Evaluasi Layanan Teknologi Informasi Menggunakan Kerangka Kerja *Information Technology Infrastructure Library*

http://dx.doi.org/10.28932/jutisi.v10i2.8320

Riwayat Artikel
Received: 31 Januari 2024 | *Final Revision*: 09 Agustus 2024 | *Accepted*: 09 Agustus 2024

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Abstrak **— Studi ini bertujuan untuk mengevaluasi PT Gramedia Asri Media untuk mengetahui apakah layanan TI perusahaan tersebut memenuhi standar terbaik dari kerangka kerja Operasi Layanan ITIL V3 (*Information Technology Infrastructure Library* versi 3). Fokus Operasi Layanan termasuk *Problem Management, Incident Management, Access Management, Request Fulfillment,* dan *Event Management*. Evaluasi dilakukan dalam empat tahap: perencanaan, pemeriksaan lapangan, pelaporan, dan tindak lanjut. Hasilnya menunjukkan tingkat kematangan implementasi layanan TI. Untuk pengumpulan data, kuesioner dibagikan kepada lima orang yang disurvei dan diwawancarai dengan kepala layanan teknik dan staf bantuan. Hasil menunjukkan bahwa tingkat kematangan layanan TI perusahaan berada di tingkat satu. Selain itu, penelitian ini menghasilkan tujuh puluh saran untuk perusahaan agar dapat meningkatkan layanan TI mereka. Hasilnya menunjukkan bahwa hampir semua saran diterima dengan baik oleh perusahaan, dan beberapa di antaranya telah diterapkan pada PT Gramedia Asri Media. Namun, tentu saja, dengan masalah yang ditemukan dari penelitian ini, akan ada keinginan untuk meningkatkan layanan dan performa.**

Kata kunci—**ITIL V3; *Service Operation*; Tingkat Kematangan.**

Evaluation of Information Technology Services Using the Information Technology Infrastructure Library Framework

Abstract — ***This study aims to evaluate PT Gramedia Asri Media to find out whether the company's IT services meet the best standards of the ITIL V3 (Information Technology Infrastructure Library 3rd version) Service Operations framework. Service Operations focus includes Problem Management, Incident Management, Access Management, Request Fulfilment, and Event Management. Evaluation is carried out in four stages: planning, field inspection, reporting, and follow-up. The results indicate the maturity level of IT service implementation. For data collection, questionnaires were distributed to five people who were surveyed and interviewed with the heads of engineering services and support staff. The results show that the company's IT service maturity level is***

at level one. In addition, this research produced seventy suggestions for companies to improve their IT services. The results show that almost all suggestions were well received by the company, and some of them have been implemented at PT Gramedia Asri Media. However, of course, with the problems discovered from this research, there will be a desire to improve service and performance.

*Keywords—**ITIL V3; Maturity Level; Service Operation**.*

I. INTRODUCTION

Information Technology (IT) as one of the backbones of almost all businesses today, is a key for companies in winning competition and markets[1]. IT services for aligned company business processes are supported by the implementation of ITSM (Information Technology Service Management) [2]. The implementation of ITSM helps IT services at company to run in accordance with the company's business objectives, and also supports the company to be better prepared to compete in business competition [3]. One way to achieve ITSM in a company is by conducting an audit of the information system and IT services that are running [4]. Audit activities are carried out to detect process non-compliance and process misalignment with related activity management standards [5]. The comprehensive implementation of these two references is a form of implementation of the ITIL (Information Technology Infrastructure Library) framework in the company which will lead to audit results in the form of recommendations that can be used by company management to improve the effectiveness of business processes in the company [6]. Service quality can be interpreted as an effort to fulfill consumer needs and desires as well as the accuracy of delivery in keeping with user expectations [7]. One of the reasons for the poor way ITIL implementation is handled is because companies do not have a project management strategy. Organizations need to approach ITIL framework initiatives with a clear understanding of how the organization operates because implementing an ITIL framework requires more skills than just knowledge of the ITIL framework in management[8]. Implementing a support desk with an ITIL approach is a best practice to ensure technology services run according to what includes incident management, problem management and change management [9]. Meanwhile, implementing a support desk will create knowledge management from an incident management resolution documentation stored in a knowledge base in order to shorten problem resolution time and enable customers to solve problems themselves by utilizing the knowledge base that has been formed[10]. One of the goals of ITIL is to help decision makers make better decisions because they are confident that the information obtained from IT is correct information [11].

The problem encountered at PT Gramedia was that the company had just changed its ERP (Enterprise Resource Planning) from originally using Oracle to now switching to Dynamics AX made by Microsoft in March 2017. The modules from Oracle ERP used include E-business Feed and Oracle Retail, this change was made because PT Gramedia encountered many problems in the company's daily operations, namely the difficulty of upgrading the Oracle ERP. Another problem is the difficulty of finding an Oracle consultant in Indonesia, which makes PT Gramedia have to look for a consultant from Australia to help set up its ERP. Also, the Oracle ERP is felt to be quite old and no longer relevant to use, causing many versions of the database and hardware to be used. no longer supports Oracle ERP. Oracle's ERP system also does not have a warehouse management section so that the system used has a lot of intervention that occurs. Moving the ERP system to Dynamics AX was not without problems, because it took time to transition from the old system to the new system, after approximately 7 months since Oracle moved to Dynamics AX, the daily performance of the new ERP is also not stable yet. is still the main problem in IT services at PT Gramedia. 4 areas that are still unstable in IT service performance are infrastructure, applications, data and human factors. In the application, errors often occurred which were quite annoying in the first 2 months after implementing the new ERP, but now these errors can be controlled and are no longer too annoying. In applications, database locking often occurs so that data entered from one scenario may not enter one of the databases in the system. PT Gramedia's IT division has tried to create and implement a hotfix regarding this problem, but on several occasions the same thing still occurs even though it has been minimized. Then the ERP system requires further tuning to improve its performance in serving the company's IT needs. Based on these thoughts, this research was planned to conduct research at PT Gramedia to find out whether the company's IT services are in accordance with the best practices contained in the ITIL framework.

