Evaluating Maturity Level of IT Service Using Framework ITIL:

A Case Study of Service Desk's

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Abstract : Information Technology Governance has become one an important one along with Information Technology Management (ITM) and Information Technology Services Management (ITSM). For ITSM, The IT Infrastructure Library (ITIL) can be used as a quality and excellence service best practice for guidelines for purpose and target of company, it will improve quality control, service level, efficiency, effectiveness, and expenses of budget from information flow, Service Level Agreements (SLAs), and take control over business and management processes. This research conducted a case study on Company of Freight Forwarder Service will be called FFS, located in Jakarta with method ITIL focused on Service Desk's. The data collected using various method such as observation, questionnaires, interview and document review. The data that has been collected is analyzed with the level of maturity of ITIL, and result showed that company FFS got average score on service desk's is 1.94, with the highest score at area Process Capability and the lowest score at area Customer Interface. This conclude, that company FFS has a good management of service desk's but lack of user experience on front end of service.

1. Introduction

Today, many companies encounter with regulatory issues of Information Technology Governance (ITG), Information Technology Management (ITM) and Information Technology Services Management (ITSM) [1]. Information system (IS) is one of the means used to support the processing of information technology. IS works in every system [2], its purpose is to help and support managements solve structured problems [3], [4].

The information technology (IT) becomes an essential part of organizations and governments. IT provided excellent service provide capabilities for them to meet their citizens or customer's needs [5], [6]. Without good IT governance there will certainly have an impact on the company's business processes. Through information systems, business processes can be supported more effectively and efficiently [7]. The effectiveness of an Information Technology and information system (IT/IS) for now becomes an important role for IT managers and management to get results in terms of quality, quantity, and time, the greater the presentation gained then the level of electives in the company is very good IT supports organizational processes, it is important for development and innovation and to strengthen a foundation of the company and expand the scope of the company [8]. The IT Infrastructure Library (ITIL) can be used as a quality and excellence service guideline for purpose and target of company [9], [10]. Improved quality control, service level, efficiency, effectiveness, and expenses of budget from information flow, Service Level Agreements (SLAs), and take control over business and management processes. ITIL plays a key sigficant

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role in helping a business or company organization to meet its target and goal since it helps to supervise the IT resources more efficiently [9]. ITSM serve for the effective and efficient delivery of IT Services in support of changing business needs. When many of these parts come together, they can make IT increasingly efficient and effective [11]. In service applications, the income growth potential of become better the speed and excellent of service often overshadows the cost reduction opportunities [12], [13]. The company is a Freight Forwarder Service specialized in the logistic transportation located in Jakarta. The problem of a well-designed institution and fulfilling the process will be a bit of marking if the processing of these days of the process should not be carried out, take control and be managed. So that company will service improvements be possible if day-to-day activities to monitor performance. Purpose of this study is to evaluate maturity level of top performance issues faced by the service desk and provides recommendations to address these issues. Service Desk is the first and single point of contact. IT plays vital role in customer satisfaction. It coordinates activities between end user and IT service provider team.

2. Literature Review
2.1. ITIL

ITIL documents best practices for ITSM and is used by many organizations around the world, though originated as government initiatives in the UK and Holland [14]. ITIL defines a service as a means of delivering or bring value significant to customers by facilitating or provide outcomes customers want to reach without the ownership of specific costs or expense and risks [15], [16]. The ITIL V3 best practices are currently detailed within five core publications that introduce five Service Lifecycle stages: Service Strategy, Service Design, Service Transition, Service Operation, and Continual Service Improvement Fig. 1 [17], [18].

Fig. 1. ITIL Service Lifecycle Approach (Source: Best Practice Insights Focus On: ITIL® Service Strategy Updated for ITIL 2011) [18].

2.2. Maturity Level

Maturity Level is a method for evaluating or auditing development level in IT Management in company. In the level measurement at the company (see table 1).

