ITSM Analysis using ITIL V3 in Service Operation in PT. Inovasi Tjaraka Buana

Muharman Lubis*, Rizky Cherthio Annisyah and Lyvia Winiyanti L

Telkom University, Jalan Telekomunikasi No. 1, Bandung, 40257, Indonesia
*muharmanlubis@telkomuniversity.ac.id

Abstract. PT. Inovasi Tjaraka Buana is a company in ISP (Internet Service Provider) sector that uses information technology to sustain activities the company. At this time the company is experiencing scaling-up, which is a drastic increase in the number of user of internet services, and coverage areas that make companies have to develop for various aspects of the company. The problem is that companies cannot at this time balancing service operations when handling an incident that occurs with drastic addition of the number of users and the amount of coverage area. To solve the problem, it is necessary to implement Information Technology Service Management (ITSM). The method used in this research is data collection by interview and observation techniques. This research will produce Incident Management Flow and Problem Management Flow. ITIL, which is a framework that illustrates best practices that focus on managing IT services, IT development and operations, which can help companies to overcome problems, so the company can apply it in order to balance service operations when handling incidents that occur.

Keywords: ITSM, ITIL, incident management flow, problem management flow.

1. Introduction
The application of information technology that continues to develop very quickly has a major impact on an organization [1] almost all company organizations implement IT because it is believed to help improve the effectiveness and efficiency of business process companies, including companies engaged in services [2]. PT. Inovasi Tjaraka Buana is a company in ISP (Internet Service Provider) sector that uses information technology to sustain activities the company. At this time the company is experiencing scaling-up, which is a drastic increase in the number of user of internet services, and coverage areas that make companies have to develop for various aspects of the company. The problem is that companies cannot at this time balancing service operations when handling an incident that occurs with drastic addition of the number of users and the amount of coverage area. One observation was supported by evidence in the form of many complaints forms complaints by users to the company[3] to solve the problem, it is necessary to implement information management service technology. The IT Service Management (ITSM) framework has been widely used to increase the value of the company's service to stakeholders [4]. ITSM is a method for managing an IT system within an organization, focusing on the perspective of customer IT services within the organization. ITSM focuses on IT-related activities and efforts to provide a framework for building relationships between IT managers and IT customers. The submitted framework includes ITIL [5]. ITIL provides a systematic approach to seeing and evaluating integrated systems in terms of people, technology, processes and organizations. The process of
identifying the process, design, implementation and evaluation that exists within the ITIL framework can be used as a tool or tool to look at more existing problems and make it easier to propose recommendations accordingly. In some IT companies ITIL is often used as a tool to obtain quality standards such as ISO 9000 and ISO / IEC 20000 [6]. In this research an ITSM analysis will be done using the v3 item by focusing on service operations [1]. The results of this analysis will produce incident management flow and problem management flow at PT Inovasi Tjaraka Buana.

Management of Information Technology Services or better known as ITSM is a management method information technology systems that are centred on the perspective of consumers of IT services on business company [7]. ITSM can defined as ‘a set of processes who work together to make sure directly the quality of IT services, according to service level agreed by customer’[8].Competition among companies in now has become very orientation towards IT, thus causing companies to have to have various quality standards for improve business processes. ITSM (IT Service Management) is a source of practical guidance to be used as an agar quality standard the creation of process improvements in the company [9]. An effective application of ITSM is done by integrating three main elements, namely people, processes and technology, into a well-designed system, which is based on best industry practice [10] Modern companies are hardly experiencing increasing competition The need to use information technology to increase competitiveness can be avoided. BSM (Business Service Management) is a compiled solution (Best Practice) The IT of the world, known as the IT Infrastructure Library (IT-IL). Accordingly The general information technology infrastructure library (IT-IL) defines how technology can work Procedures (processes) and individuals (human resources) can help in simplifying business processes and efficiency Different areas of the company [10]. ITIL (Information Technology Infrastructure Library) is a framework that describes best practices IT management service. ITIL provides a framework For IT management and quality improvement IT services provided [5]. What are ITIL best practices and their benefits?