II. RESEARCH METHODOLOGIES

A. ITIL V3

Research in the form of measuring the maturity level of information technology services in companies can use various frameworks that already exist in the world such as COBIT (Control Objectives for Information and Related Technologies), ISO (International Organization for Standardization), TOGAF (The Open Group Architecture Framework), ITIL (Information Technology Infrastructure Library), and others [12]. ITIL was chosen as the reference framework in this research because ITIL is the one that has the greatest concentration on daily operational services within the company compared to other frameworks [4]. The 5 modules that ITIL V3 has, the module chosen is Service Operation because it

sees the company's need for developing information technology services based on interviews conducted with resource persons, especially as the resource person is the head of the Technical Service and Help Desk division so research using ITIL V3 Service Operation is the most appropriate module to use as a reference.

In general, implementing or implementing the ITIL framework in a company can be done by first evaluating all device components related to information technology, especially within the IT field or division[13]. The evaluation stage is carried out in order to ensure that the company's management of information technology is in accordance with applicable regulations and standards and is more often known as an audit. The audit activities carried out are basically in the form of discovering the inaccuracy of existing processes in relation to the management standards of related activities.

The audit activities in ITIL are based on Service Operation as a whole, which is a stage or form of implementing the framework in the company. Where the results of the audit can be in the form of recommendations used by management to increase the effectiveness of activity management and continuous improvement of information technology processes. Technical audit activities use sheets of paper containing questionnaires that refer to the relevant framework which must be answered by company management in order to determine the level of information technology management in the company. And after knowing the level of results, recommendations can be given easily. However, auditors often have difficulty summarizing the results of questionnaires that have been distributed. This is all because there are many sheets that have to be summarized manually and it is possible that these sheets are not stored neatly, which impacts the results of the auditor's analysis as well.

B. Maturity Model

Maturity model is a method for measuring the level of process management development, which means measuring the extent of management capabilities [14]. How good the development or management capabilities are depends on achieving the goals of the ITIL framework. For example, there are several critical processes and systems that require stricter security management than other processes and systems that are not so critical. On the other hand, the degree and satisfaction of control required to be applied to a process is driven by the Enterprise's risk appetite and compliance requirements. Proper implementation of IT governance in an enterprise environment depends on achieving three aspects of maturity (capability, reach and control) [15]. Increasing maturity will reduce risk and increase efficiency, encourage reduced errors and increase the quantity of processes whose quality can be predicted and encourage cost efficiency related to the use of IT resources.

The benefits of measuring a company's Maturity Model can be used to map [16]:

a. Current status of company IT management.
b. The current status of company standards in the IT field to be used as a comparison
c. The company's IT management strategy is in the form of the company's expectations regarding the company's IT management position.

Each score obtained for each indicator in the Maturity Model can be described in Table 1.

TABLE 1
QUESTIONNAIRE VALUE GUIDELINES

Level	Rating
N - Not Achieved	0%-15%
P - Partially Achieved	15%-50%
L – Largely Achieved	50%-85%
F – Fully Achieved	85%-100%

Each Maturity Model Rating can be obtained if the level meets the existing requirements. The assessment can be explained as follows:

a. N Not Achieved (0 to 15% achieved) There is little or no evidence that requirements have been achieved in the existing process.
b. P Partially Achieved (>15% to 50% achieved) There is evidence that several requirements have been achieved and the attributes used are explained in the assessment. There are several aspects of the achievement of attributes that cannot be predicted.
c. L Largely Achieved (>50% to 85% achieved) There is evidence that a systematic approach has been used, significant achievements, defined attributes in the process being assessed.
d. F Fully Achieved (>85% to 100% achieved) There is evidence that there is a systematic approach and significant achievement in full of the attributes defined in the assessment process. There are no significant weaknesses related to the attributes in the assessment process.

The maturity model is divided into 6 levels based on the maturity of the modules contained in the measurement scale according to the ITIL V.3 framework [17].

