Analysis of Knowledge Management System in Pamulang University Library Based on SUMI (Software Usability Measurement Inventory)

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Abstract.We would like to measured the information system of Pamulang University library through the usability evaluation. The method in this study uses the adoption of the Knowledge Management System Life Cycle (KMSLC) life cycle. Where the stages used consist of Evaluation of Existing Infrastructure Analysis, Capture Knowledge, Implementing the KM system, Evaluation. The steps taken are system analysis, knowledge mapping in the application, implementation results and evaluation using usability. The questionnaire was conducted on 20 respondents, including 10 students and 10 Pamulang University lecturers. The questionnaire was conducted in 3 categories namely effectiveness, efficiency and satisfaction with 10 questions each so that there were 60 questions and 3 linkers namely 4 if they all agreed, 2 if they did not know and 0 did not agree. The results of the SUMI questionnaire against the Library are 90; 75; 75; 87.5; 90; 75. The usability evaluation results are above average, meaning that the usability in the UNPAM Library system is already in the good category.

1. Introduction

Pamulang University is a campus located in South Tangerang. The application of the Knowledge Management System was implemented in the Pamulang University Library. There is useful knowledge about library information systems for students and lecturers. Library is a medium for sharing knowledge [1]. The library through the information system media greatly facilitates various activities such as downloading and exchanging data [2]. Library information system is a source of knowledge management system in an institution for example the scope of lectures, namely universities. To find out the use of knowledge on the system is done by the KMSLC (Knowledge Management System Life Cycle) method. Users who use the library are students and lecturers. In addition, the need to measure the system through usability is very necessary. To measure the usefulness of library application researchers use the method adopted from SUMI (Software Usability Measurement Inventory). The respondents used consisted of 10 lecturers and 10 students with 60 questions. The criteria for the question consist of effectiveness, efficiency, satisfaction.

This study considers the importance of KMS in all fields, especially small businesses and medium businesses [3]. So it is necessary to understand the KMS trend by studying journals from several decades [4]. Other research related to KMs also explains the importance of KMS in a company through four stages of knowledge transformation namely socialization, externalization, combination and internalization [5]. Besides that, the application of KMS also needs to share knowledge about a particular product in the company, for example [6]. Through certain products, it is necessary to contribute users by utilizing technology. The application of KMS in other fields is smart farming where KMS plays a role in

storing, editing and verifying crop production [7]. To improve the quality of a system, it is necessary to have usability, there are several studies related to usability, namely Research entitled Application of Usability Testing Method in Evaluation of Prabumulih City Government Website, the results of this study a show that 100% learnability, 66.66% efficiency, memorability 58.33%, 53.33% satisfaction that can be used by users [8]. Research entitled Measurement of Usability of Financial Information Systems Case Study: Ambassador of Internal Transaction Discourse (DuWIT), The results of this study indicate usability above 72% so that this application is declared user friendly[9].

A series of activities on knowledge management will create an organization's competitive advantage through innovation and service organizations [10].In a Knowledge Management (KM) institution became a new concept of organizational development [11].Knowledge management is also the process of managing knowledge by capturing, storing and disseminating knowledge using information technology media [12]. Knowledge Management consists of software systems as well as integrating and disseminating information for users for the learning process and making decisions [13].

To increase the usability of a system for the community, it is needed Usability of the system. In this study the authors used the simplest usability using the SUMI (Software Usability Measurment Inventory) questionnaire was used, a questionnaire developed by Cork Collage University [13]. Usability testing is a bond between the user and the system used where the user will use the system and find flaws [14].

