# Audit Information System Development using COBIT 5 Framework

## (case Study: STMIK STIKOM Bali)

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*Abstract*—**Information technology (IT) is a very important part for the company or institution and investment value to make the company or institution for the better. Companies or institutions using information technology to make the support of the strategic plan company in Attaining the vision, mission and objectives of the company or the institution, as well as STMIK STIKOM Bali. Applied information technology in the companies or institute need to be regulated. Managing information technology requires an audit for evaluating and ensure compliance in terms of the standard approach. Information Technology in Bali STIKOM STMIK require audits to evaluate, assess capabilities and make a recommendation for manage information technology better. Framework COBIT 5 is use for audit, that focuses on the purpose IT service delivery in accordance with business needs. The results of audit use framework COBIT 5 with 17 process capability obtained is 2.66, which states that the implementation of IT services is already established and has a standard.**

*Keywords — COBIT 5, Service IT*

## I. INTRODUCTION

Information technology (IT) has recently influenced the way of thinking and behaving, especially in the institution or organization is in need to make a decision. Information Technology developments have spurred a new way of life, living the electronic needs of the affected, such as e-commerce, e-government, e-education, e-library, e-journals, e-medicine, e-laboratory, e learning and so on the other. As a result, IT involvement in an institution or organization lead to changes in the system that have an impact on changes in the way of performance

Information Technology has been use in every aspect of life, professions and education. STMIK STIKOM Bali have a division call is Systems Development Information (PSI). Development of Information Systems is a division in charge of designing and building software, maintenance and software development internal or external system in STIKOM Bali. Division development of Information System have a purpose to make a service running well with concepts business in STMIK STIKOM Bali.

To measure the information services provided by the division of Information Systems Development is required an audit. With an audit, it is known the level of security of assets, maintaining data integrity, can encourage the achievement of organizational goals, effectively and resources efficiently [1],

and also to know the level of maturity of information technology in STMIK STIKOM Bali and make a recommendation to achieve a level of maturity implemented and help realize the vision, mission, and purpose in PSI STIKOM Bali.

Framework used in information technology audit is COBIT 5. COBIT 5 is a comprehensive standard that helps companies in achieving goals and generate value through good governance and effective management of information technology [2]. COBIT 5 provides a complete framework. There are five domains and 37 processes in COBIT 5 can be used to conduct the audit. Therefore COBIT 5 is considered appropriate and may assist in the process of audit of information technology as it includes all the elements of information technology that is used.

Based purpose of IT services to business processes use domain EDM (Evaluate, Direct and Monitor), APO (Align, Plan and Organise), BAI (Build, Acquire and Implement), DSS (Deliver, Service, and Support) and MEA (monitor, Evaluate and Assess) and 17 process to audit services provided by the development of information systems to business processes that occur.

## II. PURPOSE OF PAPER

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## III. LITERATURE REVIEW

*Audit*

Business organization undergo different types of audits for different purposes. The most common of These are external (financial) audits, internal audits, and fraud audits. An IT audit focuses on the computer-based aspects of an organization's information systems and modern systems employ significant levels of technology [3]. Audit is playing an important role in developing and enhancing the global economy and business firms [4]. Ron Weber (1999) argued, that Information systems auditing is the process of collecting and evaluating evidence to determine computer system safeguards asses, maintain data integrity, allow organizational goals to be achieved effectively, and use resources efficiently [5]. According Sukrisno Agoes (2004), "An examination conducted critically

and systematically by an independent party, the financial statements have been prepared by management along with notes bookkeeping and supporting evidence, in order to be able to give an opinion on the fairness of the financial statements" [6].

*Cobit 5*

COBIT (Control Objectives for Information and Related Technology) is a set of documentations and a guide who directs the IT Governance and Management of IT that can help auditors, management, and user (user) to bridge the GAP between business risks, control needs and Problems of technical. COBIT was developed by an institution TI Institute Governance (ITGI), which is part of the System Information and Control Association (ISACA) [7]. In COBIT 5 version there are five (5) key principles of governance and management of IT companies, the five principles requires and show in Figure 1.
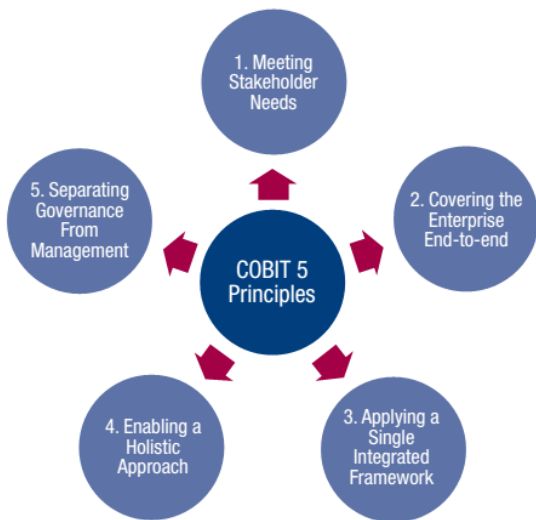


