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Utilization of the COBIT 2019 Framework to Identify the Level of Governance in Internet Services

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Abstract — Information and communication technology services at the University of Muhammadiyah Bengkulu are IT services that support IT needs in all sectors. Of all the IT services that have been implemented at this institution, there is one very crucial service, namely the internet connection service, where this internet connection service is needed by all existing information technology access. In managing this internet connection, a standardized feasibility calculation has not been carried out which results in it not being in accordance with the institutional business needs. IT governance is the process of managing information technology related investment decisions within an organization to meet current and future business needs. To achieve standardized governance, this research uses the COBIT 2019 framework which is the latest version of the development results from COBIT 5. The purpose of this study is to identify the extent to which the value of existing processes for internet connection services is currently and the value of the process achievement that refers to the standard. COBIT 2019 by calculating the maturity level value which represents the level of performance on internet connection services. From the results of the 2019 COBIT Design, LTIK Muhammadiyah Bengkulu University, it is known that those who score above 80 or must reach Capability Level 4 are APO13, BAI10, DSS02, DSS03 and DSS04, for a value of 100 there is APO12.

Keywords – Internet Service, It Governance, COBIT 2019

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I. INTRODUCTION

This Information technology at this time has become a necessity for every company. With the development of information technology, more and more companies need an internet connection that suits the company's business needs.

Information and communication technology services at the University of Muhammadiyah Bengkulu are IT services that support IT needs in all sectors. Of all the IT services that have been implemented at this institution, there is one very crucial service, namely the internet connection service, where this internet connection service is needed by all existing information technology access. In managing this internet connection, a standardized feasibility calculation has not been carried out which results in it not being in accordance with the institutional business needs.

Another problem is that more and more users are connected to the internet, the more complex the network will be and will cause new problems such as network topology that is not in accordance with standards. Therefore, it is necessary to evaluate through measuring the performance of internet connection services at the Information and Communication Technology Institute (LTIK) Muhammadiyah University of Bengkulu.

Information technology governance is a process that is able to manage investment decisions related to Information Technology within the company in order to achieve the goals of the company's current or future needs [1]. To achieve standardized governance in this research, the COBIT 2019 framework is used which is the latest version of the development of COBIT 5 [2] [3]. With various previous studies, it is known that COBIT is a framework that has a wide range of

problems coupled with the latest version of COBIT 2019 providing flexibility in its use [4].

COBIT (Control Objectives for Information and related Technology) is an IT framework issued by ISACA that can help companies to carry out optimal IT assessments that achieve a balance between expected benefits and optimize the value of the level of risk and use of resources [5] [6] [7]. COBIT is a collection of Best Practices documents for IT Governance to assist auditors, users and management [8] [9]. COBIT serves to bridge the gap between business risks, control needs and problems that occur in IT technical [10]. The purpose of this study is to identify the extent to which the value of the existing process achievements in the current internet connection service and the value of the process achievement that refers to the COBIT 2019 standard by calculating the maturity level value which represents the level of performance on internet connection services.

A previous study using COBIT 2019 addressed the governance design of PT Telekomunikasi Indonesia Regional VI Kalimantan by creating a design containing a total of 14 processes important to the company [11].

The next survey aims to examine the performance of SIPERUMKIM information technology using COBIT 2019. The findings of this survey came in the form of a corporate IT governance design and identified key process recommendations for the Salatiga Municipal Housing and Resettlement District Office. Recommendations for 5 key processes include APO12, DSS02 and DSS03 [12].

II. RESEARCH METHOD

The research method guide that will be used is descriptive analytic method which aims to describe the phenomenon of a situation that is currently running, then analyze it using a quantitative approach. This study uses the COBIT 2019 standard procedure as an analytical tool by using a table of respondent lists, maturity values formulas, and scoring techniques to obtain the maturity level.

A. Research Flow

The flow of this research uses the governance design framework written in the COBIT 2019 guidebook [13]. The description of the flow of this research is as shown in Figure 1.

