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Improving Helpdesk Capability in Perum Peruri Through Service Catalog Management Based on ITIL V3

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Abstract

Perusahaan Umum Percetakan Uang Republik Indonesia (PERUM PERURI) is a government entity responsible for the printing and security of coins and banknotes of Bank Indonesia (BI). Previous evaluation of IT governance indicates that PERUM PERURI needs to improve its helpdesk capability in providing IT services. In this study, IT service catalog is developed based on the best practices of ITIL v3 framework. This study also uses Design Thinking Approach as the guiding process in developing the service catalog, which aims to produce an execution that meets user needs through understanding the users and business requirements. This research produces two documents from Service Catalog Management, which are Business Service Catalog and Technical Service Catalog. These documents are validated by the Head of IT division and distributed to all its staff which serves as the sources of information regarding all of IT services provided by the IT division.

Keywords: *Service Catalog, Helpdesk, ITIL V3, Design Thinking,*

1. Introduction

The advancement of Information Technology (IT) today has created a relatively free space for the public to obtain information, and has had an impact on meeting the community's need for information disclosure, efficiency, and better services. IT is becoming a major commodity in terms of applications, connectivity options, electronic devices, and IT asset users [1]. Most businesses have a list of services they offer, as well as procedures for using those services and terms of service. Faced with ongoing budget constraints as well as increased demand for new services and higher service levels, IT organizations are embarking on a fundamental transformation to improve service operations quality. The Information Technology Infrastructure Library (ITIL) version 3 governs the use of the Service Catalog, where the service catalog describes the services provided by IT organizations in a formal document. The service catalog contains information that informs users about the service's output, how long it takes to respond to and fulfill requests, and how to submit requests if they wish to use the service.

Perusahaan Umum Percetakan Uang Republik Indonesia (PERUM PERURI) is a government entity responsible for the printing and security of coins and banknotes of Bank Indonesia (BI) [2] which is required to implement Good Corporate Governance (GCG) [3][4][5]. At PERUM PERURI, the helpdesk is one of the services that requires a knowledge base as a reference and standard to resolve reports and problems with information technology systems. Currently, the operational state of the IT Division's information technology service management system is that it lacks a knowledge base in the form of detailed information on available services to serve as a reference and source of information for both the Service Desk as a service provider and users as users of PERUM PERURI's information and communication technology assets. A member of the IT Division processes service requests so that the service value reaches users, and users are PERUM PERURI employees from all work units who submit service requests. The lack of detailed information about services makes it difficult for the IT Division to evaluate its services and determine which services require improvement. This will make developing services and performing maintenance difficult. Furthermore, the lack of certainty will allow the IT Division to fail to meet the high expectations of service users, resulting in user complaints against helpdesk due to dissatisfaction with the services received. As a result, it is necessary to ensure the quality of the helpdesk services and take into account the service level agreement between the user and the Service Providers.[6].

PERUM PERURI conducted an IT Governance self-assessment using COBIT 5. The assessment results include several processes that each department in the IT Division can carry out. In COBIT 5, the Operations Department is in charge of improving several processes. APO09 (Manage Service Agreements) and DSS02 are two examples (Manage Service Requests & Incidents). The recommendation for improvement in the APO09 process is to create an IT Service Catalog that requires a benchmark because the company does not have one. In terms of DSS02, the Operations Department has a specifically unavailable IT service catalog that explains various types of IT services and how to access these IT services. Users can, however, continue to use various IT services, such as incident delivery via applications, PC/laptop requests, data requests, and other IT services by contacting the IT Division. According to the recommendations for improving the two processes, an IT Service Catalog with a benchmark IT Service Management is required (ITSM).

