

Analysis and Design of a Knowledge Management System Using the Fernandez Method in the IT Operation Center Unit (Case Study: PT Citilink Indonesia)

Gilang Banuaji¹, Husni Sastra Mihardja², Gerry Firmansyah³, Habibullah Akbar⁴
^{1,2,3,4} Universitas Esa Unggul, Indonesia
Email: gilangbanuaji07@gmail.com

* Correspondence: gilangbanuaji07@gmail.com

KEYWORDS

Design, KMS, Fernandez,
KM Solution

ABSTRACT

The effect of improving business quality on companies is influenced by developments in technology and information. Utilization of Knowledge Management System (KMS) is one of the efforts to improve the quality of the company's business. In a company, the role of knowledge management is very important so that the company can grow rapidly. For the application of good organizational knowledge requires a planned and systematic knowledge management. The benefits derived from implementing knowledge management in companies are that it can improve service to customers, increase efficiency in processes and work methods, increase the number of services or products and save costs and time. The study of this matter, the IT Operation Center (ITOC) unit has difficulties in terms of sharing knowledge in the company, therefore a study is needed entitled "Analysis of Knowledge Management System Design Using the Fernandez Method in the IT Operation Center Unit (Case Study: PT Citilink Indonesia)" then the application of this Knowledge Management System can provide convenience for employees who have some problems related to IT operations.

Attribution-ShareAlike 4.0 International (CC BY-SA 4.0)



Introduction

Knowledge Management is a systematic coordination within an organization that manages human resources, technology, processes, and organizational structure with the aim of enhancing value through reuse and innovation. This coordination can be achieved by creating, sharing, and applying knowledge using the experiences and actions taken by the company for the sake of organizational learning (Dalkir, 2013).

In a company, the role of knowledge management is crucial for rapid growth. The implementation of effective organizational knowledge requires planned and systematic knowledge management. The benefits of implementing knowledge management in a company include improving customer service, increasing efficiency in processes and operations, expanding the range of services or products, and saving costs and time.

Knowledge consists of information combined with experience. According to Nonaka and Takeuchi (1995), there are two types of knowledge: Tacit Knowledge and Explicit Knowledge. According to Melissie C. Rumizen (1998), knowledge management is a systematic process of creating, capturing, sharing, and enhancing the knowledge needed for an organization to succeed. Knowledge management adds value by improving intangible assets. In the development of knowledge management, Polanyi introduced two types of knowledge: Tacit Knowledge (knowledge that is unspoken or thought knowledge) and Explicit Knowledge (knowledge that is documented and modified in documents) (Utomo, 2016).

The researcher has identified several issues in the IT Operation Center (ITOC) unit, including the lack of organized knowledge among employees for solving work-related issues in the company. Often, when some employees resign or there is a shift change, they face difficulties in handling issues due to the lack of documented knowledge about those issues. Therefore, research in the field of information systems, including knowledge management, is essential, as it can help the company develop and improve its employees' performance (Anggun, 2018).

In dealing with operational issues in the IT Operation Center, employees often require a considerable amount of time due to the lack of documentation or an application capable of storing knowledge about the existing issues. Each employee has their own tasks, and the knowledge of one employee may not necessarily be possessed by others (Kresdiana, 2013). This results in extended adaptation periods for new employees when they join the system. Furthermore, when experienced employees resign or leave their jobs, their knowledge may not be fully transferred to other employees or may be lost altogether. Based on the background mentioned above, the identified problems are as follows: 1) Knowledge and experience are not well-documented, making it difficult for employees to carry out their tasks during employee turnovers. 2) Operational IT knowledge is often lost and not well-preserved in the IT Operation Center. 3) Most of the knowledge and experience used in daily work is stored with individual employees and has not been integrated into a system. 4) There is no system managing knowledge related to IT operations in the IT Operation Center.

The research aims to build a guide application as a means to implement the Knowledge Management System, apply the Knowledge Management System for IT operations in the IT Operation Center of PT. Citilink Indonesia, and facilitate employees in the IT Operation Center to achieve optimal IT operations. With this research, titled "Analysis of Knowledge Management System Design Using the Fernandez Method in the IT Operation Center (Case Study: PT Citilink Indonesia)," it is hoped that the implementation of the Knowledge Management System can effectively manage existing knowledge and provide convenience for employees facing operational issues related to information technology services in the IT Operation Center.