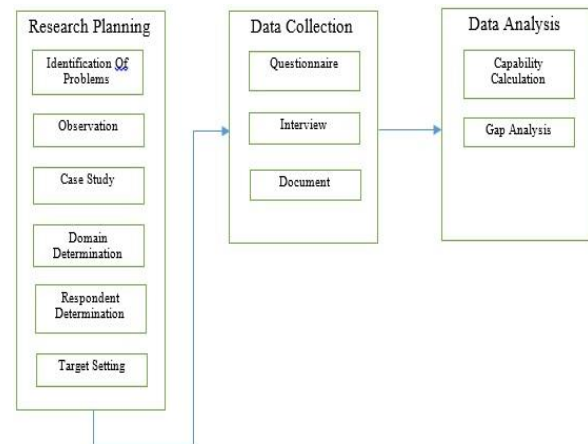


Fig.1. Research Flow

From the explanation of the picture of the research flow, it can be explained as follows, namely at the initial stage carried out in the research step is research planning, such as problem identification, then observations are made at the Information and Communication Technology Institute (LTIK) Muhammadiyah University of Bengkulu. The study is designed to gather data that will be necessary for its completion. Next is a case study regarding the methods and steps that will be used for the level identification process. The method that will be applied is the design factor in the COBIT 2019 framework, this method is done by analyzing each of the COBIT 2019 design factors [14]. The next stage is to determine the selected domain in the COBIT 2019 framework according to the scope of needs. This stage is the most important stage of all COBIT 2019 processes [15][16].

To determine the activity starting with the selected domain, questions will be made in a questionnaire that is given to correspondents. The activities in the COBIT 2019 framework are used as a source of inspiration for activities in the selected domain. The activities of each domain may differ depending on the COBIT 2019 framework. After determining the next selected domain, which is to determine who the respondents are the subjects in this study. In asking questions about the domain activity that has been determined to be carried out on the list of respondents used, the core of this process is to get the results of the activity. The last stage at the planning stage of this research is to determine the target level of capability that will be used as a reference in carrying out the level identification process. Capability level results are generated from the results of domain mapping to determine the level of achievement that must be obtained.

B. Data Collection

Data collection was used to obtain the data needed in the preparation of this study, while the data collection methods used were.

Conducting literature studies related to research whose sources come from books, journals, articles, and the internet. The discussions were taken about theories

and governance works using the COBIT 2019 framework. Interviews were conducted with the leaders of the information and communication technology institutions of Muhammadiyah Bengkulu University directly regarding the current state of internet access management. This observation was carried out by researchers by reviewing documents related to internet access.

Providing questionnaires aimed at collecting data by providing a set of questions related to the condition of internet access to be measured.

C. Data Analysis

At this stage is to analyze the data that has been obtained and manage the final results which will eventually be given to the information and communication technology institution (LTIK) Muhammadiyah University of Bengkulu, that the process of identifying the level of internet service management has been carried out. The data and result analysis phase includes the calculation of the capability level, gap analysis. In calculating the capability level, it is used to measure the condition of internet services against internet conditions. Meanwhile, the gap analysis is the difference between the results obtained and the results desired by the Information and Communication Technology (LTIK) Muhammadiyah University of Bengkulu.

III. RESULT

The result of the execution is in the form of a governance design form generated at COBIT 2019 using the Design Toolkit to fill in the design factors. The first design factor is to identify the business strategy implemented by LTIK Muhammadiyah Bengkulu University from the four strategies provided in the COBIT 2019 Design Toolkit.