The Design Thinking approach makes it simple to apply thinking patterns and knowledge by collaborating to initiate various types of innovations and creations. Design Thinking can be used as a workflow in a variety of fields, including information and communication technology (ICT). With regard to the problems, policies, and strategies that exist in PERUM PERURI's IT Division, this research will concentrate on the IT Division that provides services to the IT Division or other divisions in PERUM PERURI. Using ITIL Version 3, this study will develop Service Catalog Management at PERUM PERURI Information Technology Services. Based on the services provided, this research will assist PERUM PERURI IT Division in compiling Service Catalog Management, which will include a Technical Service Catalog and a Business Service Catalog. provided by the current Information Technology Division It is hoped that this Service Catalog document will be able to become a comprehensive source of information, knowledge, and reference for service users and service providers in order to reduce problems with the PERUM PERURI IT Division's helpdesk.

2. Research Method

2.1 Information Technology Infrastructure Library (ITIL)

The Information Technology Infrastructure Library (ITIL) provides service providers with guidance on the processes, functions, and other capabilities required to support the operation of IT services. ISO/IEC 20000 is a formal and universal standard for organizations that want to audit and certify their service management capabilities.[7].

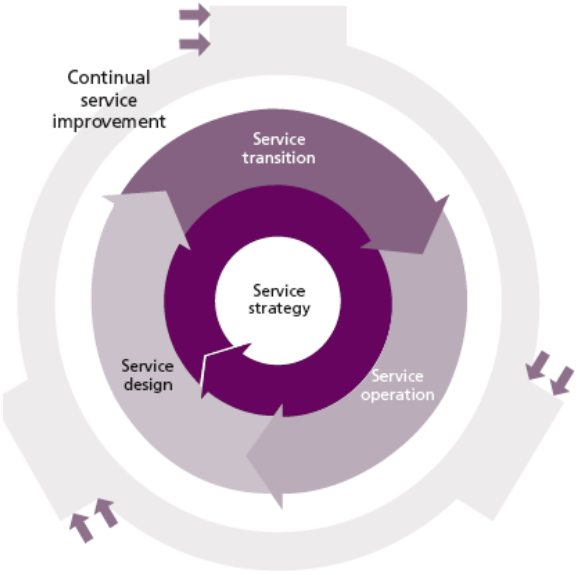

Figure 1. The ITIL Lifecycle Stage

ITIL is divided into five stages: service strategy, service design, service transition, service operation, and continuous service improvement as seen in Figure 1[8]. This research will focus on the Service Design stage, which guides the design of IT services as well as the governance of IT practices, processes, and policies. The strategy that has been determined and agreed upon will serve as the foundation for planning with the goal of achieving the service provider's targets and also as a medium of information related to services in a live environment that is supported [9]. The ITIL framework has been widely used in the implementation process of IT service management in several corporations in Indonesia [10][11][12], especially in the process of developing the service catalog management [13].

Service catalog management is an important process in service design. A service catalog is a document that was created and developed to provide accurate information about all services and to foster a service-centered organizational culture [13]. Service Catalog Management allows you to focus on user expectations while maintaining consistency. The goal of Service Catalog Management is to manage the information in the Service Catalog while keeping accuracy and consistency in representing the most up-to-date details about the availability, interfaces, and interrelationships of services that are currently running or are being prepared to run on IT service operations. Service Catalog Management activities include the following [14]:

1. Service Definition
2. Accurate creation and maintenance of *Service Catalog*
3. Linkage and consistency between Service Portfolio (one of the processes of Service Strategy)
4. Linkages between services in the Service Catalog.

Service Catalogs can be tables, matrices, or spreadsheets. Service Catalog acts as a tool for managing other IT services such as Business Impact Analysis which is part of the continuous development plan for IT services. Service Catalog is divided into two points of view, namely:

1. *Business Service Catalog*. This document contains details of all the IT services delivered to users that relate between work units and their operational processes that IT services can support. This is the user view of the Service Catalog.
2. *Technical Service Catalog*. The document contains details of all IT services provided to the user, along with relationships with support services, shared services, components, and Configuration Items required to support the provision of services to the business. It must support the Business Service Catalog and not be part of the customer view. [15]

