

CALCULATION OF INCIDENT MANAGEMENT MATURITY LEVEL AT PT XYZ USING ITILV3 FRAMEWORK

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Abstract: One of the keys to successful information technology (IT) is good IT service management planning [1]. Implementation of ITIL also makes IT functions more valueable and user oriented, better structure and coordination in IT functions through standardization and process documentation, clear roles and responsibilities, better synchronization of various IT services and increased transparency. PT XYZ is one of the IT companies and the largest data center service provider in Indonesia. Improving service quality is a target for companies to provide good services to the IT services. Based on data in 2022, from the ITS Division, the average incident report that can be completed on time is around 78% from all services reported in IT Services. Based on the data obtained, it is necessary to evaluate the measurement of the maturity level of IT services that have been implemented at PT XYZ. The results of the overall process maturity level based on the maturity assessment used in handling incidents show that the average maturity at PT XYZ is at level 3-Defined, which means the distribution of documentation covering all processes.

Keywords: ITIL v3, Maturity Level, Incident Management

INTRODUCTION

One of the keys to the success of information technology (IT) is the existence of good IT service management planning so that it can optimize the IT services provided. Conversely, poor management can be a potential threat. In order for IT governance to run well, methodologies are needed that can be used as management directions such as ITIL (Information Technology Infrastructure Library), COBIT (Control Objectives for Information and related Technology), and so on. ITIL is a general framework that describes best practices in managing IT services (Arisandy et al., 2019).

PT XYZ is one of the largest IT companies and data center service providers in Indonesia. Improving service quality is a target for companies to provide good service to the IT services provided. Under the IT Services Division, IT services to customers are monitored and maintained so that they can be managed properly.

IT services provided for private cloud projects at PT XYZ consist of Hardware, Software, Infrastructure, security, Internet and Network services. To determine the quality of services provided, it is necessary to measure the level of maturity of IT services. Based on data obtained in 2022, from the ITS Division, IT disruption reports received, the average disruption report that can be completed on time is around 78% of the overall reports received. Based on the data obtained, it is necessary to evaluate the measurement of the extent

of the maturity level of IT services that have been implemented at PT XYZ.

Research conducted at PT XYZ in the IT Services (ITS) division is expected to be used to improve and improve IT operational service management at PT XYZ, in order to achieve the expected level according to the best practices of the ITIL framework version 3 Domain Service Operation. The processes carried out for this study by knowing the level of maturity in IT service management at PT XYZ as the company's ideal measurement in the process of activities carried out. Companies can analyze current conditions based on the level of gaps expected to be able to manage IT services in the future to be effective and efficient.

THEORETICAL FOUNDATION

Information Technology Service Management

Information Technology Service Management or abbreviated as ITSM. Information technology has become an essential part of organization as well as smooth delivery of IT services is necessary to ensure smooth operations, especially with digital business processes. To meet the demands of the business side, IT services become more service-oriented to achieve customer expectations. To be able to provide reliable IT services, components in the form of hardware and software are needed in accordance with the needs of IT services. IT services contain the entire IT infrastructure with all applications and infrastructure elements used. ITSM

can be used as a glue between customers and IT service providers (Herlinudinkhaji & Daru, 2015).

Metode *Framework* ITIL

Information Technology Infrastructure Library or ITIL is a series of management and operation of information technology. ITIL is a specific framework for measuring maturity levels. The method used is the ITIL *Version 3* method by using domain *service operation*, which is a service to provide services, especially *Incident Management*.

In ITIL version 3, the stages of managing IT management are broadly the same as ITIL V3, namely there are 5 *service lifecycle* processes. The figure shows the *service lifecycle* of the ITIL framework version 3.



Figure 1. ITIL Service Life Cycle version 3

The outline explanation of the 5 service lifecycle processes of the ITIL framework version 3 is as follows:

- Service Strategy, This process is intended to determine a strategy to serve customers
- Service Design: This process is aimed at designing new IT services
- Service Transition: This process is aimed at building and implementing

IT services.

- Service Operation, This process is intended to ensure that services have been delivered and run effectively and efficiently.
- Continual Service Improvement, This process is intended to use methods from quality management to learn about successes and failures that have occurred in the past

Maturity Level

Maturity based on maturity is an organization that refers to the expertise of the organization to conduct the level of evaluation when the organization becomes more competent and to show something that was started or applied in the implementation of ITIL. The maturity level measurement method in the ITIL framework uses maturity level. For the assessment itself, two assessment methods are used to compare the maturity level of incident handling. The maturity level in UCISA's self-assessment tools has five levels: Initial, Repeatable, Defined, Managed, and Optimized. Meanwhile, ITIL self-assessment uses 9 assessment areas to measure Maturity Level, Pre-requisites, Management Intent, Process Capability, Internal Integration, Products, Quality Control, Management Information, External Integration, Customer Interface.

