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Information Technology Capability Process Measurement in Organization using Cobit 5

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Abstract*: The purpose of this research is to know the priority IT process in IT department at XYZ Organization and to know the level of capability in each IT process priority at IT department at XYZ organization. The data used and processed in this research were obtained from interviews with IT Director, IT Governance Supervisor, IT Development Supervisor, IT Operations Supervisor and Information Management Supervisor, and also observed the processes in the IT department. The result is obtained by priority IT processes and the level of capability in each of the priority IT processes at XYZ Organization. Based on the case study analysis, in order to create IT governance in accordance with the standards in the COBIT 5 framework, the organization have to improve IT governance thoroughly and continuously and fulfill the criteria in the COBIT 5 framework for all IT process in XYZ Organization.

Keywords* : COBIT 5, Process Capability Assessment, PAM, Level Capability, framework.

I. INTRODUCTION

According to [1], information technology includes all the hardware and software the company needs to use in achieving its business objectives. According to ref [2], information technology is a general term that describes any technology that helps in generating, manipulating, communicating and disseminating information. Then it is necessary to do the development of work patterns by utilizing the mapping results of the risk management that has been done on a company or organization with existing activities on the Internal Auditor. IT Governance helps provide decision-making and accountability frameworks for effective management of SI / IT usage. There are many components of governance of IT / IT, but the basic purpose of governance is to identify what decisions will be made, by whom and to determine how activities will be monitored against plans that already made. The Information Technology Governance Institute (ITGI) defines IT Governance as the responsibility of the executive and board of directors, comprising leadership, organizational structure and all processes to ensure that IT in a company or organization is capable of supporting and Broadening objectives and strategies in an organization. The period is from 2007 until 2013of IT Directorate at XYZ Organization conducts IT process assessment by Assessment Maturity Model for the entire IT process referring to COBIT 4.1 framework. After COBIT 5 was issued, the transformation of IT governance in XYZ Organization also changed from COBIT 4.1 format to COBIT 5. This is the reason behind the author in conducting the research, because XYZ Organization has never done capability level measurement by using the newly implemented COBIT 5 framework At the XYZ Organization. Therefore, we use the framework to identify the level of capability that exists in every process that become IT process priority at XYZ Organization. Furthermore, the study is identifying condition at each IT process priority that will be obtained later at the time of data collection to get picture with related to the existing conditions in the IT Directorate at XYZ Organization. This research is conducted to provide an explanation of the existing problems, which are: (1)What is the priority of IT processes in the IT Directorate at XYZ Organization?, and (2).How is the level of capability in each IT process a priority in the IT Directorate at the XYZ agency?

II. RELATED WORKS

There have been several studies conducted to audit the existing information systems in a government organization as well as private companies. Previous research has resulted in several different things, such as according to ref [7], research in his scientific article entitled "Evaluation of Information Technology Governance Using COBIT Framework 4.1 at Government Organizations". The results of his research indicate that the institute used as a research object based on maturity level calculation results in 18 (eighteen) sub-domains or relevant IT processes and important it is found that the governance of government IT Salatiga city still at level 1 (Initial / Ad hoc) Which means that IT management is still separate and not yet integrated with organizational strategy, which is seen from the lack of IT Strategic Plan or Master Plan IT. This condition also occurs because most of the procurement or IT investment is done partially and not supported by careful planning.

In addition, accordng to [8], The results of the research is the governance of information systems using exploratory factor analysis with factors and indicators taken from the domain and process on COBIT framework it can be concluded the governance of information systems at BPKAD DKI Jakarta Province is now quite good.

