

IMPELEMENTATION OF INFORMATION TECHNOLOGY SERVICE MANAGEMENT AT DATA AND INFORMATION SYSTEM CENTER OF XYZ UNIVERSITY

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ABSTRACT

Information Technology (IT) is increasingly progressing. Nowadays, the success of a business of the organization/company is highly dependent on the IT infrastructure used. Therefore, organizations/companies have to manage their IT service to be optimal to their customers. Looking at this matter and the increasing dynamics of XYZ University, then Data and Information System Center (Pusdatin) - an IT provider of XYZ University began implementing IT Service Management (ITSM) from 2013 using the latest version of Information Technology Infrastructure Library (ITIL), namely ITIL v3 as a framework for implementing ITSM in its business processes. However, along the way, there are still some problems happen in Pusdatin in order that ITSM can actually support and align with the objectives of XYZ University. Through this paper, the authors want to explain how the implementation of ITSM at Pusdatin, identify the problems related to the implementation of ITSM, and provide the solutions for each problem. The methods used are direct observation to Pusdatin, conduct an interview with the Head of Pusdatin and Staff of Pusdatin, and also perform a literature review of books and papers that discuss about ITIL. The result of this research is that ITSM process of Pusdatin generally works quite well but there are still some shortcomings because ITSM is not 100% implemented in all areas.

Keywords: *IT Service, IT Service Management, ITIL v3*

INTRODUCTION

Information Technology (IT) is increasingly progressing and has helped organization / company in various fields. Therefore, each organizations / companies keep delivering more value and uniqueness in their products and/or services which have been provided to customers. The service quality is the main point for customers. Their service should be more increased according to the customer requirements, the condition of the organization/company, and the market at the time.

Nowadays the success of a business of the organization/company is highly dependent on the IT infrastructure used. If the infrastructure is used well, the business will be more successful. Thus, organizations / companies have to manage their IT service to be optimal to their customers, due to the good management of IT service so it can reduce or eliminate the impact caused by the incident, there is no work in vain, reduce rework, help to monitor employee performance results, adjust IT service with the infrastructure of the organization / company, etc.

IT Service Management (ITSM) is an implementation and management of IT service to ensure that IT service is aligned with business needs and actively support organization/company. ITSM is not

only related to the availability of the IT infrastructure, but also related to the use of the infrastructure so the quality of IT service becomes more efficient and effective.

XYZ University is an institution of education and research in Jakarta, which consists of 11 faculties and 8 graduate schools, with an estimated 25.000 students, 1.200 staffs, and 3.000 lecturers. Looking at this increasing dynamics of XYZ University, then Data and Information System Center (Pusdatin) XYZ University is expected can deliver reliable IT service in order to improve the service quality to users. One of efforts that Pusdatin performed is to improve the service quality by implementing ITSM which has been begun in 2013.

There are many frameworks that can be used to implement ITSM. One of them is Information Technology Infrastructure Library (ITIL). ITIL has been proven can integrate and align IT and business objectives so that company can provide realistic, measurable, predictable, and efficient IT service. The use of ITIL is expected to improve productivity for company, the highest level of customer satisfaction, optimize budget, increase service availability, and reduce the impact of the risk (Cervone, 2008; Iden & Eikebrokk, 2011; McNaughton et al., 2010; Pollard & Cater-Steel, 2009), and also can predict the market, product, and service in the future. ITIL is widely used in organizations throughout the world, such as Microsoft, HP, Fujitsu, IBM, Walmart, Target, Staples, Citi, Bank of America, Barclays Bank, Sony, Disney, Boeing, Toyota, Bombardier, Eli Lilly, Pfizer, Takeda Pharmaceuticals (Arraj, 2013), University of Birmingham (O'Byrne, 2009), and University of Nottingham (Hyde, 2009).

Because of many companies have implemented ITIL and has been proven successful, ITIL can be implemented on various types of organization with the various size and objectives of the company. Therefore, Pusdatin decided to use ITIL latest version (version 3) with many reasons. One of them is to adopt a concept that has been proven and used globally, so Pusdatin can provide the consistent, efficient, and effective service in accordance with Service Level Agreement (SLA). However, there are still some problems happen in Pusdatin in order that ITSM can actually support and align with the objectives of XYZ University. Therefore, through this paper, the authors want to explain how the implementation of ITSM at Pusdatin of XYZ University, identify the problems related to the implementation of ITSM, and provide the solutions for each problem.