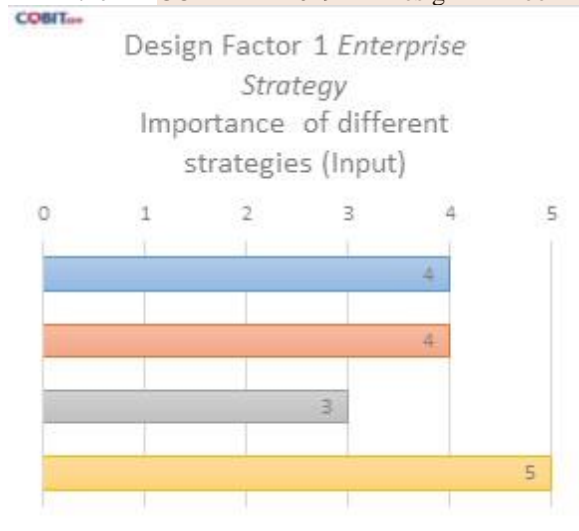


Fig 2. Design Factor 1 Enterprise Strategy

Figure 1 shows the results of the first design mapping, namely the unit strategy, which obtained the selected strategy in accordance with the strategic

priorities of LTIK Muhammadiyah Bengkulu University. The fourth unit strategy is service, in accordance with Bengkulu University's LTIK mission to implement and improve the quality of Internet services and their use. Based on this mission, LTIK Muhammadiyah Bengkulu University must provide internet media services that can be accessed by users of employees, lecturers and students of the University of Muhammadiyah Bengkulu in a uniform and stable manner. Make fast and stable internet service well distributed.

The second design factor is unit goals, which support the business strategy identified in the previous phase. The results of the second design factor study are shown in Figure 3.

Fig 3. Importance of Each Enterprise Goal

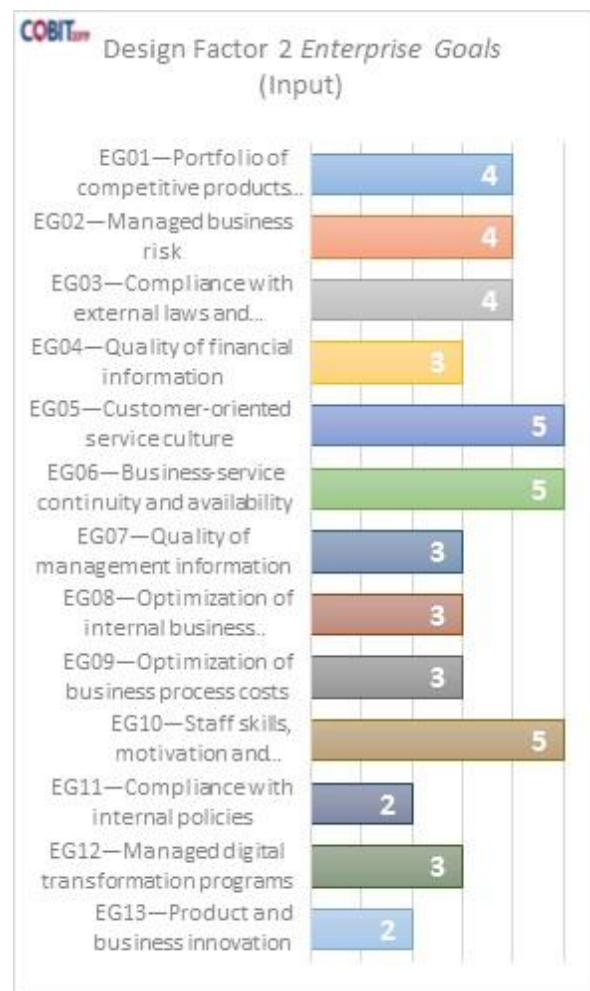


Figure 2 shows the results of the second design factor, namely the purpose of the unit, 3 selected objectives were obtained based on the LTIK objectives of the University of Muhammadiyah Bengkulu.

The purpose of LTIK Muhammadiyah Bengkulu University EG05 regarding Customer-oriented service culture is internet service-oriented, LTIK

Muhammadiyah Bengkulu University is building a media service for the internet in collaboration with a bandwidth provider company for internet access. Where the participation of employees, lecturers and students in assessing the process as users of internet services. In realizing a good assessment and better fluency, one of the things that needs to be done is to involve employees, lecturers and students in assessing the smoothness of the internet so that every decision taken by LTIK can facilitate work processes related to internet media.

