DEVELOPMENT OF HOSPITAL QUALITY CONTROL (HQC) AT CICENDO EYE HOSPITAL BANDUNG

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ABSTRACT

Cicendo Eye Hospital designated by the government as National Eye Centre possess a very important role in safeguarding public health, especially in the way the health mata.Pelayanan and strong management is key in maintaining and building trust masyarakat.Dalam this case the directors possess a very important role to oversee any activities contained in the hospital, the directors who have guidelines in the form of performance indicators dictionary hospitals and centers were issued by the government on January 13, 2015 a reference in assessing the performance of homes built sakti.Controling system method using the Analytical Hierarchy Process (AHP).

AHP is a method of decision-making by having various alternatives and has many influential factor in perhitungan.Thorugh this method is applied to the HQC applications is expected to assist the directors in the calculation of the hospital's quality will be used as a reference to give evaluation to every section in hospital .Calculaton AHP is to get the maximum value and the minimum limit of hospital quality indicators based dictionary, the values obtained from the grouping of categories based on the number of indicators which amounts to 92 indicators grouped into 16 categories, each indicator has a value in it that is inserted by the head part The Eye Hospital Cicendo.Tools software development on these systems using object oriented methods with Unified Modeling Language (UML) to describe the functional and flow data contained in the system ini.

After pass Black Box testing and testing Betha with interview with several heads parts and directors. Results from this study is the application is able to facilitate directors for Controlling each part in Cicendo Eye Hospital, as well as facilitate the filling head of the data into the system, so that the evaluation and decision can be given optimal.

Keywords: Analythical Hierarchy Process, Controling, Hospitals, Quality

1. INTRODUCTION

Cicendo Eye Hospital in Bandung stands on an area of 11,400 m2 with a building area of 13832.9 m2, consisting of 8 main building includes the installation of outpatient, inpatient, surgical installation, installation support, office, classroom and research facilities , As National Eye Center and the Hospital of the State Class A, Cicendo Eye Hospital in Bandung has many advantages in terms of completeness of supporting facilities in terms of both medical and non-medical.

Cicendo Eye Hospital designated by the government as a National Eye Centre possess a very important role in maintaining the health of the community, of course custody is followed by quality Eye Hospital Cicendo 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-annotation in which mentioned the need to enhance the organization and working procedures Cicendo Eye Hospital, it can be used as a reference for the RSMC in improving while keeping quality from Hospital.There is 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 each of these indicators should be taken to ensure that the quality of RSMC maintained and increased.

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 . decision is givted 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 destkop, uses methods

Analythic 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 .Aplication called the Hospital Quality Control (HQC) to facilitate the user in mind.

1.1 Information system

The information system is a collection of parts or components or subsystems are part of the system itself that has a job and the same goal, each of these information systems have certain functions that affect the overall process.

1.2 Quality Control

In engineering and manufacturing, quality control or quality control involves the development of a system to ensure that products and services are designed and manufactured to meet in engineering and manufacturing, quality control or quality control involves the development of a system to ensure that products and services are designed and manufactured to meet or exceed the requirements of the customers and the manufacturers themselves. These systems are often developed in conjunction with businesses or other engineering disciplines with cross-functional approach. ISO 9000 and TQM (Total Quality Management) are examples of standards and approaches that are used for quality control.

Quality control (Quality Control), or QC for the acronym, is a process that in essence is to make the entity as an observer the quality of all the factors involved in production activities. There are three aspects emphasized in this approach, namely:

1. Elements such as controls, job management, processes are defined and has been managed well, integrity and performance criteria, and identification records.
2. Competence, such as knowledge, skills, experience, and qualifications.
3. Elements software, such as staffing, integrity, confidence, organizational culture, motivation, team spirit, and quality relationships.

The scope of control includes the inspection of products, where each product is checked visually, and usually such checks using a stereo microscope to get the fine detail before the product is sold to the external market. Someone whose job is to oversee the (inspectors) will be given a list and description of the deficiencies of product defects that can not be accepted (not released), such as cracks or surface defects. The quality of the output will be at risk of disability if one of these three aspects are not fulfille or exceed the requirements of customers and the manufacturers themselves. These systems are often developed in conjunction with businesses or other engineering disciplines with cross-functional approach. ISO 9000 and TQM (Total Quality Management) are examples of standards and approaches that are used for quality control.