Table 1 Previous Study

(Wahyu, 2020) S. Wahyu, no. June, 2020	Implementasi Knowledge Management System Di Instansi Pemerintahan Dalam Pandemik Covid-19	Membangun Knowledge Management System dengan memetakan fitur menggunakan metode Fernandez agar knowledge mudah
--	---	--

	Pada Masa Transisi ‘ The New Normal’	disebarkan pada masa pandemi.
(Adnyana, I Ketut Widhi Wirawan, 2020)	Teknik Perancangan Arsitektur Knowledge Management System (KMS)	Membuat arsitektur Knowledge Management System menggunakan kerangka kerja model amrit tiwana.
(Kuswinardi, 2016)	Penerapan Enterprise Architecture Planning Pada Sistem Pemeliharaan Berbasis Pengelolaan Pengetahuan di PT. Coca Cola Bottling Indonesia	Membuat sistem pemeliharaan berbasis pengelolaan pengetahuan menggunakan kerangka kerja zachman.
Rikaro Ramadi 2016	Penerapan Knowledge Management System Pada Perusahaan Otomotif: Studi Kasus PT. ASTRIDO JAYA MOBILINDO ISSN: 2252-4983 (Ramadi, 2016)	Penelitian ini berisi tentang bagaimana penerapan Knowledge Management System pada perusahaan otomotif dengan Studi Kasus: PT. ASTRIDO JAYA MOBILINDO. Untuk mengatasi berbagai permasalahan yang ada dalam perusahaan tersebut, Knowledge Management System yang diterapkan ini berbentuk sebuah web service
Surianti, Nur Ain Banyal, Syari Rukmana Wahab 2017	Knowledge Management System Penyakit Sawit Berbasis Android Menggunakan Pendekatan Usability Engineering. ISSN print 2087-1716 ISSN online 2548- 7779 (Surianti, Banyal, & Wahab, 2017)	Penelitian ini berisi tentang pengembangan penerapan Knowledge Management System terkait penyakit kelapa sawit yang tadinya berbasis website menjadi berbasis android dengan menggunakan pendekatan Usability Engineering dalam pengembangannya.

Research Methods

The research method used is a prototype consisting of three cycles (Listen to Customer, Build / Revise Mock-Up and Customer Test / Drives Mock-Up). With analytical methods using Fishbone problem analysis (cause-and-effect) and fernandez methodology. The Fishbone method is a cause-and-effect diagram that helps identify the cause of a particular undesirable outcome thus helping to identify the root cause and ensure a general understanding of the cause. The shape of the diagram that happens to almost resemble the skeleton of a fish bone is then referred to as a Fishbone diagram or fish bone.

The Fernandez methodology consists of the following stages: 1. Analyzing Contingency Factors. 2. Prioritize KM Processes. 3. Identify previously implemented KM processes. 4. Identify additional KM processes. 5. Analyze KM infrastructure and identify KM process sequence Organizational culture, organizational structure and environmental conditions will be assessed to determine KM infrastructure. 6. Develop the required KM system.

Results and Discussions

1.1 Listen To Customer

In the prototype method, there is a Listen to Customer stage, where this stage is to collect research needs. In collecting needs, I use several stages, namely Data Collection, Problem Analysis, Fishbone Diagram Analysis.

Any problems experienced by employees operating IT that are less than optimal caused by problems such as troubleshooting various IT equipment / software. Various problems have their own levels and different damage and solutions can be solved according to the level of emergency. The problem is seen from the human aspect, tools, procedures that will be divided in the fishbone diagram.

1.2 Build / Revise

1.2.1 Analyzing Contingency Factors

There are three contingency factors that must be analyzed in determining the design of knowledge management solutions, namely analysis of task characteristics, knowledge characteristics and analysis of organizational and environmental characteristics (Rina, 2015).

1. Task Character Analysis

The parameters used in analyzing task characteristics are task uncertainty and task interdependence.

a. Task Uncertainty

Based on questions in the interview in the task uncertainty section , it was found that the tendency of task uncertainty in the IT Operation Center unit. The tendency of task uncertainty is expressed by High (H) if the tasks in the unit are not well defined or ambiguous, if the tasks in the division are well defined or unambiguous then task uncertainty is expressed by Low (L). From the resource person answered the high level of task uncertainty. Based on this, it can be concluded that the level of task uncertainty in the IT Operation Center unit is Low (L) due to routine work.

b. Task Interdependence

Based on questions in the interview in the task interdependence section , it was found that the tendency of task interdependence in the IT Operation Center unit. Task interdependence tendencies are expressed with High (H) if employees feel that the level of dependence on job success dependent on other divisions is high. If the employee feels

that the value of the degree of dependence of job success depending on other divisions is low, then it is denoted with Low (L).

2. Analysis of Knowledge Characteristics

The parameters used in analyzing knowledge characteristics are the tendency of tacit or explicit and procedural or declarative knowledge.

a. Tacit vs Explicit

In the interview results for the level of tendencies of tacit or explicit knowledge characteristics, knowledge characteristics in the IT Operation Center unit were obtained. If the employee feels that the characteristic tendency of knowledge has been documented or explicit, then in table 10 it will be denoted with E, while if the employee feels that the characteristic tendency is tacit knowledge, then in table 10 it will be notated with T. If the employee feels that both knowledge has a lot in the division, it will be denoted with T & E, which means tacit knowledge and explicit knowledge is contained in the division. From the interviewee, the tendency of knowledge is tacit. Based on this, it can be concluded that the tendency of knowledge in the IT Operation Center is tacit because of direct knowledge sharing and solution knowledge is still tacit (Alexandra, 2018).

b. Procedural vs Declarative

Based on the results of interviews in the Procedural vs Declaration section, knowledge tendencies were obtained in the IT Operation Center unit. If the employee answers procedural then this table will be denoted with P, while if the employee feels the tendency of knowledge is declarative, it will be notated with D. From the source answer procedural. Based on this, it can be concluded that the tendency of knowledge in IT Operation Center unit operators is declarative because it uses many technical problems.

