

Audit Attendance Information System at Network Access Provider Using COBIT 5 Framework

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Abstract—Network Access Provider (NAP) is a company founded in 2005. This company also has 2 other sister companies, namely PT. IGI, and PT. ID. The main focus in this research is PT. MA, the company is currently implementing an Android application-based attendance system, which is divided into 4 terms, employee absences, employee absent data collection one day before inputting salary according to employee data provided, overtime absences and business trip absences. This research will focus on the overtime absence system in the form of an android application and website. The purpose of the absent system audit is to find out the company's absent overtime system process that is currently in a trial period, using the COBIT standard. This research starts from conducting a literature study to support research, and then states the process domain and process as the scope of research. In conducting data collection and observation, this research uses survey and interview methods to the relevant informants and confirms documents. The final stage of this research is the submission of a report given to the company. The domains chosen in this study is Build, Acquire and Implement (BAI). The results show the Capability Level in the BAI03 process domain at the 2.75 level, while the desired Capability Level in the process domain is level 4. Then in the second process domain BAI07 is at level 2, while the desired Level of Ability in the process domain is level 4. After knowing the current ability level, then recommendations are made. Recommendations are given such as the formation of special units that determine information solutions, create management and related documents design improvements.

Keywords— Network Access Provider; Audit, COBIT 5; Attendance Information System.

1. INTRODUCTION

Information technology has been one of the most important assets and a critical tool in ensuring the sustainability and development of a business. It is said that the responsibility for designing, implementing and maintaining many parts of an organization's business processes depends on its Information Technology. The IT function has the responsibility to collect, convert, and archive, protect process, send and retrieve information securely as needed [1]. The success of implementing effective governance in an organization associated with the right pattern or fit for the organization so that they can be a complement or supplement of organization's strategic focus. Information technology (IT) governance is not a static concept but a process inherent in an organization or company. IT performance is correlated with organizational or company performance, which emphasizes the strategic role applied by IT in organizations. The relational mechanisms between IT and other organizational units are, in the IT governance context, the determining factors for IT performance [2].

According to the IT Governance Institute, IT governance is defined as: "Relationship structures and processes for controlling companies to achieve company goals by adding value while balancing risks versus returns on IT and its processes." [3]. Enterprises are increasingly making tangible and intangible investments in improving a company governance of IT. To support this, companies utilize the practical relevance of a generally accepted good practice framework such as COBIT [4]. COBIT, currently in its fifth edition, is a good-practice framework for the enterprise governance of IT and good decisions based on large amounts of information [5]. There is limited academic research that either analyzes COBIT or leverages COBIT as an instrument in executing research programs. Through connecting the core elements and COBIT principles with insights from the general management literature and related IT, this paper aims to find out the use of COBIT in activities aimed at research for the future. This research uses the COBIT framework. The main directives and core principles of the framework are explained. Connections are made from these directions and principles to the relevant literature. Research questions for future research around corporate governance and COBIT 5 are raised and discussed [6].

The company NAP founded in 2005 is currently implementing an Android application-based attendance system, which is divided into 4 terms, employee absences, employee absent data collection one day before inputting salary according to employee data provided; overtime absences and business trip absences. This research will focus on the overtime absence system in the form of an android application and website. In this journal, the author will try to evaluate IT Governance at the company. So the authors can get a general picture of the implementation of IT Governance, so that the author can determine the level of capability of IT Governance at the company. The authors will analyze more about the environment that occurs in the company ranging from

employees, equipment, physical security, regulations, etc., which is focused on the domain Build, Acquisition, and Implement (BAI).

2. LITERATURE STUDY

2.1 IT Governance

IT Governance has become more important within organizations as the important role that IT plays in adding organizational value has become increasingly clear. Investment in IT is a proportion of something current and capital expenditure in most industries, providing an additional impetus for IT Governance. IT is also subject to a high level of environmental instability [7], ITG is a collection of best practices that add to productive management [8].

2.2 COBIT 5

The COBIT framework was developed to provide a methodical basis for developing and conducting ITG audits. The COBIT framework is constantly achieving global recognition as the most effective and reliable tool for IT governance implementation and auditing and for assessing IT capabilities [9]. COBIT 5 is often the framework of choice for organizations throughout the world. With an increased focus on business, COBIT 5 offers major strategic changes in how the framework is structured and organized [10].