| Parameter         | ITIL, ISO 20000, and COBIT Compared                                                                 |
|-------------------|-----------------------------------------------------------------------------------------------------|
| Ownership         | A service management framework owned by Axelos                                                     | A service management standard from ISO (Geneva)                                                   | An IT governance framework from ISACA                                                             |
| Implementation    | As a framework, it can be adopted and adapted to suit IT organizations needs                        | As a standard, it has to be implemented in spirit and principles by IT organization                | As a framework, it can be adopted and adapted to suit IT organizations needs                        |
| Certificate       | ITIL certificate awarded to individuals only; can’t be awarded to an organization                   | ISO 20000 certificate awarded to organizations and individuals as assessor, implementer, etc.     | COBIT certificate awarded to individuals only; can’t be awarded to an organization                 |
| Scope/Coverage    | ITIL is a framework of best practices for service management and is complementary to ISO 20000    | The ISO 20000 standard is complementary to ITIL                                                   | The COBIT framework has more scope coverage compared to ITIL                                       |
| Flexibility       | ITIL is flexible; only required practices for an organization can be implemented                   | In order to prove compliance with ISO 20000, organizations must implement all standard requirements | COBIT is flexible; only IT governance needed for an organization can be implemented                 |
| Benefits of       | The certificate helps individuals as a knowledgebase in service                                     | The certificate helps an organization to improve its services,                                     | The certificate helps individuals in their careers for performing IT governance roles and eventually,|
| Certification     |                                                                                                    |                                                                                                   |                                                                                                   |
Table 1. Benefits of ITIL and Compared

| Parameter          | ITIL, ISO 20000, and COBIT Compared |
|--------------------|------------------------------------|
| Validity Period    | management and eventually, the organization for efficient management of IT services. The individual certificate is valid for the specified version in the certificate | demonstrates reliability and high quality of service | the organization for increased customer satisfaction |
| Synergy            | Adopting the ITIL framework helps an organization comply with the ISO 20000 standard | The organization’s certificate must be renewed every 3 years, with surveillance audits to be conducted on a yearly basis | The individual certificate is valid for life for the specified version in the certificate |
| Miscellaneous      | ITIL is widely implemented by organization selling IT services, system integrators, etc. For their clients business having IT as a backbone | ISO 20000 is widely adopted by organizations that are in the IT consultancy business, or equivalent for their own organization | As a framework with more scope, it helps an organization to adopt ISO 20000 or ITIL practices with reduced efforts. COBIT is widely implemented by organizations that have an IT department, but that are NOT in the IT consultancy business, e.g., banking, insurance, etc. |

Figure 1. Best Practices of ITIL

From the table above we can see the advantages of using ITIL and how it compares to ITIL, ISO 2000, and COBIT. Besides that ITIL framework is very appropriate to be used as a guide in developing a governance because it is best practice and has a detailed library to develop steps in the procedure [11], and can be seen using other ITIL best practices [12][13][14]. Actually, ITIL is built into five main components in the ITIL Service Lifecycle: service strategy, service design, service transition, Continual Service Improvement, and service operation [1]. Service Operation is a lifecycle stage that covers all daily operational activities managing IT services. Inside are various guidelines on how to manage IT services efficiently and effectively. Service Operation has 5 processes and 4 functions, namely: Event Management, Incident Management, Problem Management, Access Management, and Request Fulfilment, Service Desk, Technical Management, Application Management, and IT Operations Management [15]. The following are some of the processes carried out in Service Operation [16] such as event, incident problem, request fulfilment and access management. In some province, there are times when media committees have not been established yet or allocated according to the regulations. At the same time, prison imprisonment and fine relief cannot provide a deterrent to perpetrators of crime, possibly in connection with managing and providing services in an electronic environment. As a result,
human resources, technical infrastructure, public participation, supervision, and socialization are important factors that increase awareness and satisfaction of this organizational commitment [17][18]. One of the simplest ways to calculate availability depends on two numbers. The period in which the service must be available during the reporting period. This is the agreed service time (AST). Measure the downtime (DT) during the period, then take the agreed downtime and convert it to a percentage.

\[
Availability = \frac{AST - DT}{AST} \times 100\%
\]

Table 2. Percentage Degradation of Service, Outage Duration and Maximum Frequency

| IT Function That Is Not Available | % Degradation of Service | Outage duration | Maximum frequency |
|----------------------------------|--------------------------|-----------------|-------------------|
| Receiving email                  | 100%                     | Up to 2 minutes | 2 events per hour |
|                                  |                          |                 | 5 events per day  |
| Reading public folders           | 50%                      | 2 minutes to 30 minutes | 2 events per week |
| Updating public folders          | 10%                      | 30 minutes to 4 hours | 2 events per week  |
| Accessing shared calendars       | 30%                      | 4 hours to 8 hours | 6 events per quarter |
| Updating shared calendars        | 10%                      |                  | 4 events per year |

Most incidents do not result in complete termination of service for all users. Some users might not be affected while others might not have services. In the most extreme cases, there may be one user with a damaged PC who does not have access to services. It might be considered a loss of 100% service, but that would make IT an entirely unrealistic destination and not a fair measure of availability. On the other hand, it can be chosen to have the service available while others can access it. However, it doesn't take much imagination to find out how customers feel if a marked service is available when many people don't have access to it.