3. Analysis of Organizational and Environmental Characteristics

Based on the observations of the IT Operation Center unit in this case included in a large organization, because this unit is used in all stations of PT. Citilink Indonesia has an organizational hierarchical structure with a type of decentralization, this can be seen in the delegation of power and decision making widely to lower levels, this aims to reduce the burden on superiors in a work task that is heavy or cannot be done alone.

The business strategy of the IT Operation Center unit organization tends to carry out tasks in accordance with the work plan that has been set. The condition of employees is that most of them have a predetermined plan, all activities carried out are the same, only material is different. Therefore, employee business strategies can be classified as having a Low Cost organizational business strategy, namely organizational businesses that use low or minimal costs and try to be more efficient while still providing the best service.

The characteristics of the organizational environment can be known through several government policies and regulations, economic conditions and the level of business competition. Based on observations and interviews with employees of the IT Operation Center unit, it is an organization where most of its employees have understood the tasks, principals and functions in their respective sections. The tasks and work carried out by each employee tend to be the same throughout the year by providing services and facilitating the field of IT Service Delivery. The characteristics of the organizational environment in accordance with what has been described above are that it can be concluded that it has a low or low organizational environment uncertainty with organizations that are classified as conducive and there is no business competition.

1.2.2 KM Process Identification

Conclusion Based on the results of identifying the values of contingency factors above, it produces the following conclusions:

Table 2. Results of Contingency Factor Identification

Faktor Kontigensi	Nilai
Task Uncertainty	Low
Task Interpendece	High
Tacit vs Explicit	Tacit
Procedural vs Declarative	Declarative
Ukuran Organisasi	Large
Srategi Bisnis	Low Cost
Environmental Uncertainty	Low

Based on this assessment, it can be determined the KM process that is in accordance with the current contingency factors in the IT Operation Center unit of PT. Citilink New Zealand.

1.2.3 Assessing KM Process Priorities

At this stage, weighting will be carried out on contingency factors to assess the priority of the KM process. If the KM process supports the current contingency process, then based on Fernandez it will be given the value Yes, and multiplied by the multiplier factor 1. If no No is given and multiplied by a multiplier of 0, while if the process supports both types of contingency factors it will be given an OK score and the multiplier is 0.5.

In the contingency factor table, data is given on which processes support the contingency factors owned by the IT Operation Center unit and also the total cumulative score based on Fernandez's formulation. This data will be used in the next subchapter to determine which processes are prioritized based on Fernandez.

Based on this sequence, it can be concluded that the most needed KM processes based on Fernandez are Internalization, Externalization, Routines, and Socialization for Knowledge Sharing. While the process is not really needed, in this table is included in the bottom four, namely Exchange, Combination, Direction, and Socialization for Knowledge Discovery.

1.2.4 Identify existing KM processes

Based on the results of the interview, it was found that KM tendencies in the IT Operation Center unit were in the following table. If the employee feels that the KM process has been implemented then it is stated with YES (Y), if not it is stated with NO (N).

Table 3. Current Knowledge Management Process

KM Process	ITOC
Combination	N
Socialization for Knowledge Discovery	Y
Socialization for knowledge Sharing	Y
Exchange	N
Externalization	N
Internalization	Y
Direction	Y
Routines	Y

Based on the table above, it can be calculated employees who feel that the knowledge management process has been implemented, a summary of the total employee calculation for the process is shown in tables 4-11. Tables 4-11 are sorted by process only in the IT Operation Center unit.

1.2.5 Identify Additional KM Processes

Based on Table 4, the priority of KM processes needed by the IT Operation Center is obtained, while based on Table 4-10, the KM process ranking that has been implemented today is obtained. The summary of KM process ratings from the stages of Table 4 is as follows.

Table Error! No text of specified style in document.. KM Process Rating

KM Activity	Proses KM	Needs Rating	Current Utilization rating
Discovery	Combination	6	0
	Socialization for Knowledge Discovery	7	1
Capture	Externalization	4	0
	Internalization	5	1
Sharing	Socialization for Knowledge Sharing	2	1
	Exchange	1	0
Aplication	Direction	8	1
	Routines	3	1

Description: "Has no rating" = 0

Based on the table above, it can be seen that some of the KM processes needed, have not been implemented properly in the IT Operation Center Unit, such as Combination and Exchange. While some KM processes have begun to be implemented, such as Internalization and Routines.