Information Technology Service (IT Service)

Service is a means of delivering value to customers by facilitating outcomes customers want to achieve (Carlidge et al., 2012). A simple example, customers might have a problem with their vehicles, and a garage can provide service by sending mechanic to their location.

IT service is a service which is provided by the IT service provider. IT service consists of a combination of information technology, human resources, and processes. IT service generally makes a deal with the operational issues of information technology and not on the development of the technology itself. For example, the process of making computer software for sale are not the focus of IT service, but the computer system used by the marketing and business development division will become the focus of IT service (Prakoso, 2014).

Information Technology Service Management (ITSM)

Service management (Carlidge et al., 2012) is a set of specialized organizational capabilities for providing value to customers in term of service, including all of the processes, methods, functions, roles, and activities that the service provider uses to deliver service to its customers. ITSM is an implementation and management of IT service to ensure that IT service is aligned with business needs and actively support the company. ITSM (Suhairi & Gaol, 2013) can be a guide to the processes of IT

service in the organization, so that the alignment between business and IT can be realized. There are several frameworks or methodologies that can be used to implement ITSM, such as ITIL, COBIT, CMMI, ISO/IEC 20000, ISO 9000 (Cartlidge et al., 2012), Six Sigma, and TOGAF (Arraj, 2013).

Information Technology Infrastructure Library (ITIL)

ITIL is a set of best practices for ITSM (Suhairi & Gaol, 2013). ITIL was published between 1989 and 1995 by Her Majesty's Stationery Office (HMSO) in UK on behalf of Central Communications and Telecommunications Agency (CCTA). CCTA is now included in Office Government Commerce (OGC). The initial version of ITIL consisted of 31 associated books covering all aspects of IT service provision. This initial version was then revised and replaced by ITIL v2 consists of 7 books more closely connected. ITIL v2 is universally accepted and used in many countries by thousands of organizations as a basis for effective IT service provision. In 2007, ITIL v2 was replaced to ITIL v3 consisting of 5 core books covering the service lifecycle (Cartlidge et al., 2012).

ITIL v3

In 2007, OGC published ITIL version 3. This version is issued to replace the previous version. ITIL v3 is comprised of 5 core books that covers every stage of the service lifecycle (Figure 1), from the initial definition and analysis of business requirements in Service Strategy and Service Design, migrating to the operational environment within Service Transition, operation and improvement in Service Operation and Continual Service Improvement (Cartlidge et al., 2012).

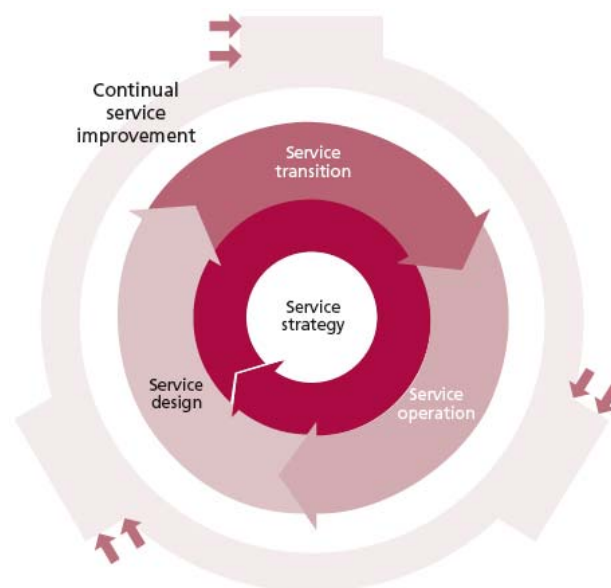


Figure 1 ITIL v3 Lifecycle
(Cartlidge et al., 2012:7)

