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E-LEARNING GOVERNANCE USING COBIT 5 FRAMEWORK WITH EDM DOMAIN (EVALUATE, DIRECT AND MONITOR)

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ABSTRACT. *Technology is now not only used in the realm of business but also in the world of education. Coupled with the state of the world which is being hit by COVID-19, many educational institutions use technology to support their teaching and learning activities and e-learning is the most widely used. The intensity of the use of e-learning is increasing, so good governance is needed so that the system can run well & help support existing activities. The object of this research is e-learning at the Kwik Kian Gie Institute of Business and Informatics. The aim is to determine the maturity level of the system and find out how the performance of the system is. Data collection techniques used were interviews and questionnaires. The data analysis technique used is a quantitative technique. The data measurement technique used is COBIT 5 Capability Level and Gap Analysis. The result of the Capability Level calculation is 4.16. This shows that the overall maturity level of the existing system has reached level 4, namely Predictable Process. The results of the Gap Analysis are +0.21 for EDM01, +0.29 for EDM2, –0.14 for EDM03, +0.36 for EDM04 and +0.33 for EDM5. Overall the existing e-learning system has operated within clear boundaries & succeeded in achieving system goals and objectives. Most of the performance of this system has been running according to expectations.*

Keyword: IT Governance, E-Learning, COBIT 5, EDM, Capability Level, Gap Analysis.

1. INTRODUCTION

Advances in mobility and technology have encouraged everyone to use technology, regardless of their profession and field, technology is needed to support the activities of many parties. Technology is an important factor that cannot be ignored in carrying out various jobs and activities. Technology and information systems are believed to have the ability to increase the efficiency and effectiveness of an organization's business processes in achieving its goals. The use of technology and information systems is not only limited to the business world, but also in the world of education.

Combined with the world situation which is currently being hit by a global scale pandemic, COVID-19, which has been going on for more than 2 years, has led to an increase in the use of technology in the world of education. Even remote learning online has to be carried out in order to support government policies in suppressing the number of COVID-19 patients who are increasing every day. The use of e-learning is increasing at various levels of education starting from elementary school (elementary school) to lectures. E-learning or electronic learning itself is a learning concept that is carried out through electronic media networks so that teachers and students do not need to meet face to face in delivering material and completing assigned assignments.

E-learning itself actually existed and was used by the Kwik Kian Gie Institute of Business and Informatics before the arrival of COVID-19, but the intensity of its use has increased due to social distancing enforced by the government. This e-learning has also undergone several updates to adapt to the new learning concept. Thus, various teaching and learning activities rely on e-learning as the main medium.

However, the use of e-learning also has its own constraints. Constraints that are often experienced in the use of e-learning usually come from the technical part, starting from the device used, internet connection, and the state of the system used during learning activities. With the increasing intensity of the use of e-learning, evaluation, maintenance and management of a qualified system are needed so that e-learning can run well and can also support learning activities at the Kwik Kian Gie Institute of Business and Informatics.

IT Governance is very important in an organization because it can help align the vision and mission of an organization. IT Governance has many tools, and has various methods used, one of which is COBIT. COBIT stands for Control Objectives for Information and Related Technology. COBIT itself is a framework created by ISACA (Information Systems Audit and Control Association) for IT governance and management.

Overall, COBIT ensures the quality, control and reliability of information systems in an organization, which is also the most important aspect of any modern business. To find out that IT governance in an organization or company is running well or not, you can use a COBIT 5 framework. COBIT 5 has a domain that focuses on governance processes, namely the EDM (Evaluate, Direct, & Monitor) domain. This domain has the function of evaluating, directing and monitoring IT management as a whole. This EDM domain aims to ensure that the needs, conditions and choices of stakeholders have been evaluated and approved by the company's goals and direct it through prioritization and decision making, as well as monitoring performance and conformity with direction and goals.

