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Knowledge Management Systems for Information Technology Operations Center

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Abstract—Information Technology Operation Center (ITOC) is the one division in Information Technology Department for XYZ company. This division responsibility to maintain and improve Information Technology services and operations in XYZ company. The major problem in this company is the number of employee turnover. It is become the obstacles for the company to keep the knowledge in the company, because the majority employees are outsourced. The company need a knowledge management systems as a solution to keep the knowledge of employees in the company (capable of storing, distributing knowledge, and maintaining corporate knowledge). The system design of this paper used SECI model method by Nonaka and Takeuchi and Object Oriented Analysis and Design method.

Index Terms— Knowledge Management, System, Analysis, Design

I. INTRODUCTION

Information technology is one important factor to improve the business processes in the organization. The development of information technology effected to any activities in the company. The information technology purpose is to support convert any data into useful information for the company. The knowledge in the company is the major capital or assets essential for companies to be able to compete. With the knowledge, the company can improve and develop the quality of human resources in the company.

According to Drucker cited in the book of Tobing [1], knowledge is the information, it happens when the information becomes the basis for action, or when the information enable a person or institution to take actions different or more effective action from the previous action. While knowledge management system is a mechanism and a process that is integrated into knowledge cycle, included store, maintenance, organizing business information [1].

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IT Operation Center (ITOC) is one of the divisions in XYZ company. The problem in the company is the number of employee turnover.

Employee turnover is the common problems in the company. It cannot be avoided by the company, it is become a major obstacle to keep the existing knowledge along with the turnover of employees in the company. This is also due to the status of the employees are outsourced, so the frequent turnover that led a loss of knowledge on IT Operation Center division, so the company difficult to keep or even retain the knowledge in the company. Therefore, the company needs a system that capable of storing, distributing and even update the knowledge in order to keep the corporate knowledge as an asset to improve the performance of human resources within the company.

The purpose of this study is as follows:

- Perform an analysis of the knowledge management process that has been running on the company.
- Designing a knowledge management system which can be used as a medium for sharing knowledge.

II. LITERATURE REVIEW

Knowledge is the application of information believed to be directly used to make decisions [2]. Knowledge that consists of data and information, then organized and processed to convey understanding, experience, learning and skills to solve today's business problems [3]. It can be concluded that the knowledge consists of data and information used to make decisions.

Knowledge Management is the organization's activities for managing knowledge as an asset, knowledge management require distribution proper knowledge to the right people in a short time, so they can interact with each other, share knowledge and apply it in their daily work to improve organizational performance [4].

Knowledge Management is a deliberate coordination systematically from individual organizations, technologies, processes and organizational structures in order to add value through reuse and innovation [5].

Knowledge Management is a process of identifying, selecting and arranging organizations typically are not structured in the organization. Knowledge Management can encourage learning in the organization that can lead to the creation of further knowledge [6].

It can be concluded that knowledge management is a process for managing organizational knowledge as an asset to add value through reuse and innovation.

The purpose of knowledge management according Dalkir [5] as follows:

- To facilitate the smooth transfer of knowledge.
- Reduce the corporate memory loss because of depreciation of employees and retired employees.
- Identify resources and critical knowledge areas so at the company.
- Build a toolkit of methods that can be used individually in groups, and in organizations to stem the potential loss of intellectual capital.

III. METHODS

The early stage of this research is conducted interviews with users, observations directly to the company, and the literature review to find supporting theories. After collecting the data the next step is to analyze the problems and the company needs. After analyzing the problems and needs that occur in the company, we provide a solution, included the design of business processes. When the design is completed, the next stage is development stage.

IV. RESULTS AND DISCUSSION

Division of IT Operation Center is one of the divisions in XYZ company. This division responsibilities are to support the activities and development of human resources in an organization. We used the SECI model (socialization, externalization, combination, internalization) by Nonaka and Takeuchi to analysis the knowledge cycle in the company [7]. Table 1 displayed a SECI model of the company to conducting knowledge sharing.

TABLE 1. KNOWLEDGE MANAGEMENT MODEL - MAPPING

Socialization (Tacit to Tacit) <ul style="list-style-type: none"> • External Meeting • Internal Meeting • Seminars • Discussion (face to face) 	Externalization (Tacit to Explicit) <ul style="list-style-type: none"> • Recording MOM (Minute of Meeting) • Creating SOP (Standard Operating Procedure) for each section in the IT Operation Center division
Internalization (Explicit to Tacit) <ul style="list-style-type: none"> • Read company product • Read MOM (Minute of Meeting) 	Combination (Explicit to Explicit) <ul style="list-style-type: none"> • Creating Service Desk Report • Creating Operation Center Report • Creating Problem Management Report • Creating a Compliance Report

And to analysis knowledge category in the company, we are developed a knowledge taxonomy that is contained all knowledge category in IT Operation Center Division (Figure 1).