1.3 Analythical Hierarchy Process (AHP)

AHP is a method break down complex problems / complicated in situations that are not structured into component parts. Arranging parts or variable composition becomes a form of hierarchy, then provide a numerical value for the subjective assessment of the relative importance of each variable and synthesize assessment to which variable has the highest priority that will affect the settlement of the situation. AHP combines considerations and personal judgment in a logical way and influenced the imagination, experience, and knowledge to construct a hierarchy of a problem that is based on logic, intuition and experience to provide consideration. AHP is a process to identify and provide an estimate of the overall system interaction.

2. CONTENTS OF RESEARCH

2.1 Problem Analysis

The difficulty in measuring the quality directors Cicendo Eye Hospital is the main problem encountered in this study, the directors have difficulty in measuring the quality caused by long time teralu in data collection and evaluation process of each part in the decision Eye Hospital Cicendo.Selain of the difficulty directors in overseeing the performance of each section in the Eye Hospital Cicendo, because each piece will submit the data to the beginning of the month, and any data provided to directors in the form of data that has not been processed, it is difficult for directors to oversee the development of each section contained in the hospital. The next thing is the difficulty of directors diperhaikan in giving the decision to every part of the evaluation based on the Dictionary of Performance Indicators Hospital and Balai.Direksi on these issues so have little time in reaching a decision directly, so often given evaluation decisions are sometimes not given to each section.

2.2 Analysis Method of AHP Against Case

AHP is used in this case is to group all indicators by category, then add up all the indicator value perkategori then divided the number of indicators in each category so that the scores will be grouped based on Table 1-0 Criteria Category

Dictionary Indicator, henceforth each category sought to value TPV obtain eigenvalues will be multiplied by the eigenvalues of Criteria Kategori.Setelah obtain the product of the two eigenvalues then the next step searching for the maximum and minimum values of the system, these two values will be used in determining the upper limit and lower limit of hospital quality, value the product of the two eigenvalues are going in for the maximum value of the quality of the hospital, then the value will be multiplied by 100% to get the quality of hospital units per cent.

Databases in this study is used to store data in a structured, so as to facilitate the processing of data for the purposes of hospital quality.

The report issued by the application HQC is a file that can later be printed by the printer, the report contained in the HQC 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 bentu assessment scores, then further ranked by calculating the difference in scores for each criteria category, it will look like in table 1-0.

Tabel 1 Criteria Category Dictionary Indicators

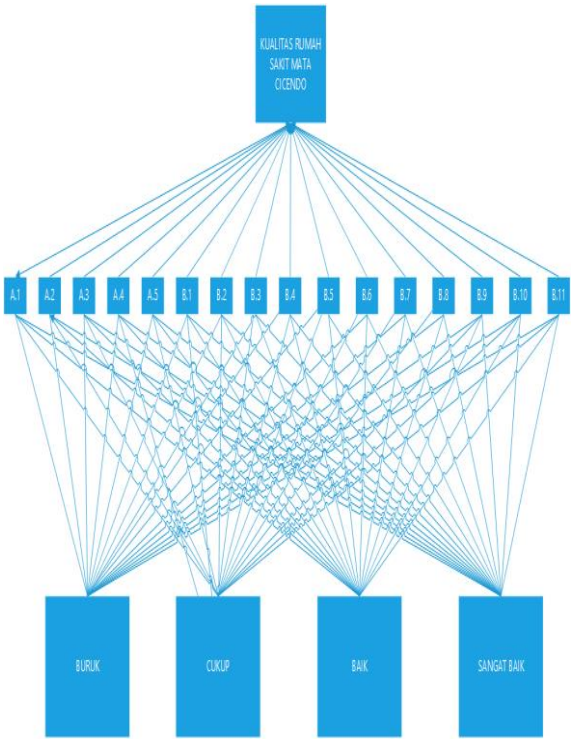
Critera	Scale	Ranked
Poor	0 - 25	4
Sufficient	26 - 50	3
Good	51 - 75	2
Excellent	75 - 100	1

2.3 Creating Structure Hierarchy

The main purpose of this application is to measure the quality HQC Eye Hospital Cicendo Bandung.Kualitas was measured based on 16 categories derived from the Dictionary of Performance Indicators Hospital and Institute, in a dictionary indicator each indicator has assessment criteria respectively but in scoring each criterion mngacu on 4 criteria so that each category can be assumed as categories that have four criteria so that every category possess the following criteria:

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

Asusmsi based on the hierarchical structure of measuring the quality of a hospital can be seen in Figure 1.0



Gambar 1 Problems Faced hierarchy

2.4 Creating 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 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
2,4,6,8	Value - a value between 2 values adjacent consideration	This value is given when there are two compromise between the two options.
reverse	If activity i got one point compared to activity j, then j has a value kebalikanya with i	

Wherein if the matrix is symmetric with diagonal then it will be worth the opposite. Value comparisons against the same criteria are worth 1. To determine the priority scale is obtained by sorting the categories based on the number of sub categories from least to most.