Figure 1 The five key principles of COBIT 5 (ISACA: 2012)

COBIT 5 framework makes a clear distinction between governance with management. Both of these disciplines have differences in terms of activity, the needs of the organizational structure and serve different purposes show in Figure 2.
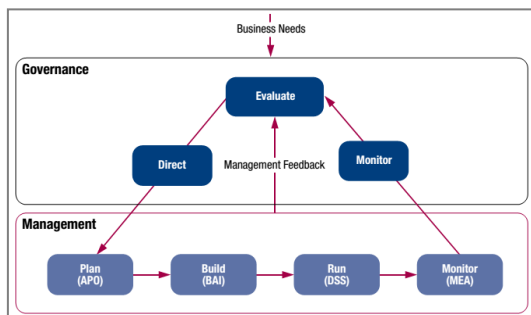


Figure 2 Governance and Management Key Areas (ISACA :2012)

In COBIT 5 there is a process reference model that define and explain in detail about the process of governance and management. The model represents all the processes commonly found in companies that deal with IT activities, as well as a reference model provides an easily understood in IT operations and a business manager. The model given process is a model of a complete and thorough, but not the only model of the process that may be used. Each company must determine its own process circuit in accordance with the specific situation. In a reference process model is the successor of the COBIT 5 process model, by integrating the process model of RiskITdan ValIT. In total there are 37 processes of governance and management in COBIT 5 as can be seen in Figure 3.
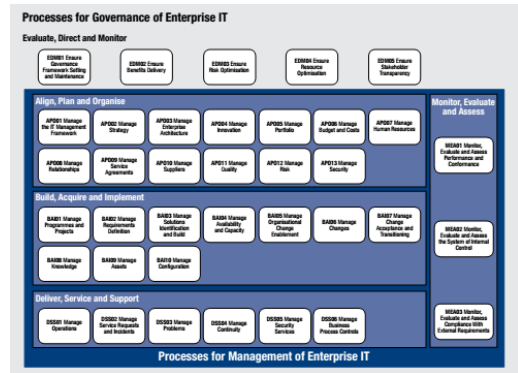


Figure 3 Process Reference Model

ISO / IEC 15 505 defines the measurement for the assessment of process capability COBIT framework. In table 1 show the process capability is defined at level 6 points from 0 to 5, who presented an increase capability of the process is implemented.

Table 1 Capability COBIT framework

| level | Description |
|---|---|
| Level 0: Incomplete process. | The process is not placed or it cannot reach its objective. At this level, the process has no objective to Achieve. For this reason this level has no attribute. |
| Level 1: Performed process. | The process is in place and Achieves its own purpose. This level has only "Process Performance" as process attribute. |
| Level 2: Managed process. | The process is implemented following a series of activities such as planning, monitoring and adjusting activities. The outcomes are established, controlled and maintained. This level has "Performance Management" and "Work Product Management" process as attributes. |
| Level 3: Established process. | The previous level is now implemented following a defined process that Allows the achievement of the process outcomes. This level has "Process Definition" and "Deployment Process" as process attributes. |

| Level 4: Predictable process. | This level implements processes within a defined boundary that Allows the achievement of the processes outcomes. This level has "Process Management" and "Process Control" as process attributes. |
|---|---|
| Level 5: optimizing process. | This level implements processes in the way that makes it possible to Achieve relevant, current and projected business goals. This level has "Process Innovation" and "Process Optimization" process as attributes. |

## IV. RESEARCH METHOD

Based on the problem being investigated and the objectives to be required a systematic in study. The steps are made systematically and logically so that it can be used as guidelines are clear and easy to solve problems.
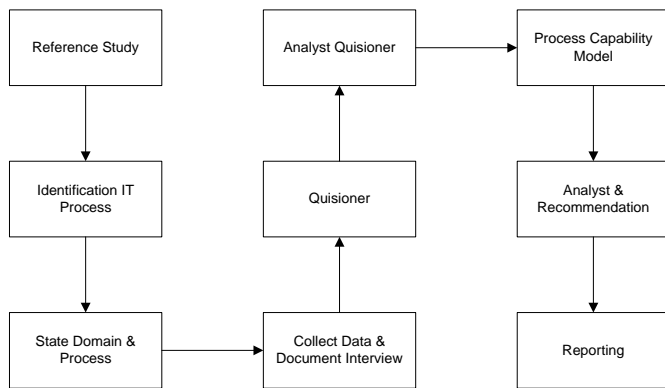


Figure 4 Research Method

In the Figure 4 show there are 9 step, which describe the steps being taken:

1) Reference Study, by doing a references study is expected to be able to explore the entire information related this research, both on the problems studied and objects into research purposes. It is hoped the research will be directed and form the rationale for researchers.