Business organizations use various types of audits for different purposes. Generally are external audits, internal audits, and fraud audits. IT audits focus on the computer-based aspects of organizational information systems and modern systems using a significant level of technology [11]. Audit plays an important role in developing and improving the global economy and business enterprises [12]. Information system audit functions to ensure the information system in the company's information assets is protected, uses the system effectively and efficiently and maintains integrity. Audit is the process of gathering and evaluating all information system activities in the company used to measure the extent to which the system that has become a provision in the company has run well. Control Objectives for Information and Related Technology (COBIT) are information technology communication and governance standards, which apply to management and the board, Information Technology provides services, to control departments, to audit functions and processes, and more importantly councils and business process owners and management to ensure the most important and sensitive details, integrity and availability of files, data and information [13].

2.3 Capability Level

Process Capability Model adopted from ISO / IEC 15504-2, where the assessment process will be based on the level of an organization's ability to perform the processes defined in the assessment model. Every 37 IT processes in COBIT 5, have a capability model that has been defined by grading measurement levels from Incomplete Process (0) to Optimizing Process (5) [14]. The explanation can be found in Figure 1.

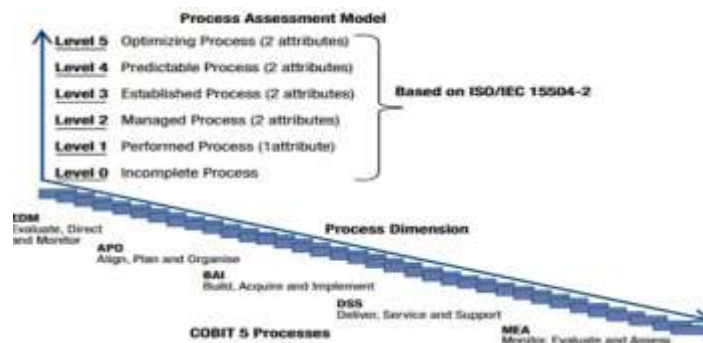


Figure 1: Overview of the Process Assessment Model [6]

Based on figure 1. 1 Overview of the Process Assessment Model, according to ISACA. The level of capability used in assess the ability of the process is as follows [15]:

- 1) Level 0: Process Not Complete: The process is not implemented or failed to achieve the objectives of the process.
- 2) Level 1: Process Done: Implementation the process of achieving its goals. At this level there are attributes PA1.1 Process Performance to measure to what extent where the process objectives are achieved
- 3) Level 2: Managed Process: Processes at level 1 are implemented in the process and work settings the product is managed appropriately. At this level there is the Performance Management attribute of PA2.1 for measure the extent to which the process has been regulated and PA2.2 attribute to measure the extent work products produced by the process well managed

4) Level 3: Process Established: Process at level 2 is implemented using a specified and capable process achieves the results of the process. At this level there is PA3.1 Attribute Definition Process to measure the extent to which the process is defined to support implementation process PA3 Process Implementation and attributes to measure the extent of the process the standard is applied effectively.

5) Level 4: Predictable Processes: Processes at level 3 are run with the specified limits to achieve the results of the process. In this level has the attribute PA4.1 Measurement The process of measuring the extent of measurement results are used in achieving company goals and attribute PA4.2 Process control for measuring breadth where the process is arranged quantitatively produce a process that is stable and predictable

6) Level 5: Process Optimization: Process at level 4 is continuously improved to meet the goals of the organization now and in the future. At this level there are attributes PA5.1 Innovation process to measure the extent Process changes are identified from implementation.

3. RESEACH OF METHODS

According to ISACA, COBIT 5 identifies set drivers of governance and management that includes 37 processes. In the area of governance, there are 10 processes in Build, Acquire, and Implement (BAI) domain, in this research; the authors will use 2 existing processes:

- 1) BAI3 Identify and Build Solutions
- 2) BAI7 Manages Changes to Revenue and Transition

The author uses literature studies by qualitative, make observations and interviews by analyzing vision and mission, goals and objectives as well as the company strategic plans and strategies, related policies for investment management and IT observation. [16].

Qualitative research methodology is said to be suitable if the researcher investigates a new field of study or intends to confirm and produce a prominent problem theory. There are many qualitative methods developed to have a deep and broad understanding of problems through their textual interpretation and the most common types are interviews and observation [17].

1. Observation

Observation is used in the social sciences as a method for collecting data about people, processes, and cultures. Observation, especially participant observation, has become a hallmark of much of the research carried out in anthropological and sociological studies and is a methodological approach typical of ethnography. It is also a tool used continuously to collect data by research teachers in their classrooms, also by social workers in the community, and by psychologists who record human behavior [18].

