Hospital Quality Control System Development

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Hospital Quality Control System Development

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Abstract. Hospitals in Indonesia have a very important role in maintaining public health. Good in service and management of the hospital is the key to maintaining and building public trust. In this case, the directors have a very important role to oversee every activity in the hospital. The directors who have guidelines in the form of a dictionary of hospital performance indicators. This research aims to build a quality control system for a hospital in Indonesia. The controlling system is built using the Analytic Hierarchy Process (AHP) method. This system is expected to be able to help directors in the calculation of hospital quality. Then be used as a reference to provide the evaluation to each section in the hospital. The result of this study is a model of Hospital Quality Control System. This system is able to facilitate the directors to control each part of the hospital, as well as facilitate the head of the department in filling data into the system so that the evaluation and decisions given can be optimal.

1. Introduction

Hospital is one part of the service industry that must maintain the quality of its services. Nowadays, the information system/information technology has an innovative impact on all aspects of hospital services. Almost all of the hospital services are able to meet the needs and demands of their consumers in a more effective and efficient manner [1]. Hospital has a very important role in maintaining the health of the community, of course, custody is followed by quality of the Hospital which should be improved and maintained so that people who seek treatment get maximum results. Such as in writing in RI HEALTH MINISTER NO. 1040 / Menkes / SK / XI / 1992 dated November 19, 1992, there are annotations in which mentioned the need to enhance the organization and working procedures at Hospital [2-4]. There are indicators that need to be considered in the improvement and maintenance of the quality, as stated in the Dictionary of Performance Indicators Hospital and Institute, published by the Ministry of Health Directorate General of Health Efforts in which there are 92 indicators divided into 49 areas of clinical and managerial area 43 where each of these indicators should be taken to ensure that the quality of hospital maintained and increased [5-8].

Directors are directly responsible for the overall quality of the hospital has conducted the measurement of quality, but there is a problem where directors often have difficulty in measuring quality because data is so much that it makes the calculation process takes a long calculation it is impacted on evaluations conducted become ineffective due to the time required for evaluation. the decision is gifted on each part becomes constrained due to time constraints of directors in delivering decisions to the part that has the problem. To overcome the above problems it will be built an application based desktop, uses methods Analytic Hierarchy Process (AHP) which AHP is used to give a recommendation decision to the directors in order to assist the directors in accelerating the calculation of the quality and decision making which parts need to be evaluated and the evaluation of

what given to the part, that this application will alert you if there is a part that is problematic, this application will also provide reports either partially or in whole be it in the form of a chart or list of evaluations that have been conducted in each of these parts.

The purpose of this research is to build a system for quality control of hospitals in Indonesia so that directors can control every part of the hospital. Build a control system using the Analytic Hierarchy Process (AHP) method.

2. Method

This study is an exploratory study method, that's based on in-depth literature study and observation. There are phases of this study. The first phase is the identification of the problem of the hospital that is the object of research. The hospital must be experiencing hospital quality control problems. Then, collecting data by observation, interview and documentation study. The second phase is the identification of hospital quality. This phase is identifying hospital indicators and sub-indicators. This identification refers to the Dictionary of Performance Indicators Hospital and Institute. Then proceed to the phase identification of the hospital department job desk by observation, interview, and documentation study. The next phase is, scoring for each indicator and sub-indicators of the hospital quality using the Analytic Hierarchy Process (AHP) approach. The last, conduct system analysis and design of the hospital quality control system with an object-oriented approach.

3. Results and Discussion

The difficulty in measuring hospital quality is the main problem encountered in this study. The directors have difficulty in data collection and evaluation process. The other problem in this study is the difficulty directors in overseeing the performance of each section in the hospital. Analytical Hierarchy Process (AHP) is used in this case is to group all indicators by category. The scores will be grouped based on Table 1 Criteria Category Dictionary Indicator [9-10].

Databases in this study are used to store data in a structured, so as to facilitate the processing of data for the purposes of hospital quality. The report of hospital quality control is the result of calculation of all the systems that are on the system, the form of the report in addition to the file is in the form of a warning if there is the problematic part, aim to give a warning to directors remedy quickly evaluate the part of the hospital so that the quality can be maintained at a good level. Criteria determined by each assessment category dictionary indicators that have much in common in the delivery range in assessment scores, then further ranked by calculating the difference in scores for each criteria category [10]. It will look like in Table 1.