2) IT Identification Process, this is occurred from the IT system requirements, system manufacturing, system services, security and also the needs of stakeholders.

3) State Domain and Process, use the COBIT 5 to selection domain and process will be use in research.

4) Collect Data and Interview, search the data and interviews with documents that already exist.

5) Questioner, based on the process of making the domain has been used and sent questioner to staff that use a services of information system in STMIK STIKOM Bali.

6) Analyst Questioner, analyze the values obtained on questioner that have been distributed.

7) Process Capability Model, this process is performed after data processing, data analysis consisted of analysis capabilities that exist today, the expected level of capability and gap analysis.

8) Analyst and Recommendation, give the results of audits that have occurred in Bali STIKOM STMIK and provide recommendations on the values obtained.

9) Reporting, give a reports about audit service information system to manager in STMIK STIKOM Bali.

## V. ANALYSIS AND RESULT

*Analysis Questioner Result*

Determining the conditions in level of activity - activity that is present in the form of audit work, then analysis the form of searching for an appropriate level on the results of the questioner form. Determination of the activity in each level is done by selecting a mode value or the value that most occur during each activity. And if the value appears that there are two levels or maybe more, then the selected is the value level of the smallest among them.

*Process Capability Level Rating Process*

There are 17 processes the measured capability in each level, with mapped into COBIT processes using domain EDM, APO, domain BAI, domain DSS and domain MEA. In EDM domain use 1 process, APO domain use 5 process, BAI domain use 4 process, DSS domain use 6 process and MEA domain use 1 process. In determining the category of each assessment level, a process is said to pass the process and achieve category Largely Achieved (L) with the provisions of the range of values obtained is 50-85%. Meanwhile, if a process has a range ranging between> 85-100%, this is a condition that must be met in order to proceed to the next level of capability assessment is no provision previous process must achieve category Fully Achieved (F) if you want to continue on the next process.

*Results Calculation Capability level*

Based on the calculation results in 17 (seventeen) process contained in the COBIT 5 framework, the obtained results of capability level that was achieved in the process of IT services in STIKOM Bali depicted in Figure 5.
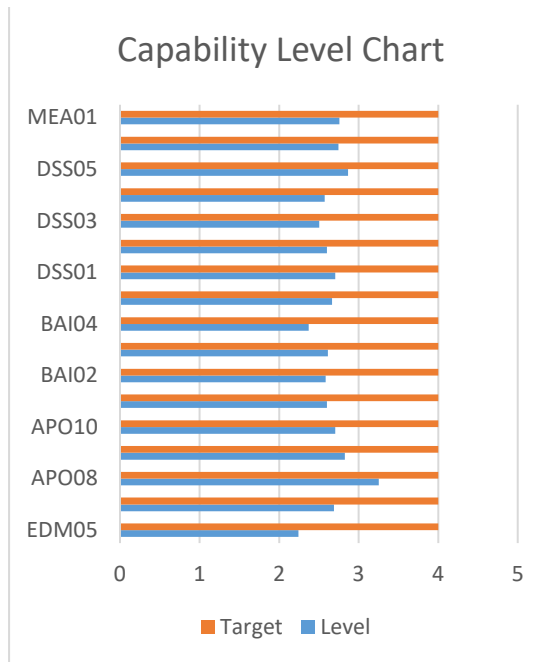
Figure 5 Result Index Proses Capability

The results of the measurement capabilities of the IT services business in STMIK STIKOM Bali for use seventeenth process in COBIT 5 measured nobody process is able to achieve the targeted level, which is level 4.

1) The process of EDM05 reached level 2.24, that can be said the company's performance, conformance measurement and reporting is transparent, with the stakeholders agree objectives, metrics and the necessary corrective actions have been defined and standardized.

2) The process of APO02 reached level 2.68, that can be said the plan has been align with IT and business objectives have been established and standardized, clearly communicating the purpose and accountability are related so that they understood by all.

3) The process of APO08 reached level 3.25, that can be said in managing the relationship between business and IT has been transparent that focuses on achieving a common goal.

4) The process of APO09 reached level 2.82, that can be said the service and IT service levels have been set for the company's business needs.

5) The process of APO 10 reached level of 2.7, that can be the enactment of services related to all kinds of company needs.

6) The process of APO 11 reached level 2.6, that can be said it has set the standard of quality in all processes, procedures, controls and efficiency in service improvement.

7) The process of BAI02 reached level 2.58, that can be said in managing the business requirements have been set to create optimal solutions and minimizes the risk that occurs in a service.

8) The process of BAI03 reached level of 2.61, that can be said it has set the standard in managing identification solutions and building repair services from a service.

