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Combination of MOORA and WASPAS Methods in Selecting the Best Hafidzoh

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ABSTRACT

The combination of the Multi-Objective Optimization method on the basis of Ratio Analysis (MOORA) and the Weight Aggregated Sum Product Assessment (WASPAS) is used by researchers in selecting the best hafidzoh so as to produce effective and efficient research objectives and make it easier for leaders to determine the best hafidzoh. Choosing the best hafidzoh is not an easy matter due to the large number of students and the large number of criteria given. Furthermore, the best students or candidates for hafidzoh are called alternatives, while the things that are assessed are called criteria. Based on the results of interviews and references that the researchers conducted, the criteria for helping the Chairperson of the Dzunnur'ain Simalungun Institute in determining the best hafidzoh were letter makhorijul, tajwid, itqon hifzd, adabul qiroah and Arabic. Meanwhile, the best alternative or candidate for hafidzoh is the total number of students in Lambaga Dzunnur 'ain, which is 30 students. Furthermore, researchers conducted analysis and calculations based on the formula of the MOORA method and the formula of the WASPAS method. The results of the analysis and calculations are that the Moora and WASPAS methods get the same best santri, namely the alternative name Santri 7, while for the second rank the alternatives obtained are santri 16 and santri 25.

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1. INTRODUCTION

Tahfidz Qur'an Foundation Dzunnur'ain Simalungun is an Islamic education school that has difficulty in determining the best female students in memorizing the Qur'an. Making the right and accurate choice is not an easy thing for decision makers. because in making decisions need a lot of consideration. considerations made so that the decision is right on target. as well as much-needed data, skills in data analysis, and suitability with the methods used [1][2].

Realizing how important it is in determining the right choice of Hafiz Quran, it is necessary to make an analysis that helps leaders in making decisions, such as a Decision Support System (DSS). Decision support systems have many methods that can help each leader decide or get his choice and the decision support system that researchers use [3][4][5] .

The decision support system method that the researcher uses to help solve the problems of the Tahfidz Qur'an Dzunnur'Ain Foundation in choosing the best hafidzoh is the Multi-Objective Optimization method based on Ratio Analysis (MOORA) and the Weight Aggregated Sum Product Assessment Method (WASPAS), where the researcher asks questions . answer directly to the leader in the form of student data, student scores, discuss criteria and alternatives [6][7][8].

Researchers also perform analysis and calculations according to the formulation of their respective methods. as for the value of each criterion as many as 5 criteria, namely makhorijul letters, tajwid, itqon hifzd, adabul qiroah and arabic [9].

As for the alternative, all candidates for memorizing the Qur'an are the best, meaning all students who study at the Tahfidz Qur'an Foundation Dzunnur'ain Simalungun [10].

Decision making is a process of choosing an action to achieve a goal or some desired goals. Within an organization, decision making is the result of the involvement of many things, such as a continuous process of communication and participation from the entire organization. The result of the decision can be a statement agreed between alternatives or between procedures to achieve certain goals [11][12][13].

A decision support system is a computer-based system consisting of three interconnected components, a language system (a way to provide communication between users and other components of a decision support system). Decision support systems can be used to aid in decision skills for both structured and unstructured situations, because no one knows how decisions should be made [14][15][16].

The MOORA method is applied to solve many economic, managerial and construction problems by calculating mathematical formulas with accurate results and was introduced by Brauers and Zavadskas in 2006.The MOORA procedure can be defined as optimization programming, also known as multi-criteria various types of complex decision-making problems. in a manufacturing environment. So MOORA is a process of simultaneously optimizing alternatives that are contradictory to attributes subject to certain limitations [17][3].

The advantages of the MOORA method are that it is very simple, accurate, and stable, this method does not require a mathematical expert to use it and requires very simple mathematical calculations. With the MOORA method the results obtained are more accurate and on target in helping decision making. When compared to other methods the MOORA method is simpler and easier to apply [2][11].

The Weight Aggregated Sum Product Assessment method or abbreviated as WASPAS is a method of a decision support system whose conceptual framework is to make effective decisions on complex problems by simplifying and accelerating the decision-making process by solving problems into parts and also organizing parts. section in a hierarchy and assign numeric values to the subjective [20][21]. The WASPAS method is currently very popularly used by researchers in the field of decision making because it provides accurate values [22].