This research is expected to provide an overview of the maturity level of the e-learning system at the Kwik Kian Gie Institute of Business and Informatics and how the system performs. Based on the background of the problem, the researcher identified the problem as follows:

1. What are the constraints experienced in using e-learning as a learning medium?
2. During a pandemic like today, what kind of e-learning system governance can support learning activities properly?
3. Governance assessment and evaluation in what domain can provide an overview of the performance of the e-learning system?
4. How far is the maturity level of the e-learning system at the Kwik Kian Gie Institute of Business and Informatics?
5. Is the performance of the existing e-learning system in line with expectations?

Based on the identification of the problems found, this research is limited by several things, namely:

1. Assessment and evaluation of Governance in what domains can provide an overview of the performance of the e-learning system?
2. How far is the maturity level of the e-learning system at the Kwik Kian Gie Institute of Business and Informatics?
3. Is the performance of the existing e-learning system in line with expectations?

2. RESEARCH METHODS

In conducting research, the data needed is primary data by conducting structured interviews and distributing questionnaires to ICT staff of the Kwik Kian Gie Institute of

Business and Informatics who are directly involved in handling the e-learning system regarding Governance, business processes, risk control, the resources needed in running e-learning selected based on the COBIT 5 RACI Diagram. In addition, the secondary data used in this study came from literature studies, journals and previous research related to the research topic.

The data analysis technique used is a quantitative technique. Quantitative research is a type of research that produces new findings that can be achieved (obtained) using statistical procedures or other means of a quantification (measurement). The measurement scale used in this questionnaire is the Likert Scale.

This scale is used to indicate the level of agreement and disagreement of respondents to a question/statement. The Likert scale used in the questionnaire uses a value of 1 to 5 with the provision that a value of 1 represents "Strongly Disagree / Strongly Disagree", a value of 2 represents "Disagree / Not True", a value of 3 represents "Doubtful / Adequate", a value of 4 represents “Agree / True” and a value of 5 represents “Strongly Agree / Very True”.

Gap analysis is carried out after the Capability Index is found. This analysis is carried out by comparing the values obtained with the expected values. The smaller the gap or gap that exists in this comparison, the better the quality of performance on the system being assessed. To find out this value, you must first know the expected value and the value obtained.

3. RESULTS AND DISCUSSION

In research focusing on the EDM Domain. Domain Evaluate, Direct and Monitor or commonly abbreviated as EDM is a domain that focuses on Governance. This EDM has a function to evaluate, direct and monitor IT management activities as a whole. EDM as a whole has 5 subdomains, namely:

Tabel 1 Domain EDM

Domain EDM		
Domain	**Subdomain**	**Aktivities**
EDM 01 *Ensure Governance Framework*	EDM01.01 *Evaluate The Governance System*	8
	EDM01.02 *Direct The Governance System*	6
	EDM01.03 *Monitor The Governance System*	6
EDM 02 *Ensure Benefits Delivery*	EDM02.01 *Evaluate Optimisation*	8
	EDM02.02 *Direct Optimisation*	7
	EDM02.03 *Monitor Optimisation*	5
EDM 03 *Ensure Risk Optimisation*	EDM03.01 *Evaluate Risk Management*	6
	EDM03.02 *Direct Risk Management*	6

	EDM03.03 *Monitor Risk Management*	4
EDM 04 *Ensure Resource Optimisation*	EDM04.01 *Evaluate Resource Management*	5
	EDM04.02 *Direct Resource Management*	5
	EDM04.03 *Monitor Resource Management*	3
EDM 05 *Ensure Stakeholder Transparency*	EDM05.01 *Evaluate Stakeholder Reporting Requirement*	3
	EDM05.02 *Direct Stakeholder Communication & Reporting*	4
	EDM05.03 *Monitor Stakeholder Communication*	3

The RACI diagram is an assignment of suggested levels of responsibility for process practice to various roles and structures. This diagram links process activities with organizational structure and/or individual roles within the company. The levels involved are as follows:

- **R – *Responsible***, refers to the person performing the task and ensuring that the activity is completed properly.
- **A – *Accountable***, refers to the person, group or entity that is ultimately responsible for the content of the process and the scope for completing tasks.
- **C – *Consulted***, refers to parties who can provide input or can be asked for opinions and suggestions in carrying out the completion of the tasks to be carried out. (2 (two) way communication).
- ***I – Informed*** refers to people who always follow the development of an activity (one-way communication).

