The Application of COBIT Framework to Evaluate Information System Governance in National Business Technology Transformation Companies

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Abstract

The purpose of this study is to determine how to assess information technology governance by utilizing the COBIT 5 framework and the domains of APO01 (Manage the IT Management Framework), EDM04 (Ensure Resource Optimization), and APO04 (Manage Innovation). The COBIT 5 architecture is employed in this study. Both qualitative and quantitative research methodologies were used in this study. Through surveys, interviews, and observations, we gathered primary data. The secondary data came from various existing sources, including websites, literature reviews, and the findings of other investigations. This study's information technology governance data analysis approach complies with COBIT 5's Assessment Process Activities. According to the analysis, the current state's capability value in the EDM04 domain is 1.8. In the meantime, the capability value is 2.9 for the anticipated circumstance. The APO01 domain's recent state results in a capability value of 1.7. In the meantime, the capability value is 3.1 for the expected circumstance. In the APO04 domain, the current state has a capability value 1.6. Under ideal circumstances, the business receives a capacity value of 3. This implies that the business needs to fulfill the prerequisites for level 2 process capacity indicators, which are now unfulfilled. For instance, producing papers outlining the management of the innovation process and documents evaluating rejected innovative ideas.

Keywords: Information Technology Governance, COBIT, Evaluate, Capability Level.

1. Introduction

Information technology now plays a significant role in supporting businesses in meeting needs and achieving their strategic goals. Information technology plays a critical role in today's corporate environment by offering competitive advantages, improving efficiency and time, and cutting costs [1]. The same is true for businesses that make information technology a priority in day-to-day operations. This is demonstrated by the availability of SOPs for managing hardware and software resources. Information technology governance is required in order to assess information technology inside the organization as a whole, given its critical role and function. Considering the critical role that information technology plays in an organization's performance, this review is imperative. The objective is to enhance the maximum revenues from information technology initiatives and effectively handle information technology-associated hazards [2]. Information technology governance places a strong emphasis on decision-making authority and accountability, decision-making processes and implementation oversight, and the decisions that are essential to bringing business and IT into harmony through efficient IT use [3]. Information technology governance is a process that directs and oversees IT-related choices and investments inside the organization in order to accomplish objectives [4].

Documented job descriptions outline the implementation of employee roles and responsibilities in daily operations. Employees complained that the workload between divisions was unbalanced, based on field observations. This can cause a lack of performance by one of the divisions in daily activities [5]. Apart from that, the company also has IT resource assets that function to support the company's daily operational activities [6][7]. However, there are obstacles to the use of new information technology due to delays in procuring SOPs on how to use this technology [8]. This causes employees to adapt to the use of new technology for a long time [9]. Another obstacle the company faces in procuring new information technology is the limited budget and inadequate management of innovation [10]. In fact, information technology projects usually require more costs than other projects [11][12]. Meanwhile, innovation capability can be seen as supporting company performance,

which can provide sustainable profits [13]. However, according to interviews that have been conducted, cost is an inhibiting factor in innovation when procuring new technology needed to support company operations [14]. Several frameworks can guide the information technology governance process [15]. The International Standards Organization (ISO), the Information Technology Infrastructure Library (ITIL), and the Control Objectives for Information and Related Technology are these frameworks. ITIL focuses on customer service, ISO is used to measure organizational quality, and COBIT is used for Information Technology management [16].

Compared to other frameworks, COBIT 5 has a wide range of problems, and COBIT 5 already covers material in other frameworks [17]. As explained by ISACA, such as: ISO/EIC 38500 enters the governance area of the EDM domain. ITIL V3 2011 and ISO/EIC 20000 (falling into the APO, BAI, and DSS domain management areas) [18]. ISO/IEC 27000 series (falls into the APO and DSS domain management areas specifically for processes related to security and risk management, as well as the MEA domain specifically for monitoring and evaluating activities). ISO/IEC 31000 series (falls into the EDM domain governance area and process-specific APO management area related to risk management) [19]. PRINCE falls into the process-specific APO domain management areas related to portfolios and the process-specific BAI domains related to project and program management [20]. Previous research shows that COBIT 5 provides support services for use in assessment models in terms of governance and IT management. IT professionals widely use COBIT because it offers consistent internal guidance and concepts for IT assessment [21]. The five fundamental principles of COBIT 5 for corporate governance and IT management meeting stakeholder needs, supporting the business end-to-end, putting in place an integrated framework, facilitating a holistic approach, and keeping governance and management separate are another benefit of the framework [22]. Whereas other frameworks do not have principles that must be met, One of the principles, implementing an integrated framework, has proven that there are many interconnected IT standards and best practices, each of which provides guidance on a subset of IT activities. Other relevant standards and higher-level frameworks align with COBIT 5, making it a comprehensive framework for enterprise IT governance and management.