2.2 Design Thinking Process

Design Thinking is a process carried out by analysis and creative ideas obtained directly with users so that they can carry out experimental experiments in making prototypes that are able to collect feedback that is used for product development that better answers user questions and complaints [16]. With Design Thinking, a new general creative idea can be created, by observing, about what users/customers want and need in their lives and how to get what they want from a product. Design Thinking can be applied as a workflow in various field activities, including in Information and Communication Technology (ICT) services. Design thinking stages are as follows, as can be seen in Figure 3

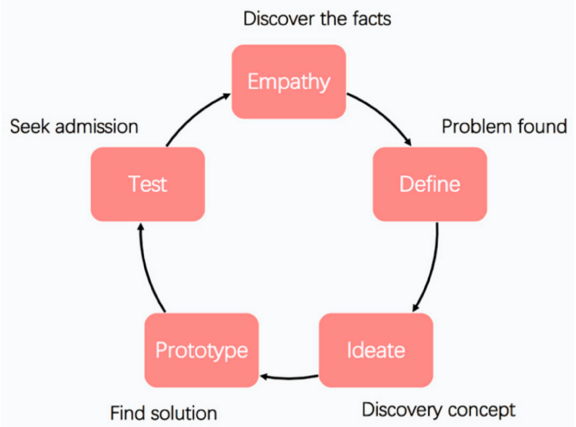

Figure 2. Design Thinking Stage

1. *Empathy.* This stage conducts participatory observations and interviews with product users to find out user demands and needs and gain insight.
2. *Define.* This stage classifies the problems experienced by users and analyzes these problems in order to determine the problems that are actually faced by the users and also map the user's expectations of a service/product.
3. *Ideate.* In the Discovery Concept, the researcher brainstorms and develops as many creative ideas as possible towards solving the main problems obtained in the previous stage.
4. *Prototype.* At this stage, the agreed concept is translated into a rapid prototype so that it can describe the product to be made. In addition, it can also be used as material for product quality improvement (Find Solution).
5. *Test.* This stage involves users to test products and give feedback. Feedbacks aim to produce products that are more targeted to meet user needs. [14]

3. Findings

3.1 Problem

As a government entity, PERUM PERURI is required to implement Good Corporate Governance (GCG). Previous evaluation of information technology governance indicates that PERUM PERURI needs to improve its helpdesk capability in providing IT services to all users.

3.2 Research Implementation

3.2.1. Empathy Stage

This stage consists of several approaches such as observation, involvement, and direct experience to collect user stories about the performance of the Information Technology

Division of PERUM PERURI. The Involvement of the IT Division's operational activities in providing support services is to act as a Service Desk as well as a Helpdesk. The IT Division is responsible for handling incidents and problems that occur in the Operational State in terms of the use of information technology assets. Problems that occur directly by the user at the time of resolution of the requested incident.

The Direct Experience approach is carried out by acting as a user of the IT services provided. The author collects several problems such as confusion about the value that can be provided by a service, starting from the services provided, who to contact if you want to access the service, how to access the service so that it can affect the productivity of the work unit experiencing problems. Observations were carried out by carrying out daily routines at the IT Helpdesk Section of PERUM PERURI. The main focus in finding various problems is PERUM PERURI's IT Corporate Governance document which discusses PERUM PERURI's Information Technology Governance Policy Management. In this approach, the authors identify several services that are facilitated by the IT Division of PERUM PERURI, which are outlined in Table 1.

Table 1. PERUM PERURI's IT Services

Service Name	Description	Service Provider
LAN Network	Service incident handling of network connection using cables.	IT Infrastructure Section
WLAN Network	Services for handling wireless intranet network connections.	IT Infrastructure Section
Data Center	Services providing physical facilities for application storage.	IT Infrastructure section
Active Directory	Account modification services.	IT Helpdesk Section
Printer	Services for providing and handling printing machine equipment incidents.	IT Helpdesk Section
PC/Laptop	Services for providing and handling computer and laptop incidents.	IT Helpdesk Section
Device Component	Services providing and handling incidents on computer components.	IT Helpdesk Section
Activation Office	Licensing Services *Ms. Offices.*	IT Helpdesk Section

3.2.2. Define Stage

The IT Division uses standards such as ISO 20000-1 and COBIT 5 as a reference in working on and managing IT services. The COBIT 5 assessment states that the IT Service Catalog specifically does not provide an explanation of the various IT services and how to access these services. This is due to the unavailability of a reference for controlling and evaluating the services provided to users.