Table 3 Priority Scale Sequence Based on Total Sub Category

N0	Category	Number of Sub Categories	Priority scale
1	B.11 Keuangan	1	9
2	B.9 Level IT	1	9
3	B.7 Sumber Daya Manusia	1	9
4	B.1 Utilisasi	1	9
5	B.5 Tingkat Kehandalan Sumber Daya	2	8
6	B.4 Temuan Yang di Tindak Lanjuti	2	8
7	B.2 Kepuasan Pelanggan	2	8
8	B.10 Pendidikan	3	7
9	B.8 Sarana dan Prasarana	3	7
10	A.5 Pengendali Mutu	3	7
11	A.4 Prosedur Penanganan Sampel Uji	3	7
12	B.6 Promotif dan Preventif	4	6
13	A.1 Kepatuhan Terhadap Standart	7	5
14	A.2 Tingkat Pengendalian Infeksi di RS	8	4
15	B.3 Ketepatan Waktu Pelayanan	23	2
16	A.3 Capaian Indikator Medik	28	1

Thus the comparison criteria matrix can be formed from the priorities contained in Table 4

After TPV obtained the next step is to calculate the level of consistency of comparison matrix category, if the value of consistency can be tolerated consistency or calculation must be repeated in order to get a calculation with the consistency of less than 0.1. For the calculation of consistency (CI) is conducted in stages figure 5

Tabel 5 Nilai eigen

Category	TPV	Number of Columns	Max
A.3	0,24169636	3,504	0,84690403
B.3	0,19048712	5,377	1,02424923
A.2	0,11690557	11,098	1,29741804
A.1	0,08723239	15,37	1,34076187
B.6	0,06210277	20,99	1,30353713
A.4	0,04066883	28,82	1,17207569
A.5	0,04066883	28,82	1,17207569
B.8	0,04066883	28,82	1,17207569
B.10	0,04066883	28,82	1,17207569
B.2	0,02530132	40	1,0120529
B.4	0,02530132	40	1,0120529
B.5	0,02530132	40	1,0120529
B.1	0,01574913	54	0,85045278
B.7	0,01574913	54	0,85045278
B.9	0,01574913	54	0,85045278
B.11	0,01574913	54	0,85045278
Jumlah			16,9391429

After getting the results of the eigenvalues of each category, then the next will be sought eigenvalues to a minimum and maximum quality to be used as the upper limit and lower limit for the quality of hospital

Table 6 Eigen value Maksimum Quality

Category	Eigen Values
Kepatuhan Terhadap Standart	0,04066122
Tingkat Pengendalian Infeksi di RS	0,05449264

Capaian Indikator Medik	0,11266077
Prosedur Penanganan Sampel Uji	0,01895677
Pengendalian Mutu	0,01895677
Utilisasi	0,00734107
Kepuasan Pelanggan	0,01179358
Ketepatan Waktu Pelayanan	0,08879085
Temuan Yang di Tindak Lanjuti	0,01179358
Tingkat Kehandalan Sumber Daya	0,01179358
Promotif dan Preventif	0,02894767
Sumber Daya Manusia	0,00734107
Sarana dan Prasarana	0,01895677
Level IT	0,00734107
Pendidikan	0,01895677
Keuangan	0,00734107
Jumlah	0,46612523

Table 6 eigen value obtained from TPV of categories multiplied by TPV of kirteria based on the amount of the value obtained in that category, as in column level IT obtained a score of 100 for the category of table 3-17 Level IT based TPV for the value of the criterion is 0.466125226 Eigen value can be calculated for maximum Quality Level IT is
(TPV Category x TPV criteria)
X 0.01574913 0.46612523 = 0.04066122

According to Table 6 is the sum of all categories 0.466125226 this figure shows the maximum value of kulaitas great-value or range of values thus be concluded criteria 75-100.Dengan maximum value of hospital quality eye health indicator Cicendo dictionaries and hall are 0 , 466 125 226.