Organizational objectives EG06 on Business-service continuity and availability. The construction of an internet media service by LTIK Muhammadiyah Bengkulu University in supporting and facilitating internet access in the campus environment where the internet access service runs as its function in facilitating employees, lecturers and students in accessing internet services.

The EG10 value is staff skills, motivation and productivity where for the skill development section, especially in the internet service section and staff motivation and productivity, training is carried out periodically as an increase in knowledge of the latest technological changes that will always develop.

The third design factor is the risk profile, which identifies the risk profile of LTIK Muhammadiyah Bengkulu University. The results of the identification of the third design factor are shown in figure 4.

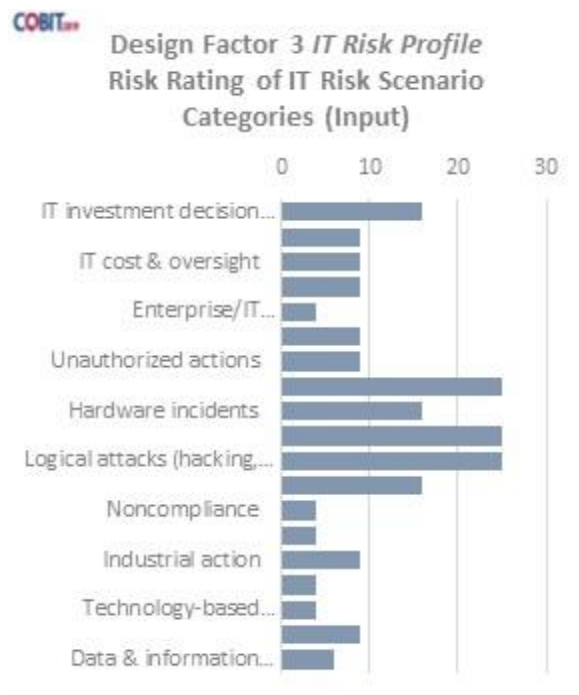


Fig. 4 Importance of Each Generic IT Risk Category

Figure 3 shows the results for the third design factor, the risk profile, with 3 selected risks having very high risk. The first risk is problems with using or using the software. The use of the software is very risky as there

is still a lack of IT resources on the Bengkulu Muhammadiyah University campus. The second risk is software bugs because the equipment used does not meet campus-level usage standards. The next category is logical attack as it will have a significant impact on the LTIK of Muhammadiyah Bengkulu University, for example, the network system will be hacked.

The fourth design factor is IT-related issues, i.e. identifying the issues that LTIK Muhammadiyah Bengkulu University will face in terms of information technology. The results of identifying the four design factors are shown in Figure 5.