Service Strategy

Service strategy (Cartlidge et al., 2012) is the core of ITIL Service Lifecycle. Service strategy provides guidance to all IT service providers to assist them in establishing a clear service strategy, especially (Nabiollahi & Sahibuddin, 2008) on how to design, develop, and implement service

management not only as an organizational capability but also as a strategic asset. The strategy used should provide sufficient value to the customer and must meet the strategic objectives of IT service providers. Therefore, it is necessary for a proper understanding for IT service providers on following questions. (1) What services should be offered? (2) To whom the services should be offered? (3) How the internal and external marketplaces for their services should be developed? (4) What are the potential competitions in the marketplaces? (5) How the customers and stakeholders will perceive and measure value, and how this value will be created? (6) How the customer will make the decision in selecting the services of various types of service providers? (7) How visibility and control over value creation will be achieved through financial management? (8) How robust business cases will be created to secure strategic investment in service assets and service management capabilities? (9) How the allocation of available resources will be arranged to provide a more optimal impact on the portfolio of services? (10) How service performance will be measured?

Table 1 ITIL v3-Service Strategy Component

Component	Function
Financial Management for IT Services	Provide the quantification in financial term between business and IT to deliver the value of IT service, the underlying value of the asset, and qualification of operational forecasting.
Service Portfolio Management	Determineservice inventory, ensure business case, validate portfolio data, maximize portfolio value, align and prioritize, balance supply and demand, which is expected to approve portfolio and service as well as a legitimate resource, and allocating company resources.
Demand Management	Understand and influence customer demand for the service and provision of capacity to meet the demand.

Service Design

Service design (Nabiollahi & Sahibuddin, 2008) provides the guidance to the design and development of service and service management process. Its main goals are to bring IT service and business goals in order to be able to offer IT service in accordance with business objectives and provide benefits to the business. Service design starts with a set of business requirements, and ends with the development of service solutionwhich is designed to meet the documented business needs, and provide Service Design Package (SDP) for use later in service transition stage. SDP defines all aspects of IT service and requirements through each stage in service design, and created for each new IT service, major changes, or service retirement (Cartlidge et al., 2012). Therefore, the scope of service design is not only to design new IT service, but also the improvement of service quality, continuity, or performance of service (Suhairi & Gaol, 2013).

Table 2 ITIL v3-Service Design Component

Component	Function
Service Catalogue Management	Provide the consistent resources and ensure that service catalog is available to anyone who has the privilege.
Service Level Management	Maintain and improve the service quality, monitor, report, and review the achievement of the service.
Availability Management	Ensure the availability and fulfillment of IT service in accordance with the agreed SLA.
Supplier Management	Ensure that suppliers work on target and also in accordance with all terms and conditions.
Capacity Management	Ensure the capacity, performance, and availability of IT infrastructure.

Table 2 ITIL v3-Service Design Component (continued)

Component	Function
IT Service Continuity Management	Maintain continuity of daily operation to ensure that all technical requirements can be fulfilled.
Information Security Management	Ensure that information security is managed effectively on all services.

Service Transition

The purpose of service transition is to ensure that new, changed, or retired service in accordance with the expectations or estimations that have been documented at service strategy and service design stages (Cartlidge et al., 2012). Service transition provides the guidance on how the requirements of service strategy encoded in service design are effectively realized in service operation while controlling the risks of failure and disruption (Nabiollahi & Sahibuddin, 2008).

Service transition is supported by the basic principles that facilitate the use of new or changed service effectively and efficiently (Cartlidge et al., 2012). The main principles include: (1) Understanding all services, their utilities and warranties. (2) Creating a formal policy and common framework for implementation of all the necessary changes. (3) Supporting knowledge transfer, decision support, and reuse processes, systems, and other relevant elements. (4) Anticipating and managing ‘course corrections’ by being proactive and determining their time of correction. (5) Ensuring involvement of service transition personnel and an understanding of service transition requirements.

Table 3 ITIL v3-Service Transition Component

Component	Function
Knowledge Management	Distribute the perspective, idea, experience, and information to ensure the service is available at the right place and time, and also improve efficiency.
Change Management	Ensure that any changes are recorded, documented, and evaluated regularly. And ensure that the standard method used efficiently and faster in handling all changes and their impacts.
Release and Deployment Management	Place all aspects of services into production and establish the use of new or changed service effectively.
Service Assets and Configuration Management	Provide accurate information about how to configure and control the assets, so that the assets can be available when needed.
Service Validation and Service Testing	Ensure and provide objective evidence that the new services or changed service to support business needs, including the agreed SLA.