Table 7 Eigen value Minimum Quality

Category	Eigen Values
Kepatuhan Terhadap Standart	0,00835855
Tingkat Pengendalian Infeksi di RS	0,01120181
Capaian Indikator Medik	0,02315918
Prosedur Penanganan Sampel Uji	0,00389686
Pengendalian Mutu	0,00389686
Utilisasi	0,00150907
Kepuasan Pelanggan	0,00242436
Ketepatan Waktu Pelayanan	0,01825235
Temuan Yang di Tindak Lanjuti	0,00242436
Tingkat Kehandalan Sumber Daya	0,00242436
Promotif dan Preventif	0,00595064
Sumber Daya Manusia	0,00150907
Sarana dan Prasarana	0,00389686
Level IT	0,00150907
Pendidikan	0,00389686
Keuangan	0,00150907
Jumlah	0,09581932

Table 7 eigen value obtained from TPV of categories multiplied by TPV of kirteria based on the amount of the value obtained in that category, as in column level IT obtained a score of 0 to Level IT category based on Table 7 the TPV value for the criterion is 0.095819316 Eigen value can be calculated for a minimum Quality Level IT is
(TPV Category x TPV criteria)
0.095819316 x 0.01574913 = 0.00150907

According to Table 7 minimum value of kulaitas great-value or range of values 75-100 criteria is 0.09581932, thus it can be concluded minimal value of hospital quality eye health indicator Cicendo dictionaries and hall is 0.09581932.

Table 8 Eigen value Case

Category	Eigen Values
Kepatuhan Terhadap Standart	0,014024
Tingkat Pengendalian Infeksi di RS	0,018794
Capaian Indikator Medik	0,038856
Prosedur Penanganan Sampel Uji	0,011277
Pengendalian Mutu	0,006538

Category	Eigen Values
Utilisasi	0,001509
Kepuasan Pelanggan	0,002424
Ketepatan Waktu Pelayanan	0,030623
Temuan Yang di Tindak Lanjuti	0,004067
Tingkat Kehandalan Sumber Daya	0,004067
Promotif dan Preventif	0,009984
Sumber Daya Manusia	0,002532
Sarana dan Prasarana	0,003897
Level IT	0,007341
Pendidikan	0,006538
Keuangan	0,001509
Jumlah	0,163980606

Table 8 eigen value obtained from TPV of categories multiplied by TPV of kirteria based on the amount of the value obtained in that category, as in the education field 41.6666667 scores obtained with a rating of 3 for category based TPV table 3-23, the value for the criterion is 0 , 160762076, it can be calculated for Eigen value assuming Quality Education is a case for

(TPV Category x TPV criteria)

0.04066883 x 0.160762076 = 0.006538006

According to Table 8 values of kulaitas hospital Cicendo is 0.163980606, thus it can be concluded minimal value of hospital quality eye health indicator Cicendo dictionaries and hall is 0,195234.Selanjutnya calculate using percentages so the formula.

Quality Percentage = (Value Quality / Value Makimal Quality) x 100%

Quality Percentage = (0.163980606 / 0.466125226) x 100%

Quality Percentage = (0.078248442) x 100%

Percentage Quality = 36%

The above calculation shows that the quality of Cicendo Eye Hospital for assuming the dictionary still stands at 36%, with details based on grouping criteria contained in Table 2 is as follows.

1. Excellent = 1 category.
2. Good = 1 Category
3. Sufficient = 11 Categories
4. Poor = 3 Categories

The above data obtained from classifying any category contained in Table 8 in accordance with the ratings listed in Table 2. It can be concluded from the above data that the quality of the Hospital Cicendo to figure 36% is still in the category of Self.

2. PENUTUP

After doing the analysis, design, implementation, and testing of the system, then the conclusion of the Hospital Quality Control Application is as follows:

1. Direski easier to measure the quality of hospital based on indicators contained in the Dictionary of Performance Indicators Hospital and Institute.
2. The Board of Directors did not find it easy to monitor the performance of each section in the Eye Hospital Cicendo.
3. The Board of Directors is easier to give advice and evaluation of the head section, as well as providing keuptusan the relevant section based evaluation.

Apart from the advantages in the use of software that has been built, a development of software products and certainly has various drawbacks, but it is able to be developed in the future. As for suggestions in the construction of Hospital Quality Control application is as follows:

1. The addition of additional features indicator data.
2. The otomasisasi in checking the evaluation.
3. The addition of a reference parameter in the performance monitoring features of each part on the application HQC.

Based on the above research that can be proved AHP can be used as a means of calculating the quality of an institution, as well as get the maximum lenigh calculation because the calculation is based on the criteria contained in a hierarchical structure.

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