2. RESEARCH METHOD

There are several methods used in research to direct this research (design) so that the researcher's predetermined goals can be achieved. Some of the research methods used by the author are action research methods where activities and or corrective actions for planning, implementation, and evaluation are handled systematically so that their validity and reliability reach the research level. Action research aims to acquire knowledge for a specific situation or target rather than generalized scientific knowledge [2][24][25].

The description of each process is as follows:

a. Prepare a plan (planning)

At this stage the activities that must be carried out are preparing the facilities of the supporting facilities needed in the research, preparing instruments for recording and analyzing data about the process and the results of the action.

b. Carry out the action (acting).
At this stage the researcher takes actions that have been formulated, in actual situations, which include initial, core and closing activities.

c. Carrying out observations (observing)
The research stage here is the data collection stage. This stage is intended to collect the supporting data needed in the research process, namely by means of observation and interviews.

d. Reflecting
At this stage is recording the results of observations, evaluating the results of observations, analyzing learning results, noting deficiencies to be used as material for drafting designs

The data collection method in this study is to use primary and secondary data. Primary data is taken directly from the object of research that comes from the original or first source. Primary data collection techniques are carried out through observation techniques by collecting information directly to the research location to observe how the process of selecting the head of the computer laboratory by providing a laboratory assessment questionnaire in the form of a series of questions asked of respondents to get answers. Meanwhile, secondary data comes from sources that have been collected by other parties. Secondary data collection techniques are carried out by means of documentation study and literature study [9][16].

3. RESULTS AND DISCUSSIONS

As for the results and discussion that the researchers did in getting the best hafidzoh using the MOORA method are as follows :

Table 1.
Criteria and Alternatif MOORA Method Used

MOORA Method					
	Criteria				
Alternatif	**C1**	**C2**	**C3**	**C4**	**C5**
SANTRI1	70	80	70	50	90
SANTRI2	70	70	70	90	90
SANTRI3	90	70	70	70	70
SANTRI4	70	80	70	70	70
SANTRI5	90	60	90	50	90
SANTRI6	70	70	70	90	90
SANTRI7	90	80	80	78	90
SANTRI8	90	70	90	50	90
SANTRI9	70	80	70	50	90
SANTRI10	70	80	70	50	90
SANTRI11	70	70	70	90	90
SANTRI12	90	70	70	70	70
SANTRI13	70	80	70	70	70
SANTRI14	90	60	90	50	90
SANTRI15	70	70	70	90	90
SANTRI16	90	80	70	70	90
SANTRI17	90	70	90	50	90
SANTRI18	70	80	70	50	90
SANTRI19	70	80	70	50	90
SANTRI20	70	70	70	90	90
SANTRI21	90	70	70	70	70
SANTRI22	70	80	70	70	70
SANTRI23	90	60	90	50	90

MOORA Method					
	Criteria				
Alternatif	**C1**	**C2**	**C3**	**C4**	**C5**
SANTRI24	70	70	70	90	90
SANTRI25	90	80	70	70	90
SANTRI26	90	70	90	50	90
SANTRI27	70	80	70	50	90
SANTRI28	70	80	70	70	70
SANTRI29	90	60	90	50	90
SANTRI30	70	70	70	90	90
Max	90	80	90	90	90
Min	70	60	70	50	70
Weight	0,15	0,2	0,16	0,12	0,11
	188600	91200	52000	42084	66500
	434,3	302,0	228,0	205,1	257,9

Table 2.
Alternatives, Criterias and the results of calculations using the Moora method

