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ITIL 2011: The Maturity of IT Service Operation in Universitas Multimedia Nusantara, Indonesia

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***Abstract*—Information Technology governance (IT Governance) in the world of education is quite widely used including in Indonesia itself, for example at some educational institutes. The ITIL framework, used as a tool for evaluation, audit and also as a reference implementation. To help improve the Universitas Multimedia Nusantara (UMN) IT service in the service operation section, it is necessary to know the maturity level of the service, which is then done through the measurement of maturity level in the service operation section. In addition, the measurement results obtained can be used to produce the right recommendations with the problems found in the service. Measurements are made on the domain service operation which is the focus of UMN's IT department services. Service Operation has 5 indicators: incident management, problem management, access management, event management, and request fulfillment. In this research, the framework used in ITIL Version 2011. The result of this measurement has been found: incident management, problem management, event management, and request fulfillment get the result of measurement at level 1 and access management up to level 2. The result of the measurement and recommendation given is expected to be input material and become development material that can be used by the IT department of Universitas Multimedia Nusantara.**

***Index Terms*— Framework, ITIL, IT, IT Governance, Service Management**

I. INTRODUCTION

Today, Information Technology (IT) has been widely used in various fields, one of which is the world of education. The process of learning and information delivery will be better if using Information Technology (IT), not only uses conventional methods as before. In addition to helping the process of learning and information delivery, Information Technology (IT) can also be utilized to help IT management of educational institutions. [1]

Information Technology Department of Multimedia Nusantara University (UMN IT) has an important role in UMN as it is responsible for UMN IT infrastructure services. The UMN IT department has a service focus on the service operations section. According to Mr. Dwi Kristiawan as UMN's IT department manager, UMN's IT department does not yet have a framework to use as a basis of measuring and improving their services. Therefore, in order to help improve UMN IT services in the service operation section, it is necessary to know the extent of the maturity level of the service, which then does/ did through the measurement of the maturity level in the service operation section. In addition, the measurement results obtained can be used to produce the right recommendations of the problems found in the service.

The purpose of this research is to measure the maturity level of service department operation department of IT Multimedia Nusantara University and to give recommendation according to findings and impacts. This study uses the framework of ITIL 2011 as a research reference.

II. STATE OF THE ART

There is some previous research that used as a reference in this writing, namely:

In the first study, the study audited the maturity level of the Asset and Logistics Management Bureau information system at IBI Darmajaya at the management level using COBIT 4.1 as its framework. The measurement of the audit uses the Gallegos stages and obtains the results, ie the DS1, DS10 and DS12 processes on the Deliver and Service domains provided by the Bureau of Asset and Logistics management to IBI Darmajaya generally at the maturity level of the Defined Process, there is an expected maturity level at the managed level and measurable is at level 4 and the gaps that exist both at the user and management level do not show a large gap [2].

The second study has the object of research that is 51 organizations in several countries, among others: Austria, Germany, Switzerland, Mexico, Canada, America, Singapore, and the Philippines. The study was conducted using the COBIT framework and used

the maturity model in level determination. The study found that the overall level of process maturity in the study was relatively simple, there was a lot of inter-process variability in maturity with several processes and there was still variation between organizations in the process of maturity [3].

In the third study, research was conducted on PURSAIR's IT services to determine how well the services provided to users. The framework used in this research is ITIL V3. Measurements are performed on the domain service operation. This research has found that there are still deficiencies in some parts, ie there are no good human resource management in the company, no documentation process and clear flow of IT service process provided and the tools do not have a clear standard in their use [4].

III. METHODOLOGIES

The research method used in the measurement of the maturity level of governance of information technology domain service operation of the IT department of Multimedia Nusantara University is the framework of ITIL 2011.

The Information Technology Infrastructure Library (ITIL) is a collection of guidelines developed by the United Kingdom's Office of Government Commerce (OGC). These guidelines, which describe integrated processes, provide the best practice approach to managing IT services [5].

In the domain service operation consists of 5 pieces of indicators, including Incident Management, Event Management, Problem Management, Access Management and Request Fulfillment [6].

This research also uses the audit stages of Gallegos [2], namely:

1. Planning

   his stage is the first stage performed. At this stage, there are several things that must be considered. To simplify the execution of the planning then the hypothesis is determined first using 5W + 1H, namely:

   a. What is the method used in the research?
   b. Who is the resource person in question?
   c. Where is the research done?
   d. Why is the research done?
   e. How is the research done?
   f. When can the research implementation begin?