One way to measure its impact is to calculate the percentage of minutes lost by the user. To do this:

1. Calculate Potential User Minutes. This is the total number of users multiplied by the duration of their work.
2. Calculate User Outage Minutes. This is the total number of users who cannot work multiplied by the time they cannot work.

\[
Availability = \frac{PotentialUserMinutes - UserOutageMinutes}{PotentialUserMinutes} \times 100\%
\]

2. Methods
The method used in this research is data collection by interview and observation techniques [19]. Data collection is one of the important stages in a process research [20]. Observations were carried out by observing the ongoing conditions at the organization's location. This condition can be in the form of media that supports the processes related to incident management, problem management that occurs at PT Inovasi Tjaraka Buana. Interviews conducted directly to management informants and staff related to data and information needed by researchers. This research expect to produce an incident management and problem management flow.

3. Result and Discussion
3.1. Incident Management Flow
Management that ensures that service services in an organization can be returned to its original condition as quickly as possible and minimize the negative impacts that may be caused [10]. Having a structured workflow ensures that incidents are handled effectively. This optimizes problem resolution for customers and businesses. The incident management flow of PT. Inovasi Tjaraka Buana. Where is the
initial stage when complaints about incidents that enter via WhatsApp or Line, then incidents will be grouped according to priority, after the incident is grouped, the incident will be handled if the incident cannot be handled then it will contact the technician, if the incident in a low priority level will be resolved use the service desk and the incident has been resolved. If the incident cannot be resolved using a service desk then contact the technician if the incident has experienced problem management and has not yet been resolved, the technician goes to the field until the problem can be resolved and the incident can be said to be finished.

3.2. Problem Management Flow

Information has dramatically shifted to a particular paradigm over the past decade as an individual's prerequisite for the presentation and creation of quality and participation in social interaction and communication. Government efforts to provide legal assurance in disclosure should be appreciated and supported. As such, there are several requirements to support execution and maintain intent, such as commitment leadership, bureaucratic culture, and public awareness. A society that wants to adopt openness as a value of inclusive importance will not only allow its citizens a wide range of individual freedom of expression, but will go one step further and actually open the process intended by public demand. Information is a fundamental requirement for the development of each individual and social environment as an important part of the digital ecosystem in education systems and national defense. To minimize adverse effects on business caused by incidents and problems caused by errors in infrastructure [10]. Problem management is an identification process Problems that occur directly. The purpose is to prevent The problem of the accident and the result eliminate recurring incidents and reduce impact incidents that cannot be prevented [5]. Furthermore, capturing all relevant information helps the team to find the root cause of the problem which is an important part of ITIL problem management. Management problem PT. Inovasi Tjaraka Buana. When there is a new problem that occurs there will be a warning management problem alert after that the problem will be grouped in accordance with priorities and the
technician will go to the field to solve the problem if the problem has been resolved, the technician will record the errors that occur and the problem has been resolved.

Figure 3. Problem Management Flow

4. Conclusion
Based on research that has been done about ITSM Analysis using ITIL V3 in Service Operations in PT. Inovasi Tjaraka Buana, then has a picture that operating services that have well-managed and appropriate services, will provide significant benefits and benefits for the continuity of business activities in the company. ITIL, which is a framework that illustrates best practices that focus on managing IT services, IT development and operations can help companies to overcome problems, so the company can apply it in order to balance service operations when handling incidents that occur. The author suggests that companies must have incident management flow and problem management flow so that when incidents repeatedly occur the company can immediately handle quickly and recorded.

5. References
[1] S Hanief and IW Jefriana 2018 Framework Itil V3 Domain Service Operation Dalam Analisis Pengelolaan Teknologi Blended Learning. J. Teknol. Inf. dan Komput. 4(1), pp. 59–65.
[2] AM Arifin and R Hanafi 2015 Analisis Dan Perancangan Itsm Domain Service Operation Pada Layanan Akademik Institut Pemerintahan Dalam Negeri (lpad) Dengan Menggunakan Framework Itil Versi 3 Analysis and Design ITSM Service Operation Domain on Academic Services of Institut Pemerinta 2(2), pp. 5798–5803.
[3] RD Putra, E Darwiyanto, G Agung and A Wisudiawan 2016 Audit Teknologi Informasi Dengan Menggunakan Framework COBIT 5 Domain DSS (Deliver, Service and Support) pada PT. Inovasti Tjaraka Buana,” eProceedings Eng., 3(1), pp. 930–937.
[4] HT. Sukmana, LK Wardhani, S Khairunnisa, KO Lee and R Wati 2019 ITSM software ranking for small medium enterprises based on ITIL V3 quick win criteria using fuzzy SIR method,” Adv. Sci. Technol. Eng. Syst., 4(2), pp. 288–298.
[5] AF Wijaya, MNN Sitokdana and P Hapsari 2019 Analysis of Information Technology Services
Management using the ITIL V3 Domain Service Operation Framework on SIMDA (Case Study: Boyolali Regency Inspectorate). **100**(41), pp. 126–131.

