

# Audit Information System of Data Storage Shelf Using ITIL Framework with Domain Service Strategy

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**Abstract**— Management for bad governance will have an impact on the quality of service in the company; this will cause low levels of customer satisfaction and trust. This can be overcome by regulating the management and checking the governance needed for customer server storage racks where this is rarely monitored and checked. Exposure to management and checking routines can improve existing deficiencies to be better and in line with company goals. The method used is to conduct an audit for checking on a server storage rack using the ITIL framework (information technology infrastructure library) with a domain strategy. Based on the results that exist in the domain strategy in order to achieve the desired level of maturity (level of maturity), all procedures required in each process must be obtained. To achieve the desired results, each process must have standard and sent procedures that are socialized to all parties involved in the implementation of checking the server storage rack that is to the manager. The procedure must be documented and updated regularly. From the results of the maturity of the current IT governance with the level of maturity to be achieved, it is recognized in the domain improvement strategy that is carried out on checking the storage rack of the server (managing human resources). The information audit system uses the ITIL framework and with the domain service strategy used to assess the level of maturity for the company where the average calculation results obtained from the interviews are 2.50 which mean the company is not optimal and is given several recommendations to improve it.

**Keywords**— ITIL, Level Maturity, Rack Server.

## 1. INTRODUCTION

Information Technology is the most important strategic resource owned by a company and needs to be managed properly. At present, many companies discuss the issues of Information Technology Governance (ITG), Information Technology Management (ITM) and Information Technology Services Management [1]. Information technology services become very important in the management of information technology, especially for auditing purposes in this service [2]. An audit of information technology services is used to determine the extent to which the use of information technology services can be a bridge for the development of a company's business. So the management of services becomes more important to manage information technology services that change to these services can change at any time according to needs [3]. Information technology services can improve service quality, can reduce risk, improve performance of value, and reduce the cost of information technology services [4]. Information systems (IS) are one of the ways used to support the development of information technology. Support is to assist and support management in solving structured problems [5], [6]. Where the key contribution, analysis, and information in the company related to the quality of IT services (information technology) provided for the smooth running of the company's business. In a computer network in a company, especially in large and multinational companies have a tendency to use information technology, especially in large data management is a data center or data center, which is a facility used for server collection. or computer systems and data storage systems that are also equipped with physical security systems [7]. The increasing digital data processing makes everyone needs flexible data storage media, large capacity and of course safe implementation. But now the data storage media used by most people are still in the form of physical storage media, where these devices are vulnerable to damage, loss and are very inflexible because we have to carry them wherever we go so that it makes us troublesome. Although this physical data storage medium is only used in certain work environments such as offices, schools, or homes, its use is inefficient and ineffective.

Without good IT governance will certainly have an impact on the company's business processes. Through information systems, business processes can be supported more effectively and efficiently [5]. Businesses need the information technology needed, increasing the risk of security systems, information security, and infrastructure security to become expensive goods [6]. The IT Infrastructure Library (ITIL) can be used as a guide for quality and excellence services for company goals and targets [8], [9]. The company is engaged in ICT (Information Communication Technology), and supporting organizations for national Internet service providers from the Directorate General of Post and Telecommunications. Information Technology (IT) is a need for all companies and business processes. This company is one that supports information technology to support all business processes carried out by the company to be effective and efficient. Management of Information Technology Services is widely used for the purpose of managing services for the required information technology. Information technology is very important in customer satisfaction in the company.

The company has received excellent resource support in infrastructure but has not been used or carried out properly in accordance with the company's Standard Operating Procedures. Good governance planning for rack server storage services must be strategically adjusted. How IT is implemented in an organization will affect how far the organization in achieving the strategic goals of vision and mission. In the current condition, checking the rack server section which is very rarely done and not in accordance with existing standards or regulations, the problem is also because the company takes care of infrastructure, server downs can occur and cannot be accessed so that the company's business activities are disrupted and cause it is not in accordance with the company's goals because it can reduce profit or loss. But audits carried out on company and rack server services will help companies to properly implement the structures and regulations that have been created, aiming to improve the quality of rack servers that store user-generated data and manage more coordinated IT resources. The purpose of this study is to increase the level of maturity of the top-level problems required by the service and provide the approval to overcome this problem. In this journal the model developed is to regulate the functions of IT services set on the server rack and permit the delivery of IT services with and researchers will find solutions to problems that have been supported by operation.