Service Operation

Service operation aims to provide the agreed service levels to users and customers, and to manage applications, technologies and infrastructure that support the delivery of service (Cartlidge et al., 2012). Service operation provides the guidelines include how to maintain the operational stability of IT service and management of design changes, the scale, scope, and target performance of IT service (Suhairi & Gaol, 2013).

Table 4 ITIL v3-Service Operation Component

Component	Function
Incident Management	Restore the service to normal condition as quickly as possible when incidents happen and minimize the adverse impact on business operations.
Request Fulfillment	Allow user to request and receive standard services. And provide information to user and customer about the service and help to answer the complaints and comments from user.
Problem Management	Prevent problems and their impacts of incidents, eliminate recurring incidents and minimize the impact of incidents that cannot be prevented.
Access Management	Entitle the user to access the service or group of services, while preventing access from unauthorized users.
Event Management	Generate and detect the notification regarding the status of IT infrastructure and IT service even when there is no event.

Continual Service Improvement

Continual Service Improvement (CSI) related to maintaining the value for customers through continuous evaluation and improvement of service quality and the entire maturity of the ITSM service cycles and its underlying processes (Cartlidge *et al.*, 2012). Figure 2 shows the seven-step improvement process.

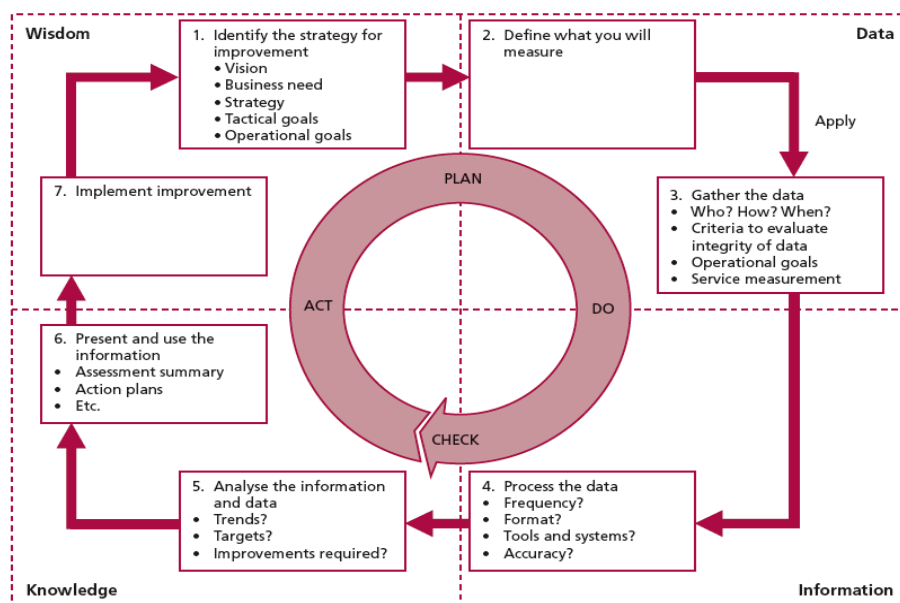


Figure 2 Seven-Step Improvement Process (Cartlidge *et al.*, 2012)

METHODS

The research methods used are the direct observation to Pusdatin XYZ University on how the current process of ITSM, conduct an interview with the Head of Pusdatin and Staff of Pusdatin to get more insight of Pusdatin, the implementation of ITSM, and its problems and also perform a literature review of books and papers that discuss about ITIL especially ITIL v3 as a basis in doing research and

to provide the solution of some problems related to ITSM that has been existing in Pusdatin. Figure 3 shows the research processes used in this paper.