To determine which KM processes are needed by the IT Operation Center, the following rules are used (Santoso, 2011):

- a. Divide the KM process into KM process needs priorities and current KM process priorities into two categories, namely high and low. KM processes are included in the high category when included in the top five ranks, while KM processes that are included in the bottom three ranks will fall into the low category.
- b. Mapping of each KM process will be carried out to determine which KM processes are prioritized for development. The classification of KM process mapping is:
 1. If the need for KM processes is high and the current use of KM processes is also high, then the process becomes the first priority to be developed.
 2. If the need for KM processes is high and the use of KM processes is currently low, then the process becomes the second priority to develop.
 3. If the need for KM processes is low and the use of KM processes is currently high, then the process becomes the third priority to develop.
 4. If the need for KM processes is low and the use of KM processes is currently low then the process becomes the last priority to develop.

Based on the mapping results, the KM process that needs to be developed is

Internalization for KM Capture activities, Socialization for Knowledge Sharing for KM sharing activities and Routines for KM application activities.

1.2.6 Infrastructure Analysis and KM Process Order

Factors that need to be considered in analyzing KM infrastructure are organizational culture, organizational structure, information technology infrastructure, physical environment and general knowledge.

1. Organizational Culture

The IT Operation Center unit supports knowledge management, this is realized by placing computers in each operator division, this is expected to facilitate each employee to enter data and information about existing problems and how to solve them. So that if there is a similar problem faced by other employees it can be easily solved.

2. Organizational Structure

The organizational structure in the IT Operation Center unit is a function structure, which is divided depending on the function / role owned by the employee. In addition, the organizational structure is also included in centralization where decision making depends on the IT Operation Center manager.

3. Information Technology Infrastructure

The network topology that will be developed by the IT Operation Center unit is as follows. All devices in each employee will be connected and installed KMS application with the network, making it easier to exchange information. KMS development will use a new network topology. KMS applications installed on cloud servers make it easy if employees access them when troubleshoot outside the office.

4. Physical Environment

The physical environmental condition of the IT Operation Center unit located in the West Jakarta area. The room has 2 computers in each employee as support for work. And for outdoor IT Operation Center employees facilitated by HP for mobile activities.

5. General Knowledge

General knowledge possessed by organizations can be in the form of tacit or explicit. The repository of knowledge is divided into three parts, namely people, artifact, and organizational entities (Fernandez & Sabherwal, 2010).

a. People

Based on the results of the interview, one of the knowledge in the IT Operation Center unit environment is found in employees. The main activities carried out by employees that require expertise, knowledge, and experience include:

Table 5. Tacit Knowledge

No	Types of Tacit Knowledge
1	Troubelshooting related to all IT operational devices & applications
2	Experience communicating with other units
3	Knowledge gained from participating in training activities, seminars, and bimtek such as application training related to operations
4	Analysis of the type or priority of operational problems

b. Artifact

The knowledge contained in the artifact includes SOPs contained in each division, guideline or manual document. Today electronic documents are still scattered on every local computer in each division. While the storage place for non-electronic documents is in the filing cabinet in each division. The following are details of explicit knowledge

owned by the IT Operation Center unit.

Table 6. Types of Artifacts

No	Types of Artifacts
1	IT equipment manual guideline or document
2	IT Asset Delivery & Receipt Report
3	IT Asset Lending Report
4	IT Operation Center Daily Report

c. Organizational Entities

Knowledge of organizational entities is knowledge related to organizational entities, such as Standard Operational Procedures (SOP), Strategic Plans (Renstra), Work Plans and other service standards. Based on the interview results, IT Operation Center employees have several SOPs, namely:

Table 7. Types of SOPs

No	Types of SOP
1	SOP for employee email creation
2	SOP for IT asset lending
3	SOP for Making Operational Application Access

1.2.7 KMS Development Based on Mechanism & Technology

Based on the previous discussion, the priority of developing KM processes needed by the IT Operation Center unit was obtained. The following is KMS based on KM process priority and required features.

Table 8. KM Features

Current KM Process	Description of System Requirements	KM Features
Socialization for Knowledge Sharing	Features that allow for the process of sharing Tacit Knowledge	Document Management & Procedural/Experience Management
Direction	Features that for employee processes that have knowledge provide direction / guidance to other employees	Document Management & Procedural/Experience Management
Socialization for Knowledge Discovery	Features that allow for the development of tacit knowledge obtained from other individuals	Document Management & Procedural/Experience Management
Routines	Features for sharing Explicit Knowledge	Document Management & Procedural/Experience Management
Intenalization	Features that make it possible to learn explicit knowledge	Document Management & Procedural/Experience Management

1.2.8 Knowledge Management Mechanism

Knowledge Management mechanism is needed to support knowledge management system. KM mechanisms that can be applied to IT Operation Center units

related to agencies and operator users or employees are as follows.