9) The process of BAI04 reached level of 2.58, that can be said the company has been keeping, managing resources efficiently and predict future needs.

10) The process of BAI06 reached level 2.67, that can be said in managing change in organizational empowerment has been set on a procedure.

11) The process of DSS01 reached level 2.71, that can be said the stipulation of operational IT services in accordance with the plan.

12) The process of DSS02 reached level 2.6, service request and incident management have met the needs and can provide a quick solution.

13) The process of DSS03 reached level 2.51, to improve services and increase subscriber satisfaction had been carried out in accordance with the procedure.

14) The process of DSS04 reached level 2.58, that can be said has set the business management in accordance with the business plan to improve business continuity.

15) The process of DSS05 reached level 2.87, has been managing the security services in accordance with the procedures in accordance with the SOP that has been set.

16) The process of DSS06 reached level 2.74, has been the standard SOP for doing business control processes and maintain information integrity and security of information assets of the company's business processes.

17) The process of MEA01 reached level 2.76, the transparency of the performance and suitability in achieving the goals.

*Measurement Results*

Achievement the analysis of the audit about services has given by Information Systems Development to STIKOM STMIK Bali obtained level of 2.67. The result can provide understanding that the services by the Information Systems Development STIKOM STMIK Bali for the Internal and External compliance with the standards and have been established by procedures that exist in division Developer Information Systems.

*Recommendation*

From the measurement results can be seen that each process used did not achieve the purpose for it, there are several recommendations that the authors provide, among others:

18) Process of EDM05, the presence of documentation every activity that has been done to stakeholders and report on any activity in more detail again.

19) Process of APO02, manage the strategic direction of IT requires all the resources available to align IT with business priorities and strategies should continue to be done.

20) Process of APO08, bolstering confidence in the IT waiter given by delivering solutions to a risk of the service.

21) Process of APO09, renew the service agreement is given if the service has been completed and monitors the services provided.

22) Process of APO10, documenting the service of the needs of suppliers to facilitate the maintenance services rendered.

23) Process of APO11, improve the quality of services provided to see the usefulness of a service that is built to fit the business needs.

24) Process of BAI02, documenting business requirements, create business processes that occur as well as the blue print of each project is built.

25) Process of BAI 03, do management of the system is built and testing of each service and management documentation.

26) Process of BAI04, making prediction service needs or to update the technology to business needs.

27) Process of BAI06, documenting the changes in a service as well as notes on a log on a system to change to remind the service change.

28) Process of DSS01, conducting an assessment of the infrastructure owned and created documentation for future evaluation material.

29) Process of DSS02, making a strategy - a strategy in solving service requests and incidents either in the form of policy or direct management actions like system.

30) Process of DSS03, making related documentation solutions for problem solving and analysis of financing to solve the problem, monitoring and documented.

31) Process of DSS04, making a scheme or system that contains the response to the incident and communication, documented and evaluated and arouses a business continuity plan (BCP) for the development of business process and document.

32) Process of DSS05, making a report on the testing of security systems implemented and evaluated as well as measuring the quality of security systems and access rights are granted.

33) Process of DSS06, making policy in determining the role that is authorized to access the activity or data that is sensitive, is described in detail and documented as well as identifying the type - the type of data that is confidential, makes storage and removal procedures are appropriate.

34) Process of MEA01, making documentation of all activities conducted based on the manufacture of systems, services and others as well as an evaluation of any activities that have been carried out

*General Recommendations*

All of capability levels obtained established process in level 3, level the target is to be achieved 4, so that recommendations are formulated are as follows:

35) Make a document on the transparency of the reporting of data to be provided to stakeholder.

36) Make a measurement application services that must be met in each business process to guarantee the service runs fine.

37) Creating a monitoring and evaluation system that is appropriate the business processes to optimize IT processes.

38) Make documentation or report on the overall results of the on-going process, and also violations as an evaluation and development sustainability.

## VI. CONCLUSION

Based on the audit has been carried out on the services provided by the Information Systems Development of the business processes in STMIK STIKOM Bali use frameworks COBIT 5, it can be concluded that in the audit phase used 17 pieces of the process of domain COBIT 5, wherein the process used is EDM05, APO02, APO08, APO09, APO10, APO11, BAI02, BAI03, BAI04, BAI06, DSS01, DSS02, DSS03, DSS04, DSS05, DSS06 and MEA01. In APO08 (Manage Relationships) gives the highest, so that it can be said that the relation between the care providers stakeholder good and EDM05 (Stakeholder Ensure Transparency), it can be said that there is still need for the provision of more transparent reporting to the stakeholders. From the results of the audit, it is known that the process is carried out in the provision of new services reach the 2.67 level still not reached the level set is level 4. So there are need a change process achieve to make better services.

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