2. Research Methods

This research uses the COBIT 5 framework. Both qualitative and quantitative research methodologies were employed in this study. Through surveys, interviews, and observations, we were able to gather primary data. The secondary data came from a variety of already-existing sources, including websites, literature reviews, and the findings of other investigations. This study's information technology governance data analysis approach complies with COBIT's Assessment Process Activities. The assessment process starts with commencement. The assessors identify the information immediately at this point. Planning the assessment is the next step in the evaluation process. We map the responsibilities involved in assessing capacity levels in accordance with the RACI diagram provided in COBIT during the Planning the Assessment step. We will create the RACI diagram based on the roles and responsibilities that are currently in place. In this briefing phase, the researcher provides the respondent with an explanation of the evaluation research so they can understand the input, process, and output in the organizational unit and process under assessment, the necessary documentation, the interview schedule, and a summary of the questions the respondents answered up until the reporting phase, which is the reporting of the information technology governance evaluations results. The researcher determines the output criteria for each step that needs to be completed during this phase of data gathering. In compliance with the established RACI Chart process domain, the researcher verified the data representation and sufficient coverage of the assessment scope in the paperwork provided by the respondents. This time, the researcher reviewed all of the processes that were identified in the process domain and verified that the generic work product in each stage of the identified process domain complied with the documentation requirements at every stage. Based on data that had been verified in the earlier phase, an evaluation was conducted. In order to provide recommendations for improving current deficiencies based on research results in accordance with the COBIT framework, researchers will report the findings, activities for each process, and gaps from information technology governance evaluations.

3. Results and Discussion

Ensuring that sufficient and qualified IT-related capabilities (people, processes, and technology) are available to achieve business objectives efficiently at the lowest possible cost is the description of the EDM04 process. This procedure seeks to guarantee that the business maximizes its resource use, minimizes IT expenses, and raises the probability of benefits realization and future readiness. Having optimal resources is one thing that must be taken into consideration to make information technology capabilities perform optimally in order to maximize the company's information technology capabilities. In order to evaluate how well corporate resources are performing, the resource optimization process must be evaluated in the hopes of advancing technological capabilities. The company's IT vision and goal are to be defined and upheld through the APO01 (Manage IT Management Framework) process. Establish and uphold procedures and powers to control information and IT use inside the organization in support of business objectives and in accordance with guiding principles and

policies. In order to meet corporate governance needs, such as managing processes, organizational structure, roles and duties, dependable and repeatable operations, as well as skills and competences, this procedure attempts to give a consistent management strategy. Apart from the company's technological resource capabilities, the company's human resource capabilities are also an important factor that plays a role in maximizing technological capabilities. Effective management of human resources through information technology management is crucial. By having information technology management capabilities, companies can improve the management of existing information and be useful in realizing company goals.

The APO04 Manage Innovation process is defined as keeping track of developments in information technology and related services, seeing chances for innovation, and organizing its application in light of business requirements. Examine the potential avenues for innovation and business enhancement that arise from new IT-facilitated technologies, services, or business innovations, in addition to those arising from current technologies and IT and business process advances. Impact corporate architecture and strategic planning choices. Through the use of information technology advancements, this approach seeks to gain a competitive edge, promote company innovation, and boost operational effectiveness and efficiency. Year after year, there is constantly a surge in dynamic information technology trends. Likewise, information technology capabilities will always increase every year. Good innovation management will ensure that information technology capabilities will always develop so that they can help improve business. Because of this, assessing managed innovation is very important to find out to what extent the company can manage existing innovation.