Table 1. Maturity Level of ITIL [21]

Level	Index	Description
Level 0: Incomplete process.	0.00–0,49	The company is not at all concerned about the importance of information technology to be managed well by management.
Level 1: Ad-Hoc process.	0,50–1,50	The Company is reactively doing the application of information technology in accordance with immediate needs, without preceded by planning previous.
Level 2: Repeatable process.	1,50–2,49	The Company already has a pattern repeatedly done in doing management of activities related to governance information technology, but its existence has not been well-defined so formally still inconsistent.
Level 3: Defined process.	2,50–3,49	The Company already has the standard procedure formal and written communications to all stakeholders to be obeyed and done in daily activities.
Level 4: Managed process.	3,50–4,49	The Company already has a number of indicators which serve as each target Application of information technology applications.
Level 5: Optimized process.	4,50–5,00	The Company has implemented governance manage the information Technology that it refers to "best practice".

According to Hall & Singleton [19] Audit is a systematic process of obtaining and evaluating objectively relevant evidence regarding an assessment of various economic activities and events to ensure the level of

suitability between these assessments and form criteria and deliver the results to interested users [20].

2.3. Other Research

Research by AlShathry, provides an insight on how to evaluate IT Service functions such as Incident Management Process on ITIL Framework. The research aimed to explore the compliance of Incident Management Process on organization to the best practices of ITIL Framework [23].

Research by Ahmad, Amer, Qutaifan and Alhilali, gives example toward practitioners such as IT experts. The result said that ITIL has the flexibility to work for a wide variety of industries and businesses and the importance of people in successful ITIL adoption [24].

3. Research Method

Company of Freight Forwarder Service will be called FFS, located in Jakarta. FFS has broad experiences in both ocean freight and air freight service and has more than sixty agents of partnership around the world. This paper uses literature study by conducting early survey by analyzing vision and mission, goals and objectives as well as the company's strategic plan as well as the strategies, policies related to the management of IT investments and field observations on IT Services.

The analytical tool used in this study is the standard procedure ITIL issued by Office of Government Commerce (OGC), where the data can be obtained by various methods, namely: Questionnaire; by distributing questionnaires to every department in the FFS. The respondents consist of 5 respondents from the top management and 40 respondents as representatives of every department in the FFS, so the overall total respondents obtained are 45.

Reporting, after questionnaires were distributed, the collected data were processed to be calculated based on the maturity level calculation. The result of the audit contains the findings of the present (current maturity level). The next steps were to analyze the interpretation of the current and the company situation to provide recommendation lists of the corrective actions to overcome weakness and to achieve the improvements in IT Service. The focus on this research is on service desk area only, because service desk is part of service operation and service desk are the primary point of contact for users when there is a service disruption, for Service Requests, or even for some categories of Request for Change. The Service Desk provides a point of communication to the users and a point of coordination for several IT groups and processes.
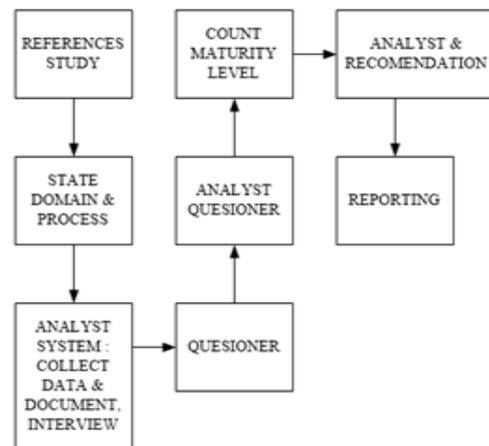

Fig. 2. Step by Step Evaluate Maturity Level [20]

4. Result and Analysis

4.1. ITIL Implementation Maturity Assessment

The maturity level of IT service management is viewed with the perspective of ITIL (Information Technology Infrastructure Library), to measure and obtain the baseline that will be used in the future IT service management improvement plan by the IT Management of the organization. If the organization then decides to implement IT governance implementation using ITIL best practice framework, the results of this maturity assessment are also useful to see the possibility of implementation not starting from the beginning. Because basically IT governance is done by an organization is part of the implementation of ITIL, although the organization is not yet known about ITIL.