Agencies and employees must begin to change the culture that exists in the IT Operation Center unit because more employees rely on others, depend on other people, lack awareness in work, then store knowledge for themselves and do not share it with other employees. The culture of knowledge sharing must begin to be implemented with SOPs, holding discussions and management must oversee changes so that a culture of knowledge sharing can be created. The following is a knowledge management mechanism created.

Table 9. Knowledge Management mechanism

Activity	KM Features	KM Mechanism
Observe IT operational issues	Document management	Search for documentation on troubleshooting
	Document Experience	Looking for problems in previous issues
Perform knowledge transfer when there is ignorance in troubleshooting IT operational problems	Document management	<ul style="list-style-type: none"> • Ask other employees • Looking for a guide to the problem
Documenting IT operational issues	Document management	Keep documentation about problems in IT operations

1.2.9 System Requirements Analysis

A. Use case Diagram

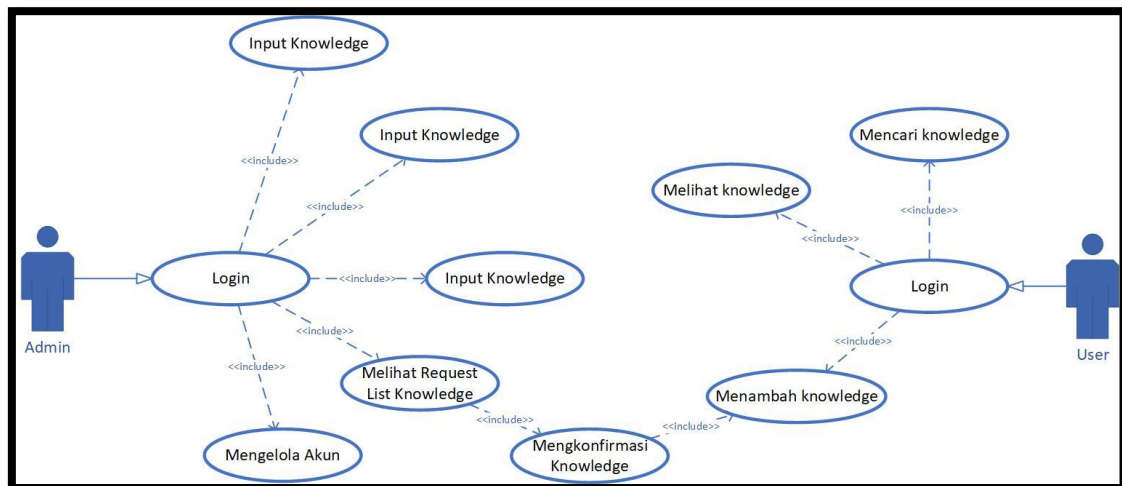


Figure 1. Usecase Diagram

In the Usecase Diagram, this proposal has two actors, namely admin and user. This admin is the IT Operation Center Manager and this user is the IT Operation Center staff (Pratama, 2019).

B. Class Diagram

In this class diagram there is a knowledge table, which is a table used to store knowledge applications, in the knowledge category table is a table to store knowledge categories, in the title table is a table that stores knowledge titles, the content knowledge table is a table to store the contents of knowledge according to knowledge application.

Then the request table is a table that stores the knowledge requested by the user for admin validation later.