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The maintenance and development factor of SI/IT has a big influence on the governance of information systems compared to other factors so that this can be the first step to do a thorough improvement. Then research conducted by accordng to [9], and the the results of the study that the evaluation of operational performance through the maturity level of COBIT frame 5 indicates that there is an inconsistency in the process of handling error complain which is indicated by the lowest level maturity rating (value2), namely BAI2 (Manage Requirements Definition), and DSS1 (Manage Operations). Both process can be the cause of the accumulation of handling of error complain, then there must be improvement through the implementation of operational SI/ICT in accordance with the company's strategic plan, especially on IT Division PT. Casa Dekora Multi Kreasi, so the solution provided by Management must make continuous improvement, especially for some process of error handling of complain, such as lack of reliable staff and unfair employee relationship as shown in maturity result of APO7 (Manage Human Relations) To improve the quality as indicated in and APO11 (Manage Quality) as well as in terms of the smoothness of the complaint error handling process shown by the lowest level maturity rating of BAI2 (Manage Requirements Definition) and DSS1 (Manage Operations). Additionally similar studies that have been done according to ref. [10] with the results of a study of the processes of the area being measured The current average capability level is at level 1 performed in the APO09, BAI02, BAI10, DSS01, DSS02, DSS03, DSS04 and 2nd (managed) process areas in APO07, APO13, BAI04, BAI08 area processes. While the processes area expectation or target average is in level 3 (Established) in the area APO09, BAI02, BAI10, DSS01, DSS02, DSS03, DSS04 and level 4 (Predictable) in the area APO07, APO13, BAI04, BAI08. In this research, process improvement efforts and the achievement of the objectives of the process are given through the recommendation of activities in the form of policies and procedures for data and information management. From the results of measurements of the level of capability at the Ministry of Defense Media Center suggested that the Ministry of Defense Media Center can perform optimization in increasing the capability of human resources by providing comprehensive training both technical and non-technical to support the maximum service.

III. RESEARCH METHOD

Stages of this research can be illustrated in the following figure:

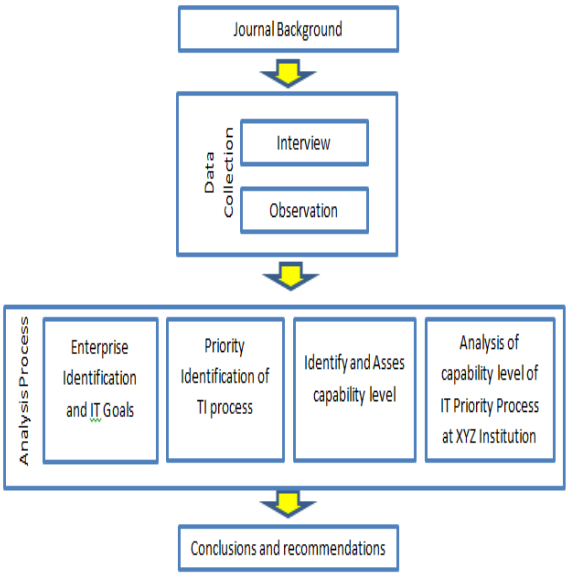


Figure 1. Research method

The research method is done by case study, with data obtained from the interviews with related parties and observing the existing processes in the IT Directorate. The interview will be conducted to the IT Director; this interview will focus on the vision, mission, strategy, and organization target to be achieved. The results of the interview will be mapped to the analysis steps available on COBIT 5. In the enterprise identification and IT goals stages obtained from the analysis of XYZ organizations goals and the interviews conducted to the relevant parties, once the company goals can be mapped, the results will be tied to the IT goals of XYZ organizations, this is done in order to synchronize the enterprise goals with IT goals by using the COBIT5 framework approach .In this step we will identify and measure the level of capability used by using COBIT 5 approach in accordance with priority identified IT process. Given that this assessment model was first introduced in XYZ Organization, this result can be used as a reference for the target size in the same activity in the following year. So at the level of Management in the IT Directorate will be able to see the position of capability achievement of each IT Process that becomes its responsibility. Data analysis techniques used in this paper is to use a qualitative approach. Based on the results of data collection conducted, then the data will be compared with the guidance in COBIT 5. Here are the details of the assessment per each level.

Table 1. Caption summary capability summary template.