Fig. 5 Importance of Each Generic IT-Related Issue

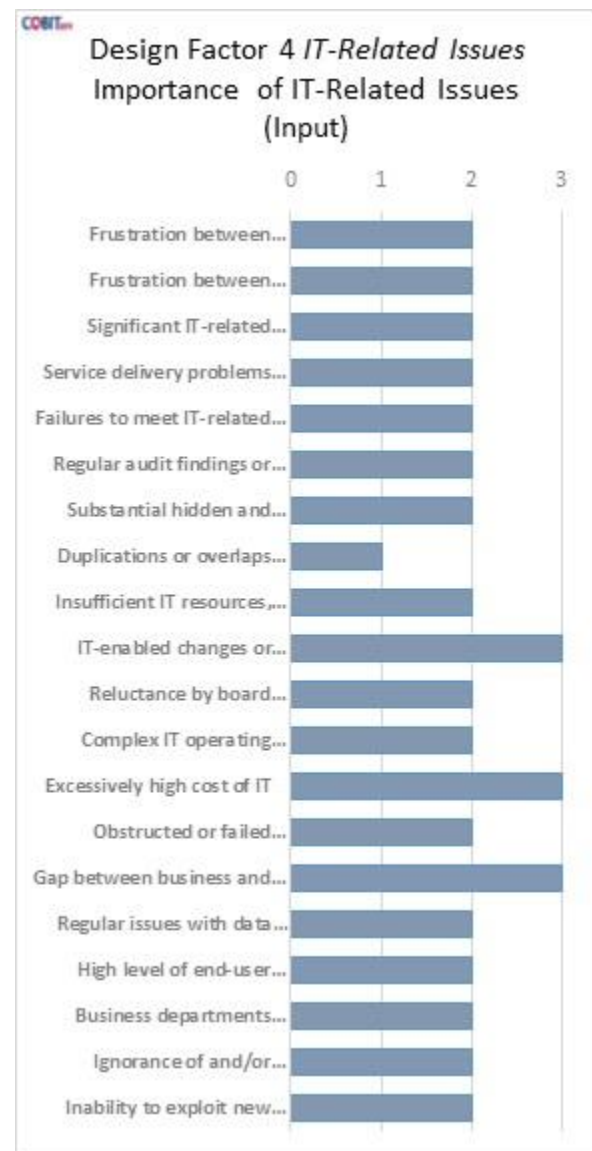


Figure 5 shows the results of the fourth design factor, namely problems related to IT, there are 3 assessments, namely a value of 1 for no problems, 2 for problems, and 3 for serious problems. From the results of this design factor mapping, there are 3 very serious problems related to IT in LTIK Muhammadiyah University of Bengkulu. One of the challenges with IT

projects is that they can frequently fall short of the goals set for them by business stakeholders, often arriving later or costing more than anticipated. The current internet service is using an external third party because of bandwidth limitations and the features and configuration of the current platform. In addition, it is expensive to pay internet bills.

The next problem is the excessively high cost of IT where for this problem it is because in order for internet services to run well and last a long time, it is necessary to buy tools to support internet services which are relatively expensive because to get equipment that meets international standards requires high funds.

The next problem is the gap between business and technical knowledge, which leads to business users and information and/or technology specialists speaking different languages, where in this case there is often a communication error between business users and IT specialists due to lack of knowledge of the IT world in the scope of business users. and the way of delivery from IT specialists is too technical.

The fifth design factor is the threat landscape, namely identifying IT threats in LTIK Muhammadiyah Bengkulu University. The results of the identification of the fifth design factor can be seen in figure 6.

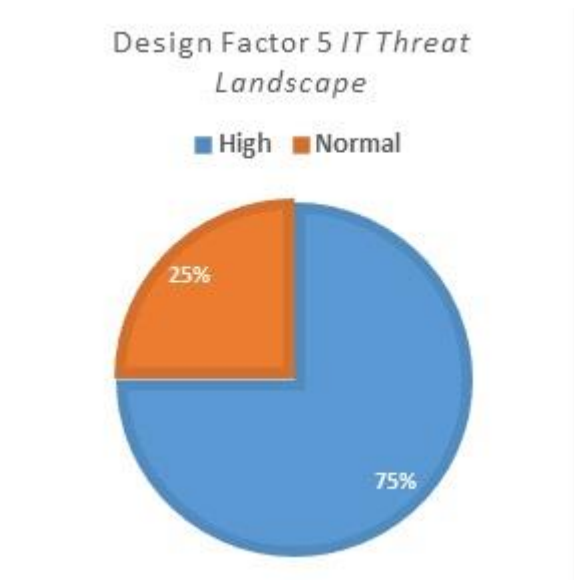


Fig 6. Importance of Threat Landscape

Figure 6 shows the results of the fifth design factor, namely in the threat landscape, LTIK Muhammadiyah Bengkulu University has a high threat to IT, which is 75% due to frequent miscommunication to business holders and IT specialists. Attacks such as hacking on the campus internet network are also large due to the absence of human resources, especially in the field of cyber security, which is still considered very minimal.