With an answer percentage of 80%, it can be inferred from the recapitulation results for the EDM04.01 process, which evaluates resource management, that most respondents are at capability level 2 when it comes to assessing present situations. This might be taken to suggest that management, which consists of planning and monitoring tasks, is already underway while resources are being evaluated. With a 70% response rate, the majority of respondents evaluated the capacity level to be at level 3 for future scenarios. The organization anticipates that the resource management evaluation mechanism it has put in place will yield the desired outcomes. The majority of respondents in the assessment of current conditions are at capacity level 1, according to the EDM04.02 process (directing resource management), with a 60% answer rate. This indicates that most respondents believe that the organization is already providing direction for resource management, for example, by directing strategy implementation through regular communication. Meanwhile, for future conditions, the majority of respondents assessed the capability level to be at level 2, with an answer percentage of 60%. This can be interpreted as the company hoping that the process of directing resource management in the future can be managed periodically, including planning and monitoring activities. As with strategic communication activities, it is hoped that in the future they can be documented regularly.

With 66.7% of respondents responding, it can be inferred from the recapitulation results for the EDM04.03 process monitoring resource management that most respondents are at capability level 2 when it comes to evaluating the current situation. The interpretation of these results suggests that the process of monitoring resource management is well managed, including the monitoring of performance achievements by employees using KPI (Key Performance Indicator) document guidance. Meanwhile, for future conditions, the majority of respondents assessed the capability level to be at level 3, with an answer percentage of 83.4%. This can be interpreted as meaning that the company hopes that in the future, the process of monitoring resource management can achieve the planned targets. For instance, the business anticipates that the performance of human resource management will match the specified KPI. Based on the response rate of 39.6%, it can be inferred that most respondents are at capability level 2 for the APO01.01 process, which determines the organizational structure. This can be interpreted as meaning that the process of determining the organizational structure of the company has been managed, which includes planning and monitoring. Activities to verify the adequacy of the organizational structure, which has been monitored regularly. Meanwhile, for future conditions, the majority of respondents assessed the capability level to be at level 3, with an answer percentage of 45.9%. This can be interpreted as meaning that the company hopes that in the future, the processes that have been implemented can achieve optimal results. As in the activity of determining priorities for investment programs that are expected to achieve targets in accordance with the plans that have been made.

With a 46.5% response rate, it can be inferred that most respondents to the assessment of present conditions are at skill level 2 for the APO01.02 process, which involves defining roles and responsibilities. The interpretation is that the company has managed the process of establishing roles and responsibilities, including planning and monitoring activities. For example, role and responsibility monitoring activities that are carried out regularly once a month already have guidelines listed in the yellow book and KPI, which explain the code of ethics. Meanwhile, for future conditions, the majority of respondents assessed the capability level to be at level 3 with a percentage; the answer was 71.5%. This can be interpreted as meaning that in the future, the company hopes that the processes that have been implemented can achieve the targeted results. Every existing employee must adhere to the code of ethics to regulate their actions in monitoring activities. With 58.4% of respondents indicating that they are at capacity level 1, it can be assumed that most respondents are at this level for the APO01.03 process,

which entails maintaining management system enablers. This can be interpreted as indicating that there is already a process running in the company to maintain system enabler management. As there is already an evaluation process with existing governance standards, Meanwhile, for future conditions, the majority of respondents assessed the capability level to be at level 3, with an answer percentage of 61.2%. This can be interpreted as meaning that the company hopes that in the future the processes that have been implemented can achieve the targeted results. For example, during governance evaluation activities, it is hoped that improvements will be carried out in accordance with the recommendations that have been given. With a 66.7% response rate, it can be inferred from the recapitulation results for the APO01.04 process which deals with conveying management goals and direction that most respondents are at capability level 1 when it comes to evaluating present situations. According to this perspective, the procedure does a good job of informing staff members about the company's direction and aims. With 58.4% of respondents answering correctly, the majority of respondents evaluated the capacity level to be at level 3 for future conditions. The business is hoping that the procedures it has put in place will provide the intended outcomes. For instance, management objectives and directives that have not yet been recorded can be routinely recorded in the future as they are shared with staff members. With a 60% response rate, it may be inferred that most respondents are at skill level 2 for the APO01.05 procedure, which involves placing IT services as optimally as possible. Most respondents understood this to mean overseeing the implementation of technological functions, which are evaluated for effectiveness once a month in the organization. Meanwhile, for future conditions, the majority of respondents assessed the capability level to be at level 3, with an answer percentage of 66.7%. This can be interpreted as meaning that the company hopes that in the future, the process of placing technology functions can achieve the desired results, such as increasing the performance of information technology.