Process Name	LLevel1	Level 2		Level 3		Level 4		Level 5	
	PA 1.1	PA 2.1	PA 2.2	PA 3.1	PA 3.2	PA 4.1	PA 4.2	PA 5.1	PA 5.2
Rating by Criteria									
Rating									
Capability Level Achieved									

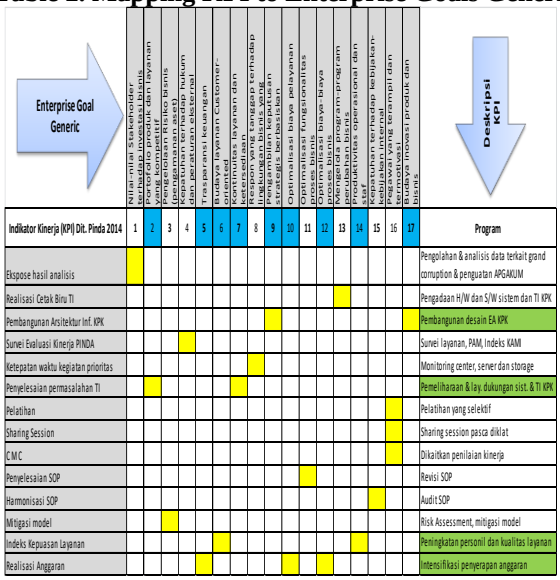
IV. RESULTS AND DISCUSSION

Enterprise goals or objectives are fundamentally different and unique to each company or organization, therefore COBIT 5 offers a generic 17 enterprise goal (EG) approach as a framework for implementing cascading processes in the selection of priority IT processes at XYZ Organizations. In this case the EG used by the XYZ Organization is a KPI taken from the performance contract of the IT Directorate.

1) Mapping KPI Directorate of IT to EG Generic

In the table below, explicate mapping process between KPI Directorate IT with generic enterprise goals contained in COBIT 5.

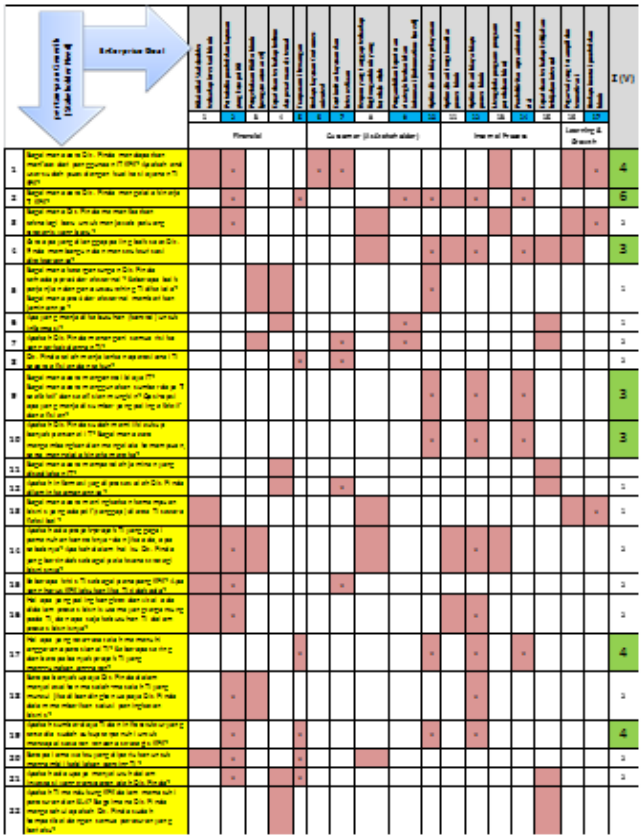
Table 2. Mapping KPI to Enterprise Goals Generic



2) EG Generic Mapping to Stakeholder Needs Generic

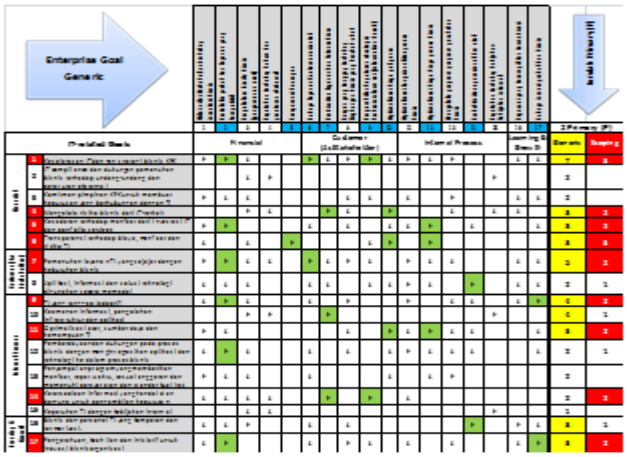
From this method can be amplify how stakeholder perspective and how the questions are linked with generic EG as can be seen in Table 3. Mapping generic EG to stakeholder's needs generic below:

Table 3. EG generic mapping to generic stakeholder needs



The step of selecting the priority IT process is the result of the mapping of enterprise goals and IT goals cascaded back to the 17 IT realized goals generic (ITG) contained in COBIT 5, resulting in priority IT processes at XYZ Institute. COBIT 5 has provided 17 IT related goals that have been classified against several perspectives: financial, stakeholder, internal process, and learning and growth. In the table below can be used to map between 17 IT related goals with the results of enterprise goals and IT goals that have been obtained in the previous stage, for the next stage will be selected IT related goals that have the results of the primary score is greater than two, the IT related These goals will be cascaded with 37 IT COBIT 5 processes to gain priority IT processes at XYZ Agencies.

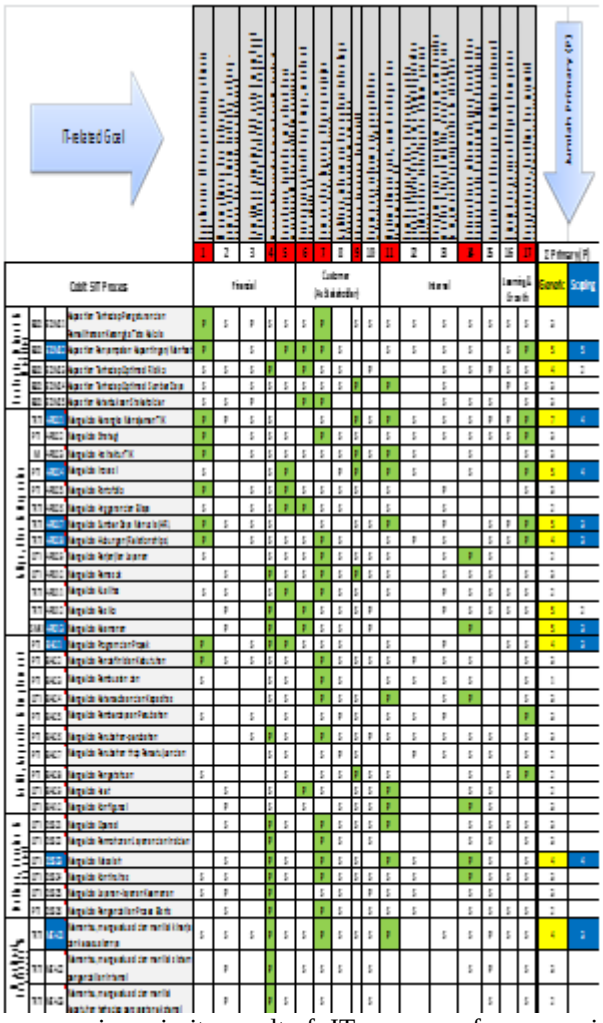
Table 4. EG Generic Priority Mapping with IT-related



From the above table ilustrate the IT-related priority target that is the numbers 1,4,5,6,7,9,11,14 and 17, then nine

IT-related priority goals will be cascaded with 37 existing IT process on COBIT 5 to get priority IT processes on XYZ Organizations as can be seen in the table below.

Table 5. Mapping of IT-related Goals to IT Process COBIT 5



There are nine priority result of IT processes from mapping results using the table above :

1. EDM02 Certainty of delivering benefits
2. APO 01 Managing ICT management framework
3. APO 04 Managing innovation
4. APO 07 Managing human resources
5. APO 08 Managing relationships
6. APO 13 Manage security
7. BAI 01 Manage programs and projects
8. DSS 03 Managing the problem
9. MEA 01 Monitor, evaluate and assess its performance and suitability.