C. Activity Diagram

1. User System Flow

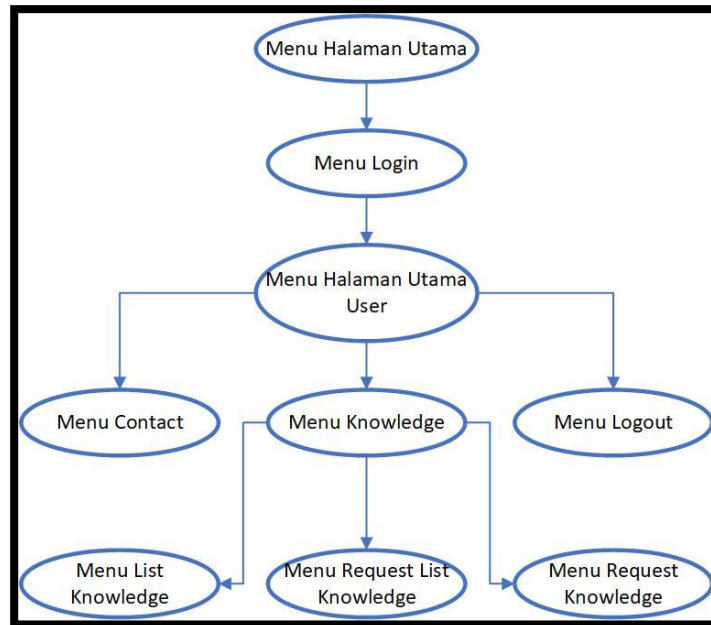


Figure 2. User System Flow

2. Admin System Flow

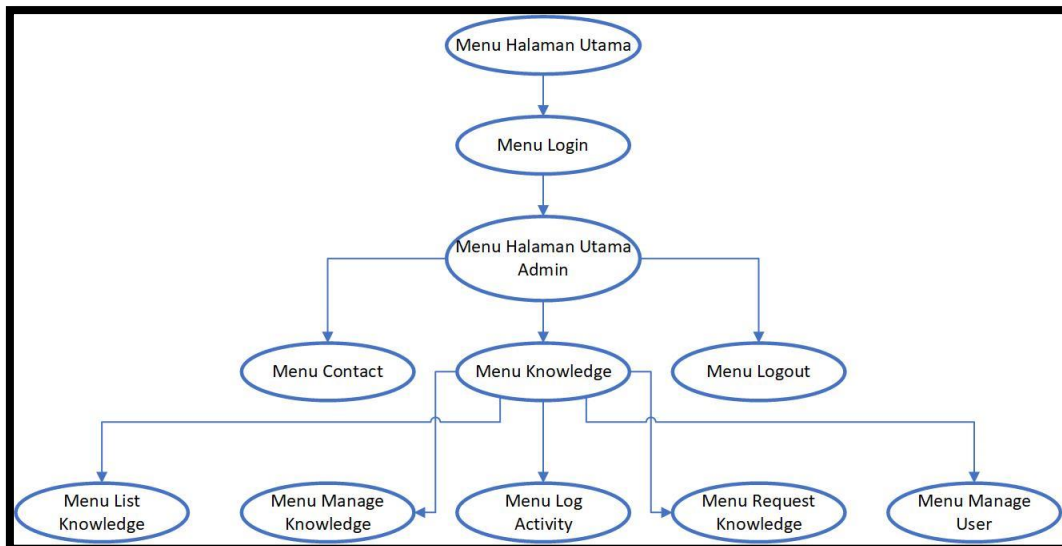


Figure 3. Admin System Flow

1.3 Custom Test

1.3.1 Blackbox Testing

Table 10. Blackbox Testing

No	Menus / Functions	Steps	Expected results	Actual Results
1 .	Login	<ol style="list-style-type: none"> 1. Open https://kmsnew.kebababooy.com/ 2. Click the login menu 3. Enter ID and Password on the registered Username and password form for secure login access. 4. Click the log in button 	<ul style="list-style-type: none"> • There is no problem filling in the Username and password • No problem logging in . 	<ul style="list-style-type: none"> • Login successfully
2	Home Menu / main page	Click the home button	<ul style="list-style-type: none"> • Click the home button . 	<ul style="list-style-type: none"> • Successfully enter the start page
3	Menu Knowledge	<p>On the Knowledge menu there is a list of existing Knowledge is in the system based on category :</p> <ol style="list-style-type: none"> 1. Click one _ Existing knowledge 	<ul style="list-style-type: none"> • Nothing _ problem moment choose one button _ Knowledge category 	<ul style="list-style-type: none"> • Can select the existing Knowledge list • Displaying selected Knowledge results
4	Manage Knowledge menu	<p>In the Manage Knowledge menu there is Choice of list of Knowledge lists that have been input, in this menu there is Knowledge input, edit Knowledge, delete Knowledge and search Knowledge functions :</p> <p>For Input Knowledge :</p> <ol style="list-style-type: none"> 1. Click knob add new knowledge 2. Fill in the Knowledge accordingly selected category _ 3. Click to button save <p>To Edit Knowledge :</p> <ol style="list-style-type: none"> 1. Select the Knowledge you want edited 	<ul style="list-style-type: none"> • Nothing _ problem moment input Knowledge • Nothing _ problem moment editing Knowledge • Nothing _ problem moment delete Knowledge • Nothing _ problem in search for Knowledge 	<ul style="list-style-type: none"> • Succeed adding new Knowledge • Succeed editing Knowledge • Succeed delete Knowledge • Succeed displays results Knowledge search

		<ol style="list-style-type: none"> 2. Click edit button 3. Edit Knowledge as desired 4. Click knob save <p>To Delete Knowledge:</p> <ol style="list-style-type: none"> 1. Select the Knowledge you want deleted 2. Click delete button 3. Will appear notification “ Is Certain will delete Knowledge?” 4. Click OK button <p>For Search Knowledge:</p> <ol style="list-style-type: none"> 1. Click search column 2. Type the Knowledge you want searching for 3. Finished 		
5	Manage Users	<p>In the manage user menu there are functions to add user, edit user, delete user and search for user</p> <p>For add users</p> <ol style="list-style-type: none"> 1. Click knob add new user 2. Full Name , user name, password 3. Select the user role as admin or as a user 4. Click save data <p>For edit user:</p> <ol style="list-style-type: none"> 1. Select the desired user edited 2. Click edit button 3. Change user data 4. Click tomsol save <p>For delete user:</p> <ol style="list-style-type: none"> 1. Select the desired user deleted 2. Click delete button 3. Will appear notification is want to delete user? 4. If yes click ok 	<ul style="list-style-type: none"> • Nothing _ problem moment input User • Nothing _ problem moment edit User • There is no problem deleting User • There is no problem in finding Users 	<ul style="list-style-type: none"> • Succeed adding new User • Succeed edit User • Succeed delete Users • Succeed displays results search Users