4.2. Assessment Area ITIL Implementation Maturity Assessment

This assessment is not intended to test complete conformance with ITIL, but rather to get an overview of the maturity of processes and functions in service governance, especially for quick win functions and processes based on ITIL perspectives. The meaning of quick win is a function and processes in ITIL that become pioneers to be implemented where the benefits can be directly felt by FFS users, as well as a function and processes that are directly related to FFS management. The areas studied in this assessment can be seen in Table 2.

Table 2. Area Assessment

Area *Assessment*	Description
Area 1: Pre-requisites	This area we will examine the availability of necessary prerequisite items to support the process / function activity.
Area 1,5: Management Intent	Studies of this area relate to the existence of organizational policies, business objectives, or the like that encourage the existence and operation of processes / functions
Area 2: Process Capability	This area is related to the organization's ability to run the process / function.
Area 2,5: Internal Integration	The Internal Integration area is reviewed to see the adequacy of integration between activities within this process. The activities in the process will be interconnected in order to meet the objectives of the process.
Area 3: Products/Output	Studies in this area are intended to look at the actual output of an already running process. To what extent is the output relevance that the process has produced to the achievement of the objectives of the process?
Area 3,5: Quality Control	This area deals with the review and verification of the process output. This is done to maintain the quality of output.
Area 4: Management Information	This area concerns the availability of information supply to management to support decision making.
Area 4,5: External Integration	A review of this area is to see whether the external relationship between this process / function and other ITIL processes / functions has been established within the organization.
Area 5: Customer Interface	In the area of Customer Interface will be reviewed whether the user has continuous review and validation activities. This activity aims to ensure optimization of the process / function is always maintained in meeting the needs of users.

Assessment of the level of maturity of each area will be made to processes and functions within ITIL (Quick Win). The rating scale is from 1 to 5. Table 2 below provides a description of each of these scales. The assessment results shown below use a radar chart diagram that is shaped like a cobweb. There are 9 axes that represent 9 assessment areas. Figures contained on each axis indicate the level of maturity of each area in the process / function being studied. With this diagram the gap in the level of maturity between the areas of one with the other areas will be seen by contrast.

4.3. Service Desk

In general, the Service Desk function is a service and reporting center related to the service, both to service users, management and internal service providers. Service Desk analyst must execute initial to identify while the user or consumer is on call and try to know the full symptoms of the event and to determine exactly what has gone wrong and how to correct it. When it becomes clear and clean that Service Desk is unable to finish the incident or target time for Service Desk has been pass through, the incident must be escalated at one time for further support.

4.4. Pre-requistes

It is certain whether the minimum level of prerequisites is available to support process activities. Is there a helpdesk in the organization?

What does it do and does it work well? The Helpdesk does not exist officially, but the FFS function within the network management area is already established Service users. Maturity Level at this stage is 2, Repeatable Process. Whether the Service user already knows the function of the service desk / help desk as a single point of contact center. Service users already know that if there are difficulties with the network, they contact FFS. Procedures have been made, with the form, but no standard logs and procedures are created. Maturity Level at this stage is 3, Defined. Are the functions and duties of the Service Desk already socialized? Is the Service Desk function felt by the users in the field? Because service users are still not consistently asking / reporting services to the service desk. Be socialized not formally. Maturity Level at this stage is 2, Repeatable. Does the Service Desk still perform its function reactively to service requests or report problems faced by users (if requested / asked)? Reactive when prompted. Maturity Level at this stage is 1, Ad-Hoc. Whether the Service Desk has not acted proactively for example by providing information about plans related to application / service changes to users. There is no planning for service changes. Maturity Level at this stage is 1, Ad-Hoc.