MATERIALS AND METHODS

Types of Research

The research method used is a mixed method, namely collecting data and quantitative data analysis in the first stage by conducting questionnaires using two assessments as comparison

material in measuring the level of maturity. The first, ITIL is *self-assessment* and is based on the *Universities and Colleges Information Systems Association* (UCISA) and adopted in its entirety without any reduced or modified statement items. Then *qualitative* analysis in the second stage to strengthen the results of *quantitative* research conducted in the first stage through interviews with related teams handling *Incident Management*.

Data Collection Methods

In collecting data, the methods used by researchers are: 1) Literature Study. Data collection techniques by conducting observational studies of books, literature, notes and reports related to the problem solved. 2) Questionnaire. Questionnaire or questionnaire is a technique with written questions asked to respondents that aim to collect data. 3) Interview. An interview is a conversation conducted directly with the relevant team authorized to handle *incident*

management. 4) Observation. Observation is a complex process and consists of direct observation (Romadhon et al., 2018).

RESULTS AND DISCUSSION

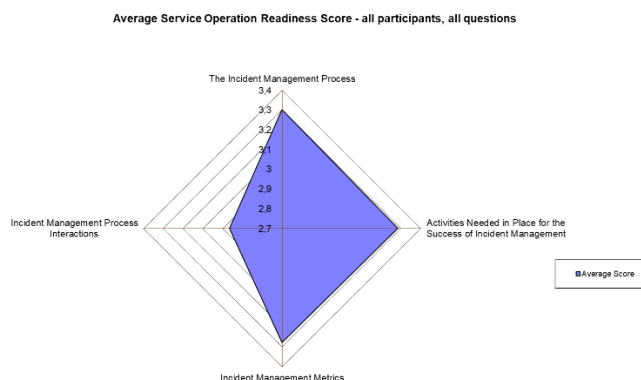
UCISA Maturity Level Calculation Results

In the assessment stage, two assessment models were carried out as comparison material in measuring the maturity level of *incident management*. The first assessment using UCISA's *self-assessment* tools consists of 4 instrument parameters with 40 questions related to *incident management* where each question is assessed based on the level of maturity so as to produce an average score of maturity in incident handling. In this assessment, the maturity level at PT XYZ is at *level 3 – defined*, where all procedures or functions have been standardized, communicated and documented through training, the process also has targets and objectives with allocated resources that make activities more proactive.

Parameter	Level 1 Initial	Level 2 Repeatable	Level 3 Defined	Level 4 Managed	Level 5 Optimising	Jumlah Jawaban	Jumlah Respon	Skor rata-rata Maturity
The Incident Management Process	0	0	11	92	58	535	162	3,30
Activities Needed in Place for the Success of Incident Management	0	0	6	18	18	138	42	3,29
Incident Management Metrics	0	0	0	13	5	59	18	3,28
Incident Management Process Interactions	0	0	4	21	5	89	30	2,97

The graph of the maturity level of *Incident Management* in each *instrument*

parameter based on the score obtained is described as follows:



ITIL Maturity Level Calculation Results

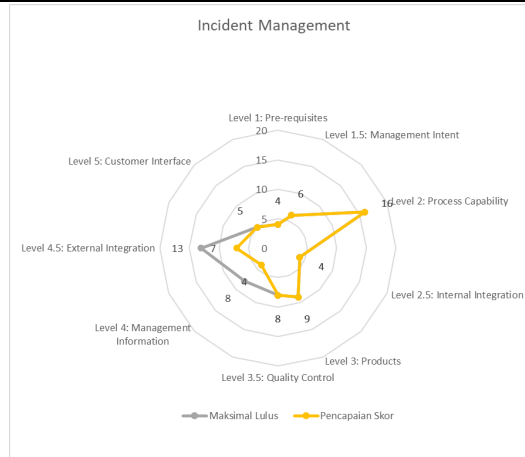
As for the ITIL *maturity self-assessment* questionnaire contains questions with a total of 47 questions with Yes and No answers and mandatory questions where each question with Y answers gets a value of 1 and mandatory

M+n questions based on ITIL. The results of the ITIL maturity *self-assessment* questionnaire obtained maturity results at Level 3.5 – *Quality Control* and *PASS* back at level 9, Even so, the maturity of IT services in *Incident management* can only reach level 3.5 because at *level 4* get *FAIL* status.