The 6 levels in the maturity model scale [17] are as follows:

a. Level 0 (Non-existent); The company does not know at all about the information technology processes in its company
b. Level 1 (Initial Level); at this level, the organization generally does not provide a stable environment for developing a new product. When an organization appears to suffer from a lack of management experience, the benefits of integrating product development cannot be determined by ineffective planning, system response. The development process is unpredictable and unstable, because the process is regularly changed or modified as work progresses from one project to another. Performance depends on individual abilities or terms and varies with the skills they have.
c. Level 2 (Repeatable Level); At this level, policies to regulate the development of a project and procedures for implementing these policies are established. The effective level of a management process in developing projects is institutionalized, by allowing the organization to repeat successful experiences in developing previous projects, even though there are certain processes that are not the same. The effective level of a process has characteristics such as; practiced, documented, enforced, trained, measured, and can be improved. Product requirements and design documentation are always maintained to prevent unwanted changes.
d. Level 3 (Defined Level); At this level, the standard process for developing a new product is documented, this process is based on the integrated product development process. These processes are used to help managers, team leaders and development team members work more effectively. A process that has been well defined has the characteristics; readiness criteria, inputs, standards and procedures in working on a project, verification mechanisms, output and criteria for completing a project. Rules and responsibilities are clearly defined and understood. Because the software process is clearly defined, management has good knowledge of the project's progress. Costs, schedules and project requirements under supervision and product quality are monitored.
e. Level 4 (Managed Level); At this level, the organization creates a matrix for a product, process and outcome measurement. The project has controls over the product and process to reduce variations in process performance so that there are acceptable limits. The risks of transfer of product technology, manufacturing processes and markets must be known and managed carefully. The development process can be determined because the process is measured and carried out within measurable limits.
f. Level 5 (Optimized Level); At this level, the entire organization is focused on a continuous improvement process. Information technology has been used in an integrated manner to automate work processes within companies, improving the quality, effectiveness and adaptability of companies. The product development team analyzes errors and defects to determine the cause of the error. The development process carries out evaluations to prevent known errors and defects from occurring again.

C. Measurement Stages

The measurement stages applied in this research refer to the Gallegos audit stages [18].

a. Planning. PT Gramedia's measurement planning is carried out by first analyzing the company's profile along with its vision and mission, what problems the company has through pre-interviews, then continuing with determining the problem formulation and problem boundaries for the research carried out.
b. Field Inspection. Field examinations were carried out by collecting data through interviews with resource persons and filling out questionnaires carried out on research objects that refer to Service Operation from the ITIL V3 framework.
c. Reporting. The research continues with processing the data that has been obtained to determine the maturity level of IT services in the company. The measurement results were obtained based on the results of questionnaires, surveys and interviews, then the findings were reviewed using the Fishbone method analysis using the 6M categories which include machine, method, material, measurement, man power, and finally mother nature. The results obtained will be the conclusion of the service measurements carried out.
d. Follow Up. Provide the results of research in the form of findings and recommendations for corrective action to the company.

D. Data Collection Technique

This research methodology aims to find out a real picture of events regarding the IT Service measurement process plan at PT Gramedia using the ITIL framework. The results of this research were obtained through an interview process, data observation, field studies and questionnaires as well as theoretical and scientific literature studies which will be used as a guide in this writing. The use of ITIL methods in this research is intended to provide an approach to improving the quality of IT services. This method provides a detailed description of the importance of a process in an IT organization which

includes improving job services, procedures, responsibilities which can be used as a basis for the insight needed in every organization [19].

In obtaining data to be processed in this research, the questionnaire stage was carried out to determine the values of each indicator in the framework. Questionnaires were given to members of the Technical Services and Help Desk division totaling 5 people as respondents. Knowledge of the reference framework is needed in preparing the questionnaire questions to be asked. This is needed in implementing the ITIL framework so that the context can be understood. The questions made in the questionnaire must be in accordance with the indicators and also the company's needs in measuring the ITIL framework. The questionnaire questions were prepared based on references from the User Guide regarding the ITIL Maturity Model and Self-assessment Service produced by an institution called Axelos. The questionnaire prepared is divided into several levels which are fulfilled in stages starting from level 1 of 5 service operation coverage, then calculating the value of IT services before entering the next level questionnaire.

An interview was conducted with the Head of the IT division of PT Gramedia Asri Media, Mr. Silvester Budianto, to find out the scope of IT Services carried out at PT Gramedia Asri Media. Pre-interviews were conducted to find out which ITIL modules were appropriate and needed by the company in order to carry out measurements and find out the IT division of PT Gramedia structurally and the job description of each member of the IT division as well as the information technology services implemented, the problems and impacts of implementing the existing system . The interview was conducted in the SIT Room of the PT Gramedia Office located in the Kompas Gramedia Building Unit 1, 4th floor, West Palmerah, South Jakarta.

E. Research Variables

In this study, the research variables are in accordance with the ITIL V3 framework in the service operations module, namely first determining which ITIL V3 module you want to measure at PT Gramedia which is known based on a pre-interview process with the resource person, and selecting the ITIL Service Operations module based on problem analysis. what happened to PT Gramedia is still disrupting the performance of the company's service desk.