The observation made is looking at the overtime absent process that exists on Network Access Provider. Observations are also made by directly testing the software, then comparing whether the software system was in line with the procedures previously established. In addition, the purpose of this observation is to collect all the findings that are on the field, even though there is already an interview methodology.

2. Interview

Interviews were used to test the correctness and maturity of data and obtain more complete data from the observation method. This interview method is in accordance with the guidelines for the capability level model COBIT 5 [19]. Interviews can be defined as qualitative research techniques that involve "conducting intensive individual interviews with a small number of respondents to explore their perspectives about a particular idea, program, or situation"[20].

Interviews are important data collection techniques that involve verbal communication between researchers and subjects. There are various approaches to interviews, from being completely unstructured where subjects are allowed to talk freely about whatever they want, to very structure where the subject's response is limited to answering direct questions. The quality of data collected in interviews will depend on interview design and interviewer skills [21].

Based on figure 2 Research Workflow, the first step is the review of business documents in the form of SOP documents that have been given for us to study first. Then do literatures study, relating to the company's objectives. The first step is the review of business documents, in the form of SOP documents about the absent overtime system that have been given for us to study first. Then do a literature study, relating to the company and the objectives relating to the company, then interview respondents, which are related to the system being researched. The results will be measured as the level of capability, the contents of which are the current level and the expected level, then the gap will be analyzed, the gap between the current level and the level expected by the company. Then from the results of the existing gap analysis, recommendations will be given for the company to reach the expected level. The final step is to provide conclusions that exist in the study.

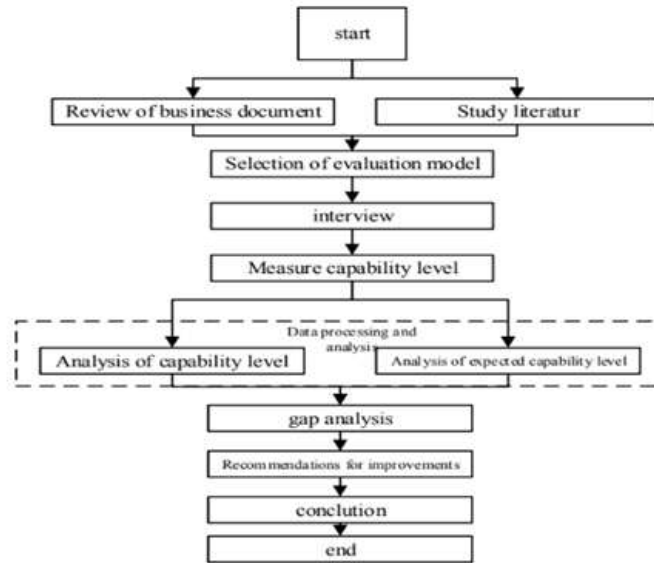


Figure 2: Research Workflow [22]

4. ANALYSIS AND DISCUSSION

In this part, the authors will discuss the result of the IT Governance evaluation that was conducted using COBIT 5 framework alongside with capability level that can be used to measure the current performance of the company. There are two main results of this research, namely the capability levels and the recommendations based on the findings that the authors found. The domain used for this research is BAI (Build, Acquire, and Implement). This domain focuses on the identification of the IT requirements, acquirement of the technology, and its successful implementation in the organization’s current business processes. And the main focus is BAI03 Manage Solutions Identification and Build, and BAI07 Manage Change Acceptance and transitioning.

4.1 BAI03 Manage Solutions Identifications and Build

The process of this process includes about, Establish and maintain identified solutions in line with enterprise requirements covering design, and development. Manage configuration, testing, requirements management and maintenance of business processes, applications, information/data, infrastructure and services. The purpose of this process is to determine timely and cost-effective solutions that support the company's strategic and operational objectives.

Table 1: Process Capability Domain BAI03

Process Capability Domain BAI03 Manage Solutions Identifications and Build			
No	Sub Domains	Current	Expected
BAI03.01	Design High Level Solutions	3	4
BAI03.07	Prepare for Solution Testing	3	4
BAI03.08	Execute Solution Testing	2	4
BAI03.10	Maintain Solutions	3	4

4.2 BAI07 Manage Change Acceptance and Transitioning

This process formally accepts and creates new operational solutions, such as implementation planning, system and data conversion, acceptance testing, communication, release preparation, production of new or changing business processes and IT services, initial production support, and post-implementation review. This process only focuses on one sub domain BAI07.04 Establish a test environment, this subdomain discusses defining and determining a safe testing environment.

