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DECISION SUPPORT SYSTEM IN THE ELECTION OF THE OSIS CHAIRMAN

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ABSTRACT

Election of the Chairman of the council is a routine activity undertaken annually . This council was established with the purpose of connecting and delivering inspiration and aspirations of the students to be able to participate and help the teachers and staff in running programs and competitions are held. To help the student /student in selecting the Chairman of this council , we need a decision support system that is able to take decisions quickly , targeted and accountable by using *Analytic Network Process (*ANP). *Analytic Network Process* (ANP) method is used to determine the weight criteria according to the decision makers. Decision Support System is expected to help and provide an alternative in determining a person is worthy and deserve to be chairman of the council.

Keyword : First keyword; : *Decision Support System* ,ANP, *Eletion*

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1. INTRODUCTION

The development of information technology has been growing rapidly. This development is marked by the existence of government agencies or companies that use information technology. One method that is quite developed is the Decision Support System method. The decision-making system plays an important role in the performance of an organization. Ability in the decision-making process quickly, right on target, and can be accounted for is the key to success in the future.

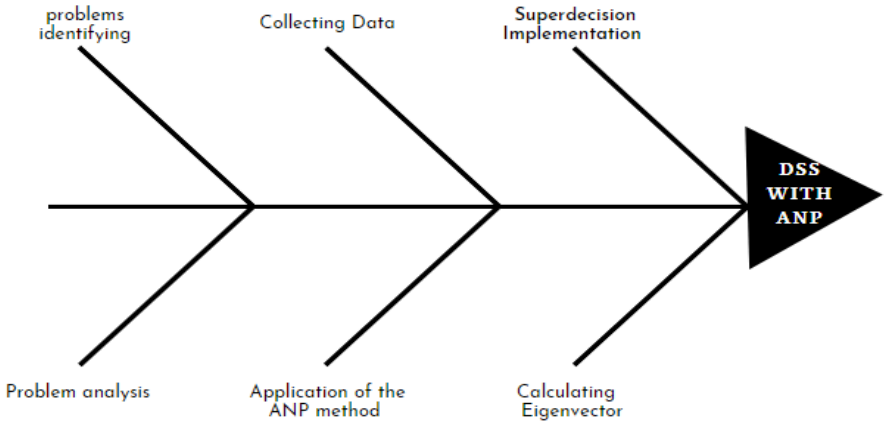
In the selection of the OSIS chairman at SMK Negeri 2 Gunung Talang, students are usually required to send one person from each locality to become a candidate for the OSIS chairman and the election is carried out by the students concerned. The problem is if the students who are sent do not meet the predetermined criteria whether the organization will survive or advance. For this reason, a Decision Support System (DSS) is needed that can assist students in determining whether a person is appropriate and worthy to become an OSIS Chair in accordance with predetermined criteria.

The method used in the selection of the student council chair is the ANP (Analytic Network Process) method, which is a mathematical theory that allows a decision maker to deal with interrelated factors (dependence) and systematic feedback. ANP is a method of making decisions based on many criteria or Multiple Criteria Decision Making (MCDM) developed by (Thomas L Saaty). This method is a new approach to the qualitative method which is a further development of the Analytic Hierarchy Process (AHP) method. Decision making in the selection of the chairman of the Intra-School Student Organization (OSIS) uses the Analytic Network Process (ANP) method, the software used is Superdecisions. With this Superdecisions software we can determine clusters, namely alternatives, facilities/infrastructure, Activities and Other Criteria.

2. RESEARCH METHOD

To get optimal research results, the researchers used the following stages: in the form of a fishbone diagram as shown in Figure 1

Fig 1. Research Stage Diagram



1. Defining the Problem
   At this stage the aim is to find problems that exist in the Decision Making System in the current OSIS Chair election. This stage must be stated clearly so that it can be understood and agreed upon by the user.
2. Identify Scope
   At the identification stage, this scope is carried out to determine what problems exist in the OSIS chairman election system and provide boundaries for the problems to be studied.
3. Analyzing the Problem
   At this stage analyzing the problem aims to analyze the criteria and alternatives for decision making in the selection of the OSIS Chair so that from the analysis of the problem one can get an appropriate problem solving.
4. Setting Goals
   At this stage it aims to provide convenience for students in selecting the OSIS Chair at SMK N 2 Gunung Talang and knowing how to make decisions using the Analytic Network Process (ANP) method.
5. Collecting Data
   At this stage the research collects data from various available sources, one of which is a questionnaire filled out by respondents. In obtaining data.
6. Application of the Analytic Network Process (ANP) Model
   The application of the Analytic Network Process (ANP) Model by weighting the criteria, sub-criteria, and alternatives and performing pairwise comparisons between criteria, sub-criteria and alternatives.
7. Implementation of Superdecisions
   Designing Clusters and Nodes using Superdecisions Software to get the final results of the analysis.
8. Calculating Eigenvectors And Performing Inconsistency Analysis
   Calculates the results of the pairwise comparison matrix multiplication of each criterion to get the results of the priority weight values.

3. RESULTS AND DISCUSSION

After conducting research at the Vocational High School (SMK) N 2 Gunung Talang, the selection of the OSIS chairman has been carried out officially from the school. major. Then from the class leader of each local or department who determines the representative from each local or department to nominate himself as the student council president.