In the sixth design factor stage, it is the stage to identify the needs and demands for compliance that must be met by LTIK Muhammadiyah Bengkulu University.

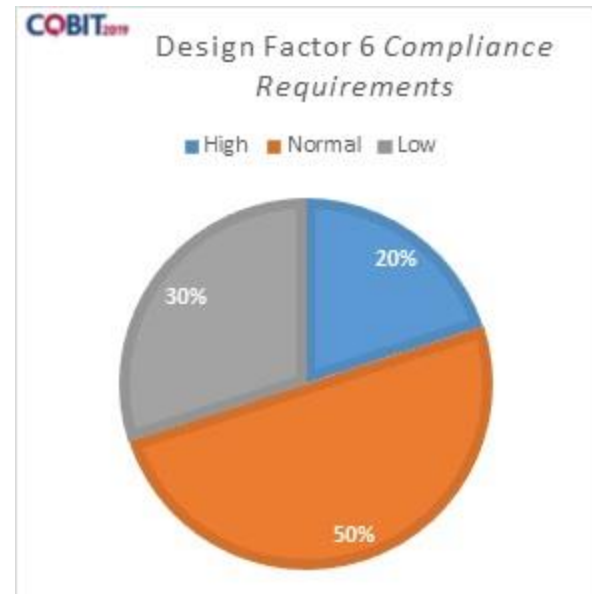


Fig 7. Importance of Compliance Requirements

In the assessment related to the sixth design factor, it was obtained by interviewing one of the network service staff to obtain information on problems related to the classification of the subject of needs and demands for company compliance in operating.

The seventh design factor is the role of IT, this domain is carried out to adjust the role of IT in LTIK Muhammadiyah Bengkulu University with the role of IT in the COBIT 2019 domain process. The results of the identification of the sixth design factor are in figure 8.

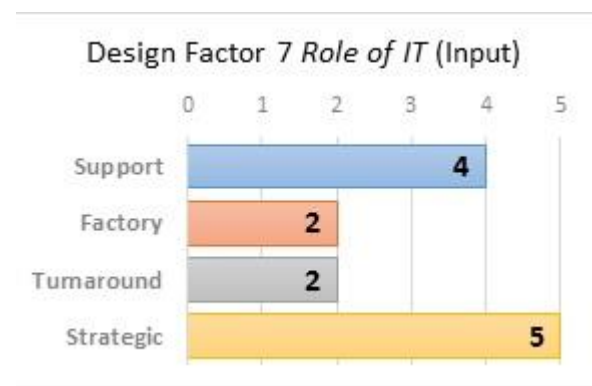


Fig 8. Importance of Role of IT

Figure 8 shows the results of the mapping of the seventh design factor to the COBIT 2019 domain process, namely the role of IT, so that one role from IT was selected based on the suitability of the role of IT at LTIK Muhammadiyah Bengkulu University, namely strategy or strategy. The first role of IT is in accordance

with the conditions of LTIK as the role of IT is very strategic in the services provided to employees, lecturers and students.

The eighth design factor is the IT resource model, this domain is carried out to adjust the IT resource model at LTIK Muhammadiyah Bengkulu University with the IT resource model in the COBIT 2019 domain process. The results of the identification of the eight design factors are in figure 9.