Table 1. Criteria Category Dictionary Indicators

Critera	Scale	Ranked
Poor	0 - 25	4
Sufficient	26 - 50	3
Good	51 - 75	2
Excellent	75 - 100	1

The main purpose of hospital quality control application is to measure the quality of the hospital, which was measured based on 16 categories derived from the Dictionary of Performance Indicators Hospital and Institute. Each indicator has assessment criteria respectively but in scoring each criterion base on 4 criteria so that each category can be assumed as categories that have four criteria so that every category possess the following criteria [10]:

1. Excellent
2. Good
3. Sufficient
4. Poor

The hierarchical structure of measuring the quality of a hospital can be seen in Figure 1.

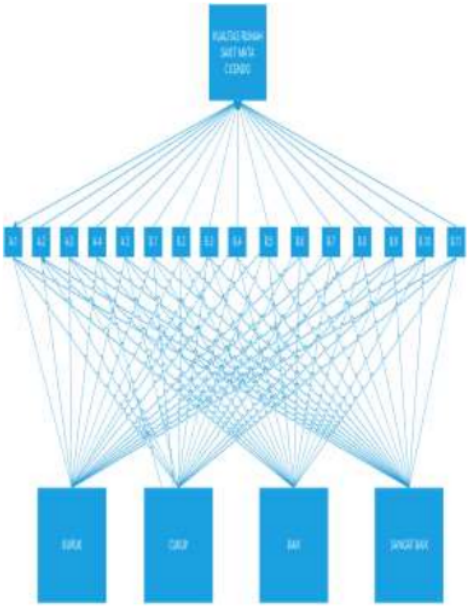

Figure 1. Problems Faced hierarchy

The next step is creating a pairwise comparison matrix as well as the assumption of the case by using the scale of priorities in Table 2.

Table 2. Priority scale

Intensity Interests	Meaning	Explanation
1	Both elements are equally important	Two elements have equal influence on the destination
3	Elements that one a little more important than the other elements	Experience and judgment slightly contribute to an element other than the elements.
5	Elements which one is more important than the other elements	Experience and judgment in very strong support of the elements other than the elements
7	One element is obviously more important than the absolute other elements	One strong element supported and dominant look daam practice
9	One absolutely essential element of the other elements	Evidence to support one element against another element has the highest possible degree of confirmation strengthens
2,4,6, and 8	Value - a value between 2 values adjacent consideration	This value is given when there are two compromises between the two options.

To determine the priority scale is obtained by sorting the categories based on the number of subcategories from least to most (See Table 3).

Table 3. Priority Scale Sequence Based on Total Sub Category

N0	Category	Number of Sub Categories	Priority scale
1	B.11 Accounting	1	9
2	B.9 IT Level	1	9
3	B.7 Human Resource	1	9
4	B.1 Utilisation	1	9
5	B.5 Level of resource reliability	2	8
6	B.4 Follow up	2	8
7	B.2 Cutomer satisfaction	2	8
8	B.10 Education	3	7
9	B.8 Facilities and infrastructure	3	7
10	A.5 Quality control	3	7
11	A.4 Procedure	3	7
12	B.6 Promotif dan Preventive	4	6
13	A.1 Obedience	7	5
14	A.2 Infection control	8	4
15	B.3 Timeliness of service	23	2
16	A.3 Achievement of medical indicators	28	1

Figure 2 until Figure 5 shows the results of the analysis and design of the hospital quality control system. Figure 2 shows how the interaction between users and hospital quality control system. Figure 3 shows the examples of interaction between user and system in the evaluation process.