## 2. LITERATURE REVIEW

### 2.1 ITIL

ITIL (Information Technology Infrastructure Procedures) is the best practice to help businesses run and support company management to achieve company goals. To achieve the ideal target, strategic alignment needs to be made between existing businesses and businesses that will be run. Because there are some internal problems, such as lack of evaluation and management control of the planning itself. No wonder the company's business is not working properly, most SOPs are not run properly, some server racks are not well controlled and there are rarely checks and errors when checking, then researchers can find there will be problems and adverse effects on the company who lives for a while.

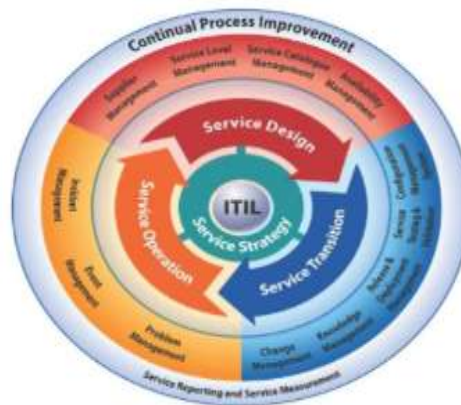


Figure 1. ITIL V3 Service Lifecycle [12]

## 3. RESEARCH OF METHODS

The methodology used in this study is the stages of research, data collection, and analysis with ITIL support. The stages of the research are the preparatory processes carried out before the start of the study. With the research stage or discussion of work that can be done so that research is more structured in its implementation. Figure 2 shows the work process that will be carried out in this study.

### A. Early Research Initiation Phase

These methods make it possible to define indicators for monitoring and steering the IS [16]. This stage is the initial stage in conducting research. Before starting the research an identification of the problems currently occurring in the Company is carried out. After identifying the problem, a restriction is made to the problem found. Then the identification and limitations of the problems that have been identified can be used as a reference in determining the objectives of the research conducted. By knowing the research objectives, a literature study and field survey can be carried out to achieve that goal. Literature studies carried out in this study include journals, websites, and books on IT Infrastructure Library (ITIL) version 3 Service Strategies, and Process Maturity Framework (PMF). While the field survey was conducted by knowing how the condition of the business processes that are currently running at the company today by way of direct observation or interviews with relevant parties.

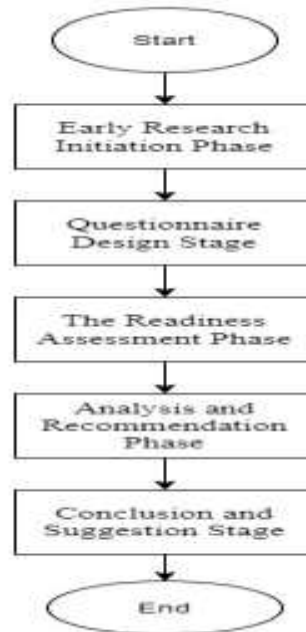


Figure 2. Research flowchart [15].

#### B. Questionnaire Design Stage

This stage is the stage to make preparations before evaluating the level of readiness, including preparations regarding the determination of respondents who will fill out the questionnaire, identification of what parts will be assessed, and also the design of the Service strategy questionnaire. Determination of the respondents chosen to fill out the questionnaire are employees who work in the company's System Admin division. The part that will be assessed on the level of readiness assessment, which is seen based on 3 (three) of the 3 (three) area demand management, financial management, and service portfolio management. The following below is a description of the 3 (three) areas:

1. Principles of Service Strategy and demand management processes (Pre-requisites, Management Intent, Process Capability, Internal Integration, Products / Outputs, Quality Control, Management Information, External Integration, Customer Interface).
2. Principles of Service Strategy and financial management processes and service portfolio management (Pre-requisites, Management Intent, Process Capability, Internal Integration, Products / Outputs, Quality Control, Management Information, External Integration, Customer Interface)
3. Technologies related to Documentation & Communication activities, Process Integration, Skills & Staffing, Tools & Automation, Metrics & Measurement, Controls & Governance in the Portfolio Management category.

#### C. The Readiness Assessment Phase

At this stage, the questionnaire is filled directly into the System Admin section of the company handling the documentation. The questionnaire was carried out in 2 stages, the first stage was a trial questionnaire used to determine whether or not each item of the questionnaire statement was made. If there are invalid questionnaire statements, they must be discarded or replaced with questions that are more understood by respondents for further processing of data. If the questionnaire statement is valid, then the statement can be used to enter the research data.

