Implementation helpdesk system using information technology infrastructure library framework on software company

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Abstract. As a company which relates its customer service, a software company (this case is PT Boon Software) is induced to give the good service to its customer. The existing information technology (IT) system service is made by patchwork. It brings some problems in service catalog, problem management, change management, and service level agreement (SLA). The purpose of this research is to implement helpdesk system to software company with Information Technology Infrastructure Library (ITIL) framework as a standard reference to solve various problem related information technology service on a company. This research starts by investigation all stakeholders of the company with some questionnaires. Implementation ITIL is stratified by finding the gap between the current condition and the standard base line in ITIL. After implementation IT service using ITIL, the stakeholders are asked the same questionnaires. The result shows that there is significant different before and after implementing system service using ITIL.

1. Introduction
In an era increasingly competitive today, companies are competing in providing the best service and quality of its IT services. This requires the company to pay more attention over the quality of an IT service. Controlling the quality of IT service can lead to the loyalty consumer of the IT service. Therefore, the company must continue to make improvements to the performance quality continuously to maintain the trust and customer satisfaction. A small, medium and large company with sophisticated equipment also cannot avoid the delay in response time or resolution on its IT services. Factors causing delays such as are varied, ranging from a lack of human resources, recording manually, work habits, until SOP (Standard Operating Procedure). It can affect the quality of IT service end aimed at consumers. PT. Boon Software is one of the company's IT Consultant focused on IT Supply Chain Solution in Indonesia. Therefore PT Boon Software itself makes IT as a pillar business in the forefront. It is widely used in various areas, especially for big city like Jakarta and Surabaya. Therefore, the quality of IT services is a major concern to ensure the consumers
continue to use its services. To be in the forefront among the competitors with similar services, PT. Boon Software needs to maintain and improve the quality of their IT services.

Handling IT services, PT. Boon Software currently is still using manual method that has many weaknesses and does not answer the challenges that exist as in this below case. Service catalog, IT service catalog is not available so the user does not know what services IT can provide to the users that have an impact on the slow pace of the IT Service Desk. Problem management records only problem without priority to the problem that occurred. Change management, changes that exist are not recorded whether these problems cause disruption to the entire IT services. Service level agreements (SLA), service level of each problem does not exist or has not been defined. By aformentioned problem, it is decided to implement IT service desk using Infrastructure Library (ITIL) framework in the Company PT. Boon Software. This research is expected to solve the IT service in this company

2. Related Work

Information Technology Infrastructure Library (ITIL) itself has several processes which are the business perspective, IT infrastructure management, planning to implement service management, application management, security management, service management [1][2][3][4]. IT service management (ITSM) is a framework (framework) to manage the IT infrastructure in an enterprise, and set the best service for the use of IT services. In other words, the concept of ITSM appears in line with the increased dependency and needs of companies in IT to achieve strategic objectives. In the ITSM itself, one containing the function service desk and problem management process that can be the cornerstone of the integration of IT management and support services company in general and IT services [5][6][7][8].

Information system audit is defined as a process of collecting and evaluating evidence to assess whether the information system has ensured support management of data, achieve the objectives of an organization effectively, and have been using resources efficiently. In this study, information systems audit with ITIL to assess existing IT service management. ITIL version 3 framework was used as a guide in preparing the operational steps so that the continuity of IT services can work properly. ITIL framework has focused the development of IT governance, especially in terms of services (IT service) and ideal to use as a guide in developing a governance because of its best practices and a detailed library to develop the steps in the procedure [9][2]. IT governance considers two things: the added value of IT to the business and IT risk mitigation. The value of IT is driven by strategic alignment of IT and business, while the risk mitigation driven by responsibility to the organization. Both require the support of sufficient resources and can be measured to ensure the desired results are met.

At the service strategy carried ITSM strategy to transform into a strategic asset of the organization. Stage design service guides development IT service management based on the strategy that has been developed previously at the stage of service strategy which fulfills the customer satisfaction. In the service operation contains steps to ITSM best practices[1]. In the continual service improvement is done managing feedback from customers who later collaborated in four previous stage. It aims to increase the output of activities service strategy, service design, service transition and service operation[10]. In accordance with the auditing standards of ISACA (Information Systems Audit and Control Association), the auditors prepare a report that includes the purpose of inspection, the nature and depth examination. Manage engine as one of implementation of ITIL differs in each enterprise environment. Implementation of ITIL makes IT processes operate more easily than before, but a process
must also be well received by everyone and are not accepted by such rigid process[1]. Implementation of ITIL should ensure the smooth functioning of business services and should not be burdening business services.

3. Proposed Method for IT Help Desk

The proposed method is to design IT help desk to handle the manual process in input data or information. Problems are identified and then used to plan the right solution for solving the problem. Some problems found can be identified as follows.

a. Service catalog, IT service catalog is not available so the user does not know what services IT can provide to the users that have an impact on the slow pace of the IT Service Desk.

b. Problem management, problem management records only problem no priority to the problem that occurred.

c. Change management, changes that exist were not recorded whether these problems cause disruption to the entire IT services.

d. Service level agreements (SLA) was service level of each problem is not defined.