Event Management is the process of monitoring services (Monitoring Service) and Configuration Items (CI). All changes to the state of CI are recorded in the event log provided by a tool. In the ITIL 3 framework, the focus of event management is:

a. Informational Event
b. Warning Events
c. Exception Events

Incident Management is a process for thinking about how to restore IT services that experience unplanned disruptions and declines in quality responsively and quickly. The process of incident management is:

a. Incident Management Support
b. Incident Logging and Categorization
c. Immediate Incident Resolution by 1st Level Support
d. Incident Resolution by 2nd Level Support
e. Handling Major Incidents
f. Incident Monitoring and Escalation
g. Incident Closure and Evaluation
h. Pro-Active User Information
i. Incident Management Reporting

Problem Management is a process for analyzing the root of the problem and finding solutions to things that cause incidents to occur repeatedly, or is responsible for handling lifecycle problems. If it is related to an incident then the problem usually occurs after the incident, the cause is generally not known when the problem ticket is created, and the Problem Management process is responsible for further investigation. The following processes are discussed in problem management:

a. Proactive Problem Identification
b. Problems of Categorization and Prioritization
c. Problem Diagnosis and Resolution
d. Problem and Error Control
e. Enclosure and Evaluation Problems
f. Major Problem Review
g. Problem Management Reporting

Request fulfillment is the process of how we as a service provider can fulfill or not a request from an IT service user. Requests are different from incidents and/or problems. Request fulfillment generally takes the form of a request from a

service that has already been prepared. Meanwhile, an incident is the occurrence of an unexpected event. The process in request fulfillment includes:

a. Request Fulfillment Support
b. Request Logging and Categorization
c. Request Model Execution
d. Request Monitoring and Escalation
e. Request Closure and Evaluation

Access Management is a process for setting user authorization to be able to access IT services in accordance with the roles and rights related to that user field. What is regulated includes user ID, user group, profile, LDAP or ActiveDir and others. The following 2 objectives of access management are:

a. Maintenance of Catalog of User Roles and Access Profiles
b. Processing of User Access Requests

III. Result and Discussion

A. Planning

In the planning stage is the preparation of the research that will be carried out on the object, namely PT Gramedia Asri Media. The research was carried out by stating what benefits can be obtained from measurement, followed by analyzing the vision and mission, strategies and policies related to IT services in the company. The research continues by looking for problems that occur in the company's IT services, then identifying problems with which ITIL modules suit the company's needs and determining how far IT services can play a role in helping PT Gramedia's business processes. It is hoped that in this measurement PT Gramedia can reach level 2 based on the Service Operation module in ITIL V3. Problems in the company's IT services were discovered based on the results of pre-interviews with resource persons. The problem that occurs is that the system is still not stable due to the change in the ERP used from Oracle to Dynamics AX, one of which is the lack of use of filters in the system which causes an overflow to occur in the financial division system in the company so that updates and adjustments are still needed over time. . In terms of use, users still need time to adapt to the new ERP system with training provided by the ERP vendor, namely Microsoft, to PT Gramedia employees.

B. Field Inspection

Interview Results

The follow-up interview stage carried out with Mr Budi referred to the selected ITIL module, namely service operations, to obtain information and data related to the research. Questions are made referring to selected modules from the ITIL V3 framework. The first question asked was about SOPs and work procedures contained in PT Gramedia's IT division. According to the source, the work SOPs in the companies that serve as reference will always be evaluated periodically every 2 months, but it does not rule out the possibility of evaluations being carried out suddenly if necessary, for example when there is a change in system or work flow in the company related to existing work procedures. will be carried out from employees in the IT and non-IT divisions. Service Operation is also related to the continuous availability of services from the IT division within the company, therefore there are IT staff who work in shifts to support the running of the system 24/7, namely a database administrator. The 24/7 service is available because there is still sales counting activity from each Gramedia Store branch for daily sales data collection which is carried out automatically by the system. The admin is on standby 24/7 with the aim of maintaining the system if undesirable errors occur during the sales data process every day. The Technical Services & Help Desk division at PT Gramedia is divided into 5 sub-divisions, each division has a service area that separates where the division will work as in the division's organizational structure. Area 1 Helpdesk will carry out regular monitoring and maintenance of Gramedia retail stores in the Jabodetabek and West Java areas. Helpdesk Area 2 is responsible for IT services in retail stores in all parts of Indonesia apart from Jabodetabek and West Java. Helpdesk Area 3 will carry out regular monitoring and maintenance on IT services at PT Gramedia's central unit and other unit IT services such as publishing, finance, marketing communications, wholesale, merchandising and central distribution units. The System and Database Administrator is responsible for the design, development, performance and maintenance of all IT systems and databases within PT Gramedia. Lastly is Infrastructure which is a sub-division that will ensure that the IT infrastructure at PT Gramedia runs according to needs.

In dealing with daily problems, the company also uses 2 applications as handlers requested by users so that work can be done by IT staff, especially the helpdesk section. The applications used include GAM Portal. The GAM Portal is used as a Ticket Request for services required by users that want to be carried out by helpdesk staff to fulfill user needs and complaints regarding malfunctions of the company's infrastructure and IT systems. The second helpdesk application used is HD Tools. HD Tools are used by companies to carry out checks which are a follow-up to previous user requests to then take action for improvements and ensure that the infrastructure and systems running are running according to user needs

without any malfunctions. The interview continued with questions about what problems occurred in PT Gramedia's IT division. The company has just switched from Oracle ERP to the new ERP from Microsoft, namely Dinamic AX, so the implementation and transition requires time to adjust, starting from setting the new ERP system to the company's business needs to training the HR staff in using the new ERP. The problem that still occurs is that overflows in data input by finance staff still occur because there are no filters installed in the new ERP system to catch overflows that occur when entering financial data. This problem can be resolved by reconfiguring by the new ERP vendor, namely Microsoft.