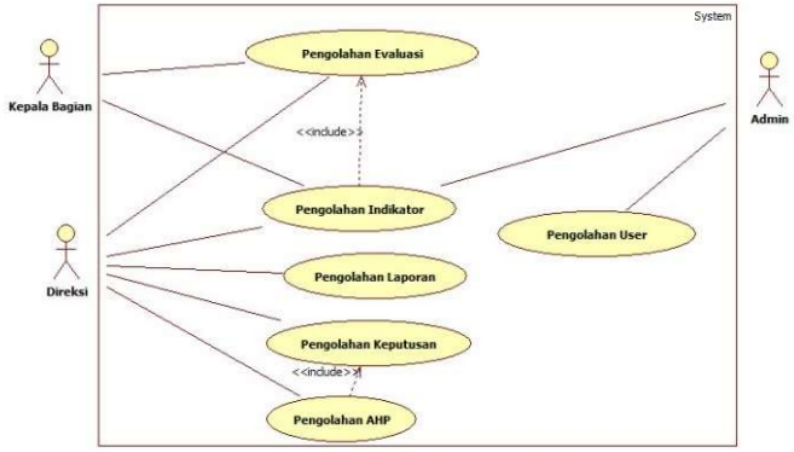

Figure 2. Use Case Diagram

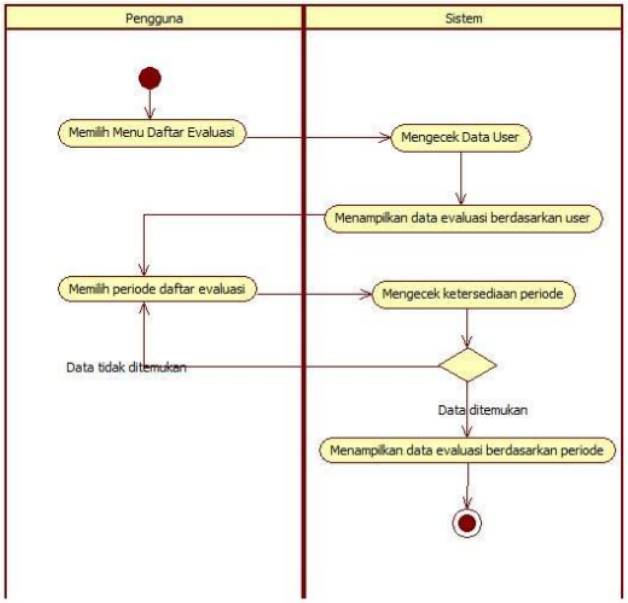

Figure 3. Activity Diagram of Evaluation

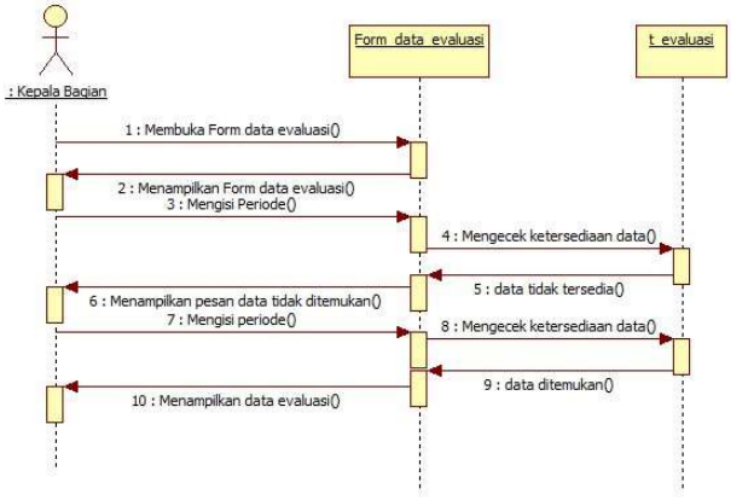

Figure 4. Sequence diagram of the evaluation

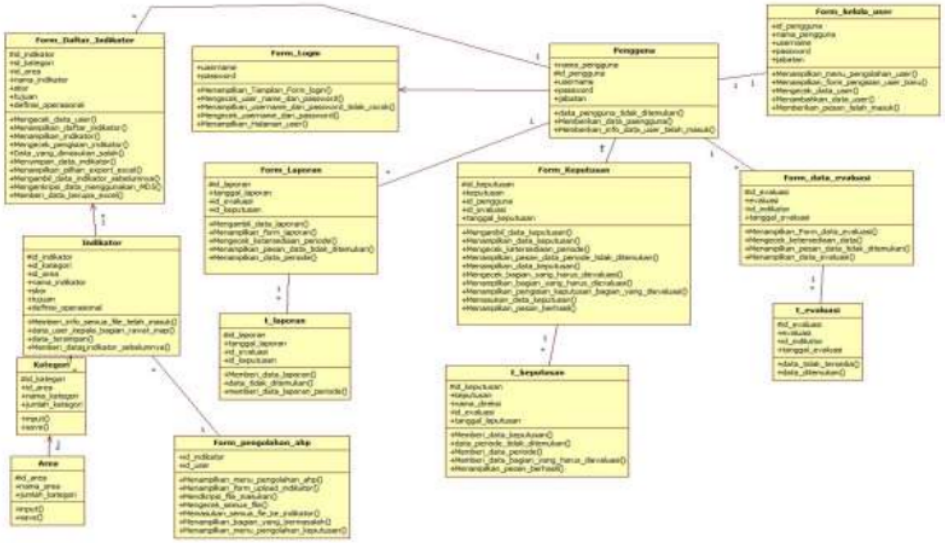

Figure 5. Class Diagram

4. Conclusion

After doing the analysis, design, implementation, and testing of the system, then the conclusion of the Hospital Quality Control Application is more easier to measure the quality of hospital-based on indicators contained in the Dictionary of Performance Indicators Hospital and Institute, the Board of Directors did not find it easy to monitor the performance of each section in the Eye Hospital Cicendo, and the Board of Directors is easier to give advice and evaluation of the head section, as well as providing decision the relevant section based evaluation.

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