Business gap analysis is used to determine what steps need to be taken to move from the current state to the desired condition. A gap analysis can also be interpreted as a comparison of actual performance with potential performance or expected. As a method, a gap analysis is used as an evaluation tool business to see the difference between the company's current performance with the targeted performance. This analysis also identifies what measures are needed to reduce the gap, or achieve expected performance in future periods. Moreover, this analysis also estimates the time, cost and resources needed to achieve the expected state of the company. A gap analysis consists of three main factors, namely components: a list of characteristics (such as the level of performance) of the present situation, a list of desired improvement in the future, and a list of what gaps exist and the future. Gap analysis will lead to the organization or company to reflect the status and capabilities of what is currently owned by the organization and want to be asked where in the future. The original objectives of the gap analysis are: gathering requirements of the company, determining adjustments (customization) is required, ensure the new system meets the needs of enterprise business processes, ensuring that business processes will be best practice, and identify the problems that require changes in company policy. In this study, population are employees of software company which relates to manage engine “OsTicket” in the central office. The survey and the questionnaire are spread for all stakeholders of this company. This company has 40 employees and 20 loyal cutomers. The 40 employees consists 30 the staff employees and 10 management employees. Therefore they can be represented as the population of this company. To determine the number of samples, this research uses a method Slovin that is shown in Eq. (1)

\[ n = \frac{N}{1 + Ne^2} \]  (1)

By using the Eq. (1) with the margin error 10 %, total number sample is 49. They consist staff employees, management employees and customer are at least 23, 9 and 17, respectively. This research uses 50 respondents which consists 24, 9 and 17, for staff employees, management employees and customer, respectively. The spread questionnaires contain questions to be answered by the respondents to obtain the information needed in research. In this study data collection used a questionnaire as data collection instruments. Questionnaires in IT survey contain questions are to be answered by the respondents to obtain the information needed in
research. To be able to give an answer that describes the actual situation, then this questionnaire must be clear, unambiguous and can be used by all respondents to avoid or minimize the possibility of misunderstanding by respondents. The scale of measurement used in this questionnaire is likert scale. Likert scale using intensity values of 1 - 5. This scale defines the level of confidence of respondents from each of the questions:
Answers can be given to the value, for example:
1. Strongly Agree / Always / Very Positive values of 5
2. Agree / Frequent / Positive values 4
3. Undecided / Sometimes / Neutral grades 3
4. Disagree / almost / Never / Negative value 2
5. Strongly Disagree / Never / Very Negative value of 1

4. Result Analysis

Table 1, 2, and 3 show the survey result comparison before and after implementing SLA in service desk using ITIL. Table 1, 2 and 3 are for customer, staff and management, respectively. Data had taken at random from the emails for 2016 from an average of 100 emails. Mostly, each categories respondent has a similar answer. Before implementation the entire handling helpdesk applications still using manual (via email) and no recording in real SLA, the value before implementing tends to be small. At the end, the comparison is performed between the current system SLA OS ticket system and after implementation of ITIL as shown in table 4.

**Table 1. IT Survey result existing system 2016 – customer**

| No | Question                                                                 | Score Before | Score After |
|----|---------------------------------------------------------------------------|--------------|-------------|
| 1  | IT Service Desk can be contacted at any time                              | 1.4          | 4.2         |
| 2  | Answer given IT Service Desk can solve your problem                        | 3.4          | 3.4         |
| 3  | Resolution time is in conformity with your wishes                         | 1.4          | 4.2         |
| 4  | You can solve the problems that have happened without the help of IT Service Desk | 1.6          | 4.1         |
| 5  | You know that your problems has been handling by IT Service Desk          | 1.6          | 5.0         |
| 6  | You can monitor your ticket                                               | 1.0          | 5.0         |
| 7  | Overall you are satisfied with the services provided                      | 1.8          | 4.1         |

**Table 2. IT Survey result existing system 2016 – staff employee**

| No | Question                                                                 | Scoring Before | Scoring After |
|----|---------------------------------------------------------------------------|----------------|--------------|
| 1  | The current system is in conformity with the standards of the company     | 2.4            | 4.4          |
| 2  | The current system helps you in everyday work                             | 1.6            | 4.1          |
| 3  | The current system convenient and easy to use                             | 4.3            | 3.4          |
| 4  | The current system makes it easier to share information to other IT Service Desk | 1.8          | 4.0          |
| 5  | The current system makes it easy to see the results of your work supervisor | 2.0           | 4.0          |
Table 3. IT survey result existing system 2016 – management employee

| No | Question                                                                 | Scoring Before | Scoring After |
|----|---------------------------------------------------------------------------|----------------|---------------|
| 1  | The current system can generate the required management report            | 1.4            | 4.0           |
| 2  | The current system is able to make the customer satisfied                 | 1.0            | 4.4           |
| 3  | The current system is able to integrate with other systems in the company | 1.8            | 4.6           |
| 4  | The current system is easy to be monitored                                | 1.0            | 5.0           |

Table 4. SLA implementation

| Task                        | Description                                      | SLA       | Before     | After      |
|-----------------------------|--------------------------------------------------|-----------|------------|------------|
| Response Time               | The time required the first time in replying to customer emails | 1 hour    | 2 hours 48 minutes | 5 Minutes  |
| Solving time Low Priority   | The time needed to resolve low priority case      | No SLA    | 9 days     | 2 Days     |
| Solving time Medium Priority| The time needed to resolve medium priority case   | 2 days    | 7 days     | 1 day      |
| Solving time High Priority  | The time needed to resolve high priority case     | 1 day     | 3 days     | 3 hours    |
| Solving time Emergency Priority | The time needed to resolve emergency priority case | 12 hours  | 1 day 12 hour | 1 hour     |

5. Conclusion

After implementing ITIL helpdesk, there are several conclusions that can be drawn-related challenges are: Service catalog, this time the user can find service catalog in osTicket, so grouping problems can be done and can be dealt with more quickly by relevant support teams. Problem Management, can be done systematically making it easier for support teams keeping procedures. Change Management, any changes that are in the system will be recorded properly, so do the observation and evaluation of all forms changes. Service Level Agreement (SLA), an increase in services provided to users.

There are some parts of ITIL which have not been implemented in this study such as financial management, supplier management, information security management are planned to be carried out on the second step.

6. References

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