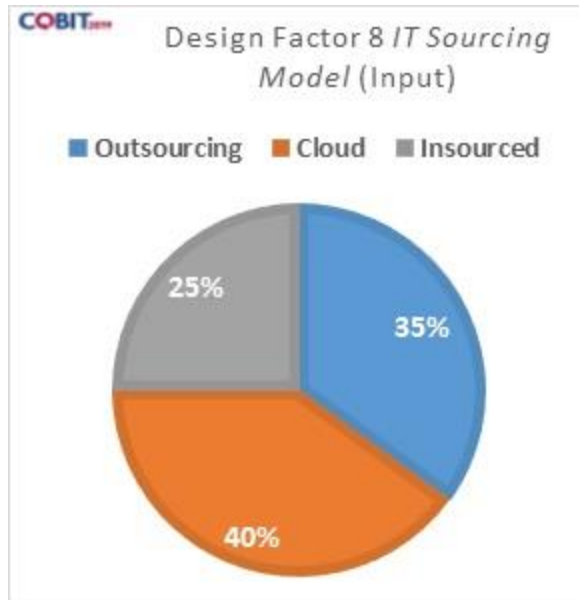


Fig 9. Importance of Sourcing Model for IT

Figure 9 shows the results of mapping the eighth design factor to the COBIT 2019 domain process, the IT resource model, resulting in the selected IT resource model based on the suitability of the IT resource model from LTIK Muhammadiyah Bengkulu University. Experienced in LTIK conditions, i.e. getting the most out of the cloud. Provides IT services to its users, thus forcing LTIK to provide the cloud for the development and management of services.

The ninth design factor is the IT Implementation Methodology, which was implemented in order to align the method implementation model of LTIK Muhammadiyah Bengkulu University with the method implementation in the COBIT 2019 domain process. The results of determining the ninth design factor are shown in Figure 10.

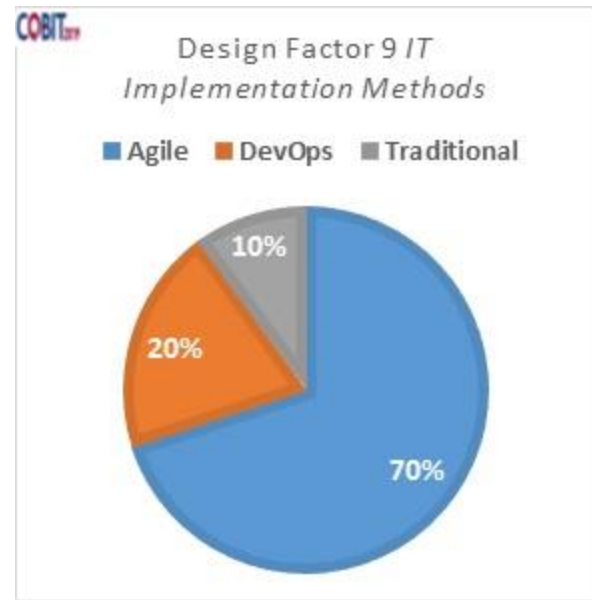


Fig 10. Importance of IT Implementation Methods

Figure 10 shows the results of mapping the ninth design factor to the COBIT 2019 domain process, namely the IT implementation model used by LTIK Muhammadiyah University of Bengkulu. The application of agile methods on internet services facilitates the software development process. In addition, agile methods also require relatively fast time and also do not require large resources.

The tenth design factor is the technology adoption strategy, which is adopting technology in the unit strategy to be identified. The results of the tenth design factor identification are shown in figure 11.

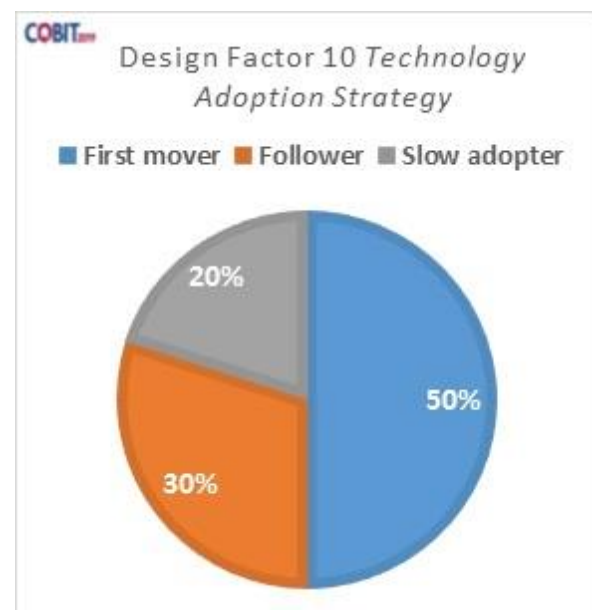


Fig 11. Importance of Technology Adoption Strategy

Figure 11 shows the results for the ninth design factor for the COBIT 2019 domain process. The first