A. Criteria Paired Comparison Matrix

In the Analytic Network Process (ANP) method, pairwise comparisons are performed. The decision starts with loading a view of the all network results. The network shows the existing criteria and sub-criteria, then a number of pairwise comparisons are multiplied by each other to get the factor and eigenvalues.

Table 3.1 Results of Comparison of Nodes in Alternative Clusters in the Election

of Student Council Chair

ALTERNATIVE																		
Criteria 1	**Paired Comparison Value**																	**Criteria 2**
Student	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Prestasi
Student	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Student
Achievement	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Student
The Highest Score	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Achievement
The Highest Score	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Student
The Highest Score	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Student

From the results above, it can be seen that the selection criteria for the candidate for the chairman of the Highest Score OSIS are more dominant than the SMK students themselves and so on, so that a pairwise comparison table is obtained in the alternative cluster consisting of the criteria for Highest Score, SMK Students, Achievement, Class I Students.

Table 3.2 Pairwise Comparison Matrix of Nodes in Alternative Clusters

Alternative	Nilai Tertinggi	Student	Student	Student
The Highest Score	**1**	**1/7**	**3/1**	**1/5**
Student	**7/1**	**1**	**3/1**	**1/1**
Achievement	**1/3**	**1/3**	**1**	**1/1**
Student	**5/1**	**1/1**	**1/1**	**1**

Table 3.3 Comparison of Nodes in the Cluster of Facilities/Infrastructure in the Election of Student Council Chair

Infrastructure																		
Criteria 1	**Paired Comparison Value**																	**Criteria 2**
Room	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Lemari
Room	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Cupboard
Room	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	table
Cupboard	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	table
Cupboard	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Cupboard
table	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	table

Then the next step is to calculate the results of the paired criteria into a pairwise comparison matrix which is converted into decimal form. The results of the matrix multiplication process above are squared again to get the eigenvalues where the results are the same or close to the results of the first matrix and the results of the second matrix. After obtaining the priority value, then the value is used as a percentage (%) in order to find out the amount of each criterion weight.

Table 3.4 The weight of each criterion

0.186	**19%**
0.393	**39%**
0.248	**25%**
0.173	**17%**
1.000	**100%**

B. Analysis of the Results of the Analytic Network Process (ANP) Method

Obtained a priority scale for each criterion. In the first line for Facilities / Infrastructure with a value of 0.140 or 14%, the second line Activities with a value of 0.454 or 45% and the third line Other Criteria with a value of 0.406 or 41%.

Table 3.5 Priority Scale on each Criterion

Cluster	**toal**	**weight**
Alternative	1.000	100%
infrastructure	0.140	14%
activity	0.454	45%
est	0.406	41%
total	**2.000**	**2.000**

from the table above, it can be seen that the Alternative Cluster has the highest weight from the other clusters, which is 100%.

From the survey results, it can be seen that the selection criteria for the candidate for the OSIS Paskibra chairman are more dominant than the Scouts and so on, so that a pairwise comparison table is obtained in the cluster. The Activity Program consists of Paskibra, Scouts, PKS, and PMR. Then the next step is to calculate the results of the paired criteria into a pairwise comparison matrix which is converted into decimal form. The results of the matrix multiplication are summed by row, to get the eigenvalues of each criterion. The results of the matrix multiplication process are then squared again to get the eigenvalues where the results are the same or close to the results of the first matrix and the results of the second matrix. The results of the matrix multiplication are added up by row, to get the eigenvalues of each criterion.

Obtained a priority scale for each criterion. In the first row for Paskibra with a value of 0.10 or 10%, the second row for Scouts with a value of 0.15 or 15%, the third row for Clasmeting with a value of 0.35 or 35%, and in the fourth row for MOS with a value of 40%. Then calculate the maximum eigenvalue obtained by adding up the result of multiplying the eigenvalue by the number of columns.

The Consistency Index values are 0.690. Then the value of Consistency Ratio (CR) can be obtained 1.190.

4. CONCLUSION

From the results of the Decision Support System (DSS) analysis in the election of the OSIS Chair at SMK N 2 Gunung Talang using the Analytic Network Process (ANP) method, it can be concluded that:

1. To solve problems in the selection of the OSIS Chair, the authors use 4 Clusters, including: Alternatives, Facilities / Infrastructure, Activities and other Criteria.
2. Each of the Clusters has 4 Nodes, including:
   a. Alternative Clusters: Highest Value, Vocational High School Students, Achievements and Class I Students.
   b. Cluster of Facilities / Infrastructure : Room, Wardrobe, Wall and Desk.
   c. Activity Clusters: Paskibra, Scouts, Clasmeting, and MOS.
   d. Other Criteria Cluster: Appearance, Way of Talking, How to Get along and Skill / Ability.

3. Software Super Decisions has been able to meet the need to assist in determining the best candidate for OSIS Chair according to predetermined criteria.
4. By using the Analytic Network Process (ANP) method, it turns out that it can be used in the process of selecting the OSIS chairperson, because this method is able to make more objective comparisons, be able to predict data more accurately and the results achieved are more stable.
5. Based on the results of the Analytic Network Process (ANP) processing using Super Decision, the highest weighted value was obtained, namely Class 1 students with a value of 0.41574, and the second priority weight value, namely Vocational High School students with a value of 0.23728, the highest score with a value of 0.20749 and Achievement with a value of 0.13949.
6. The use of the Analytic Network Process (ANP) method is proven to be able to handle the effect of interdependence between criteria/sub-criteria so that the results of the weighting of the criteria become more objective and in accordance with the actual situation

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