With a 56.3% answer rate, it can be inferred that most respondents are at capability level 2 for the APO01.06 procedure, which involves inserting information (data) and system ownership. The majority of respondents rated the APO01.06 process's present state at capability level 2, suggesting that the organization has managed to determine information and system ownership successfully. For instance, the corporation has managed a data warehouse with personnel in charge of it, and the monthly report includes data security rules. With a 62.6% response rate, the majority of respondents evaluated their capacity level to be at level 3 for future conditions. This might be taken to suggest that the organization hopes to attain the required integrity and consistency in the future with the data management procedure that has been put in place. With a 65% response rate, it can be inferred that most respondents who evaluated the current state of the APO01.07 process—managing continuous process improvement are at capability level 2. These findings indicate that the majority of respondents are actively managing the continuous improvement process, including regular process updating activities. Meanwhile, for future conditions, the majority of respondents assessed the capability level to be at level 3, with an answer percentage of 90%, indicating the company's hope that the updated process can achieve the previously targeted results.

With a 75% response rate, it can be inferred from the recapitulation results for the APO01.08 process maintaining compliance with rules and procedures that most respondents to the assessment of present conditions are at capacity level 2. According to the majority of respondents, this efficiently manages the process of keeping an eye on corporate policies and procedures, including those that regulate employees and are mentioned in the yellow book. With an answer percentage of 85%, most respondents evaluated the capacity level to be at level 3 for future scenarios. This can be interpreted as meaning that, in the future, we hope to have a system to track employees' compliance with policies and procedures. For the APO04.01 process, namely creating an environment conducive to innovation, it can be concluded that the majority of respondents assessing current conditions are at capability level 2, with an answer percentage of 60%. This can mean that there is management involved in the process of creating the innovation environment needed by employees, such that employees can freely provide opinions regarding innovation ideas. Meanwhile, for future conditions, the majority of respondents assessed the capability level to be at level 3, with an answer percentage of 80%. Employees hope for future documentation of innovation ideas provided by employees.

With a response percentage of 41.7%, the recapitulation results for the APO04.02 process maintaining a grasp of the company's environment led to the conclusion that most respondents are at capability level 1 when assessing current situations. This can be interpreted as a process of understanding the company's environment, such as regularly holding meetings to ensure a shared understanding of the company's environment. Meanwhile, for future conditions, the majority of respondents assessed the capability level to be at level 3, with an answer percentage of 85%. This can be interpreted as meaning that the company hopes that, in the future, there will be an implementation of evaluating innovation opportunities in order to achieve the desired results. With a 43.8% response rate, it can be inferred that most respondents are at competency level 1 when it comes to the APO04.03 procedure, which involves observing the technical environment. This can be interpreted as meaning that there is already a process of observing the technological environment through meetings held with principals, distributors, and business partners. Meanwhile, for future conditions, the majority of respondents assessed the capability level

to be at level 3, with an answer percentage of 85%. This can be interpreted as meaning that employees hope that in the future, the process of observing the technological environment can be expanded by considering influences from outside the company in order to expand knowledge about new technologies.

With a 60% response rate, it can be inferred that most respondents are at capability level 1 when it comes to evaluating the potential of developing technology and innovative ideas for the APO04.04 process. According to this understanding, there is already a system in place for evaluating innovative concepts and cutting-edge technologies. An analysis of the innovative concepts included in improvement documents is part of this assessment. With a 75% response rate, the majority of respondents evaluated the competence level for future conditions as being at level 3. This might be taken to indicate that the corporation hopes to incorporate scheduling in the future as part of the process of evaluating innovative ideas and new technology so that inspections can be conducted on a regular basis and with more organization. With 62.6% of respondents responding, it can be inferred that most respondents are at capacity level 1 for the APO04.05 procedure, which involves recommending additional appropriate activities. This can mean that there is already a process regarding the documentation of recommendations for appropriate innovation ideas in the company. Meanwhile, for future conditions, the majority of respondents assessed the capability level to be at level 3, with an answer percentage of 68.8%. This can be interpreted as meaning that in the future, the company hopes that there will be documentation of the entire process related to the implementation of new technological innovation ideas so that the desired results can be achieved.