		<p>For looking for Knowledge:</p> <ol style="list-style-type: none"> 1. Click search column 2. Type the User you want searching for 3. Finished 		
6	Menu Request Knowledge	<p>Request Knowledge menu displays a list of Request Knowledge inputted by the user, in this menu there is function search for Knowledge, display Knowledge details , accept Knowledge and reject Knowledge</p> <p>For looking for Knowledge:</p> <ol style="list-style-type: none"> 1. Click search column 2. Type the User you want searching for 3. Finished <p>For View Knowledge details:</p> <ol style="list-style-type: none"> 1. Select Knowledge in the Request list 2. Click details button 3. Displays Knowledge details 4. Finished <p>For receive Knowledge:</p> <ol style="list-style-type: none"> 1. Select the Knowledge you want to view 2. Click Knowledge details 3. Click knob receive Knowledge 4. Finished <p>For reject Knowledge:</p> <ol style="list-style-type: none"> 1. Select the Knowledge you want to view 2. Click Knowledge details 	<ul style="list-style-type: none"> • Nothing _ problem moment view Knowledge details • Nothing _ problem moment editing Knowledge • Nothing _ problem moment receive Knowledge • Nothing _ problem moment reject Knowledge • Nothing _ problem in search for Knowledge 	<ul style="list-style-type: none"> • Succeed displays Knowledge details • Succeed receive Knowledge and enter into the system • Successfully rejected Knowledge _ • Succeed displays results Knowledge search

		3. Click knob reject Knowledge 4. Finished		
7	Menu Add Knowledge / Request Knowledge (User)	On the Request Knowledge user menu, the user can add Knowledge with admin permissions To add Knowledge : 1. Click knob add new knowledge 2. Fill in the Knowledge form accordingly selected category _ 3. Click to button save 4. Wait confirmation from admin 5. finished	<ul style="list-style-type: none"> • Nothing _ problem in adding new knowledge by the user 	<ul style="list-style-type: none"> • Can make Request a list of new knowledge that has been obtained added by user
8	Activity Log Menu	On the Activity Log menu, Admin can view the activity log What only that has He do or the user does For View activity logs 1. Make sure already logged in (Admin) 2. Click the log activity menu 3. finished	<ul style="list-style-type: none"> • Nothing _ problem in displays the activity log 	<ul style="list-style-type: none"> • Displays admin and user activity logs
9.	Contact Menu	The Contact menu is menu containing Contact admin or underwriter answer in operationalization of this Knowledge Management System and address How to view Contacts: 1. Make sure already logged in 2. Click the Contact menu 3. Finished	<ul style="list-style-type: none"> • No problems displaying contact information 	<ul style="list-style-type: none"> • Displaying information contact

1.3.2 User Acceptent Testing

At this testing stage, in addition to using black box testing, User Acceptance Test (UAT) testing will be carried out. This test is carried out so that the results of the system

are in accordance with what the user wants.

Here are the testing stages:

This test uses a questionnaire to get the results. This test is used to assess the system as it relates to system benefits, system appearance and system feasibility.

Questionnaires that have been answered by respondents will later be calculated using the Likert Scale method. The Likert scale is used to measure the perceptions, attitudes or opinions of a person or group regarding social events or phenomena, based on operational definitions that have been established by the researcher. In the use of the Likert scale, there are two forms of questions, namely the positive question form to measure the positive scale, and the negative question form to measure the negative scale. Positive questions were scored 5, 4, 3, 2, and 1; While the negative question forms were scored 1, 2, 3, 4, and 5.

Formula: $T \times P_n$

Q : Total number of respondents who voted

P_n : Likert score number selection

In answering the questionnaire with calculations using the Likert scale, respondents answered on the microform by selecting one of the radio buttons on each question. The questionnaire that has been filled out by respondents is given a score for each answer as shown in the table below:

Table 11. Assessment Weights

Statements	Score
Strongly agree	5
Agree	4
Less agree	3
Disagree	2
Strongly disagree	1

Table 12. UAT Results

No	Questions	Strongly agree	Agree	Less Agree	Disagree	Strongly disagree
1	is system This fulfil need for ITOC Units ?	7	7	0	0	0
2	is all expected features and functions of the system This useful for ITOC units ?	9	5	0	0	0
3	is appearance system This easy used by ITOC unit employees ?	5	9	0	0	0
4	is with exists system This can help internal ITOC unit employees Looking for the	6	8	0	0	0

	knowledge you need ?					
5	is system This can accessed When just , or there is limitation time certain ?	1	9	4	0	0
Total		36	30	4	0	0

Based on the results of the calculation above, it can be concluded as follows:

1. P strongly agree = $36 * 5 = 180$
2. P agree = $30 * 4 = 128$
3. P less agree = $4 * 3 = 12$
4. P disagree = $0 * 2 = 0$
5. P strongly disagree = $0 * 1 = 0$

Total Score = 322

After that, a search was carried out for the interpretation results by giving the highest score (Y) and the lowest score (X) with the formula, as follows.