Questionnaire Results

The respondents to this questionnaire were each member of the division under the Technical Services and Help Desk, totaling 5 people. Detailed calculation data from all respondents can be seen in the calculation table in Appendix 6. The number of questions asked based on each indicator can be seen in Table 2:

TABLE 2
QUESTIONNAIRE QUESTION AND RESULT

Indicator	Number of Question	Score
Incident Management	13	70.89%
Problem Management	13	69.69%
Access Management	12	70.83%
Event Management	11	67.73%
Request Fulfillment	11	71.09%
	Total: 60	**Average: 70.04%**

The calculation of the questionnaire was continued by averaging all the indicators which resulted in a result of 70.04%. Figure 1 was obtained by calculating all questionnaires from 5 respondents from PT Gramedia.

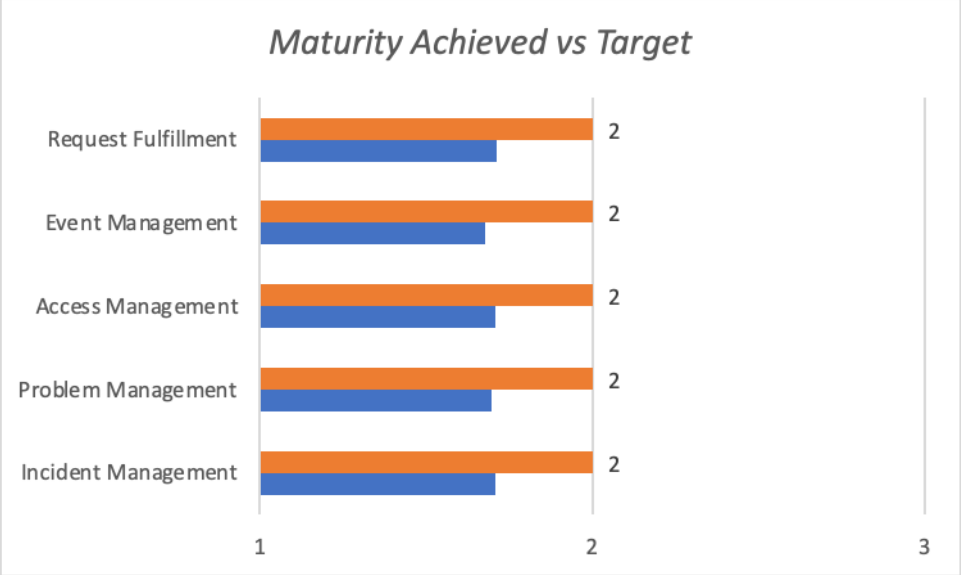

Figure 1. Maturity model achieved score graph

All indicators obtained the same results, namely the research stopped at level 1. Based on the measurement results, it was found that the indicator with the lowest value was the Event Management indicator, namely at 67.73%, and the indicator that got the best score was Request Fulfillment, namely at 71.09%, so that from The five indicators that are measured, the best IT service that has been carried out in the company is Request Fulfillment, namely IT's ability to fulfill or not a request from a user, namely an IT service user. So it can be concluded as a whole based on this questionnaire that Service Operation can still be improved.

C. Reporting

The research continued with the stage of preparing a report based on the results of analysis from field inspections through questionnaire calculations and matters expressed through interviews that had been carried out in the previous stage.

The findings were obtained based on the results of the questionnaire which had scores below the average for each indicator and also the problems informed by the informant during the interview. The results of the field inspection will be a guide in concluding the extent of the maturity level and Maturity Model of PT Gramedia's IT division in providing services to users. From the results of the inspection carried out, findings and impacts will be produced, then suggestions and recommendations will be given regarding IT services from PT Gramedia which are expected to make the services provided better than before.

Recommendations for level improvement are given to companies so that the IT services provided are more established. At least companies like PT Gramedia can improve IT services up to level 2 as the target for the level of service provided. The following are the findings and recommendations from the results of questionnaires and interviews at PT Gramedia Asri Media, which were analyzed using the fishbone method. The fishbone analysis that has been made is the basis for developing recommendations. Before the analysis is carried out, groupings are made to separate the findings in each process. At level 1 there are 52 findings grouped from 11 questionnaire questions. From each of these findings, the results were obtained through 6M, namely: materials (raw materials), machines and equipment (machines and equipment), manpower (human resources), methods (methods), Mother Nature/environment (environment), and measurement (measurement). The following is a fishbone analysis in tabular form for the entire process that stops at level 1. In this analysis the data is presented in tabular form to make it easier to read the findings and recommendations, it can be seen in Table 3.