Fig. 1. Knowledge Taxonomy

1. Service Desk

- Remedy is a request for help / Request for Assistance (RFA) via the web. A unique number (INC Remedy Ticket Number) will be given for any request that will be handled by the Service Desk. Service Desk will serve all Request for Assistance (RFA) user associated with the application of regular service and a premium service. For example: (a.) Regular Service Application: Single Mediation; (b.) Premium app: HRIS and MKIOS.
- Reset password. Service Desk has been given authorization to reset the password for multiple applications either regular or premium contained in the company. password reset activity conducted within 1 month.
- Create Statistic Ticket Report. Statistics ticket report contains increase and decrease the number of tickets going on in the week. The report as an information that can be used as a reference to the development (every week).

2. Operation Center

- Alarm Monitoring. The responsibility is to monitor the activities of any conditions that occur in each product.
- Create Alarm Report. Result alarm report is a report containing the increase and decrease of the number of alarms in one week.

3. Problem Management

- Incident Analysis. Incident is an event where a product targets under the standards (set by the company). So the incident analysis is performed to find the cause of the reduction targets that have occurred.
- Improvement plan. The solution for each incident.
- Incident report. Describes an incident that consists of a problem, rootcause, analysis and solution of the incident that occurred.

4. Compliance

- Data Analysis. Analyzing the data reduction in the success rate, transaction, non-success rate and error for every product.
- Data Analysis Report. To create a report on the data that has to be generated from each transaction made all the product part of IT Operation Center.

In Table 2 displayed the current knowledge management problems in PT XYZ.

TABLE 2. THE CURRENT PROBLEMS

SECI Model	<p>The issues contained in the SECI mapping company before the development of knowledge management, as follows:</p> <ol style="list-style-type: none"> Externalization <ul style="list-style-type: none"> Record MOM (Minutes of Meeting) Before the development of KM to record the MOM, they are use paper, so it is possible loss of the MOM file. MOM that has been recordern, then the company distributed via email to all meeting participants. One of the obstacles in distributing MOM that is the limited capacity of the email that is hindering the process of distributing MOM. Creating SOP Still less inequality of the distribution of the entire SOP for every employee. Combination <p>Create report for each department. Lack of knowledge possessed by employees to analyzing all activity for each part in IT Operations Center division.</p> Internalization <ul style="list-style-type: none"> Read MOM Nowadays every employee got the MOM via email. There are limitations to the capacity of the email, cause uneven distribution so not all employees are aware about the contents and the frequent loss of the MOM, because employees can remove it intentional or not.
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The proposed system design will explain the SECI mapping that will be proposed and OOAD (Object Oriented Analysis and Design with the Unified Process) as the tools to design the system.

Below are all activities as well as the proposed features that knowledge must be maintained are as follows:

TABLE 3. ACTIVITY MAPPING

Department	Activities	Proposed Feature
Service Center / Operation Center/ Problem Management / Compliance	Create Remedy	<p>The proposed features that can be used to keep the knowledge in the activity of creating a remedy that is:</p> <ul style="list-style-type: none"> News feature To be able to conduct a discussion on how to remedy problem solving occurs. File feature Files feature is a feature that can be used to upload and download files that are used to create and provide solutions to remedy.
	Create Report	The propose features that can be used to keep the knowledge in the company.

The table below showed knowledge cycle mapping for the company (proposed).

TABLE 4. KNOWLEDGE CYCLE MAPPING

Knowledge Cycle	Propose Features
Knowledge Creation and Capture Phase	<ul style="list-style-type: none"> MOM (Minute of Meeting)
Knowledge Sharing and Dissemination Phase	<ul style="list-style-type: none"> News (Discussion Forum) Download File Upload File
Knowledge Acquisition and Application Phase	<ul style="list-style-type: none"> Profile User

The table below displayed the new mapping knowledge using SECI Model.

