysis stage was carried out to establish the current maturity level of IT governance. The COBIT 5 domain is used to assess the maturity level of IT governance by organizational mapping goals owned by MAN 1 MEDAN, namely Enterprise Goals and IT-Related Goals. Mapping was carried out beginning with mapping the Education Office's organizational goals with COBIT 5 Enterprise Goals, as shown in Table 1:

Table 1. Enterprise Goals

Figure 4—COBIT 5 Enterprise Goals				
BSC Dimension	**Enterprise Goal**	**Relation to Governance Objectives**		
		Benefits Realisation	**Risk Optimisation**	**Resource Optimisation**
Financial	1. Stakeholder value of business investments	P		S
	2. Portfolio of competitive products and services	P	P	S
	3. Managed business risk (safeguarding of assets		P	S
	4. Compliance with external laws and regulations		P	
	5. Financial transparency	P	S	S
Customer	6. Customer-oriented service culture	P		S
	7. Business service continuity and availability		P	
	8. Agile responses to a changing business environment	P		S
	9. Information-based strategic decision making	P	P	P
	10. Optimisation of service delivery costs	P		P
Internal	11. Optimisation of business process functionality	P		P
	12. Optimisation of business process costs	P		P
	13. Managed business change programmes	P	P	S
	14. Operational and staff productivity	P		P
	15. Compliance with internal policies		P	
Learning and Growth	16. Skilled and motivated people	S	P	P
	17. Product and business innovation culture	P		

Evidence of the results of mapping organizational goals is taken from the vision and mission of MAN 1 Medan, then adjusted to COBIT 5 enterprise goals with the results of mapping organizational goals into COBIT 5 enterprise goals summarized in Table 2.

Table 2. Summary Of Mapping Organizational Goals Into Enterprise Goals

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MAN 1Medan	NO	Enterprise Goals	BSC Dimension	Realization	Optimisation
Pious, Knowledgeable, Populist And Care About Health As Well Environment	4	Compliance with external laws and regulations	Financial	Primary	
	8	Agile responses to a changing business environment	Customer		Primary
	14	Operational and staff productivity	Internal	Primary	
	1	Skilled and motivated people	Learning and growth		Primary

Table 3. Achievement Of Capability Levels For Each COBIT Process

Process Name	To Be Assessed	Process Capability Level					
		0	1	2	3	4	5
EDM01	2	F	F	L	N	N	N
EDM03	2	F	F	L	N	N	N
EDM05	1	F	F	P	N	N	N
APO02	3	F	F	F	L	N	N
APO11	3	F	F	F	L	N	N
APO13	1	F	F	P	N	N	N
BAI04	4	F	F	F	F	L	N
BAI07	2	F	F	L	N	N	N
DSS02	2	F	F	L	N	N	N
MEA01	2	F	F	L	N	N	N

The EDM01 process (Ensure Governance Framework Setting and Maintenance) ensures that the level 2 Managed Process is reached in terms of regulation and maintenance of the governance framework. Each team member staff, teachers, and students knows the rationale behind every action they do. Each agreed-upon activity's implementation is chosen. However, MAN 1 does not yet have a structure in place for yearly evaluations. So that the Internal Oversight Unit (SPI) can supervise and manage each process while just keeping an eye on its performance. The Eagerly Achieved (L) process has Level 2 at the capability level.

The EDM03 (Ensure Risk Optimization) process has achieved level 1, or the Performed Process at the Fully Achieved capability level, which considers the risks associated with using current systems in MAN 1. Media and security that may be used through the Google account settings for each user, including staff, teachers, and students, have been provided to manage the dangers that could arise in the learning management system at MAN 1 Medan. The Managed Process has also advanced to the Largely Achieved competency level at level 2.

Stakeholder transparency is ensured via the EDM05 (Ensure Stakeholder Transparency) procedure, which has attained level 1. Implementing system transparency and compliance with the on going activity agreement have allowed the Performed Process to operate at the achievable capability level. The process has been implemented as planned, monitored, and changed at level 2 Managed Process if the desired results have yet to be obtained. The procedure is still at the level of Partially Achieved, nevertheless.

The APO02 procedure (Manage Strategy), which is concerned with managing the system's strategy, is employed. MAN 1 Medan has achieved level 3, or Established Process, with a Largely Achieved capability level, in this process.

DISCUSSIONS

In this section, The APO11 (Manage Quality) process takes into account the quality management of the system used. Based on the mapping of the learning management system used by MAN 1 Medan, this process has

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reached level 3, namely the Established Process with a Largely Achieved capability level. This is evidenced by the observations made at MAN 1 Medan, where established procedures and results have implemented quality management, and impacts have been seen for madrasas.

The APO13 (Manage Security) process focuses on implementing system security management. The learning management system at MAN 1 Medan has considered the risks that may arise from using the application. However, madrasas cannot ensure whether this security setting has been used optimally by each staff, teacher, and student, because it depends on each - each account holder, therefore, can be mapped that this process has reached level 1 Performed Process with the Fully Achieved capability level because the ongoing security management process has been implemented. At level 2, Managed Process has reached the Partially Achieved capability level.

Process BAI04 Manage Availability and Capacity, namely managing the availability and capacity of the system. Based on the results of interviews with IT Administrator MAN 1 Medan, the system's ability is unlimited. It can be accessed anytime and anywhere as long as there is an internet network connection. Therefore, it can be mapped that this process has reached level 4, namely the Predictable Process at the Largely Achieved capability level.

The BAI07 process (Manage change acceptance and transitioning) manages and accepts system updates and their transition to a better version. In this process, the MAN 1 Medan learning management system has reached level 2: Managed Process with a Largely Achieved capability level.

The DSS02 (Manage Service Request and Incidents) process manages service requests and incidents. In this process, the learning management system at MAN 1 Medan. In this process, the system at MAN 1 Medan has reached level 2 Managed Process, where the capability level reaches the Largely Achieved level.

The MEA01 process is monitoring, evaluating, and assessing performance and suitability. Based on the results of observations at MAN 1 Medan, the implementation of performance as the development of a working version of the system from the framework provided has yet to be maximized. Still, it has been going well in terms of implementation according to planned results. Therefore, this process reaches level 2 Managed Process with a Largely Achieved capability level.

The interview results with Mr. Asrul Yafizham S.S., S.Pd., Counts, C. Ht. States that the strategy implemented by the learning management system at MAN 1 Medan follows the management of learning strategies held by madrasas, with a relatively high level of effectiveness, namely 90%. Therefore, it must be further improved when viewed from the assessment using COBIT as input for the application of IT in MAN 1 MEDAN schools.

CONCLUSION

From the results of an assessment based on COBIT as an evaluation material, the capability of implementing IT at Madrasah Aliyah Negeri 1 Medan still needs to be improved. This is proven by the fact that it is often found that the implementation of each process and its stages in each of the problems encountered has remained the same. The results of this study focus on choosing a more secure, private, efficient, and optimal system integration. Therefore, it is hoped that the results of this research can be a way to see to what extent the level of IT implementation that has been implemented at Madrasah Aliyah Negeri 1 Medan has been achieved and steps to improve the performance of staff and teachers as well as the expertise of students and students in using the system. and IT governance for the future, so that it can carry out the Main FUTURES which form the basis of the work reference for all devices l Madrasah Aliyah Negeri 1 Medan for the continuity of a learning management system that has optimal integrity and is aligned with the vision and mission of the madrasah.

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