2. Field Inspection

   In a study, it is necessary to conduct a field inspection. In the current study, field checks were conducted to the UMN IT department. The first thing done at this stage is to interview with Mr. Dwi Kristiawan as a UMN IT Manager. After the interview, it was found that what happened to UMN's IT department was about the development or maintenance of UMN IT service, especially in the service operation section because of the development of the era, the adjustment must be done. In addition, improvements to errors and bugs also continue to be necessary. The next step is spreading the questionnaire. Questionnaires were distributed to obtain quantitative data which will be processed at a later stage. The results of the questionnaire indicate that from 5 levels 1 indicator in the domain service operation, there is an indicator that can rise to the next level of Access Management. Therefore, a 2nd level questionnaire was created for the indicator. The result of the questionnaire shows that Access Management stops at level 2.

3. Reporting

   The next stage is done by providing information on the results of interviews and questionnaires that have been processed. Processing information is done in accordance with the provisions of the maturity model that existed on ISO 15504. Questionnaire level 1 has respondents as many as 8 people with a statement of 60 items. It is known that the results of questionnaire level 1 obtained the result that there is 1 fruit indicator service operation that can rise to level 2 of Access Management. Then, the 2nd level questionnaire for Access Management was created by having 15 questions. The questionnaire was distributed among the UMN IT department. Respondents in the 2nd level questionnaire were 9 people. The results of the questionnaire obtained showed that Access Management stopped at level 2. After the results of the questionnaire obtained, then conducted an interview to verify the data has been obtained. The results of these interviews are then processed and analyzed to serve as findings, impacts, and recommendations.

4. Follow Up

   The last stage is the follow-up. This last stage is done by giving reports on research results that have been done. Recommendations and suggestions for IT departments are provided. Recommendations that have been given can be used as a reference by the IT department to make improvements and improvements to the department.

This study also uses the maturity level calculation that existed on ISO 15504 which is listed in the book [7].

There are 4 categories to determine whether an indicator can rise to the next level or not, as for the category include:

Table 1. Categories

Categories	Average Score
N *Not Achieved*	0% - 15%
P *Partially Achieved*	>15% - 50%
L *Largely Achieved*	>50% - 85%
F *Fully Achieved*	>85%-100%

Obtaining scores of each indicator is the average result of all respondents that have filled in the given questionnaire. In accordance with the provisions contained in Axelos [8], an indicator is said to rise to the next level when the average minimum score is> 85%.

IV. Result and Discussion

Here is an analysis and discussion of research based on the audit stages by Gallegos:

1. Planning

   The planning of this research can be aligned as follows:

   a. The first step is to request a license to conduct research to the IT department of Universitas Multimedia Nusantara.

   b. Grant permission and directly request permission to conduct research on measuring the level of IT department IT maturity UMN.

   c. Next, make an appointment with the IT department to conduct a meeting that will be useful for pre-interview.

   d. Pre-interview with Mr. Dwi Kristiawan as UMN's IT department manager. Pre-interviews were recorded to be made as transcripts.

   e. After getting the desired data, the data is then processed into a questionnaire.

   f. Questionnaire creation is done in accordance with the ITIL 2011 level 1 framework.

   g. The implementation of the questionnaire staged to the parties concerned with obtaining 8 respondents who are staff of UMN IT department.

   h. Processing the questionnaire and converting the data onto a determination value of measurement of the next level.

   i. Based on the result of questionnaire level 1 that has been obtained, there is an indicator that can go up to level 2.

   j. Creation of questionnaire level 2 is based on indicators that managed to level up with 15 questions.

   k. Spreading the questionnaire level 2 is done by obtaining respondents as many as 9 people.

   l. The results of questionnaire level 1 and level 2 are then processed and analyzed to make recommendations in accordance with the findings obtained.

   m. The next stage is to provide the recommendations that have been analyzed to the company for corporate IT governance can grow and achieve the desired target in accordance with the framework of ITIL 2011.

2. Field Inspection

   Here are the results of field inspections obtained based on interviews and questionnaires that have been done:

   a. Interview Result. In order to obtain more information about the focus of UMN's IT department services and the problems that occurred or experienced, interviews were conducted. The interview was conducted to UMN's IT Manager, Mr. Dwi Kristiawan. The questions are discussed around the problems with the department and are useful for verifying the results of the distributed questionnaires.

   Based on information provided by resource persons, UMN's IT department has problems with their service operations. The problems of the system are related to the development and maintenance that must be done in order to improve the quality and quality of the system and to fix the bugs in UMN's IT infrastructure.

   The first focus of services carried out by UMN's IT department is the service operation section. However, according to Mr. Dwi Kristiawan for the future did not rule out that IT departments will also focus on service design because according to him both things are mutually integrated.

   The second focus of UMN's IT department is security and safety. According to him, this security problem is very important because if the security of a system has a good level of security then people will believe and want to use

it. In addition, security is sensitive because it deals directly with confidential data that should not be accessed by just anyone. Therefore, the UMN's IT department is always doing development that focuses on this security problem so that security and safety on UMN's IT is not easy to be broken so that will not happen things that are not wanted.

b. Questionnaire Result. The making of the questionnaire was made based on the existing standards in the ITIL 2011 framework according to the ITIL Maturity Model and Self-Assessment Service manual. The questionnaire focuses on domain service operation because according to interviews that have been done with Mr. Dwi Kristiawan the focus on UMN's IT department is currently on the operation service. In the domain service operation there are 5 pieces of indicators used as a benchmark for the UMN's IT department. The indicators include: Incident Management, Problem Management, Access Management, Event Management and Request Fulfillment.