Table 2: Process Capability Domain BAI07

Process Capability Domain BAI07 Manage Change Acceptance and Transitioning			
No	Sub Domains	Current	Expected
BAI07.04	Establish a test environment	2	4

4.3 Gap Analysis

In this section, the results of the analysis conducted on what is obtained. The condition of IT operational governance at organization can be seen based on current level with the BAI domain process in COBIT. The results obtained are based on the results of interviews in the presence or absence of these activities in the company and strengthened by clarification of all activities or processes that occur in the field. The questions conducted in the interview are based on the BAI domain in COBIT 5. Current level is the results obtained in the current field. Based on the results of the current level analysis which produces an average level in each process, then it will be compared with the expected level that has been obtained. Then, the researcher will do a gap analysis of the capability level. Gap is the distance between the average capability level and the expected level. This gap analysis aims to provide convenience regarding the improvement of information technology governance from the company's management. Expected Level is the capability level expected by a company that is above one level from the current capability level. Gap Analysis will provide a process of improvement that is more directed and more focused on any findings that have gaps.

Table 3: Gap Analysis of Each Process

Process	Average Current Level	Expected Level	Gap
BAI03	2.75	4	1.25
BAI07	2	4	1

Base on table 3, the results of the gap analysis of each new process and it is known that it is necessary to improve the IT processes within the company.

4.4 Recommendations

Table 4: Process Design High Level Solutions BAI03.01

Findings	<ol style="list-style-type: none"> 1. The company has not adopted a high level design that is able to meet the architectural requirements. 2. The company has involved IT specialists who have experience in ensuring the design process. 3. The design has been made in accordance with the direction of the company. 4. The company has received approval on its final design by stakeholders.
Gap	The company has not adopted a high level design that is able to meet the architectural requirements
Activity	Establish high-level design specifications that are able to meet the business and corporate architecture requirements.
Recommendation	The company should start to establish a high-level design specification, even though the application design looks not complicated. However, high-level design is a solution to facilitate the use of this application, not just to display the application.

The result of the gap analysis in the BAI03 process between the current level and the level you want to reach is 1.25, it is necessary to increase 1 more level to reach the expected level. Then in the BAI07 process, the resulting level is 2 and 2 more levels are needed to reach the desired expected level.

Based on table 4, table 5 and table 6, is a table of research results from the BAI03.01, BAI03.07 and BAI03.10 domains, in the first column are several findings that the authors found in each domain. Then in the second column is a gap, which is an activity, based on their respective domains, which are not fulfilled by the company which causes the company cannot reach the expected level.

In row 3 is the activity column, the activity in the column is activity based on each domain, the activity based on this domain aims to help the writer to analyze, and assess whether the company has fulfilled all of these activities.

In the last column is the recommendation column, the author will provide direction in the form of recommendations for the company, in order to reach the level expected. The recommendations given are based on their respective domains.

So the four columns are made so that they can provide recommendations that are easily seen, in accordance with findings that need to be improved, activities that have not been fulfilled and gaps that have been found and have not been met.

Next is a detailed explanation of the findings, gaps, activities and recommendations based on the domain used in the study: Finding Process Execute Solution Testing BAI03.08 are:

1. The company does not have a solution team to do the testing.
2. The company does not separate testing, such as only in special environments for the period of testing.
3. The company has followed the instructions for testing according to the test plan.
4. The company has not tested the system until it is deemed complete, or the system has not yet been in “complete tested” status.
5. The company has recorded errors during the testing period.
6. This overtime system has never been audited before.
7. The company always records the results of the test and gives it to stakeholders according to the test plan.