V. CONCLUSION

Based on the results of the research, there are eight priorities IT processes in IT Directorate at XYZ Organization, detail as follow:

1. APO01 Managing ICT Management Framework
2. APO07 Managing Human Resources
3. APO 8 Managing Relations (Relationships)
4. BAI01 Managing Programs and Projects
5. DSS03 Managing Problems
6. MEA01 Monitor, Evaluate and Assess Performance and Conformity
7. APO04 Managing Innovation
8. APO13 Managing Security

Of the eight IT processes that are the result of the mapping on the section of Discussion and Research results that will be used as a priority KPI Directorate of IT in the next year, because the eight IT process is a process of IT priority / important that can support the realization of harmony and have a direct impact between Enterprise Goals with IT Goals at XYZ Agencies. From the measurement of the level of capability of the priority IT process on Organization XYZ, the following results are obtained:

1. APO01 with capability level 5 which is the optimizing process level it explains that IT Directorate at XYZ Organization has successfully implemented completely related to ICT Management Framework and this process is considered to have successfully fulfilled core business objectives of XYZ Organization.
2. APO07 with capability level 3 or so-called established level, this illustrates that the IT Directorate has successfully managed its human resources in the IT field; it is still limited to the achievement of outcome in the IT Directorate, but not yet at the level of success in supporting the core business objectives From the XYZ Organization.
3. APO 8 with capability level 1 indicates that the IT Directorate in managing its relationship with core business XYZ Agencies has implemented the process required by the COBIT 5 framework, but the IT Directorate has not been able to properly manage the relationship, the work product output of this process has not been established Appropriate, and no effort to maintain the continuity of the flood.
4. BAI01 with capability level 1 illustrates that the IT Directorate has been able to carry out the process of managing the IT programs and projects it is responsible for, but the current management of programs and projects should be further enhanced by striving to meet the criteria required by COBIT 5 for this process to rise to the next level.
5. DSS03 with a level of capability 1 indicating that the IT Directorate in managing the problem of best practices performance and work product output has been achieved, but can still be upgraded to a higher level.
6. MEA01 with capability level 3 illustrates that the IT Directorate of XYZ Organization has been able to collect, validate and evaluate business objectives, IT objectives and processes and their matrices, but in this process the IT Directorate has not been able to provide a systematic and real time report on all its activities to the stakeholders who need the information.
7. APO04 with 0 capability level indicates that IT Directorate has not been able to implement innovation management process at XYZ organization.
8. APO13 with capability level 0 informs that the IT Directorate has not been able to determine, operate and monitor the information security management system at XYZ Organization.

REFERENCES

1. Laudon,K.C., & Laudon,J.P.(2007).Management Information System : Managing The Digital Firm.(Tenth Edition).New Jersey: Pearson Prentice Hall.
2. Williams,B.K.,Sawyer.,& Stacey.C. (2010). Using Information Technologi: A Practical Introduction to Computers & Communications.(Nineth Edition).New York:McGraw Hill.
3. ITGI. (2011). Global Status Report on the Governance of Enterprise It (GEIt)—2011. Governance An International Journal Of Policy And Administration, 70. Retrieved from http://m.isaca.org/Knowledge-Center/Research/Documents/Global-Status-Report-GEIT-2011_res_Eng_0111.pdf.
4. Gondodiyoto, Sanyoto. (2007). Audit Sistem Informasi + pendekatan COBIT.Edisi Revisi. Mitra Wacana Media, Jakarta.
5. Isaca. (2012). COBIT 5 Implementation. USA: Isaca.
6. Isaca. (2013). COBIT Process Assessment Model (PAM): Using COBIT 5.
7. Axelon Samuel Renyaan (2013). Evaluation of Information Technology Governance Using COBIT Framework 4.1 At Government Organizations.
8. Dias Rawiro (2016). Evaluation of Information System Governance Using Cobit Framework At Financial Management Agency And Regional Asset DKI Jakarta.
9. Gerry Daniel Hamonangan (2016), Evaluation of Information Technology Governance Using the Cobit Framework At Pt. Casa Dekora Multi Kreasi.
10. Firman (2016). Evaluation of Information Technology Services Based on ITIL V3 2011 and COBIT 5 A Case Study Data Center and Information (Media Center) of the Ministry of Land.

AUTHORS PROFILE

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