2. Method
The system development method used is the method adopted from the KM System Life Cycle found in [15]. The method in Figure 1 consists of Analysis of Existing Infrastructure Evaluation, Knowledge Capture, Implement the KM system, Evaluation [16].
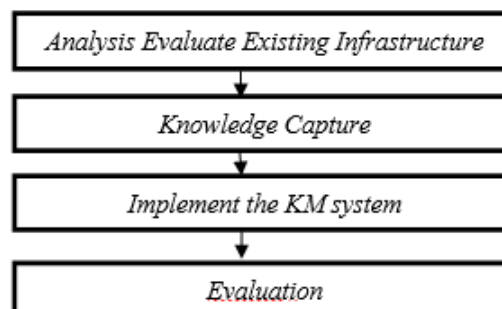

Figure 1. KM System Life Cycle

1.   Analysis Evaluate Existing Infrastructure
This Evaluate Existing Infrastructure process is the first stage of the KM System Life Cycle. This process is carried out by looking at the characteristics of library sistem information in University Pamulang.
2.   Knowledge Capture
Knowledge Capture is done by creating a knowledge folder on the application. Where each map is integrated and interconnected
3.   Implement the KM system and usability evaluation
Implementing the KM system is done by doing a system screenshot.
4.   Evaluation
Evaluation using the SUMI (Software Usability Measurement Inventory) questionnaire with 20 respondents and 60 questions.

3. Results and Discussion
a. Analysis Evaluate Existing Infrastructure
Analysis of system requirements, namely through analysis of data about library.

b. Knowledge Capture
The map of knowledge designed in this system consists of library in Pamulang University. Figure 2 is The knowledge map of library in Pamulang Universuty consist of About Us, Fasility, Code of Conduct, Service, Membership, and cooperation. an explanation of the library knowledge map contained in Figure 2 consists of several stages. the first about us, which tells about us, contains the vision, mission,

objectives and profile of the library. Second, the facilities consist of reading rooms, discussion rooms, computer rooms, book collections and the internet. Third, the Rules of Procedure consist of lending procedures, sanctions and fines. The Fourth Service, consisting of operational services. The Fifth Membership, consisting of membership requirements and library-free.
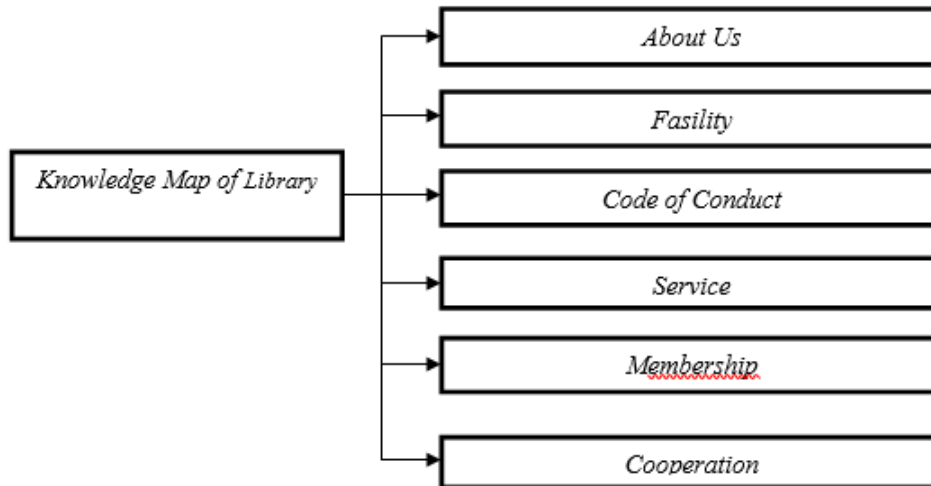
Figure 2. Knowledge Map of library in Pamulang University

c. Implement the KM system

Figure 3 is implementing the KM system and the starting page of the Pamulang University library. Every user who will use the library application must open this page, where the user must log in first. so that users can enjoy all Pamulang University's online library facilities.

Figure 3. Implement the KM system

d. Evaluation

The next stage the respondents were asked to provide responses to each question from the SUMI questionnaire [17]. The score used for each response is different, 4, 2, 0 for the agree, don't know and disagree responses to the categories of effectiveness, efficiency and satisfaction. The number of questions given to respondents consisted of 30 questions that had 10 questions in each category.

After that the results in each category will be multiplied by 2.5. SUMI questionnaire measurement in the form of assessment with a scale of 0-100. The final score of each category uses the median on each ordered value given by the respondent to get the results of the use of the prototype system. According to SUMI's provisions, if the median measurement results are less than 50, this means that they are still

below average. Table 1 is the Table Effectiveness category for students. Table 1 has the values of 95, 80, 95, 75, 90, 95, 80, 95, 90, 80.