No.	Level	Syarat Lulus	Minimal Lulus	Maksimal Lulus	Pencapaian Skor	Selisih Skor	Status	Kumulatif Skor
1.	Level 1: Pre-requisites	M+1	2	4	4	0	PASS	4
2.	Level 1.5: Management Intent	M+1	4	6	6	0	PASS	10
3.	Level 2: Process Capability	M+1	12	16	16	0	PASS	26
4.	Level 2.5: Internal Integration	M+1	2	4	4	0	PASS	30
5.	Level 3: Products	M+1	6	9	9	0	PASS	39
6.	Level 3.5: Quality Control	M+1	6	8	8	0	PASS	47
7.	Level 4: Management Information	M+2	4	8	4	4	FAIL	51
8.	Level 4.5: External Integration	M+2	9	13	7	6	FAIL	58
9.	Level 5: Customer Interface	M	5	5	5	0	PASS	63
Total Skor			50	73	63	10		

The company has reached *Level 3.5* Standard category because the company has succeeded in quality control focusing on *reviewing* and verifying process *outputs* and ensuring that all activities are in

accordance with the *established Quality Control*. The following is a graph of PT XYZ's IT service maturity in *Incident Management*. It can be seen on the chart that the score obtained is almost close to *level 4*.



Interview and Obervasi

Researchers conducted interviews with 3 expert respondents in their fields to find out, identify problems and analyze the differences between handling IT service incidents in the IT Services Division with the ITIL framework for incident management. The results of interviews grouped

according to the stage of handling IT service management incidents in the IT Services Division in the authorized team in handling incident services, namely ITSM Manager, Project Manager Coordinator and Level 1 Support Team are illustrated in the table.

Tahapan Penanganan Incident	Penanganan Insiden Layanan
Identifikasi Insiden	Insiden pada layanan IT disampaikan kepada service desk, Whatsapp Group atau dari email.
Pencatatan Insiden	Pencatatan insiden disampaikan melalui aplikasi Tikecting , namun terdapat insiden yang dilaporkan melalui saluran lain dan tidak tercatat
Pengkategorian Insiden	Insiden sudah dikategorikan sesuai pedoman pengelolaan operasional IT dan layanan IT
Prioritas Insiden	Sudah adanya prioritas penanganan insiden yang terjadi berdasarkan impact dan urgency insiden
Diagnosis Insiden	Penanganan insiden yang disampaikan dianalisis berdasarkan pengalaman dan pengetahuan yang terbatas diketahui
Eskalasi Insiden	Insiden yang terkait security, network dan internet dieskalasi ke seksi terkait Namun belum ada target waktu penyelesaian insiden dan hanya menunggu informasi bahwa insiden telah ditangani
Investigasi Insiden	Belum ada status penanganan Investigasi insiden dilakukan oleh seksi terkait insiden yang berjalan dan hanya menunggu informasi bahwa insiden telah ditangani
Resolusi dan Pemulihan	Penyelesaian insiden dengan melakukan pengujian dan pengecekan kembali sistem telah sesuai dan proses penyelesaian dicatat melalui aplikasi tikecting
Penutupan Insiden	Penutupan insiden berupa penyampaian kepada user bahwa sistem sudah beroperasi kembali, setelah konfirmasi ke user dicatat ke aplikasi tikecting
Laporan Insiden	Laporan insiden dapat dilihat di aplikasi tikecting dan dilaporkan setiap minggu
Evaluasi Insiden	Evaluasi dilakukan di setiap hari untuk insiden yang belum diselesaikan pada saat daily meeting

Based on the results of field observations, the delivery of this incident is handled through the tikecting application by means of the reporter or *Support level 1*

recording incident tickets. However, from the results of the interview, the handling of incidents escalated to the relevant team (*Support level 2/3*) has not been recorded in

the ticketing application and does not have a resolution target, the Support level 1 team only waits for the completion status to be closed in the ticketing application if the incident has been handled.

CONCLUSIONS

Based on the results of the discussion that has been described in the previous chapters, some of the analysis results that can be concluded are as follows: 1). From the entire process of maturity level based on assessment tools using both UCISA and ITIL maturity level in incident feeding, an average maturity level of 3 was obtained. This level is included in the *Refined / standard* level which is described as the majority of service operation processes in PT XYZ, especially the ITS Division. At Level Defined which means equitable distribution of documentation covering all processes.

From the observations and interviews, it was found that the handling of incidents escalated to the relevant team has not been recorded in the ticketing application and does not have a resolution target, the Support level 1 team only waits for the completion status to be closed in the ticketing application if the incident has been handled.

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