

Audit Information System Using Framework COBIT 4.1 (With Domain Monitor and Evaluate) At Samudera Indonesia Company

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Abstract. Samudera Indonesia is a company engaged in the field of logistics services throughout the territory of Indonesia and reach the international sphere. The company divides its business portfolio into 4 lines, namely Samudera Shipping (shipping business), Samudera Agencies (agency business), Samudera Logistics (logistics business), and Samudera Terminal (port business) to deliver integrated transportation and logistics services, and one of branch office located in Surabaya which serving in the field of agency. For a large company with high-complexity business processes and assisted with information technology, the company must be able to provide services that match the business objectives to be achieved. Investment on information technology that has been applied, has not provided a firm guarantee for the company. There are other factors to consider, not just focusing on the use of information technology assets, but companies should focus on monitoring, maintaining, managing and ensuring that companies comply with relevant information technology regulations. Therefore, the researchers using domain of Monitor and Evaluate, to measure the maturity level of enterprise information technology based on monitoring, managing process and how far Samudera Indonesia Company comply with applicable information technology laws and external requirements.

1 Introduction

The development of science and technology continues to increase, making the two things are combined to make an information technology that helps human work. In the field of information technology, especially in the business world, it is very reliable to run the business process. One of them, companies use information technology (IT) to make integrated information systems and can be accessed directly by employees, so that with the information system operational work can be helped.

In addition to the application of IT, companies need a process of controlling the information system applied, namely by utilizing the audit information system according to

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the standards of Control Objective for Information and Related Technology (COBIT), issued by the organization called Information System Audit and Control Association (ISACA) in 1992. COBIT also has a maturity model (Maturity Model) that is used to determine the current maturity position and continuously and continuously should strive to increase its level to the highest level so that aspects of governance (IT) to run effectively [1], [2].

So far, the company has implemented Open Ticket Request System (OTRS) to find out the IT problems that happened. The way the system works, the IT staff as well as the regular staff who encountered problems directly related to the information system or network infrastructure (all part of the critical assets) managed by the company, can report the issue through OTRS system. The system has a list of common constraints experienced by staff, along with the amount of costs listed according to the problems handled by the IT staff. However, the system does not yet have clear standards or formal measures of IT performance reporting, one of which, the performance of IT staff is assessed when there are any reports of problems from staff regarding IT usage within the company.

Therefore, Samudera Indonesia Company requires the control or audit of information systems, to oversee and evaluate all IT assets used by company staff, so the authors use the information system audit method with the COBIT 4.1 framework that focuses on the Monitor and Evaluate domain. This domain focuses on monitoring and evaluation processes aimed at enterprise IT solutions and all business processes implemented, so there is a common assessment standard for the company.

2 Literature review

2.1 COBIT 4.1

COBIT (Control Objective for Information and Related Technology) is the best of practices of information technology (IT) management that helps organizations to maximize business profits, and can help auditors, users and management manage business risks and technical issues within the organization. The COBIT framework is compiled by the Information System Audit and Control Association (ISACA) and the IT Governance Institute (ITGI) [3]. COBIT can be used to measure maturity levels in the IT process and measure the suitability between business needs and IT objectives within the organization [4].

2.2 Control practices

COBIT has a standard of control practices used as a measure for an organization. From the monitor and evaluate domains used by researchers, it has control practices [3], as follows

1. ME 1 (Monitor and Evaluate IT Performance)
 - a. ME 1.1 Monitoring Approach
 - b. ME 1.2 Definition and Collection of Monitoring Data
 - c. ME 1.3 Monitoring Method
 - d. ME 1.4 Performance Assessment
 - e. ME 1.5 Board and Executive Reporting
 - f. ME 1.6 Remedial Actions
2. ME 2 (Monitor and Evaluate Internal Controls)
 - a. ME 2.1 Monitoring of Internal Control Framework
 - b. ME 2.2 Supervisory Review
 - c. ME 2.3 Control Exception
 - d. ME 2.4 Control Self-assessment
 - e. ME 2.5 Assurance of Internal Control

- f. ME 2.6 Internal Control at Third Parties
- g. ME 2.7 Remedial Actions
- 3. ME 3 (Ensure Compliance with External Requirements)
 - a. ME 3.1 Identification of External Legal, Regulatory and Contractual Compliance Requirements
 - b. ME 3.2 Optimization of Response to External Requirements
 - c. ME 3.3 Evaluation of Compliance With External Requirements
 - d. ME 3.4 Positive Assurance of Compliance
 - e. ME 3.5 Integrated Reporting
- 4. ME 4 (Provide IT Governance)
 - a. ME 4.1 Establishment of an IT Governance Framework
 - b. ME 4.2 Strategic Alignment
 - c. ME 4.3 Value Delivery
 - d. ME 4.4 Resource Management
 - e. ME 4.5 Risk Management
 - f. ME 4.6 Performance Measurement

