Implementation of COBIT 5.0 for Information System Analysis in Pakuan University

Lita Karlitasari, Aries Maesya, Dini Suhartini

Abstract: Pakuan University currently has an Academic Management Information System (SIMAK) that used to manage all lecture activities, from Scheduling, Lecture Activity, to Final Assessment. The purpose of this research is to analyze the extent of maturity of SIMAK. The application of the COBIT 5.0 Method is used to further improve the effectiveness of each activity, ensure the objectives achieved, provide recommendations in the future, unite stakeholder agreements in evaluating the results of activities, and provide strong support for the overall activities. There is also one domain that is used is the domain Deliver, Service, and Support (DSS). Based on the results of the analysis, the level of capacity of the process of activities carried out is at level 3 or a established process. That can be increased to level 4 or the predictable process. Therefore, the recommendation is to make a quality assurance document or performance appraisal every semester, simplified content by eliminating duplication, monitoring and analysis of demand documents and disseminating to all user including lecturers and students about the importance of maintaining data security.

Index Terms: SIMAK, COBIT 5.0, DSS, Model Compatibility Process.

I. INTRODUCTION

Based on the number of statistics in the Higher Education Database, in 2018 there are 4,610 universities that are active in both private and private sector [6]. At this time the use of Information Technology in the Higher Education is inevitable in managing the activities of lectures. The Ministry of Research, Technology and Higher Education itself has set IT as an important part in running an organization, as quoted in Government Regulation No. 62 of 2017 on Information Technology Governance within the Ministry of Research, Technology, and Higher Education [7]. Thus to supervise all data in Higher Education Database, in 2018 there are 4,610 universities as academic, financial, and personnel administration. Some colleges also use computers to strengthen and enrich the learning process, for example to deliver electronic lectures, interact via electronic mail, or build a collection of electronic material that can be downloaded easily. However, the problems that often arise in the implementation of information technology in universities include: the absence of information technology development plans (strategic plan, roadmap, or the like) that describes the implementation objectives of information technology and its relevance to the target universities, the lack of clarity in charge of the implementation of information technology, the absence of a system for the identification of needs, assessment, and evaluation of information technology support for university activities, the lack of clarity of procedures for the implementation of activities supported by information technology facilities, including procedures for handling exceptions, and the lack of clarity of the executor and responsible activities which is supported by information technology facilities, especially activities that involve more than one party. The issues that arise are usually resolved reactively and ad-hoc, so the solution is not complete and there is always the possibility that similar problems will reappear in the future. If this is allowed to continue, universities will lose momentum to gain support from information technology. [8]

II. METHODS

A. Information Technology Governance

The definition of IT governance (IT governance) according to ITGI (Information Technology Governance Institute) (2007) are: "IT governance is the responsibility of executives and the board of directors, and its composite of leadership, the organizational structures and processes that ensure that the enterprise's IT sustains and extends the organization's strategies and objectives." IT governance is an integral part of corporate management that includes leadership, organizational structure and processes that ensure that enterprise information technology can be used to maintain and expand organizational strategy and goals. One of the developments in IT governance informatics technology has always been said to be a new form of informatics technology management. However, between IT governance and IT management has a thin line of separation. According to [4] the domain of IT management is focused on providing IT services and computer technology is used to support administrative processes, such as academic, financial, and personnel administration. Some colleges also use computers to strengthen and enrich the learning process, for example to deliver electronic lectures, interact via electronic mail, or build a collection of electronic material that can be downloaded easily. However, the problems that often arise in the implementation of information technology in universities include: the absence of information technology development plans (strategic plan, roadmap, or the like) that describes the implementation objectives of information technology and its relevance to the target universities, the lack of clarity in charge of the implementation of information technology, the absence of a system for the identification of needs, assessment, and evaluation of information technology support for university activities, the lack of clarity of procedures for the implementation of activities supported by information technology facilities, including procedures for handling exceptions, and the lack of clarity of the executor and responsible activities which is supported by information technology facilities, especially activities that involve more than one party. The issues that arise are usually resolved reactively and ad-hoc, so the solution is not complete and there is always the possibility that similar problems will reappear in the future. If this is allowed to continue, universities will lose momentum to gain support from information technology. [8]
products efficiently and effectively and managing IT operations. While the IT governance comes the duality of demand is contribute to current business operations and performance and transform and position IT to meet future business challenges. [4]

B. COBIT 5.0

COBIT 5.0 is a business framework for IT governance framework, as well as a suite of tools that support managers to bridge the gap between control requirements, technical issues and business risks (business risk). COBIT is developed by the IT Governance Institute (ITGI) which is part of the Information Systems Audit and Control Association (ISACA). According to ISACA, COBIT 5.0 is a framework for governance and management of information technology and all that is related, starting from meeting stakeholder needs for information and technology. Domain Deliver, Service, and Support (DSS) are one of five COBIT 5.0 domains that include Management of Enterprise IT. Domain DSS focuses on delivering data, services, and support provided for effective and efficient information systems. Domain DSS has six processes, namely: [3]

- DSS01 Manage Operation
- DSS02 Manage Service Requests and Incidents
- DSS03 Manage Problems
- DSS04 Manage Continuity
- DSS05 Manage Security Services
- DSS06 Manage Business Process Control

C. Process Capability Model

The number of rating scores on the Capability Model is the same as six levels, including: [3]

1. Level 0 Incomplete Process
   The process is not implemented or fails to achieve its process objectives. At this level, there is little or no evidence of any achievement of process objectives.