Table 5: Process Prepare for Solution Testing BAI03.07

Findings	<ol style="list-style-type: none"> 1. The company does not have a solution team to do the testing. 2. The company does not separate testing, such as only in special environments for the period of testing. 3. The company has followed the instructions for testing according to the test plan. 4. The company has not tested the system until it is deemed complete, or the system has not yet been in “complete tested” status. The company has recorded errors during the testing period. 5. This overtime system has never been audited before. The company always records the results of the test and gives it to stakeholders according to the test plan.
Gap	<p>The company does not have a testing team and a solution team during testing. The company does not separate testing in specific environments and its field directly. Previous overtime systems have never been audited</p>
Activity	<ol style="list-style-type: none"> 1. Test solutions by including independent testers from the solution team. Ensure that testing is conducted only within the development and test environments. 2. Use clear test instructions, as defined in the test plan. Perform all tests according to the test plan (e.g., security, interoperability, usability). 3. Identify, record and classify errors during testing. Repeat the test until all significant errors have been resolved. 4. Record the test results and communicate the test results to stakeholders
Recommendation	<ol style="list-style-type: none"> 1. Provide a solution team, to carry out testing the solution, because if given directly to the overtime team, the overtime team may not necessarily be able to provide the best solution during the testing period. 2. Then the next recommendation, an audit should be carried out immediately for the application and the test results are maintained.

Gaps Process Execute Solution Testing BAI03.08 are:

1. The company does not have a testing team and a solution team during testing.
2. The company does not separate testing in specific environments and its field directly.
3. Previous overtime systems have never been audited

Activity Process Execute Solution Testing BAI03.08 are:

1. Test solutions by including independent testers from the solution team. Ensure that testing is conducted only within the development and test environments.
2. Use clear test instructions, as defined in the test plan.
3. Perform all tests according to the test plan (e.g., security, interoperability, usability).
4. Identify, record and classify errors during testing. Repeat the test until all significant errors have been resolved.
5. Record the test results and communicate the test results to stakeholders

Recommendation Process Execute Solution Testing BAI03.08 are:

1. Provide a solution team, to carry out testing the solution, because if given directly to the overtime team, the overtime team may not necessarily be able to provide the best solution during the testing period.
2. Then the next recommendation, an audit should be carried out immediately for the application and the test results are maintained.

Finding Process Maintain Solutions BAI03.10 are:

1. The company has developed and implemented a maintenance plan according to business needs.
2. The company has assessed the current proposed system maintenance activities.
3. The company has considered the risks and impacts of this system; the company has also confirmed it to stakeholders.
4. The company has followed a solution to use the development process on a new system.

5. The company has not yet used the change management process for the overtime system.

6. The company has confirmed that maintenance has been routinely analyzed.

Gap Process Maintain Solutions BAI03.10 is the company has not yet used an official change management process for the overtime system. Activity Process Maintain Solutions BAI03.10 is Develop and implements plans for routine maintenance according to business needs. Recommendations Process Maintain Solutions BAI03.10 are for further maintenance updates, companies must immediately use an official change management process.

Findings Process Establish a Test Environment BAI07.04 are:

1. The company already uses dummy data to do the testing.

2. The company does not destroy the sanitation of sensitive data.

3. The company has never considered the interaction effect of a third organization system, because there is no third party.

4. The company does not make a process for the disposal of test results, media and related documentation in accordance with the requirements of the test plan.

5. The company does not ensure a safe test environment, and is immediately interfered with in the field, because according to him the overtime system

Activity Process Establish a Test Environment BAI07.04 are:

1. Create a test database that represents the production environment. Sanitize data used in a test environment.

2. Protect sensitive test data with destruction. Consider the effects of interaction organization system with third parties.

3. Perform the process of removing test results, media, and related documentation as required by the test plan.

4. Ensure that the testing environment represents future operations,

5. Ensure that the testing environment is safe and cannot interact with the real system

Recommendation Process Establish a Test Environment BAI07.04 are:

1. The company should protect or destroy sensitive data that is used for testing, because the data does not include dummy data.

2. Then if there are new developments again for the application. The company is expected to carry out testing activities in a safe environment, which means it is not immediately mixed into real or field systems.

5. CONCLUSION

The conclusion of this research is, the company already performs some of the IT Governance, but most of them are not performed optimally. This can be seen at their current level, which not even one sub-domain can reach their expected level. Their average score on domain BAI03 Manage Solutions Identification and Build is 2.75. This score can be improved by doing some of these things: the company should establish high-level design specifications, because high-level design is a solution to facilitate the use of this application, not just to display the application. Then, the company must provide a solution team, to carry out testing the solution, the goal is that the company gets the best solution during the testing period.

Then, average score on domain BAI07 Manage Change Acceptance and Transitioning is 2, this score can be improved, if the company carry out testing activities in a safe environment, which means do not be mixed with direct implementation in the field, then sensitive data used for testing must be destroyed after it is used during testing. The authors hope that this research can be useful to organizations in order to improve their IT Governance.

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