The appropriate respondent based on the diagram is Mr. Rommi Alvian as Head of ICT Kwik Kian Gie Institute of Business and Informatics. In this RACI Diagram, Mr. Rommi occupies the Accountable, Consulted, and Informed levels. An interview was conducted with Mr. Rommi Alvian to find out the general description of the condition and mechanism of the e-learning system at the Kwik Kian Gie Institute of Business and Informatics.

In addition, questionnaires were also distributed to staff who directly handle the e-learning system, namely Ms. Rijki Umami as ICT Support, Mr. Hisyam as ICT Infrastructure and Mr. Ade as Programmer. Where these three staff occupy the Responsible and Consulted levels. The e-learning system in the Kwik Kian Gie Institute of Business and Informatics has been maintained for its infrastructure every 3 months.

In addition, the use of e-learning has also been monitored regularly. E-learning is now used as a hybrid learning where learning can be done remotely or online as well as offline. Because of this, it really helps students to be able to study and can re-read material because teaching and discussion materials will be recorded by the system besides that students don't have to come especially during a pandemic. Lecturers can also experience the benefits such

as being able to systematically prepare online classes. However, according to the source, in terms of the features implemented in the Kwik Kian Gie Institute of Business and Informatics e-learning, from a scale of 10 it only reaches a scale of 5.

In terms of data security and infrastructure, ICT itself has periodically backed up data, of which there are 2 backups, namely locally, in the form of a system, hard drive and in the cloud, on Google Cloud. In terms of infrastructure, there are also 2 back-ups that are carried out, namely data and system back-ups, and the other is the whole back-up where there are servers, systems and data. Not only the system and data are backed up, but the engine is also backed up.

Even in the division of tasks to handle the e-learning system, there is already a clear division of tasks assigned to different staff. The need for data access can be done by each party, it's just that each has different access rights where lecturers have higher access rights. The e-learning system used at the Kwik Kian Gie Institute of Business and Informatics is Moodle, where the level of access is tiered to the highest level, namely admin and that is ICT.

In terms of reporting to institutional management, it is usually done when there are constraints and requests from academics regarding e-learning performance. However, periodic reports regarding system performance have been carried out up to the level of the ICT Chair and this monitoring is carried out almost every day. Following are the results of calculations based on the formula that has been described with the number of respondents 3 (three).

Tabel 2. Indeks Questionere

Subdomain	Indeks Questionere	Total Index Questionere
EDM01.01	106	259
EDM01.02	77	
EDM01.03	76	
EDM02.01	107	251
EDM02.02	85	
EDM02.03	59	
EDM03.01	75	201
EDM03.02	78	
EDM03.03	48	
EDM04.01	64	170
EDM04.02	66	
EDM04.03	40	
EDM05.01	31	113
EDM05.02	45	
EDM05.03	37	

Tabel 3. Index Attributes

Domain	Level Index Kuesioner	Atribut Index
EDM 01	259	86,3
EDM 02	251	83,7
EDM 03	201	67
EDM 04	170	56,7
EDM 05	113	37,7

In COBIT 5 it is explained that there are six levels of System Maturity which are also called Capability Levels which can be briefly described as follows:

Tabel 4. Level Matury

Level Matury	Information
0 – *Incomplete Process*	The process failed, or has not been implemented properly
1 – *Performed Process*	Process implemented successfully
2 – *Managed Process*	Implemented processes can be managed
3 – *Establish Process*	The implemented process has been able to achieve the results of the process
4 – *Predictable Process*	The implemented process can now be operated within defined limits to achieve its process results
5 – *Optimising Process*	Processes operated can be improved and meet business objectives