After the trial questionnaire was carried out, the next stage could be the distribution of questionnaires to the same respondents. But the difference, if the first questionnaire is still in trial, but the second questionnaire is a questionnaire with invalid questions and has been replaced in the form of questions that are more understood by respondents but still in the same scope as the previous questions. After going through the second questionnaire filling step, then the validation and reliability tests are carried out again, if the data is valid then the readiness assessment stage can be carried out. In this study an assessment of the level of readiness of Service Strategy and Service Design was conducted. in the company to find out how the company's current conditions in implementing existing processes in the Service Strategy and Service Design. The assessment of the Service Strategy readiness level in this final project is seen from 3 areas that support the company's readiness in implementing ITIL Service Strategy version 3, which consists of Process,

Technology, and People. This questionnaire uses 2 choices of answers and weights. Both answer choices are taken based on the template. After giving a weighting value to each statement on the questionnaire, the average value was calculated for each process. For the questionnaire the average value of each category was calculated based on three areas, namely people, processes, and technology. In assessing the level of readiness the author also uses a validity test, test the validity of data that can be trusted in accordance with reality. Data validity test is a correlation technique used to determine the validity of items until now is the most widely used technique [13]. Validity Test is used to find out how actual the data used is real or true. This measurement also determines whether the data is valid or not. Measurement is said to be invalid if the measurement deviates from its purpose [14].

#### D. Analysis and Recommendation Phase

At this stage an analysis of the level of service strategy readiness of the company is in accordance with ITIL version 3 standardization, to find out to what extent the company's readiness in managing Service Strategy processes or can also be used as a benchmark for the extent to which the company's readiness if it wants to implement ITIL version 3 on Service Strategy. If the readiness level is already known, then a gap analysis can be performed on the results of the readiness level obtained based on the PMF compared to the maturity level expected by the company. Gap analysis is used as a comparison of actual performance with potential or expected performance by the company. After the gap analysis is done, it can be known what recommendations the company must do to evaluate each Service Strategy process based on ITIL V3 which still has not reached the level expected by the company. The results of the assessment of the level of preparedness for the Service Strategy, the results of the gap analysis and recommendations will later be given to the company as a result of the evaluation to manage the Service Strategy to conform to ITIL V3 framework standards.

#### E. Conclusion and Suggestion Stage

At this stage it is the final stage of research that contains conclusions and suggestions. The conclusion contains a summary based on the results of research that has been done by describing the points that can help companies to find out how the condition of Service Strategy in the company today to be able to evaluate and improve. While the suggestions contain points to help the reader so that further research goes better, with ITIL ensuring transparency, discovering needs experimentally, uncovering variability, improving performance, can help decision makers to think about the right way and need to be taken and so on [17].

### 4. RESULT AND DISCUSSION

The results and discussion solve the level of compatibility and recommendations for the recommendation. The design of the questionnaire level of readiness Service strategy first starts with the process of collecting data to support in solving problems. In the case study research in the company, the data collection process is carried out, namely by distributing questionnaires that have been made to respondents related to the implementation of Service Strategy in the company. The questions designed are only related to Service Strategy at ITIL. This research only takes the Service Strategy domain, because the company does not tell what standards are used to conduct evaluations using certain standards regarding the suitability of documentation, starting from the analysis stage to the development process. Of all the sub-domains in the service strategy domain, the writer uses 2 sub-domains, namely demand management and service portfolio management. There are 2 choices of answers to choose from respondents, namely Yes and No. The choice of answers is a format that has been made in such a way that an average value can be calculated which is considered as a level of maturity for the readiness achieved.

#### 4.1 Determination of Respondents

After the Service Strategy readiness level questionnaire has been designed, the next step of this research is to determine the respondent. Respondents who will fill out the questionnaire are the company's MIS (Management Information System) division of three people.

Based on the results of the validity test that has been done, we get an invalid variable, with the following results, can be seen in Table 1.

This is the result of the validation test of the domain service strategy with sub-domains used, namely service portfolio management with the total number of question items 29 and the number of invalid items 6 from the variables Pre-requisites, Management Intent, Process Capability, Internal Integration, Products / Output, Quality Control, Management Information, External Integration and Customer Interface.

Table 1. Validity Test.