TABLE 3
INCIDENT MANAGEMENT FINDINGS AND RECOMMENDATIONS

Code	Findings	Recommendation
IM-04-2	There is no clear SOP regarding handling incident triggers to be resolved thoroughly	Providing SOPs and recording a list of incidents and how to handle them to provide knowledge to staff so that incident handling is carried out effectively
IM-04-4	The workforce carries out incident handling activities at a slow pace and has not followed up the incident to the root cause	Provide knowledge to staff and always follow up on every incident that occurs to be resolved completely
IM-06-1	arrangements for supporting devices that are not in accordance with procedures to prevent incidents that gradually occur	Make strict regulations and rules regarding violations that occur and their consequences in service standards
IM-06-2	Documentation and files on incidents that occurred previously have not been properly recorded	Ensure that the system that is running and applied is not susceptible to fraud by having a multi-level approval system and carrying out updates to correct deficiencies
IM-06-6	Have not yet calculated how successful and effective the activities that have been carried out are in handling incidents	Have measurement statistics through feedback on how effective incident handling is routinely carried out
IM-11-2	There is still a need to improve human resources	Conduct training for human resources so that they are knowledgeable in handling incidents
IM-11-4	HR does not yet understand the full use of IT systems and services so that incident handling is less responsive	Ensure HR is familiar with the system used before going into the field to handle incidents
IM-12-1	IT services for users are still being put aside to mature the technical side of the system	A service assessment form is required to be carried out to improve future services to users
IM-12-2	There is no planning process for managing incidents that often occur	Have an ongoing incident response plan
IM-12-5	The focus on improving the functionality of applications and running systems is still lacking in providing services to *users*	System improvements and development must be accompanied by good service to its users
IM-13-2	The response from High Level Management to IT services is still slow	High level management also carries out at least comprehensive monitoring of IT services

Code	Findings	Recommendation
IM-13-6	lack of stakeholder roles in roles that lead to system services	Stakeholders also take part in decision making
IM-00-2	Because in the process of requesting services, *users* sometimes still experience *pending waiting* for a response from superiors. Because the process that occurs is more technically significant.	Fixing and resetting the new ERP by collaborating with the vendor
IM-00-3	The newly implemented ERP system does not meet *user requirements* in verifying data input	In data input, a multilevel approval system is required to prevent input errors
PM-01-2	Lack of analyzing all problems within the company and coordinating in resolving these problems effectively and efficiently.	Maintain communication and coordination regarding problem handling by filling in tickets and collecting data
PM-01-4	*Helpdesk* services in terms of acceptance of system use are still less responsive	Applying a real time system to lifecycle problems
PM-06-2	There is still a lack of recording to be used as a guide for employees in overcoming problems that occur	Create standard procedures for handling problems related to planning and supervision that will be carried out
PM-06-4	Staff knowledge is still lacking in mastering problem handling	Detail each problem handling procedure so that employees can understand it better
PM-06-5	the work environment is accustomed to using the functions of the IT system, not troubleshooting	Implement a proactive work system for the services provided to system *users*
PM-12-1	IT services for users are still being put aside to mature the technical side of the system	Service improvements are needed which are also accompanied by application maturation
PM-00-1	Changes due to several factors that influence the life cycle of using the old system are no longer able to support business processes	Organize *a response team* that acts as a *user supporter* if they encounter problems in using the new system
PM-00-4	Knowledge of the new system is still lacking because it has only just been implemented in the company so more training is needed	A special time is held for training on the newly implemented system and demonstrations

The following are the level achievements for each process in Service Operation

1. At least the company schedules the development of incident management through meetings and feedback with members of the IT division to speed up and improve the tempo of incident response.
2. Complete documentation from previous incident files and store them in a database so that similar incidents can be handled better.
3. Complete procedures and detailed information in incident handling SOPs so that employees can better understand incidents that occur and provide common cases.
4. Provide time for stakeholders to provide feedback on the performance of IT services in the company.
5. Adapt the new ERP to business needs by embedding filters to filter the data that users want to input and testing it first with various scenarios over a period of time.
6. Complete documents for resolving and overcoming problems that occur so that employees are more familiar with dealing with problems that arise in a solution.
7. Focus on users is good behavior in providing services, but technical factors are at least considered in order to improve quality better and more innovatively.
8. Provide complete information regarding handling problems that have been carried out previously
9. Study previous performance and use it as a reference for developing IT services within the company
10. Analyze incidents and how to deal with previous incidents, then create FAQs regarding previous incidents.
11. Provide training on the use of the new ERP by the ERP vendor and the company's internal IT division to users and employees within the company.
12. Add special security for important data that cannot be accessed by just anyone

13. Monitoring all access from all networks to the storage space or database
14. Provide outreach and training to avoid fraud
15. Tighten access restrictions for every company application user
16. Create monitoring limits for the performance of data and access management processes
17. Understand the infrastructure and IT service resources to look for weaknesses in each business process supporting device and then create appropriate fraud prevention steps.
18. Ensure that all information and resources required before implementing data management are documented and safe to access (in accordance with user rights).
19. Supervise staff performance
20. Create targets for developing IT service supporting infrastructure.
21. Scheduling so that event management is carried out more orderly and maintains time efficiency in handling incidents
22. Ensure the capability of resources to support business processes within the company
23. Make a schedule for fulfilling customer requests so that no requests are missed or late
24. Provide knowledge to service requesters if errors occur in making service requests
25. Establish an SOP so that the service requested is at least in accordance with the work procedures provided by the IT service provider
26. Create resource and capability placement guidelines.
27. Explain the services available within the company to users

D. Follow Up

The final stage of this research is to disseminate the results of research related to IT services, providing suggestions for improvements and recommendations for services in accordance with the ITIL framework. The results of the research will be provided to the resource person, namely Mr. Budi as head of the IT division at PT Gramedia Asri Media with the hope that it can help improve performance in providing IT services to all company stakeholders, especially within the scope of Service Operation. This recommendation is an input for improving IT services carried out by the IT division of PT Gramedia Asri Media. In carrying out this process, a checklist follow-up table will be provided which allows the company to accept recommendations, accept recommendations with other requirements that must be met first and reject the recommendations given if they are less relevant to the services provided, as well as supporting reasons. Recommendations for the five activities in service operations can be seen in Table 4.