Result: The average of the Pre-requisites Assessment was 1.80 that was in level 2, Repeatable Process. Recommendation are Processes have been partially defined with moderate agreement on how

specific process activities are performed and Staff responsible for performing tasks related to these IT processes vary in their approach by process and/or platform.

4.5. Management Intent

Establishes whether there are company or institution policy statements, business and management objectives (or similar evidence of intent) provided that both of them goal and guidance in the modification or use of the prerequisite items. What expectations and commitment from management to the existence of the Service Desk is good enough for the Service Desk to perform its functions more effectively and efficiently? There is no document stating that the service desk is formalized. Informally, however, FFS staff has been working on the preparation of working procedures by making service request forms. Maturity Level at this stage is 3, Defined. Is financial support good enough for the existence of human resources (HR) and tools for the smooth functioning of this service desk? Analysis at IT Incident Management. Maturity Level at this stage is 0, Incomplete. What Management has not considered the Service Desk as a strategic function in service operations? Management has not considered the Service Desk as one of the strategic functions in service operations in FFS. Maturity Level at this stage is 1, Ad-hoc.

Result: The average of the Management Intent Assessment was 2.00 that were in level 2, Repeatable Process. Recommendations are IT process awareness campaigns have been implemented once to limit IT and the business departments and there is one specific intention in the organization/business statements related to this IT process.

4.6. Process Capability

Examines the activities being carried out. The questions are aimed at identifying whether a minimum set of activities are being performed. Does the Service Desk perform its functions when contacted by users of the service, particularly in digging information and initial investigation of reported service disruptions? The Service Desk already performs its function when contacted by the service user. Maturity Level at this stage is 4, Managed. If there is a new service or service change, whether the Service Desk can provide information regarding this to the users of the service. And there are formal procedures governing this activity. There is no formal procedure when there is a new service. Usually the procedure is developed informally. Maturity Level at this stage is 2, Repeatable. The Service Desk has been able to answer user questions regarding service status. The Service Desk can answer user questions regarding service status. Maturity Level at this stage is 4, Managed. Is there a reference / ticket number for complaints / users of the service for the purpose of following up the progress

of incident service disruption? There are no references or ticket numbers for complaints. The form has been created but not consistently executed. No logs. Maturity Level at this stage is 2, Repeatable. If there is an incident resident progress update status, is the Service Desk provided information / notification in order to follow up this information to the service user. There is no information about the status update progress regarding the completion of the incident. There is no formal notification of follow-up information to service users. Maturity Level at this stage is 1, Ad-hoc. The Service Desk can communicate plans and service level changes due to the absence of a Service Level Agreement (SLA). There are SLAs but not formally created. Maturity Level at this stage is 3, Defined. Does the List of duties and functions of the Service Desk have been formally agreed, Available on Main Tasks and Functions? Maturity Level at this stage is 4, Managed. Is there still any communication about the responsibility for completion of the incident report from service users? There is no data on this. Maturity Level at this stage is 0, Incomplete. Whether the Service Desk's workload analysis has been done formally so that there is no stronger justification for adjusting the composition and competence of the HR Desk Service as well as the budget required. There is no data on this. Maturity Level at this stage is 0, Incomplete.

Result: The average of the Process Capability Assessment was 2.86 that were in level 3, Defined Process. Recommendations are Staff responsible for performing tasks related to IT processes understand the processes but lack control over process-related activities, IT process training is required by the IT organization, Formal process technology and tool selection has commenced, some use of standard tools and automation is in place but processes are still primarily performed manually and IT service requirements related to technologies and/or toolsets are being defined and developed.