TABLE 5 THE NEW SECI MODEL

Socialization (Tacit to Tacit)	Externalization (Tacit to Explicit)
<p>Current</p> <ul style="list-style-type: none"> Discussion (face to face) <p>Proposed</p> <ul style="list-style-type: none"> News (Discussion Forum) 	<p>Current</p> <ul style="list-style-type: none"> Record MOM (minute of meeting) create SOP (standard operating procedure) <p>Proposed</p> <ul style="list-style-type: none"> Create MOM (public) Create MOM (division) Download File Upload File Seminar
Internalization (Explicit to Tacit)	Combination (Explicit to Explicit)
<p>Current</p> <ul style="list-style-type: none"> Read MOM (Minute of Meeting) <p>Proposed</p> <ul style="list-style-type: none"> Applied MOM (public) Applied MOM (division) 	<p>Current</p> <ul style="list-style-type: none"> Create report <p>Proposed</p> <ul style="list-style-type: none"> Download file Upload File

The figure below showed Use Case Diagram of the system to be built. In the Use Case diagram below describes the interactions made by each actor to the knowledge management system.

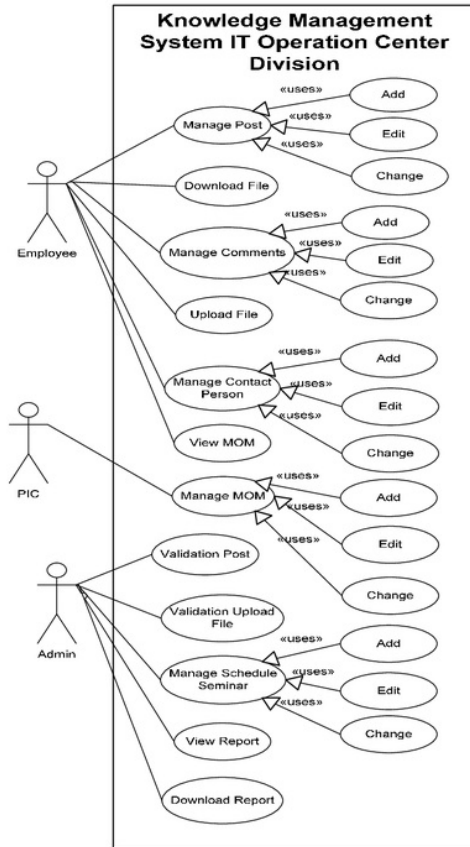


Fig. 2. Use case Diagram for Knowledge Management System PT XYZ

This research used domain Class Diagrams to describe the relationship between objects that are needed to develop the class in the program (see Fig. 3).

Fig. 4 displayed a design of network architecture for knowledge management system on the IT Operations Center division. The personal computer used as a server which is connected via a LAN network, so all employees to be able to access the Knowledge Management System in the company only.

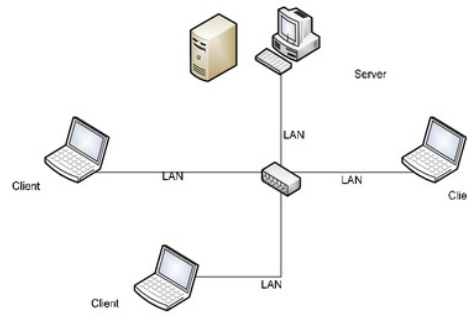


Fig. 4. Network Architecture

V. CONCLUSION

In this paper, after used SECI model to analysis the current problems in the company, this paper discussed about the solutions of the current problems used the OOAD methods (Object Oriented Analysis and Design) with the Unified Process. The system design also covers the design of the class diagram used to describe each table is needed in the system design. Basically the knowledge management systems can be used as a medium for sharing knowledge for each employees in XYZ company.

And for the future development of knowledge management system, we give the suggestion to adding a mobile platform application. So it can perform discussion at discussion forum anywhere and anytime, so that knowledge sharing is not limited by space and time.

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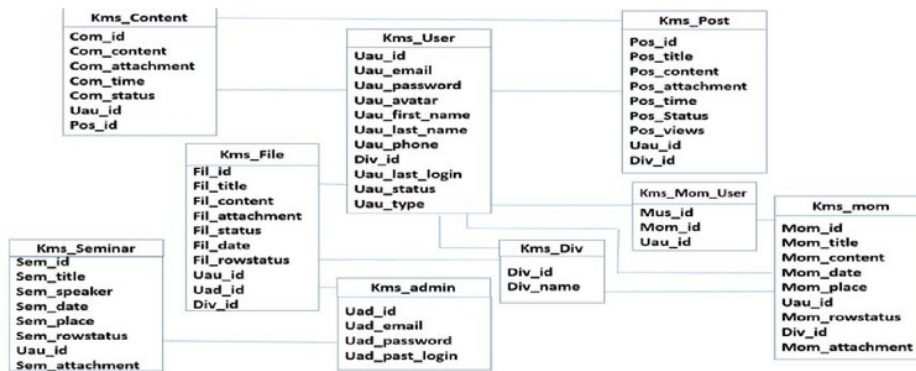


Fig. 3. Domain Class Diagram

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