Result of Level 1 Questionnaire. Here is an average gain of a level 1 questionnaire that has been spread:

Table 2. Level 1 Questionnaire Result

Indicator	Average
Incident Management	76.46%
Problem Management	75%
Access Management	85%
Event Fulfillment	79.17%
Request Fulfillment	79.18%

Based on the results of the questionnaire obtained, on level 1 that managed to rise to the next level is access management with an average acquisition of 85%.

Result of Level 2 Questionnaire. The results of level 2 questionnaire of the access management indicators obtained an average of 84.16%.

3. Reporting. The target measurements specified are at level 3 for all indicators in the service operation domain of the UMN's IT department.

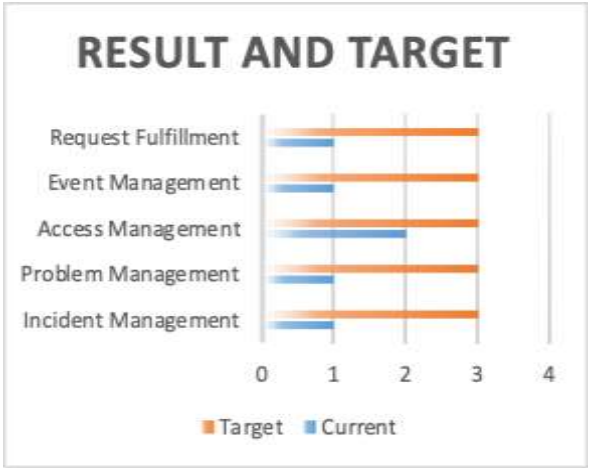

Figure 1. Result and Target

Figure 1 shows that the results obtained from the measurement of service level maturity provided by UMN's IT department are as follows:

a. Incident management level 1.
b. Problem management level 1.
c. Event management level 1.
d. Request Fulfilment level 1.
e. Access management level 2.

After the measurement results have been found, recommendations are made in accordance with the indicator. Recommendations made are recommendations for improvement and recommendations to reach level 3. Recommendations made are then provided to UMN's IT department. The recommendations are 158 total.

Table 3. Recommendations

Indicators	*Recommendation*
Incident Management	32
Problem Management	32
Event Management	27
Request Fulfillment	29
Access Management	38
Total	**158**

4. Follow Up. Recommendations made are then provided to the UMN IT department in order to obtain follow-up. Recommendations given to indicators Incident Management, Problem Management, Event Management and Request Fulfilment are recommendations for level 1 improvement and to reach level 2 and 3. Whereas, Access Management recommendation is recommendation level 2

improvement and to reach level 3. There are 158 recommendations provided with the following details:

a. Incident Management. There are 32 recommendations given to the incident management indicators. 16 recommendations have been approved, 9 recommendations are approved and done, 4 recommendations are approved with adjustments, 1 is considered and 2 has no decision.

b. Problem Management. There are 32 recommendations given to the problem management indicator. Of the recommendations, 12 recommendations have been approved, 12 recommendations agreed and done, 7 recommendations agreed with adjustments and 1 being considered.

c. Event Management. There are 27 recommendations given to event management indicators. Results obtained among other areas: 9 recommendations have been approved, 4 recommendations approved with adjustments and 14 recommendations being considered.

d. Request Fulfilment. There are 29 recommendations given to the request fulfilment indicator. A total of 12 recommendations have been approved, 8 recommendations approved and done, 2 recommendations agreed with adjustments, 6 recommendations are considered and 1 recommendation has no decision.

e. Access Management. There are 38 recommendations given to the request fulfilment indicator. A total of 30 recommendations have been approved, 2 recommendations approved and done, 2 recommendations approved with adjustments and 4 recommendations are considered.

V. CONCLUSION

The research was conducted at the service operation domain of UMN's IT department. There are 5 indicators that become the benchmark of measurement in this domain, among other: incident management, problem management, access management, event management, and request fulfillment. The framework used is ITIL 2011.

From the measurement result of the maturity model which has been done to UMN's IT department, the following conclusion can be drawn:

1. Based on the measurement of the maturity model that has been obtained then there are 4 pieces of indicators that remain at level 1, namely: incident management, problem management, event management, and request fulfillment. Meanwhile, access management indicators managed to increase from level 1 to level 2.

2. Recommendations made based on the findings found have received follow-up from the IT department and as many as 129 recommendations have been approved from the total of 158 recommendations. The average recommendation will be made in quarter 2, i.e. in April to June 2018.

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