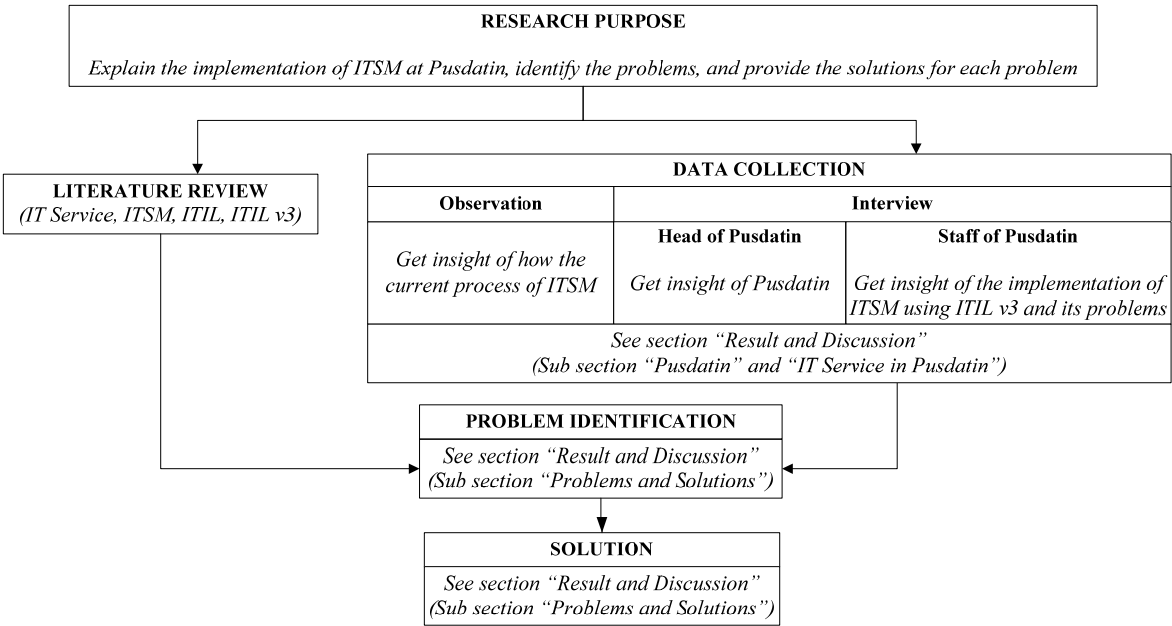


Figure 3 Research Processes

RESULTS AND DISCUSSIONS

Pusdatin

Data and Information System Center or known as Pusdatin is one of the unit established in accordance with the Decree of the Rector of XYZ University in February 2010. The establishment of Pusdatin aims to accelerate the use of information technology in supporting the vision of XYZ University.

Pusdatin as the IT service provider for XYZ University has a role as an implementer of development, maintenance and service of information system and network, cooperation between the central computer and information system of university and/or other corporation inside and outside the country, and central computer administration.

To carry out its role, Pusdatin is divided into five divisions. (1) System Development. This division is assigned to oversee the activity of existing systems in XYZ University. This division works from standardize of the system, perform system requirements, design, coding, and implementation of the system. In addition making the application system, this division also has a duty to handle if there are bugs against the system. (2) Operation. This field has a duty to serve the operational needs, both of the internal of Pusdatin and academicians of XYZ University. (3) Technical Support. This division acts as the frontline of Pusdatin’s service has a duty to record any incoming service requests and serve it with Standard Operating Procedure (SOP) and SLA that have been defined in the service catalog of Pusdatin. (4) Security. This division monitors and strengthens the security and information in the network and data center in XYZ University. (5) Risk Management. This division aims to manage potential losses that may occur on investment, development, and utilization of IT in XYZ University.

Infrastructures owned by Pusdatin are as follows: (1) Operating System and Software: Windows, Standard Office Software, Development Software (Eclipse, Netbeans, etc.), Database Processing Software. (2) Network Infrastructure: Physical, Protocols (TCP/IP, IPX, SNA, DECnet, NetBEUI), TCP/IP Management (WINS, DNS, DDNS, DHCP, Host/LMhost files), Load Balancing. (3) Data Center and Environmental Infrastructure: Site Physical Security (Site Selection, Air Conditioning, Electrical, etc.), Risk Management (Back Up Site).

IT Service in Pusdatin

Pusdatin has implemented ITSM within its business processes by using ITIL v3 as a framework since 2013. Based on the interview which was conducted with Staff of Pusdatin, ITSM is not 100% implemented in all areas. There are areas that are not 100% implemented (partially implemented) and still improved continually in order to achieve the expected results. In addition, there is one unnecessary area to implement ITSM, namely supplier management. The implementation of ITSM by using ITIL v3 can be seen in Table 5.