No.	Variable	Number of question items	The number of items is invalid
1	Pre-requisites	2	1
2	Management Intent	2	-
3	Process Capability	4	1
4	Internal Integration	2	1
5	Products / Output	2	-
6	Quality Control	5	2
7	Management Information	4	-
8	External Integration	3	-
9	Customer Interface	5	1
Total		29	6

#### 4.2 Readiness Level Assessment

Assessment of the level of readiness of the company in implementing the Service Strategy in the company which consists of several levels, namely level 1 to level 5, the Process Maturity Framework (PMF) can be used as an effort to improve the maturity of each service management process per process or to measure the maturity of the service management process overall. This approach with PMF has been used by a number of information technology industries in recent years, with several different models according to the organization. the calculation process is used to evaluate and assess the maturity of the service management process. Based on the results of a questionnaire that has been given to three respondents of the company's IT division related to the company's readiness in implementing the Service strategy that the writer uses as company information based on ITIL best practices, the following are the results of an assessment of the average maturity level of Service Strategy readiness of the service portfolio management. The results of the assessment can be seen in Table 2.

In table 2. That shows the results of assessments made in the form of tables to be more easily understood, this table is to explain IT Process Excellence Reviews Process Overview reflects the average response by one or more key individuals who have assessed the maturity level of key IT operational and strategic processes. Where in the Documentation & Communication variable with an average score of 3.00, Process Integration with an average score of 3.00, Skills & Staffing with an average score of 2.50, Tools & Automation with an average score of 3.00, Metrics & Measurement with an average score of 3.00 and finally Controls & Governance with an average score 2.50.

#### 4.3 Gap Analysis

Based on the results of the assessment of the Service Strategy readiness level that has been obtained for the management of storage racks in the company, a gap analysis will be conducted. Gap analysis is used as a comparison. The following is the average gap of the three assessment areas produced based on the results of the company's readiness level compared to the results of the company's expected level of maturity:

Table 2. Rating Result

	score
Documentation & Communication	3.00
Process Integration	3.00
Skills & Staffing	2.50
Tools & Automation	3.00
Metrics & Measurement	3.00
Controls & Governance	2.50

From table 3 shows the results of the gap analysis of the sub-domain service portfolio management with the level of readiness obtained and the expected maturity of the company and comparing the value of the obtained and expected company.

Table 3. Gap Analysis

Area : Service Portfolio Management			
Description	Maturity Readiness Level	The expected maturity of the Company	Gap
Pre-requisites	3.00	4,00	1,00
Management Intent	3.00	4,00	1,00
Process Capability	2.50	4,00	1,50
Internal Integration	3.00	4,00	1,00
Products / Output	3.00	4,00	1,00
Quality Control	2.50	4,00	1,50
Management Information	3.00	4,00	1,00
External Integration	3.00	4,00	1,00
Customer Interface	3.00	4,00	1,00

#### 4.4 Recommendations

This section will discuss the recommendations given by the author for the company.

Finding: The number of employees who do not obey the rules (SOP) in the company and cause work errors that are not known by the company but may result in losses for the company and customers. From the research results of the questionnaire also seen the lack of performance or skills of company employees.

The recommendations given by the author are to hold special training to improve the skills of staff and hold certain assessments which are to train workers' skills. Recommendations for service improvement especially for rack server checking (Controls & Governance). The author provides recommendations to change the company's strategy in terms of service, in this study the authors see the problems that exist in customer service, where the rack server owned by the customer is very rarely done checking this might cause harm to the company because it provides bad service to customers if a server occurs down and such the company will not know if there is no routine checking of the rack server used to store customer data. The recommendation given is that employees routinely check the existing rack server to avoid any mistakes that cause company losses and give fines to employees who do not do their job.



## 5. CONCLUSIONS

Based on this research using ITIL V3 services with a domain service strategy which is one tool that can be used to help companies to make infrastructure strategies in the use of information technology and for corporate governance and services and conclusions can be drawn that produce an assessment with the results of interviews with managers and company employees, where the results of the interview are:

1. With sub-domain service portfolio management with 29 questions from Pre-requisites, Management Intent, Process Capability, Internal Integration, Products / Output, Quality Control, Management Information, External Integration and Customer Interface variables. There are 6 invalid questions.

2. With the results obtained Documentation & Communication variable with an average score of 3.00, Process Integration with an average score of 3.00, Skills & Staffing with an average score of 2.50, Tools & Automation with an average score of 3.00, Metrics & Measurement with an average score of 3.00 and finally Controls & Governance with an average score of 2.50.

The author also concluded that the company did not get the desired value of 4.00, it can be seen that the value obtained is still at an average of 3.00 and some even still get 2.50 results.

The suggestions put forward for further research are:

An audit process was carried out using different ITIL service domains, namely service transition, service operations, and continuous service improvement, using input data from this research process. An audit process was carried out on PT. INET which was applied to all company divisions. An audit process was carried out with other service case studies.

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