4.7. Internal Integration

Seeks to ascertain whether the activities -within the process- are integrated sufficiently in order to fulfill the process intent. Whether in incident resolution activities, the Service Desk is considered to have involved specialist personnel such as database administrators or programmers as 2nd line support. FFS already has enough personnel who can act in incident settlement activities. Maturity Level at this stage is 4, Managed. Are there any complaints / questions addressed directly to the specialist, where the Service Desk team is not necessarily informed? Although a complaint form has been made but its implementation inconsistency causes many complaints to be submitted directly to the specialist. Maturity Level at this stage is 2, Repeatable. Is there a service information repository for the Service Desk as a communication medium to service users? The

information in question is the module, features, and functionality of services, documentation, and various referral materials for users in using the services provided. There is no information repository by default. Maturity Level at this stage is 1, Ad-hoc.

Result: The average of the Process Internal Integration was 2.33 that were in level 2, Repeatable Process. Recommendations are Data integration points are manually implemented with assistance from proprietary tools and Process automation opportunities have been identified and piloted.

4.8. Product/Output

Examines the actual output of the process to enquire whether all the relevant products are being produced. Is there a Service Catalog as a common reference between the user and the Service Desk in interacting with the services provided? There is a Service Desk service form. Maturity Level at this stage is 4, Managed. Is there a single repository for the Service Desk that contains actual data on service users and the parties involved in service provision? No single repository found, unrecorded complaint. Maturity Level at this stage is 2, Repeatable. Is there a probing standard for obtaining data and user identification services? Examples: standards in the initial handling of calls, such as how to direct users, and what to dig before an escalation of a report to a specialist. No formal standards were found regarding the services provided. Maturity Level at this stage is 1, Ad-hoc. Is there a report for each of the related specialists in the provision of services by category / report type? No specialist reports were found. Completion is done separately without any report from each specialist by category. Maturity Level at this stage is 2, Repeatable. Whether the Service Desk Team has performed a workload analysis in order to adapt the composition, competence and development plans of the HR Service Desk. There is no data on this. Maturity Level at this stage is 0, Incomplete. Does the Service Desk already provide executive reports on service availability, user satisfaction, service disruption recaps, service improvement recommendations, etc. No executive reports found regarding this service. Maturity Level at this stage is 2, Repeatable.

Result: The average of the Process Product/Output was 2.22 that were in level 2, Repeatable Process. Recommendations are there is standard report produced, but not delivered regularly.

4.9. Quality Control

Is concerned with the analyst, review and verification of the process output to make ensure that it is in keeping with the quality intent. Whether the Service Desk Operator performs recordings that are mixed with other processes / functions, as there is no classification of report types from service users. No records were found on this subject. Maturity Level at this stage is 1, Ad-hoc. Are there performance targets for Service Desk services, such as declaration of key performance indicator (KPI) and operational level agreement (OLA). There is no target in the form of KPI, but informally there is an operational level agreement. Maturity Level at this stage is 2, Repeatable. Are there any Training of Service Desk personnel not scheduled on a periodic basis, and not necessarily informed to service management? Personnel training is defined as a specialist in each field, but there is no training of personnel in relation to service desk personnel. Maturity Level at this stage is 2, Repeatable. Whether the Service Desk has used the tools for handling reports from service users (recording, initial investigation, escalation to specialist, progress monitoring, and closing of user report completion). There is no application for handling reports from service users, escalation, monitoring progress and closing of completion. Maturity Level at this stage is 1, Ad-hoc.

Result: The average of the Process Quality Control was 1.50 that was in level 1, Ad-Hoc Process. Recommendations are Metrics have been identified for core IT processes; measurement and collection of data has commenced, Metrics reporting exists but is not yet standardized across processes, Basic Measurement Program has been outlined and/or developed, Performance related to these processes is somewhat consistent but has room to improve and IT has established internal audit guidelines and/or specific legislative compliance initiatives.

