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Implementation Of The Promothee Method In The Decision Support System to Determine The Learning Guide

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ABSTRACT

In learning to teach not only the students who evaluated the results of the study, the Tentor also evaluated the teaching and learning system, this is done to know the feasibility and quality of the tentor who teaches so that it is known which has a good and professional performance description. In determining the best sort order often appears subjectivity of decision makers, therefore there are often mistakes so that there is a problem that causes the effort to determine the order of the achievements of the tentor that will be rewarded, from this can cause jealousy for each tentor who feel himself best but do not get the award as it should. The Promethee method is a method used in multicriterion order determination or prioritization. The Promothee method is a very efficient and simple method, and is easy to implement compared to other methods of completing multicriterion-based problems. Testing the application of decision support system to determine the best tentor, in the decision to use the sample data results achieved in the following three ways: Leaving Flow, Entering Flow and Net Flow..

1. Introduction

Teaching and learning activities are the foremost thing in the world of education. Students are learners who seek knowledge in school or outside schools. Tentor is an educator who is the teacher, mentor, coach of his students. A professional tentor should control the materials they teach and be responsible for monitoring the students ' learning skills through evaluation. In learning to teach not only the students who evaluated the results of his study, the Tentor also evaluated the teaching learning system, this is done to know the feasibility and quality of the tentor who teach so that it is known to the tentor who have good performance and professional.

Appraisal and evaluation of the tentor conducted to know the influence of teaching tentor to his students. In Primagama Assessment and award awarding is often done with the aim to spur the performance of the Tentor in learning to teach and improve the performance of the Tentor. The determination of the best tentor has a certain judgment stipulated by the Primagama and Primagama have the criteria of who will be the best tentor.

In determining the best sort order often appears subjectivity of decision makers, therefore there are often mistakes so that there is a problem that causes the effort to determine the order of the achievements of the tentor that will be rewarded, from this can cause jealousy for each tentor who feel himself best but do not get the award as it should. So it takes a method of order determination or priority in multicriterion analysis.

2. Theorytycal Basis

A. Decision Support System

It is a system that presents information, modeled and manipulated data. The system is used to help make decisions in certain situations. In making the decision to use data for processing, the decision support application provides an easy interface, and can combine thought in decision making. The decision support system is developed not to automate decision making, but it provides an interactive device solution that allows it to be helpful in decision making using a variety of available analytical models.

B. Components of Decision Support system

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A decision support system has three sub systems that determine the technical capabilities of the decision support system, namely the database management subsystem, the model base management subsystem, and the dialogue software subsystem.

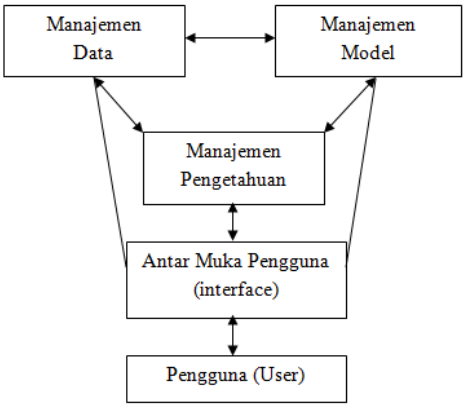

Fig 1. Components of Decision Support system

C. ***Preference Ranking Organization for Enrichment Evaluation Method***

MCDM has more than one criterion where the criteria make decisions with other decisions being trade-offs. This decision-making is done through the electoral process or by formulate attributes, objectives. Promethee is used to determine the most optimal decision of some alternative decision that has been formulated before. The Promethee method can only be applied if a decision maker can express preference between the given criteria.

Multicriterion Preference Index

Index preference Multicriteria is determined based on the average weight of the preference function Pi.

$$\omega(a,b) = \sum_{i=1}^{n} \pi_i \; p_i(a,b) : \forall\, a,b \in A$$

ω(a, b) is the intensity of the decision maker's preference stating that alternatives are better than alternative B with simultaneous consideration of all the criteria. It can be presented with a value between 0 and 1 value, with the following provisions:

a. *ω(a,b)= 0* indicates weak preference for alternative A > alternative B based on all criteria.
b. *ω(a,b)= 1* indicates strong preference for alternatives a > alternative B based on all criteria.

The preference index is determined based on the value of the outranking relationship on a number of criteria from each alternative. This relationship can be presented as an outranking value graph, its nodes are alternatives based on Assessment of certain criteria..

D. **Promethee *Ranking***

Preference direction calculation is considered based on index value:

a. Leaving flow

$$\omega^{+}(a) = \frac{1}{n-1} \sum_{x \epsilon A} \omega\,(a,x)$$

b. Entering flow

$$\omega^{-}(a) = \frac{1}{n-1} \sum_{x \epsilon A} \omega\,(a,x)$$

c. Net flow

$$\omega(a) = \omega^{+}(a) - \omega^{-}(a)$$

Keterangan:

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1. $\omega(a,x)$ = Show preference that the alternative is better than alternative x.
2. $\omega(x,a)$ = Show preference that alternative x is better than alternative
3. $\omega^{+}(a)$ = *Leaving flow*, used to determine the order of precedence on the Promethee I process using partial order.
4. $\omega^{-}(a)$ = *Entering flow*, used to determine the order of precedence on the Promethee I process using partial order.
5. $\omega(a)$ = *Net flow*, used to generate the final decision of order determination in resolving the issue resulting in a complete order.