Table 5 ITIL v3 Component in Pusdatin

Category	Process Name	Implemented	Partially Implemented	Not Implemented
Service Strategy	Financial Management for IT Services	√		
	Service Portofolio Management	√		
	Demand Management	√		
Service Design	Service Catalogue Management	√		
	Service Level Management	√		
	Availability Management		√	
	Information Security Management		√	
	Supplier Management			√
	Capacity Management	√		
	IT Service Continuity Management		√	
Service Transition	Knowledge Management		√	
	Change Management	√		
	Service Validation and Service Testing	√		
	Service Asset and Configuration Management	√		
	Release and Deployment Management		√	
Service Operation	Event Management		√	
	Incident Management	√		
	Request Fulfillment	√		
	Problem Management	√		
	Access Management	√		
Continual Service Improvement	The 7 Step Improvement Process		√	

The process of IT service which is applied by Pusdatin currently can be seen in Figure 4. When there are service requests, the first request or problem has to be delivered prior to the service desk. If the problem can be immediately solved, the problem is finished. However, if it cannot be handled by the service desk, it will be forwarded to the operation division. The issue requires a change so Pusdatin have to check its service portfolio and asset to decide whether the request can be realized.

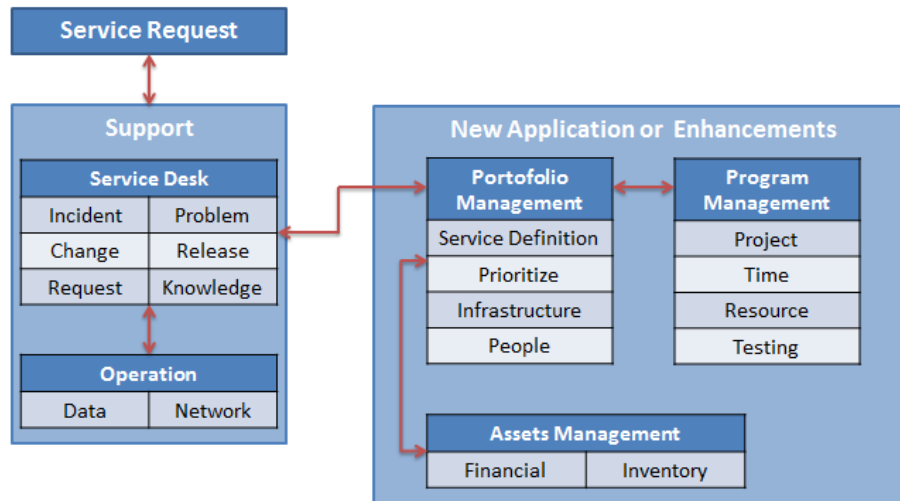


Figure 4 IT Service Process in Pusdatin

List of IT services which are provided by Pusdatin are: (1) Software Installation and Repair: this service provides the installation and repair of operating system and supporting office software on computers and notebooks in the work unit of XYZ University. (2) Hardware Problem Checking: this service provides the hardware troubleshooting on computers and notebooks in the work unit of XYZ University. (3) Network Printer Support: this service provides the installation, problem checking, and activation of the network (sharing) of the printer in the unit work in XYZ University. (4) System Support: this service provides the support for use of application system that Pusdatin given to the academic community in XYZ University. (5) Website Support: this service provides the support and maintenance of websites to the academic community in XYZ University. (6) Data: this service provides the data requests and related information to the academic community in XYZ University and related external party. (7) Email: this service provides the email which is given to the academic community in XYZ University. (8) Training: this service provides the training related to Pusdatin's product which is given to the academic community in XYZ University.

Problems and Solutions

As discussed earlier, Pusdatin has implemented ITSM within its business processes. But along the way there are still some problems happen in Pusdatin in order that ITSM can actually support and align with the objectives of XYZ University. The problems encountered include: first, lack of ability to align the relationship between incident and problem. This problem can be overcome by: (1) Record in detail all incidents, its causes, how to handle them, and their success rate. (2) Have a tool that can mapping the incident and problem management using fishbone diagram (Figure 5), so that the cause of incident can be grouped into several major categories to identify the various sources. Pusdatin is expected can identify the source of problems easier, and can take appropriate action so that no further occurrence of similar incidents in the future. (3) Good work relationship and communication between staff at all levels. (4) Ensure that business impact is well understood by all staffs who solve the problems.