These levels are processed and divided into 6 Index Scales as shown in Table 2.1. Then do the calculations to find the Capability Index. It is from this Capability Index that the Maturity Level of the System can be determined by comparing the results of the Capability Index with the Index Scale that has been made. The results obtained are as follows:

Domain	Capability Index	Level Maturity
EDM 01	4,32	5
EDM 02	4,18	4
EDM 03	4,19	4
EDM 04	4,36	5
EDM 05	3,77	4

The total EDM domain capability index obtained was 20.82 then divided by the number of domains tested, namely 5. The overall e-learning system capability index was 4.16, when compared with the Index Scale listed in Table 2.1, it occupies a maturity level of 4, namely , Predictable Process.

Gap Analysis or Gap Analysis is a tool that can be used to evaluate organizational performance. Literally "gap" identifies a difference (disparity) between one thing and another. This analysis is often used in the field of management and is one of the tools used to measure service quality. The results of this analysis are as follows:

Tabel 5 Gap Analysis

Domain	NDH	NDD	Gaps
EDM01	4,11	4,32	+0,21
EDM02	3,89	4,18	+0,29
EDM03	4,33	4,19	–0,14
EDM04	4	4,36	+0,36
EDM05	3,44	3,77	+0,33

Information:
NDH: Expected value
NDD: Obtained value

CONCLUSION

The EDM domain contained in COBIT5 is an area of Governance which has the function of evaluating, directing and monitoring IT management activities as a whole. This domain also has 5 sub-domains, namely EDM01 which focuses on regulation, maintenance and implementation of existing IT Governance frameworks in institutions so that existing systems can run properly, EDM 02 which focuses on optimizing IT services and assets according to the amount of cost so that they can be providing benefits for institutions, EDM03 which focuses on optimizing and managing existing IT risks within institutions so that IT risks do not exceed the tolerance threshold, EDM04 which focuses on optimizing IT resources to support institutional performance, and EDM05 which focuses on transparent communication with stakeholders stakeholders to ensure that IT goals and strategies are aligned with institutional strategies.

Based on the results of the research conducted, overall the maturity level of the e-learning system in the EDM domain has reached level 4, namely Predictable Process with a value of 4.16 which means that the e-learning system at the Kwik Institute of Business and Informatics Kian Gie can already be operated within clear limits in achieving system results or goals. While the level of maturity in each domain obtained is in the EDM01 domain it gets a value of 4.32, in EDM02 it gets a score of 4.18, EDM03 gets a score of 4.19, EDM04 4.36 and in EDM05 it gets a score of 3.77. Some of these domains have reached level 5 Optimizing Process, namely processes that are already in place and operating have met business objectives and can be improved further. The domains are EDM01 and EDM04. Meanwhile, EDM 02, EDM03, and EDM05 are at level 4 Predictable Process.

In addition, from the Gap Analysis conducted, there is only 1 (one) domain that has a gap or minus value, namely EDM03 with the value obtained is –0.14. Meanwhile, EDM01, EDM02, EDM04 and EDM05 have positive gap values, namely +0.21 for EDM01, +0.29 for EDM 02, +0.36 for EDM04 and +0.33 for EDM05. So it can be concluded that the overall performance of the e-learning system at the Kwik Kian Gie Institute of Business and Informatics has worked well and met expectations. Even though there is 1 domain that gets a minus value, this number is considered small, and can be increased again so that it can meet the expected value.

From the results of research conducted by the author, the ICT of the Kwik Kian Gie Institute of Business and Informatics is expected to be able to develop every process of governance of the existing e-learning system so that it becomes even better so that it can assist in achieving the goals of the Kwik Kian Gie Institute of Business and Informatics , especially in development on EDM03 which got a minus score in Gap Analysis.

For future authors, it is hoped that they can use other governance frameworks or can also compare the framework that the author uses with other governance frameworks so that they can provide even better recommendations which will certainly greatly assist the Kwik Kian Gie Institute of Business and Informatics in develop and improve governance of existing e-learning systems.

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