Alternatif	**Criteria**						
	C1	**C2**	**C3**	**C4**	**C5**	**NO**	**Rangking**
SANTRI1	0,16	0,26	0,31	0,24	0,35	0,194	25
SANTRI2	0,16	0,23	0,31	0,44	0,35	0,211	4
SANTRI3	0,21	0,23	0,31	0,34	0,27	0,197	18
SANTRI4	0,16	0,26	0,31	0,34	0,27	0,197	21
SANTRI5	0,21	0,20	0,39	0,24	0,35	0,202	14
SANTRI6	0,16	0,23	0,31	0,44	0,35	0,211	4
SANTRI7	0,21	0,26	0,35	0,38	0,35	0,224	1
SANTRI8	0,21	0,23	0,39	0,24	0,35	0,208	11
SANTRI9	0,16	0,26	0,31	0,24	0,35	0,194	25
SANTRI10	0,16	0,26	0,31	0,24	0,35	0,194	25
SANTRI11	0,16	0,23	0,31	0,44	0,35	0,211	4
SANTRI12	0,21	0,23	0,31	0,34	0,27	0,197	18
SANTRI13	0,16	0,26	0,31	0,34	0,27	0,197	21
SANTRI14	0,21	0,20	0,39	0,24	0,35	0,202	14
SANTRI15	0,16	0,23	0,31	0,44	0,35	0,211	4
SANTRI16	0,21	0,26	0,31	0,34	0,35	0,213	2
SANTRI17	0,21	0,23	0,39	0,24	0,35	0,208	11
SANTRI18	0,16	0,26	0,31	0,24	0,35	0,194	25
SANTRI19	0,16	0,26	0,31	0,24	0,35	0,194	25
SANTRI20	0,16	0,23	0,31	0,44	0,35	0,211	4
SANTRI21	0,21	0,23	0,31	0,34	0,27	0,197	18
SANTRI22	0,16	0,26	0,31	0,34	0,27	0,197	21
SANTRI23	0,21	0,20	0,39	0,24	0,35	0,202	14
SANTRI24	0,16	0,23	0,31	0,44	0,35	0,211	4
SANTRI25	0,21	0,26	0,31	0,34	0,35	0,213	2
SANTRI26	0,21	0,23	0,39	0,24	0,35	0,208	11
SANTRI27	0,16	0,26	0,31	0,24	0,35	0,194	25
SANTRI28	0,16	0,26	0,31	0,34	0,27	0,197	21
SANTRI29	0,21	0,20	0,39	0,24	0,35	0,202	14
SANTRI30	0,16	0,23	0,31	0,44	0,35	0,211	4

As for the results and discussion that the researchers did in getting the best hafidzoh using the WASPAS method are as follows :

Table 3.
Alternatives, Criterias and the results of calculations using the WASPAS method

Alternative	Kriteria				
	C1	C2	C3	C4	C5
SANTRI1	70	80	70	50	90
SANTRI2	70	70	70	90	90
SANTRI3	90	70	70	70	70
SANTRI4	70	80	70	70	70
SANTRI5	90	60	90	50	90
SANTRI6	70	70	70	90	90
SANTRI7	90	80	80	78	90
SANTRI8	90	70	90	50	90
SANTRI9	70	80	70	50	90
SANTRI10	70	80	70	50	90
SANTRI11	70	70	70	90	90
SANTRI12	90	70	70	70	70
SANTRI13	70	80	70	70	70
SANTRI14	90	60	90	50	90
SANTRI15	70	70	70	90	90
SANTRI16	90	80	70	70	90
SANTRI17	90	70	90	50	90
SANTRI18	70	80	70	50	90
SANTRI19	70	80	70	50	90
SANTRI20	70	70	70	90	90
SANTRI21	90	70	70	70	70
SANTRI22	70	80	70	70	70
SANTRI23	90	60	90	50	90
SANTRI24	70	70	70	90	90
SANTRI25	90	80	70	70	90
SANTRI26	90	70	90	50	90
SANTRI27	70	80	70	50	90
SANTRI28	70	80	70	70	70
SANTRI29	90	60	90	50	90
SANTRI30	70	70	70	90	90
Max	90	80	90	90	90
Min	70	60	70	50	70
Weight	0,15	0,2	0,16	0,12	0,11
	20	20	20	40	20

Table 4.
Alternatives, Criterias and the results of calculations using the WASPAS method

Alternatif	kriteria				
	C1	C2	C3	C4	C5
SANTRI 1	0,778	1,000	0,778	0,556	1,000
SANTRI 2	0,778	0,875	0,778	1,000	1,000
SANTRI 3	1,000	0,875	0,778	0,778	0,778
SANTRI 4	0,778	1,000	0,778	0,778	0,778
SANTRI 5	1,000	0,750	1,000	0,556	1,000
SANTRI 6	0,778	0,875	0,778	1,000	1,000
SANTRI 7	1,000	1,000	0,889	0,867	1,000
SANTRI 8	1,000	0,875	1,000	0,556	1,000
SANTRI 9	0,778	1,000	0,778	0,556	1,000
SANTRI 10	0,778	1,000	0,778	0,556	1,000
SANTRI 11	0,778	0,875	0,778	1,000	1,000