TABLE 4
RECOMMENDATIONS FOLLOW-UP

No	Recommendation	✓/✗	Reason	Estimate
1.	Ensure that the system that is running and applied is not susceptible to fraud by having a multi-level approval system and carrying out updates to correct deficiencies	✓	Only for some important cases	As soon as possible
2.	Implement a proactive work system for the services provided to system *users*	✓	With conditions depending on the case that occurs	As soon as possible
3.	Service improvements are needed which are also accompanied by application maturation	✓		As soon as possible
4.	Organize a response team that acts as a *user supporter* if they encounter problems in using the new system	✓	Refreshments are carried out periodically	As soon as possible
5.	Utilize operating system controls to prevent fraud with security protocols	✓	There is just an access list	As soon as possible
6.	Increase data usage authorization and *user access rights* with access parameters and menu groups	✓		As soon as possible
7.	Implement procedures to require the use of digital signatures to ensure data security from security access	✓	There is already a request for *user* access, but it still needs enhancement	As soon as possible
8.	Establish a reporting system for events that occur daily	✓		As soon as possible
9.	Have data regarding incidents and handling carried out in the past and have anticipation before an incident occurs again	✓		As soon as possible
10.	Understand current and future needs for human resources to support the achievement of IT goals	✓		As soon as possible

No	Recommendation	✓/✗	Reason	Estimate
11.	Know the limits of service requests that can be submitted to the response team to avoid miscommunication	✓		As soon as possible
12.	Complete documentation regarding what services can be provided	✓		As soon as possible
13.	Describes the tasks and assistance that can be provided to *users* regarding service requests	✓		As soon as possible
14.	The processes and roles of each employee are detailed in accordance with their respective activities and responsibilities.	✓		As soon as possible
15.	Complete documentation from previous incident files and store them in a database so that similar incidents can be handled better	✓		As soon as possible
16.	Complete procedures and detailed information in incident handling SOPs so that employees can better understand incidents that occur and provide common cases	✓		As soon as possible
17.	Provide time for stakeholders to provide feedback on the performance of IT services in the company	✓		As soon as possible
18.	Complete documents for resolving and overcoming problems that occur so that employees are more familiar with dealing with problems that arise in a solution	✓		As soon as possible
19.	The focus on *users* is good behavior in providing services, but technical factors are at least considered for better and more innovative quality improvement	✓		As soon as possible
20.	Provide complete information regarding handling problems that have been carried out previously	✓		As soon as possible
21.	Study previous performance and use it as a reference for developing IT services within the company	✓		As soon as possible
22.	Analyzing incidents and handling previous incidents, then creating FAQs regarding previous incidents.	✓		As soon as possible
23.	Add special security for important data that cannot be accessed by just anyone	✓		As soon as possible
24.	Monitoring all access from all networks to storage space or database	✓		As soon as possible
25.	Tighten access restrictions for every user of company applications	✓		As soon as possible
26.	Create monitoring boundaries for the performance of data and access management processes	✓		As soon as possible
27.	Understand the infrastructure and IT service resources to look for weaknesses in each business process supporting device and then create appropriate fraud prevention steps.	✓	The Division always carries out research for service development	As soon as possible
28.	Create targets for developing IT service supporting infrastructure.	✓	Targets are created based on the review results received	As soon as possible
29.	Ensure the capability of resources to support business processes within the company	✓		As soon as possible
30.	Establish an SOP so that the requested service is at least in accordance with the work procedures provided by the IT service provider	✓		As soon as possible
31.	Create resource and capability placement guidelines.	✓	This will be carried out with the assistance of HRD for support and extension	As soon as possible
32.	Explain the services available within the company to *users*	✓		As soon as possible
33.	Conduct training for human resources so that they are knowledgeable in handling incidents	✓	Routinely done monthly	July
34.	Ensure HR is familiar with the system used before going into the field to handle incidents	✓	Routinely done monthly	July