The Define will determine the problem statement will be the background for making the research object. The results of this stage are in the form of problem statements oriented to user expectations, service evaluation, and compliance with ISO 20000-1 and COBIT 5 standards. In terms of user expectations, there is a question "How to increase user satisfaction with IT services?". Then for service evaluation the question "How to evaluate and control IT services?". Meanwhile, compliance with the ISO 20000-1 standard will apply framework ITIL Version 3 best practice in IT Service Management.

3.2.3. Ideate Stage

At this stage, brainstorming with the PIC of PERUM PERURI is carried out to discuss what problems the author can solve. Some ideas such as making a ticketing website, developing a website on Asset Management, designing problem management, and designing Service Catalog Management. The result of brainstorming is the design of Service Catalog Management based on recommendations for improvement from the governance assessment

using COBIT 5. Service Catalog Management will be made based on 2 points of view, namely Business Service Catalog and Technical Service Catalog. Details of the contents of the Service Catalog Management can be seen in Table 2.

Table 2. The detailed information provided in Service Catalog

Element	Description
Service Name	Name of the Service
Service Description	Description of the Service
Service Type	Service type: (1) *Customer Facing Service*, a type of IT service that is demonstrated and accessible to users. This type of service supports the user's business processes. (2)*Supporting Service*, the type of IT service that supports (*underpin*) the *Customer Facing Service type.* This type of service is not accessible to users and is addressed to *technical support* in order to deliver *value* from the essence of the service.
Supporting Service	Other related services.
Business Owner	Owner of a business
Business Unit(s)	Unit that can access services
Service Owner	The section that responsible for the service
Business Priority	Business Priority services (*High, Medium, Low*) 1. *High,* Service associated with more than 2 other services. 2. *Medium,* Service related to 1-2 other services. 3. *Low,* Service does not affect other services.
Service Level Agreement	User and service provider agreement regarding service delivery Service
Service Hours	Service uptime
Business Contact	Contact business information
Service Report	IT service report
Service Reviews	Duration of service control and review
Security Rating	Service security level

3.2.4. Prototype Stage

This stage is carried out as many as 3 iterations which in each iteration contains interviews, prototyping, and testing. Iterations are carried out until there is no feedback corrective. Prior to prototyping, interviews were conducted with the aim of collecting data related to the services provided by each section in the IT Operations Department such as the IT Infrastructure Section, the IT Helpdesk Section, and the IT System Maintenance Section. The results of the interviews in iteration 1 were conducted on the IT Infrastructure Section which contains the services provided by the section, as can be seen in Table 3

Table 3. Network, Communication, and Data Center Services

Service Name	Service Description
Cable Network	Services for providing and handling PERUM PERURI network connection incidents using cables as connections between work units.
Wi-Fi Network	Service for providing and handling wireless intranet network connection incidents as a connection between work units.
Internet	Service for providing and handling internet connection incidents to users to sites that are allowed for official purposes with network security protection.
Provision of Data Center	Services for providing physical facilities used to accommodate applications and business information about each work unit.
E-mail	Service for providing and handling electronic mail incidents for employees for official purposes.

Service Name	Service Description
Telephone	Service for providing and handling telephone usage incidents with extension numbers between PERUM PERURI work units based on VOIP technology for employees for official purposes.
VPN	Access rights granting and incident handling service VPN that allows employees to access the company's internal network from outside networks.
Outlook	Outlook licensing and setup services for company operations.
Own Cloud	Services for providing and handling cloud usage incidents for employees for official purposes.

After obtaining services from the IT Infrastructure Section, prototyping is carried out for the Technical and Business Service Catalog. For instance, the technical and business service catalog for Cable Network services can be seen in Table 4 and Figure 3.