[6] YP Handoko 2017 Pemanfaatan ITIL v3 untuk Mengatasi Masalah Layanan TI pada Sistem Terintegrasi di Perguruan Tinggi. *Semin. Nas. Sains, Tek. Komput. dan Rekayasa*, 3(1), pp. 1–10.

[7] S Romadini, A Fajar and S Iqbal 2018 Perancangan sistem manajemen layanan teknologi informasi pada layanan reseller dan dropship bandros menggunakan iso 20000-1: 2011 area general requirements dan design and transition of new or changed services (Studi Kasus : CV kabita informatika ) DESIG. 5(2), pp. 3428–3435.

[8] F. Salim 2017 Pengaruh Information Technology Service Management (ITSM) terhadap Kinerja Industri Perbankan. (November), p. 5.

[9] B Uddin 2014 Evaluasi penerapan manajemen layanan ti menggunakan kerangka kerja it infrastructure library (ITIL) sub domain service desk, incident management dan problem management. *Jurnal TEDC* 8(2).

[10] L Magdalena and K Kuncel 2011 Analisis Problem Management pada IT Helpdesk dengan implementasi ITSM dan SLA (Studi Kasus: Citigroup Indonesia). *J. Digit*, 1(2), pp. 97–112.

[11] TP Silitonga, A Holil and N Ali 2010 Program Manajemen Helpdesk Dan Dukungan Ti Berdasarkan Framework ITIL V3 (Studi Kasus Pada Biro Teknologi Informasi BPK-RI). SemnasIF 2010.

[12] R Wijaya and RV Hari 2016 Perancangan Tata Kelola Service Desk Menggunakan Kerangka Kerja Information Technology Infrastructure Library (ITIL) V.3 Pada PT Berlian Jasa Terminal Indonesia. *Pros. Semin. Nas. Manaj. Teknol. XXV*, pp. 1–8.

[13] R Wijesinghe, H Scheepers and S McLoughlin 2015 Defining the optimal level of business benefits within IS/IT projects: Insights from benefit identification practices adopted in an IT Service Management (ITSM) project. *ACIS 2015 Proc. - 26th Australas. Conf. Inf. Syst.*

[14] M Bahtiar and AR Perdanakusuma 2018 Evaluasi Tingkat Kematangan Sistem Informasi Manajemen Rumah Sakit Menggunakan ITIL (Information Technology Structure Library) Versi 3 (Studi Pada : Rumah Sakit Umum Universitas Muhammadiyah Malang ). *J. Pengemb. Teknol. Inf. dan Ilmu Komput. Univ. Brawijaya*, 2(11), pp. 4525–4531.

[15] L Ramadani 2016 Perancangan Tata Kelola Manajemen Layanan Teknologi Informasi Menggunakan ITIL V3 Domain Service Design Di Pemerintahan Kota Bandung Designing Information Technology Service Management Governance Using Itil V3 Service Design Domain in Bandung City. 3(2), pp. 3397–3402.

[16] E Wahyu and T Darmaningrat 2018 Pimpinan Redaksi Faizal Mahananto Dewan Redaksi Tata Pelaksana Usaha Achmad Syaiful Susanto Rini Ekowati Sekretariat. **08**(01).

[17] M. Lubis, TF Kusumasari and L Hakim 2018 The Indonesia Public Information Disclosure Act (UU-KIP): Its Challenges and Responses. *Int. J. of Electrical and Computer Engineering*, 8(1), pp. 94–103.

[18] M. Lubis and FA Maulana 2010 Information and Electronic Law Effectiveness (UU-ITE) in Indonesia. *Proc. IEEE CITSIM 2010*.

[19] N. Iin 2010 Dasar Teori Perbaikan Analisis Jabatan Menggunakan Metode Observasi dan Proses Hierarki Analitik Di PT. Leading Garment Industries. *e-Proceeding Eng.* 6(1), pp. 5–45.

[20] I. Poetra and H. Mulyono 2019 Analisis dan Perancangan Sistem Informasi Layanan Pelanggan PDAM Tirta Mayang Kota Jambi Berbasis SMS. *J. Manaj. Sist. Inf.* 4(2), pp. 92–101.