2.3 Maturity level

Maturity level has a role as a measure of how mature IT processes that have been applied by the company. Proper implementation on IT governance in the enterprise environment, depending on the achievement of the three aspects of maturity (maturity), namely the ability, reach and control. The impact of increased maturity will reduce risks and improve efficiency, encourage reduced errors and improve quantities of quality-predicted processes, and drive cost efficiency related to IT resource use. The level of IT management capability based on the COBIT 4.1 framework, has a maturity level with a scale from level 0 to level 5 can be combine the risk assessment [3], [6]. Risk assessment is obtained from the multiplication of likelihood value and impact value. To obtain the likelihood value and the impact value of each risk, several criteria are needed to assess the scale. Factors that can influence the occurrence of a risk (likelihood) are threat / threat factor and vulnerability factor. The criteria used to assess likelihood is the likelihood of the extent to which this potential vulnerability may cause or develop a threat. Can be rated as high or medium or low [5].

3 Research method

3.1 Method of audit information system

In implementing an information system audit, the authors apply the methodology applied in accordance with the methodology recommended by the IT Assurance Guide: Using COBIT. The basis for implementing data collection methodologies in the audit of information systems, including observation and interviews with the company. The following is an explanation of audit methods performed by the author:

1. Define audit resource
2. Control evaluation
3. Evaluation of compatibility process to control
4. Evaluation of limited substance
5. Evaluation of significant substance
6. Measure maturity level
7. Determine conclusion and recommendation

3.2 Steps of audit information system

1. Create a questionnaire to know the purpose of information technology (IT) and survey to the company to determine the appropriate audit domain with the problem.
2. Collecting data using judgmental sampling method, interview, observation, and questionnaire.
3. Understand the strategies and business processes owned by Samudera Indonesia Company.
4. Mapping between IT objectives and IT processes.
5. Determination of aspects that need to be measured maturity level (maturity level) in accordance with the audit domain (in this thesis the domain used is monitor and evaluate).
6. Measure the maturity level according to the audit domain.
7. Validate data obtained internally and externally with resource persons.
8. Taking conclusions and recommendations based on the analysis of the information system audit, as well as the suggestions and expectations provided by the company's IT staff.

4 Result and analysis

4.1 Preliminary audit of information technology

This initial audit process is done by filling out the entire domain questionnaire contained in COBIT 4.1, this is done to find out how far the IT condition is known by the staff. The results of the initial audit questionnaire (which focuses on the Monitor and Evaluate domain) were used as a benchmark with the results of the control analysis and the evaluation analysis by the authors. After distributing questionnaires to IT staff in the company, following the results of questionnaire data from Samudera Indonesia Company, Regarding the entire domain contained in COBIT.

Table 1. Monitor and evaluate (ME)

Domain	Average	Max Value
ME1	3.16666667	5
ME2	5	5
ME3	5	5
ME4	4.6	5

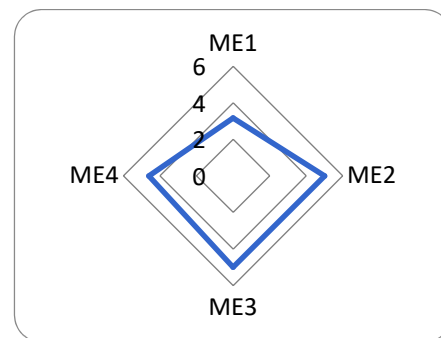


Fig 1. Questionnaire result of ME

The calculation of the average value in Table 1, comes from the value obtained from the questionnaire filled by the company. In the questionnaire, each domain has control points that explain the domain with a maximum value of 5 and can be seen on the graph of the result from Figure 1.

4.2 Comparison of maturity level Samudera Indonesia Company and result of field observation

Table 2. Comparison of maturity level

Domain	Maturity Level based on PT. Samudera Indonesia	Maturity Level based on Field Observation
ME1	3.16666667	4,04
ME2	5	3,87
ME3	5	3,74
ME4	4.6	3,91

In the description of table 2, the calculation of the maturity level of PT. Samudera Indonesia represents the total value obtained in the ME domain during initial audit. As for the next column, the maturity level based on observation and interviews of the authors with resource persons on the evaluation of control, process evaluation, so that the final result obtained is an analysis conducted by the author along with the provision of recommendations.

5 Conclusion and recommendation

Overall IT process in PT. Ocean Indonesia has conducted monitoring and evaluation activities in accordance with existing procedures, but has not done very well and has not achieved control practices from COBIT 4.1:

- (a) Maturity level assessment of ME1, ME2, ME3, and ME4 domains has been classified according to the procedures, and with the result of ME1 Monitoring and Evaluate IT Performance score of 4.04; ME2 Monitoring and Evaluate Internal Control of 3.87; ME3 Ensure Compliance with External Requirements of 3.74; ME4 Provide IT Governance of 3.91.
- (b) Assessment of IT maturity level at PT. The Indonesian Ocean, which is a defined criterion, is due to the fact that the company has implemented IT processes in accordance with predetermined procedures and standards, and has been adapted to the business model, strategy and business objectives of the company.

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