Based on the recapitulation results for the APO04.06 process, namely monitoring the implementation and use of innovation, it can be concluded that the majority of respondents in assessing current conditions are at capability level 1, with an answer percentage of 56.3%. This can mean that there is already a process of monitoring the implementation and use of new innovations by conducting assessments. Meanwhile, for future conditions, the majority of respondents assessed the capability level to be at level 3, with an answer percentage of 68.8%. The company hopes to carry out an overall evaluation in the future to monitor the implementation and use of new innovations, enabling improvements to achieve the expected results. Based on attribute 1.1, process performance, the achievement value is 87.6%. The company has met the requirements for achievement at level 1, placing it in the fully archived category. As proof, there are documents such as SOPs that regulate resource management and also the division of tasks for each individual responsible for these resources. The achievement value was 79.2% for both the attribute 2.1 performance management process and the attribute 2.2 work product management procedure. A number of papers, including key performance indicators, provide proof of the minimal performance standards that staff members are expected to meet. This category includes work product management (process attribute 2.2) and performance management (process attribute 2.1). As a result, the evaluation process is unable to proceed to level 3, as level 2 requires it to be included in the fully archived category, one of the requirements for moving on to the next level.

Based on the process attribute 1.1, process performance, the achievement value was 93.8%. The company's achievement at level 1 means that it is included in the fully archived category, indicating that the requirements have been met. The company has already fulfilled several documents as requirements, including determining the organizational structure and roles and responsibilities. The achievement value was 70.9% for both the attribute 2.1 performance management process and the attribute 2.2 work product management procedure. This category includes work product management (process attribute 2.2) and performance management (process attribute 2.1). Therefore, in order to go to the next level, level 3, the evaluation process cannot be continued because at level 2, it must be included in the completely achieved category. Process characteristic 1.1: Achieved a 93.8% achievement score in process performance. The business is in the fully archived category since it satisfies the level 1 achievement requirements. Several documents serve as evidence, including an improvement document that provides an overview of the innovation process that will be put into practice. The achievement value was 91.7% for both the attribute 2.1 performance management process and the attribute 2.2 work product management procedure. This category includes work product management (process attribute 2.2) and performance management (process attribute 2.1). As a result, the evaluation process is unable to proceed to level 3, as level 2 requires it to be included in the fully archived category, one of the requirements for moving on to the next level.

4. Conclusion

The analysis yielded the following conclusions: For the given scenario, a capability value of 1.7 was found in the EDM04 (Ensure Resource Optimization) domain. This can be taken to suggest that the EDM04 domain is at capacity level 2, indicating that regular process management, including planning and monitoring tasks, has been applied generally. In the meantime, the capability value is 2.9 for the anticipated circumstance. This can be taken to signify that the organization wants to attain a capability value of 3 in the EDM04 domain, which indicates that the processes that have been put in place should produce the desired outcomes. The business needs to fulfill the prerequisites for level 2 process capability indicators, which are now unfulfilled. such as identifying needs,

drafting financial SOPs, and documenting resource management techniques. The APO01 domain is at capacity level 2, which indicates that regular process management, including planning and monitoring tasks, has generally been carried out. The organization aims to get a capability value of 3 in the APO01 domain, indicating that the established procedures are anticipated to yield the desired outcomes. There is a gap value of 1.4 between competency level ranges two and three. This implies that the business needs to fulfill the prerequisites for level 2 process capacity indicators, which are now unfulfilled. For instance, developing SOPs for upcoming strategic plans and papers outlining the information technology framework in the long run.

A capability value of 1.6 is obtained for the current situation in the APO04 (Manage Innovation) domain. This can be understood to suggest that the APO04 domain is at capability level 2, indicating that planning and monitoring activities have generally been performed on a periodic basis to manage the process. In the meantime, the capability value is three for the anticipated scenario. This can be taken to signify that the organization wants to attain a capability value of 3 in the APO04 domain, which indicates that the procedures that have been put in place should produce the desired outcomes. The organization needs to fulfill the prerequisites for level 2 process capacity indicators, which are now unfulfilled. For instance, producing papers outlining the management of the innovation process and documents evaluating innovative ideas that are rejected. Based on the previously explained analysis and conclusions, we suggest considering and implementing all recommendations in the EDM04, APO01, and APO04 domains to enhance information technology management in companies. For further research, it is recommended to use different measurement scales, such as the rating scale and the Guttman scale, so that different measurement results can be obtained. For further research, researchers should utilize different domains in COBIT 5 to obtain diverse evaluation results. For further research, it is advisable to incorporate additional frameworks such as ISO, ITIL, and others. So that the results obtained can be used as a comparison and get different recommendations according to those applied in the framework.

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