Table 1. Effectiveness Category for Students

Effectiveness Category									
1	2	3	4	5	6	7	8	9	10
95	80	95	75	90	95	80	95	90	80

Table 2 is the Efficiency category for students table. This table also has a value 90, 100, 65, 70, 100, 85, 45, 65, 80 and 40.

Table 2. Efficiency Category For Students

Efficiency Category									
1	2	3	4	5	6	7	8	9	10
90	100	65	70	100	85	45	65	80	40

The last table for students is Table 3. Table 3 above is the satisfaction category for students. Table 3 has values of 90, 80, 90, 60, 65, 80, 70, 60, 80, 65.

Table 3. Satisfaction Category For Students

Satisfaction Category									
1	2	3	4	5	6	7	8	9	10
90	80	90	60	65	80	70	60	80	65

The combination of the three tables for students is Table 4. Table 4 is The results of SUMI questionnaire calculations for students. Where table 4 produces a median above the average of 90, 75 and 75.

Table 4. The Results of SUMI Questionnaire Calculationsfor Students

User	Responden		
	Effectiveness	**Efficiency**	**Satisfaction**
1	75	40	60
2	80	45	60
3	80	65	65
4	80	65	65
5	90	70	70
6	90	80	80
7	95	85	80
8	95	90	80
9	95	100	90
10	95	100	90
Med	90	75	75

After analyzing the students, the next step is usability analysis for lecturers about the use of Pamulang University library. Table 5 is an Effectiveness category for lecturers table. Table 5 is the initial stage of assessment of lecturers with the results of 100, 80, 95, 75, 85, 95, 80, 95, 90, 80.

Table 5. Effectiveness Category for Lecturers

Effectiveness Category									
1	2	3	4	5	6	7	8	9	10
100	80	95	75	85	95	80	95	90	80

Table 6 is the Efficiency category for lecturers table. This table is the result of the second usability analysis for lecturers. These results have values 90, 100, 65, 90, 100, 90, 45, 65, 90, 40.

Table 6. Efficiency Category for Lecturers

Efficiency Category

1	2	3	4	5	6	7	8	9	10
90	100	65	90	100	90	45	65	90	40

The satisfaction category for lecturers is in Table 7. Table 7 is a stage 3 analysis of lecturers where this table has values of 90, 82.5, 90, 60, 65, 80, 70, 60, 80, 65.

Table 7. Satisfaction Category for Lecturers

Satisfaction Category									
1	2	3	4	5	6	7	8	9	10
90	82.5	90	60	65	80	70	60	80	65

Table 8 is the results of SUMI questionnaire calculations for lecturers. Table 8 is the final score for lecturers in the form of a median for each category of effectiveness, efficiency and satisfaction found in SUMI. The value of each category is 90, 90, and 70 meaning that the usability on the prototype of this system is good. Because when the measurement results are below average, it needs to be improved. This needs to be done to improve the quality of a website that is used [3].

Table 8. The results of SUMI questionnaire calculations for lecturers

User	Responden		
	Effectiveness	**Efficiency**	**Satisfaction**
1	75	40	60
2	80	45	60
3	80	65	65
4	80	65	65
5	85	90	70
6	90	90	80
7	95	90	80
8	95	90	82.5
9	95	100	90
10	100	100	90
Med	90	90	75

4. Conclusion

This research is an analysis of the knowledge management system with a usability approach to the system. The system analyzed is library in Pamulang University. The analysis used uses the adoption of the Knowledge Management System Life Cycle (KMSLC) method with the usability approach through Software Usability Measurement Inventory (SUMI) using a minimum of 20 respondents. 10 responden for students and 10 responden for lecturers. Usabiliy results found that the library used is in the good category where the results of the questionnaire show the number 90 for effectiveness, 75 for efficiency and 75 for satisfaction for students and 87,5 for effectiveness, 90 for efficiency and 75 for satisfaction, for lecturers.The results of the respondents above average, the application used is in the good category.

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