No	Recommendation	✓/✗	Reason	Estimate
35.	Have an ongoing incident response plan	✓	Carried out at the Monthly Management Review	July
36.	System improvements and development must be accompanied by good service to its users	✓	Monthly Routine Training	July
37.	High level management also carries out at least comprehensive monitoring of IT services	✓	During the monthly management review meeting	July
38.	Stakeholders also take part in decision making	✓	With conditions based on those determined by SMO	July
39.	Strengthening access protection and monitoring in the form of an audit trail to see activities that occur on the system	✓	It will start to be done regularly	July
40.	Providing SOPs and recording a list of incidents and how to handle them to provide knowledge to staff so that incident handling is carried out effectively	✓		Q3
41.	Make strict regulations and rules regarding violations that occur and their consequences in service standards	✓	There is IT policy monitoring every 2 months	Q3
42.	Establish a ticketing system for each service request by *a user* along with the due time for when the service is needed	✓		Q3
43.	Provide knowledge to staff and always follow up on every incident that occurs to be resolved completely	✓		Q3
44.	Have measurement statistics through feedback on how effective incident handling is routinely carried out	✓	Carried out annually	Q4
45.	A service assessment form is required to be carried out to improve future services to users	✓	Carried out on an annual basis	Q1
46.	Fixing and resetting the new ERP by collaborating with the vendor	✓		It is already done
47.	In data input, a multilevel approval system is required to prevent input errors	✓	The ERP approval system has been implemented	It is already done
48.	Maintain communication and coordination regarding problem handling by filling in tickets and collecting data	✓		It is already done
49.	Applying a real time system to lifecycle problems	✓	There is already a system alert + activity log	It is already done
50.	Create standard procedures for handling problems related to planning and supervision that will be carried out	✓	Enhancements required	It is already done
51.	Detail each problem handling procedure so that employees can understand it better	✓	Performed by SMO	It is already done
52.	A special time is held for training on the newly implemented system and demonstrations	✓		It is already done
53.	Prepare documents in the form of guidebooks and FAQs regarding the use of the new system	✓		It is already done
54.	Documentation and UAT are carried out first to ensure the new system can meet business needs	✓		It is already done
55.	Carry out service measurements on a scheduled and routine basis to improve performance	✓	Carried out by KPI (Key Performance Index)	It is already done
56.	There is a document regarding the company's clear vision and mission, especially regarding authorization rights	✓		It is already done
57.	Documenting UAT and readjusting *user access rights*	✓	Carried out before implementation of the new system	It is already done
58.	Put more effort into providing direction to employees in handling the documentation process which must be detailed and detailed in every activity carried out	✓	Regular refreshments are carried out by the cashier, *user* and EDP	It is already done
59.	Limiting access hours and security protocols by holding activity logs	✓		It is already done
60.	The processes and roles of each employee are detailed in accordance with their respective activities and responsibilities.	✓	KPI (Key Performance Indicator) has parameters	It is already done

No	Recommendation	✓/✕	Reason	Estimate
61.	Make maintenance schedules and regularly review data storage resources	✓	Maintenance is carried out every day after transaction calculations	It is already done
62.	There is monitoring and coaching for employee performance.	✓	Routinely carried out every time a new system is implemented	It is already done
63.	Conduct evaluations regarding incidents that occur and discussions in meetings regarding incident resolution	✓	Routinely carried out monthly management reviews per section, department, division	It is already done
64.	*Users* receive training regarding handling service recovery issues such as incidents.	✓		It is already done
65.	Hold reminders for service requests that have not been fulfilled	✓		It is already done
66.	Adapting the new ERP to business needs by embedding filters to filter the data that users want to input and testing it first with various scenarios over a period of time	✓		It is already done
67.	Ensure that all information and resources required before implementing data management are documented and safe to access (in accordance with *user rights*).	✓	It's already in ERP	It is already done
68.	Scheduling so that event management is carried out more orderly and maintains time efficiency in handling incidents	✓		It is already done
69.	Re-managing corporate governance that is open, responsible, ethical, with integrity and attention to all aspects of the company in detail to improve quality	X	It is not within the authority of the IT division	
70.	Documentation available, and weekly meetings for ongoing activities.	X	Done monthly, if weekly it is done less formally	

From the overall results of level 1 recommendations, it can be concluded that 68 of the 70 recommendations given were accepted by the company, and 2 recommendations were rejected by the company because the suggestions given were no longer relevant to the state of the systems and services in the company. Of the 68 recommendations given to companies, they are further grouped into several criteria and also target times for implementation and realization of these recommendations. From the recommendations received, based on information from the resource person, namely Mr. Budi, he explained that some of the recommendations given had been implemented by the company in an effort to improve IT services at PT Gramedia, but in the future continuous development was needed so that IT services that ran could be even better. . The implementation of the recommendations given will be carried out as soon as possible, which means they will be implemented immediately after the delivery of service measurement results at the general meeting which will be held, usually every month.

IV. CONCLUSION

It can be concluded from this research that it is a measurement of the services provided by the IT division of PT Gramedia Asri Media to its stakeholders. The results obtained from this measurement are to provide input and recommendations with the hope that the IT division's services will become more established, and also to help ensure that PT Gramedia's investment in the IT sector is used optimally. Based on the research data obtained, IT services at PT Gramedia in accordance with the ITIL V.3 framework stopped at level 1 because the five indicators tested showed results that were still below 85% so the measurement could not be continued to the next stage. This also shows that the level of IT service stability at PT Gramedia is still at the initial level. Where at this level, organizations generally do not provide a stable environment for developing a new product. When an organization appears to suffer from a lack of management experience, the benefits of integrating product development cannot be determined by ineffective planning, system response. Based on the results of the follow-up carried out, almost all of the recommendations given to the company were well received, and several recommendations have also been made to PT Gramedia, but of course the concerns obtained through this research will provide a desire to improve the division's services and performance. IT in the future. So far the IT

services at PT Gramedia have been running quite well and through this research it is hoped that the performance of PT Gramedia's IT division will be better, it is also hoped that there will be full attention from stakeholders to make the recommendations given come true.

ACKNOWLEDGEMENT

The author would like to thank Universitas Multimedia Nusantara, especially the Information Systems Study Program. In addition, the author would like to thank PT Gramedia Asri Media, family and friends who have provided support in preparing this research.

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