3. Discussion

A. Data on the screening criteria

Data on the screening criteria is important data because it is a matter of being assessed on the tentor and having certain criteria that have been established by the Primagama. These criteria are what are the judgments on the tentor in determining the best of achievement. Here is the table data criteria to be assessed which are marked with the letter F1-F5 as in the table below:

Table 1.
Data on The Screening Criteria

Kriteria	**Keterangan**
F(1)	Discipline
F(2)	Performance
F(3)	Creative
F(4)	Responsible
F(5)	Cooperation

B. Analysis by Promethee Method

The Tentor in the Primagama are selected to determine the best Tentor to be achieved. The best Tentor that is accomplished Tentor is that if the Tentor gets the highest score will be promoted, it gets an additional class and is rewarded and charter. In the process of management and calculation of appraisal data in the need of Promethee method to get more effective and efficient results.

Promethee method is one of several methods of determining order or priority in multicriterion analysis, so in solving the problem of assessment of Tentor using Promethee method that in this case will give a recommendation aboor that achieve achievement with the criteria of assessment and weight that has been determined. Criteria and weights are required to perform calculations in Promethee method, so that the best alternatives will be obtained. The best alternative is the tentor which has the highest value of the summation of all the assessment criteria and the value of a predetermined weight.

The criteria of the screening or the above scoring criteria have been determined and determined by the Primagama, the assessment is conducted by reviewing the class directly and viewing the data of the existing tentor. The assessments on criteria A, B, C, D, E, determined to be appraisal or divided in value from the highest to lowest value, i.e. > = 90 as highest value, 89-80 as high enough value, 79-70 as enough value, 69-60 as low value, < = 59 as the lowest value. The above assessment has been determined by the Primagama party..

Below is the calculation of selection of best tentor determination by applying Promethee method as follows: Provides the value of each alternate (A-E) on each criterion (F1-F5) that is already specified. The table below is the assessment data table of each alternative A-E against all F1-F5 criteria with the values already obtained.

Table 2.
Alternate Data Tentor with Each Criteria

Criteria	Alternative				
	A	B	C	D	
F(1)	90	85	80	77	
F(2)	87	82	77	65	
F(3)	80	78	69	73	
F(4)	69	75	80	85	

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Table 3.
Conversion Rate Match Ranking

Criteria	Alternative				
	A	B	C	D	
F_1	5	4	4	3	
F_2	4	4	3	2	
F_3	4	3	2	3	
F_4	2	3	4	4	

Table 4.
Multicriterion Preference Index

	A	B	C	D
A		0,6	0,8	0,8
B	0,2		0,6	0,4
C	0,2	0,2		0,4
D	0,2	0,2	0,4	

Table 5.
Table of Promethee Method Rangking

Alternative	*Leaving Flow*	*Entering Flow*	*Net Flow*	Rangking
A	0,7	0,2	0,5	1
B	0,45	0,3	0,15	2
C	0,35	0,5	-0,15	3
D	0,3	0,5	-0,2	4

C. Design

A use case will describe a sequence of interactions between one or more actors on the system. In phase requirements The use Case model describes the system as a black box and the interaction between actors against the system in a form of narrative consisting of user input and response of the system. Each use case describes the behavior of some aspects of the system, without compromising its internal structure. During the creation of models use case in parallel must also be assigned objects involved are visible in each use case.

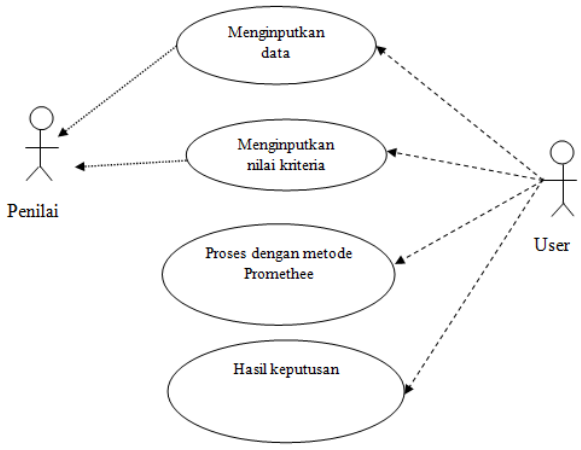

Fig 2. Diagram Use Case Decision Making

4. Conclusion

From the results of the study, the author concluded that the process of determining the best tentor is by a direct assessment to the class or a direct review of the class and data assessment Tentor. Decision Support System determines the best tentor by using Promethee method can determine the preference criteria of the five

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existing criteria and determine the alignment. Decision Support System determines the best tentor using the sample data achieved done in the following three ways: Leaving Flow, Entering Flow and Net Flow.

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