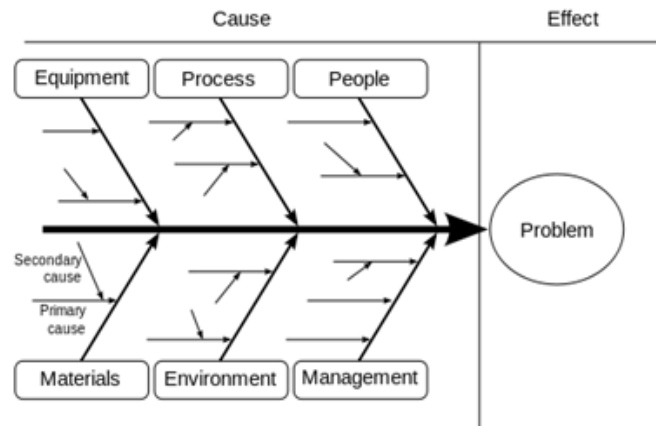


Figure 5 Fishbone Diagram Illustration

(Source: http://upload.wikimedia.org/wikipedia/commons/thumb/5/52/Ishikawa_Fishbone_Diagram.svg/280px-Ishikawa_Fishbone_Diagram.svg.png)

Second, client difficult to know the current progress of the incident is being faced and how far the incident was handled. The solution of this problem Pusdatin can follow Sony's ITSM in terms of incident handling process reporting periodically from staffs and inform it to customers via SMS or email. Third, Event detection is performed in general terms. Events handling are usually performed in a simple way and done at the issue time only. Pusdatin can create an application that can predict the upcoming events and can take early preventive action before the problem happens.

Fourth, downtime has often happened because the high demand for server services that are not comparable with the server specifications. It is recommended to improve the specification of the server, and to consider the upcoming trends. Pusdatin may consider Internet Service Provider (ISP) hired to speed up internet access as much as possible and in accordance with the SLA offered by the ISP.

Fifth, in the case of Access Management, Pusdatin has set the privilege of each user in accordance with the roles and needs of the user. However, the user status updates still need to be monitored to ensure that users who have privilege are an active user who are registered as a student or staff in XYZ University. The awareness of the importance of maintaining the confidentiality of the access to the system is very important to be understood by any users, with a notification to change the password periodically and do not propagate their password and username to others. Sixth, lack of evaluation schedule, this causes mismatches between the operational documents with current conditions at that time. Therefore, Pusdatin has to perform an evaluation at a particular time and make changes to the operational document in accordance with the latest conditions.

CONCLUSIONS

IT Service Management (ITSM) is an implementation and management of IT service to ensure that IT service is aligned with business needs and actively support organization/company. ITSM is not only related to the availability of the IT infrastructure, but also related to the use of the infrastructure so the quality of IT service becomes more efficient and effective.

XYZ University is an institution of education and research in Jakarta, which consists of 11 faculties and 8 graduate schools, with an estimated 25.000 students, 1.200 staffs, and 3.000 lecturers.

Data and Information System Center or known as Pusdatin is one of the unit established in accordance with the Decree of the Rector of XYZ University in February 2010. Looking at this increasing dynamics of XYZ University, then Data and Information System Center (Pusdatin) of XYZ University is expected to deliver reliable IT service in order to improve the service quality to users by implementing ITSM since 2013. There are many frameworks that can be used to implement ITSM, such as Information Technology Infrastructure Library (ITIL).

Pusdatin has implemented ITSM within its business processes by using ITIL v3 as a framework. ITSM is not 100% implemented in all areas. There are any areas that are partially implemented and still improvement continually. Along the way there are still some problems happen in Pusdatin in order that ITSM can actually support and align with the objectives of XYZ University. The problems encountered include: (1) lack of ability to align the relationship between incident and problem; (2) it is difficult for client to know the current progress of the incident is being faced and how far the incident was handled; (3) event detection is performed in general terms; (4) downtime often happened because the high demand for server services that are not comparable with the server specifications; (5) Pusdatin has set the privilege of each user in accordance with the roles and needs of the user, however the user status updates still need to be monitored to ensure that users who have privilege are an active user who are registered as a student or staff; and (6) lack of evaluation schedule, causes mismatch between the operational document with current conditions at that time.

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