Table 4. Technical Service Catalog - Cable Network

Service Name	**Cable Network**
Service Description	Services for providing and handling PERUM PERURI network connection incidents using cables as connections between work units.
Service Type	Operations / Customer-facing Service
Service Category	Network, Communication and Data Center
Supporting Services	sihepi.peruri.co.id / ext. 2113 and 2114
Business Owner(s)	Information Technology Division / ext. 2011
Business Unit(s)	Specific work units
User Requirement	All work units in the production area
Service Owner(s)	Priyanto Akhmad Solihin – Head of IT Infrastructure Section ext. 2114
Business Priority	High
Service Level Agreement	1 – 3 days
Service Hours	Working Hours (Monday – Friday, 07.45 – 16.00 WIB)
Business Contact	IT Infrastructure Section ext. 2113, 2114
Escalation Contact	Service Desk – IT Infrastructure Section – Technical Support – Service Owner
Service Report	Weekly Coordination Meeting
Service Reviews	Review once a week.
Security Rating	High

Figure 3. Business Service Catalog - Cable Network Service

3.2.5 Testing Stage

This stage is testing the prototype that has been made previously. Testing is carried out by printing the Business Service Catalog and Technical Service Catalog documents, which will then be presented to the Head of IT Infrastructure, the Head of IT Helpdesk, and the Head of IT System Maintenance as the service providers to obtain feedback from them. The feedback can be seen in Table 5. All feedback obtained is recorded and then becomes material for service catalog improvement. After the service catalog is repaired, the document is distributed to all IT staff and IT users.

Table 5. Feedbacks from service provided.

Service Providers	Feedbacks
Head of IT Infrastructure	● Oversized tabular form in *Business Service Catalog* ● There are errors in the names and descriptions of some services
Head of IT Helpdesk	● Need additional services
Head of IT System Maintenance	● Need additional services ● Explanation regarding the determination of the contents of the document

3.3 Discussion

This research produced Service Catalog Management documents, namely the Business Service Catalog and Technical Service Catalog. These documents are developed based on ITIL framework version 3 through a few iterations and validated by the head of IT sections in PERUM PERURI. As of May 2022, PERUM PERURI has been using the business and technical service catalogs as the guidance of the IT services provided for one month.

The Business Service Catalog contains details of IT services needed by users and business processes that are in line with information technology services, thus making it easier for users to access information about IT services. This document contains 23 IT services that are available to the non-IT staff, the service users. Interviews were conducted with non-IT staff to get feedback on the business service catalog. They said that with the business service catalog, it makes it easier for them to contact the help desk if they need IT staff assistance or if there is a disruption to IT services. They also stated that with the information provided in the business service catalog, they became aware of what to expect with the services in regards to the response and handling time.

The Technical Service Catalog contains details of the flow of escalation of IT service resolution so that operational activities could run smoothly. This document contains information of 26 IT services that are available to the non-IT and IT staff. It has been validated by the Head of IT and distributed to the IT staff as part of the service providers. To find out feedback on the technical service catalog, an interview was conducted with the IT staff. With the help of technical service catalog, the IT staff know the commitment they made to the users and can manage their time and tasks better.

4. Conclusion

The Business Service Catalog was developed in response to the needs of IT service users who require information in the form of IT service documentation and who want to make it easier for users to access information about 21 IT services provided by the IT department. The Technical Service Catalog was created in response to the need for Technical Support to determine the flow of escalation of 26 IT service resolutions so that operational activities could run smoothly. Both of these documents have been validated by the Head of IT and distributed to the users of IT services.

In the future, PERUM PERURI can continue to add service items into the service catalog if there is indeed an addition of new services. PERUM PERURI should also be able to continue the ITIL service design stage by developing the Service *Portfolio* and *Service*

Level Agreement document. Service portfolio serves as a source of strategy validation in the IT services management. In addition, Service Level Agreement will complete the service design stage as it will provide a measurement of success in terms of service capacity, aspects of service security, aspects of availability, and aspects of the sustainability of each IT service.

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