mover percentage is 50% as LTIK Muhammadiyah Bengkulu University Technology is not the first to implement the system. LTIKs prefer to wait for other organizations or companies to adopt new technology before implementing it themselves. LTIK is also a slow adopter, or an employee who does not try new things quickly, because not all LTIK employees are able to adapt instantly to technological changes.

From all the design factors results in COBIT 2019, all the generated domains are combined into a governance design, as shown in Figure 12.

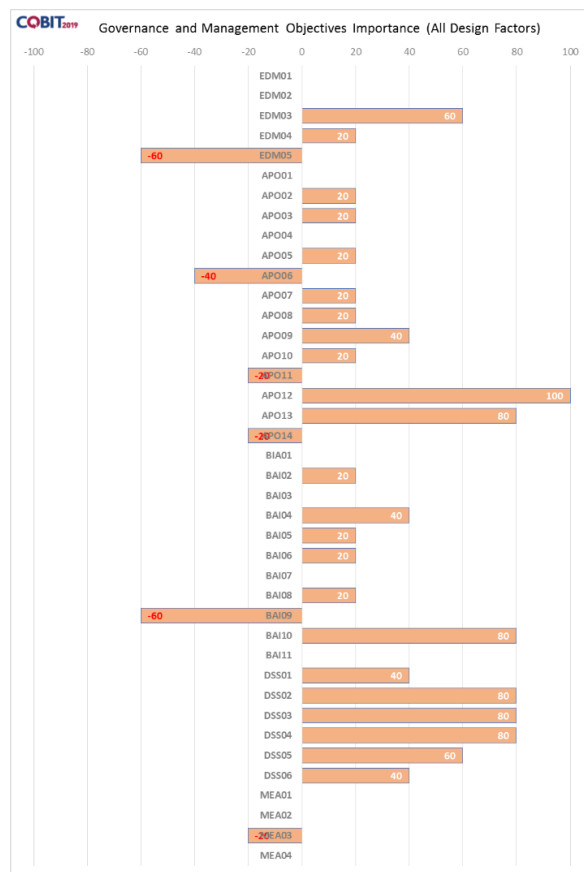


Fig 12. All Design Factors

IV. DISCUSSION

This research conducted through COBIT attempts to examine and analyze IT and business risks for a good organization. The information is also analyzed in terms of business and future research scope.

COBIT 2019 design at LTIK Muhammadiyah University of Bengkulu. The resulting governance design is a process with a recommended level of competence. COBIT 2019 explains that an expected competency level of 80 or more requires a competency level 4. If a competency score is 50 or more, a level 3 competency is required. If the score is greater than or equal to 25, level 2 competence is required, and if the full score is below 25, the process must reach level 1 competence. The following are the results of LTIK management at Bengkulu University.

From the results of the COBIT 2019 design, LTIK Muhammadiyah Bengkulu University, it is known that those who score above 80 or must reach capability level 4 are APO13, BAI10, DSS02, DSS03 and DSS04. The value 100 is APO12.

V. CONCLUSION

According to the calculations that have been done, it can be concluded that the level of introduction to governance can be carried out in stages starting with the research planning stage, namely: Identifying problems to target the level of ability. continue to the next step Data collection comes from a document review questionnaire, the last is the data analysis stage from the calculation of the ability level with the results of the 2019 COBIT Design Muhammadiyah Bengkulu University it is known that those who get a score above 80 or must reach Capability Level 4 are APO13, BAI10, DSS02, DSS03 and DSS04. The value 100 is APO12.

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