$X = \text{lowest score of likert} * \text{number of respondents} * \text{number of questions}$

$$X = 1 * 14 * 5 = 70$$

$Y = \text{highest score likert} * \text{number of respondents} * \text{many questions}$

$$Y = 5 * 14 * 5 = 350$$

After determining the highest and lowest values, then a search is carried out to find out the interval and percent interpretation by finding the percent (I) score interval, with the following formula.

$$I = 100 / \text{number of likert scores}$$

$$I = 100 / 5$$

$$= 20$$

So the interval of the distance from lowest to highest, which is 20.

Here are the criteria for interpretation of scores based on intervals.

- a. Number 0% - 19.99 = Strongly disagree
- b. 20% - 39.99% = Disagree
- c. 40% - 59.99% = Sufficient
- d. Figure 60% - 79.99% = Agree
- e. Numbers 80% - 100% = Strongly agree

After that, a search was carried out using the index formula, as follows.

$$\text{Index \%} = \text{Total Score} / Y * 100$$

The % index results for respondents are as follows.

$$\text{Index \%} = 322 / 350 * 100$$

$$= 92\%$$

Conclusion

From this research, the researcher concludes that the most dominant Knowledge Management solution in the IT Operation Center of PT. Citilink Indonesia is Socialization

for Knowledge Sharing, Routines, and Internalization. This is because most employees frequently engage in discussions, seek solutions to work-related issues, and share ideas among themselves. On the other hand, task interdependence is relatively high as it affects other units, and task uncertainty is low as tasks are performed routinely. Furthermore, explicit knowledge is less abundant compared to tacit knowledge.

This process takes into account the needs of knowledge management, and the existing knowledge management processes require a knowledge management system with features such as document management, experience management, and search functionality to support the proposed process.

The implementation of this Knowledge Management System can facilitate employees in the IT Operation Unit of PT. Citilink Indonesia in obtaining more optimal IT services and providing the best service to the public.

References

- Adnyana, I Ketut Widhi Wirawan, Yuki Hidayat. (2020). Teknik Perancangan Arsitektur Knowledge Management System (KMS). *Majalah Ilmiah Unikom*, 17(2), 103–110.
- Alexandra, J. (2018). Tacit dan Explicit.
- Anggun, Nugroho. (2018). *Journal of Chemical Information and Modeling*.
- Dalkir, Kimiz. (2013). Knowledge Management in Theory and Practice. In *Knowledge Management in Theory and Practice*. <https://doi.org/10.4324/9780080547367>
- Kresdiana, H. (2013). Transfer Pengetahuan Kemampuan Berinovasi dan Kinerja Organisasi (Suatu Kajian Empiris).
- Kuswinardi, Wiwin. (2016). Penerapan Enterprise Architecture Planning Pada Sistem Pemeliharaan Berbasis Pengelolaan Pengetahuan Di PT. CocaCola Bottling Indonesia. (Vol. 2 No. 1: SMARTICS Journal (April 2016)).
- Pratama, A... (2019). Belajar UML - Activity Diagram.
- Ramadi, Rikaro. (2016). Penerapan Knowledge Management System Pada Perusahaan Otomotif : Studi Kasus Pt. Astrido Jaya Mobilindo. *Simetris : Jurnal Teknik Mesin, Elektro Dan Ilmu Komputer*, 7(2), 635. <https://doi.org/10.24176/simet.v7i2.776>
- Rina, Wahyuni. (2015). UNIVERSITAS INDONESIA PERANCANGAN KNOWLEDGE MANAGEMENT SYSTEM : JAKARTA.”.
- Surianti, Surianti, Banyal, Nur Ain, & Wahab, Syari Rukmana. (2017). Knowledge Management System Penyakit Sawit Berbasis Android Menggunakan Pendekatan Usability Engineering. *ILKOM Jurnal Ilmiah*, 9(3), 361. <https://doi.org/10.33096/ilkom.v9i3.189.361-367>
- Utomo, Eko Setyo. (2016). Pengaruh Tacit Knowledge Dan Explicit Knowledge Terhadap Kinerja Karyawan Pt Wadja Karya Dunia Pati.
- Wahyu, Sawali. (2020). Implementasi Knowledge Management System Di Instansi Pemerintahan Dalam Pandemi Covid-19 Pada Masa Transisi “ The New Normal.” (June).