2. Level 1 Performed Process (1 attribute)
   The process is implemented to achieve its business objectives.

3. Level 2 Managed Process (2 attributes)
   Implemented processes are managed (planned, monitored, and adjusted) and the results are defined and controlled

4. Level 3 Established Process (2 attributes)
   The process is documented and communicated (for organizational efficiency)

5. Level 4 Predictable Process (2 attributes)
   The process is monitored, measured, and predicted to achieve results.

6. Level 5 Optimizing Process (2 attributes)
   The process is predicted and then improved to meet relevant business objectives and future goals.

III. RESULT

Obtain samples from the existing population used RACI model (Responsibility, Accountability, Consult, and Informed). Know the level of capability, the respondents from the research amounted to 5 (Eight) people, including: Vice Rector for Human Resources and Finance, Head of Internal Quality Assurance Institution, Head of Information Technology and Communication, Administrative and User Center (Lecturers/Students). The results of the first mapping are then mapped with IT-related Goals. Then used process capability model (PCM) which is divided into two categories, namely primary (P) and secondary (S). P indicates that the item has a high priority, while S indicates that the item has a low priority.

<table>
<thead>
<tr>
<th>IT PROCESS</th>
<th>Vice Rector for Human Resources and Finance</th>
<th>Head of Information Technology and Communication</th>
<th>Administrative</th>
<th>Lecturers / Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>DSS01</td>
<td>Manage Operation</td>
<td>S</td>
<td>P</td>
<td>S</td>
</tr>
<tr>
<td>DSS02</td>
<td>Manage Service, Request, Incidents</td>
<td>S</td>
<td>P</td>
<td>S</td>
</tr>
<tr>
<td>DSS03</td>
<td>Manage Problems</td>
<td>P</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DSS04</td>
<td>Manage Continuity</td>
<td>S</td>
<td>S</td>
<td>P</td>
</tr>
<tr>
<td>DSS05</td>
<td>Manage Security Service</td>
<td>S</td>
<td>P</td>
<td>S</td>
</tr>
<tr>
<td>DSS06</td>
<td>Manage Business Process Controls</td>
<td>S</td>
<td>P</td>
<td>S</td>
</tr>
</tbody>
</table>

This process begins with gathering information from the questionnaires and interviews that have been done during the audit process. From the collection of information is obtained average capability existing level (As is) and target level (To be).

<table>
<thead>
<tr>
<th>IT PROCESS</th>
<th>Average Capability Process</th>
<th>Rounding Capability Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>DSS01</td>
<td>3.75 (As-is)</td>
<td>4.75 (To-be)</td>
</tr>
<tr>
<td>DSS02</td>
<td>3.40 (As-is)</td>
<td>4.40 (To-be)</td>
</tr>
<tr>
<td>DSS03</td>
<td>3.25 (As-is)</td>
<td>4.25 (To-be)</td>
</tr>
<tr>
<td>DSS04</td>
<td>3.75 (As-is)</td>
<td>4.75 (To-be)</td>
</tr>
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</table>

Based on the analysis of capability level results, recommendations are obtained for each DSS domain process.

<table>
<thead>
<tr>
<th>IT PROCESS</th>
<th>Current Condition</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>DSS01</td>
<td>Manager Operation</td>
<td>Implementation of operational procedures and activities of SIMAK have been monitored, measured and predicted, but have not reported the results of measurements every semester, especially for the Study Program.</td>
</tr>
<tr>
<td>DSS02</td>
<td>Manage Service, Request, Incidents</td>
<td>Creation of quality assurance documentation or performance appraisal every semester</td>
</tr>
<tr>
<td>DSS03</td>
<td>Manage Problems</td>
<td>Standard Operational Standards should be prepared for clear implementation of activities.</td>
</tr>
<tr>
<td>DSS04</td>
<td>Manage Continuity</td>
<td>The content is well organized, and has guidelines that make it easy for users to use SIMAK, but there is still some confusing content, because it is exactly the same.</td>
</tr>
<tr>
<td>DSS05</td>
<td>Manage Security Service</td>
<td>More simplified content by eliminating duplicates.</td>
</tr>
<tr>
<td>DSS06</td>
<td>Manage Business Process Controls</td>
<td>There needs to be a clear monitoring of all services, requests, and incidents, in order to be measured and predicted.</td>
</tr>
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A continuous analysis request has been made to produce a good business strategy and technical strategy but no report has been made. There are already key decision makers to make sustainable plans possible but not yet documented what to do.

Information systems already use antivirus and firewall for system security but there is no software for Intrusion Detection System (IDS). There is no policy for security connectivity based on risk assessment. Identified control activities have influenced key business processes but cannot be monitored, measured or predicted. Performed the maintenance of the integrity and validity of the data through the processing cycle, but its character is still when there is an unexpected interruption.

**REFERENCES**

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**IV. CONCLUSION**

The conclusion that can be drawn from the results of this study is the application of the COBIT 5.0 Method which is used to further improve the effectiveness of each activity, ensure the objectives achieved, provide recommendations in the future, and unite stakeholder agreements in evaluating the results of activities.

The domain used is the domain of Deliver, Service, and Support (DSS). Based on the results of the analysis, the level of capacity of the process of activities carried out is at level 3 or the process specified. While based on the results of recommendations can be increased to level 4 or a predictable process. These recommendations include quality assurance documents or performance appraisals every semester, more simplified content by removing duplicates, monitoring and analyzing request documents and disseminating to all users including lecturers and students about the importance of maintaining data security.

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