Alternatif	kriteria				
	C1	C2	C3	C4	C5
SANTRI 12	1,000	0,875	0,778	0,778	0,778
SANTRI 13	0,778	1,000	0,778	0,778	0,778
SANTRI 14	1,000	0,750	1,000	0,556	1,000
SANTRI 15	0,778	0,875	0,778	1,000	1,000
SANTRI 16	1,000	1,000	0,778	0,778	1,000
SANTRI 17	1,000	0,875	1,000	0,556	1,000
SANTRI 18	0,778	1,000	0,778	0,556	1,000
SANTRI 19	0,778	1,000	0,778	0,556	1,000
SANTRI 20	0,778	0,875	0,778	1,000	1,000
SANTRI 21	1,000	0,875	0,778	0,778	0,778
SANTRI 22	0,778	1,000	0,778	0,778	0,778
SANTRI 23	1,000	0,750	1,000	0,556	1,000
SANTRI 24	0,778	0,875	0,778	1,000	1,000
SANTRI 25	1,000	1,000	0,778	0,778	1,000
SANTRI 26	1,000	0,875	1,000	0,556	1,000
SANTRI 27	0,778	1,000	0,778	0,556	1,000
SANTRI 28	0,778	1,000	0,778	0,778	0,778
SANTRI 29	1,000	0,750	1,000	0,556	1,000
SANTRI 30	0,778	0,875	0,778	1,000	1,000

Table 5.
Alternatives, and Rangking of calculations using the WASPAS method

Alternatif			Q	RANGKING
SANTRI 1	0,6178	0,8621	0,7399	25
SANTRI 2	0,6461	0,9007	0,7734	7
SANTRI 3	0,6283	0,8827	0,7555	18
SANTRI 4	0,6200	0,8731	0,7465	21
SANTRI 5	0,6367	0,8798	0,7582	14
SANTRI 6	0,6461	0,9007	0,7734	7
SANTRI 7	0,7062	0,9646	0,8354	1
SANTRI 8	0,6617	0,9073	0,7845	4
SANTRI 9	0,6178	0,8621	0,7399	25
SANTRI 10	0,6178	0,8621	0,7399	25
SANTRI 11	0,6461	0,9007	0,7734	7
SANTRI 12	0,6283	0,8827	0,7555	18
SANTRI 13	0,6200	0,8731	0,7465	21
SANTRI 14	0,6367	0,8798	0,7582	14
SANTRI 15	0,6461	0,9007	0,7734	7
SANTRI 16	0,6778	0,9321	0,8049	2
SANTRI 17	0,6617	0,9073	0,7845	4
SANTRI 18	0,6178	0,8621	0,7399	25
SANTRI 19	0,6178	0,8621	0,7399	25
SANTRI 20	0,6461	0,9007	0,7734	7
SANTRI 21	0,6283	0,8827	0,7555	18
SANTRI 22	0,6200	0,8731	0,7465	21
SANTRI 23	0,6367	0,8798	0,7582	14
SANTRI 24	0,6461	0,9007	0,7734	7
SANTRI 25	0,6778	0,9321	0,8049	2
SANTRI 26	0,6617	0,9073	0,7845	4
SANTRI 27	0,6178	0,8621	0,7399	25
SANTRI 28	0,6200	0,8731	0,7465	21
SANTRI 29	0,6367	0,8798	0,7582	14
SANTRI 30	0,6461	0,9007	0,7734	7

4. CONCLUSION

The combination of the MOORA and WASPAS methods provides accurate and clear results because it has the same final result, namely ranking 1 obtained by students 7. So the researchers conclude that the MOORA and WASPAS methods can be used in analyzing the data that the researchers obtained in determining Hafidzoh. The best Dzunnur'ain Simalungun foundation. The combination of the MOORA and WASPAS methods also produced the same second rank and was obtained by 2 santri or 2 alternatives, namely Santri 16 and santri 25. So that, the leadership of the dzunnur'ain Simalungun foundation can find it easier to find the best hafidzoh which can then provide rewards or awards for achievement. These rankings are also important for the leadership to know so that there is an evaluation or review of the students who are in the lowest ranks.

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