4.10. Management Information

Is concerned with the governance of the process and make sure that there is equal and timely information result from the process in order to backup necessary stakeholder or management decisions. Does the Service Desk Coordinator analyze the team's operational performance, user awareness level, and user training needs informally? Because the Service Desk function is not formal, then there is no analysis report of the operational work of the team. But a personnel performance report as a specialist has been done. Maturity Level at this stage is 2, Repeatable. Is there a reporting mechanism to management regarding the above matters done if requested? There is a reporting mechanism. Maturity Level at this stage is 3, Defined. Whether the Service Desk has made information to management about the level of user satisfaction and incident trend analysis and its resolution. No user satisfaction report was found, incident trend analysis and resolution. Maturity Level at this stage is 1, Ad-hoc.

Result: The average of the Process Management Information was 2.00 that were in level 2, Repeatable Process. Recommendations are IT process controls are centrally managed within IT and Formal IT governance has been established and interfaces with the business.

4.11. External Integration

Verify whether all the external interfaces and connection between the discrete process and other processes have been established within the organization or institutions. At this step, for IT service management, use of full ITIL terminology may be expected. Whether the Service Desk and Incident Management functions are currently held by the same team so there is no control mechanism and communication mechanism between the two roles. Still held by the same team. Maturity Level at this stage is 1, Ad-hoc. Whether the Change Management process is in place so that the service update / change plan notifications are still scattered from each specialist, and not necessarily informed to the Service Desk. Organizationally, because the core of the personnel who serve as a service desk is a specialist, then indirectly the information reached the specialist. However, the change management process is not formal. Maturity Level at this stage is 3, Defined. Does the Service Level Management (SLM) Process not yet exist, so the SLA for the service has not been created? As the result stated there is no reference source for the Service Desk regarding an SLA violation. SLA has not been made, there is no reference source for Service Desk regarding SLA violation. There is a gentlemen agreement on the SLA. Maturity Level at this stage is 2, Repeatable. Whether the Service Desk has not proactively undertaken an incident trend analysis to report to the Problem Management process. Moreover, the process of Problem Management was not yet defined. No incident trend analysis was found to report to the problem management process. Maturity Level at this stage is 1, Ad-hoc.

Result: The average of the Process External Integration was 2.00 that were in level 2, Repeatable Process. Recommendations are Process integration with other IT processes is being actively implemented.

4.12. Customer Interface

Is primarily concerned with the continuing external review, verification and validation of the process to make sure that it remains optimized towards meeting the requirement of the customer. Has the Service Desk not surveyed service users to monitor user satisfaction with request fulfillment? Including monitoring the alignment work Service Desk with business needs and servicing users. No customer satisfaction survey has ever been conducted. Maturity Level at this stage is 1, Ad-hoc.

Table 3. Assessment Summary Service Desk

Service Desk	Average Score
Pre-requisites	1.80
Management Intent	2.00
Process Capability	2.86
Internal Integration	2.33
Products / Output	2.20
Quality Control	1.50
Management Information	2.00
External Integration	1.75
Customer Interface	1.00
Average area Assessment	1.94

Whether the Service Desk has not monitored user perceptions of the services provided. There is no monitoring of user perceptions, since the service user is a party within the organization (internal) and is considered not a customer. Maturity Level at this stage is 1, Ad-hoc.

Result: The average of the Process Customer Interface was 1.00 that was in level 1, Ad-Hoc Process. Recommendations are IT process regularly deliver report regarding this process to its customer and Input and complaints are handled inadequately.

5. Conclusion

In Summary, this research aimed to evaluate the service desk's process on company FFS IT Department using assessment of best practices ITIL. Service desk's is one from many ITSM process that represent the foremost region between IT service and user experience with IT. This research provides an overview evaluation of service desk's ITIL maturity status on company FFS. Result showed that in spite of the good Process Capability and Internal Integration area, result still does get average area assessment below point 2. It because several area falter behind like Quality Control and Customer Interface area that get point below 1.5. Companies usually ignore the importance of the interface or delivery of IT services to end users, therefore these two areas get the smallest point from all area that researcher assess

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