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DECISION SUPPORT SYSTEM FOR DETERMINING LECTURER CANDIDATES FOR THE POSITION OF HEAD OF WORK UNIT AT KUANTAN SINGINGI ISLAMIC UNIVERSITY USING THE SIMPLE ADDITVE WEIGHTING (SAW) METHOD

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Abstract

Kuantan Singingi Islamic University in determining Lecturer candidates as work unit head office holders is carried out by means of Lecturers submitting proposals as self-submission candidates as work unit head candidates. So that from the proposals for submitting these candidates, it is considered by the leadership of the Kuantan Singingi Islamic University for each candidate, which candidate is suitable for the position by carrying out various considerations so that later it will produce which of the candidates will occupy the position of head of the unit. So in this way it will require quite a long process and also in determining the criteria for each candidate is done manually so that the reports generated are not very accurate. With the application of Fuzzy Multiple Attribute Decision Making (FMADM) using the Simple Additive Weighting (SAW) method, the weight, criteria and ranking values of each Lecturer who are candidates for Head of Work Units are obtained. So that by calculating the Decision Support System to Determine Lecturer Candidates for the Head of Work Unit Positions at the Islamic University of Kuantan Singingi By Applying the Simple Additve Weighting (SAW) Method, it can help users determine Lecturer candidates for the position of head of work units at Kuantan Singingi Islamic University.

Keywords: SPK, SAW, Lecturer, Department

1. INTRODUCTION

Human resources are one of the supporting factors to increase the performance productivity of an agency. Therefore, highly competent human resources will support performance which will determine the achievements of each section. This can be a consideration for agencies in determining the head of each work unit.

Decision Support Systems (DSS) are part of a computer-based information system including knowledge-based systems (knowledge management) that are used to support decision making within an organization or company. It can also be said to be a computer system that processes data into information to make decisions on specific semi-structured problems [2].

The SAW method is often known as the weighted sum method. The basic concept of the SAW method is to find the weighted sum of the performance ratings for each of the alternatives. The SAW method requires the process of normalizing the decision matrix (X) to a scale that can be compared with all existing alternative ratings [3].

Kuantan Singingi Islamic University in determining Lecturer candidates as work unit head office holders is carried out by means of Lecturers submitting proposals as self-submission candidates as work unit head candidates. So that from the proposals for submitting these candidates, it is considered by the

leadership of the Kuantan Singingi Islamic University for each candidate, which candidate is suitable for the position by carrying out various considerations so that later it will produce which of the candidates will occupy the position of head of the unit. So in this way it will require quite a long process and also in determining the criteria for each candidate is done manually so that the reports generated are not very accurate.

Based on the description of the problem above, the authors put forward a title for research at Kuantan Singingi Islamic University, namely "Decision Support System for Determining Lecturer Candidates to Occupy Head of Work Units at Kuantan Singingi Islamic University by Applying the Simple Additve Weight (SAW) Method" so that in determining the head candidate units in accordance with the academic achievements of existing lecturers.

2. METHOD

2.1 Research Flowchart

The method used in this study is the system development life cycle (SDLC) which has several stages. As the name implies, SDLC starts from one stage to the last stage and returns to the initial stage forming a cycle or life cycle.

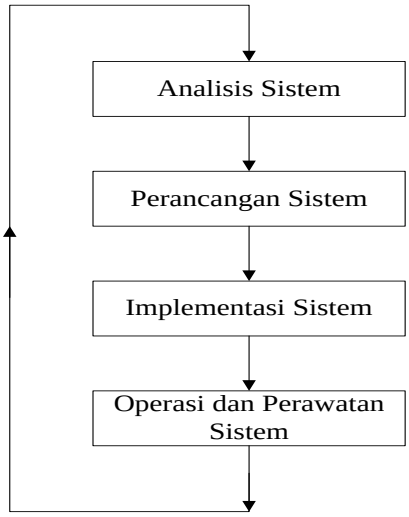

Figure 1. System Development Life Cycle

The stages in the SDLC method are as follows.

1. System analysis (system analysis).
   a. Preliminary studies.
   b. Feasibility study.
   c. Identify user problems and needs.
   d. Understand the existing system
   e. Analyze research results.
2. System design (system design)
   a. Preliminary design
   b. Detailed design
3. Implementation of the system (system implementation)
4. System operation and maintenance

The cycle or life cycle of system development appears if the system that has been developed and operated cannot be maintained anymore, so that a system development is needed again, as shown in the following figure.

2.2 Data Source

The research flow chart in this study is as follows.

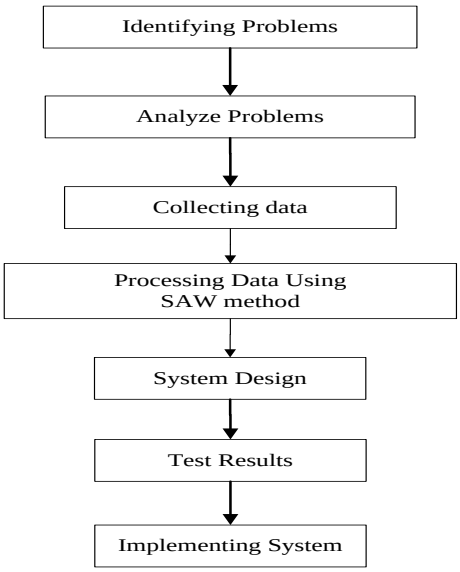

Figure 2. System Flow Diagram

3. RESULTS AND DISCUSSION

3.1 Lecture Data

The data used in this study are data from Lecturers at the Kuantan Singingi Islamic University who were proposed to become heads of work units in the Kuantan Singingi Islamic University Environment, the data used in this study were taken in September 2022. Data collection was carried out by direct observation to fieldwork and interviews with the Islamic University of Kuantan Singingi.

3.2 Criteria Type

In the process of making a Decision Support System that will be carried out to determine lecturer candidates to become Heads of Work Units. Then there are some data that will be considered in the process of designing the system. This data will be used as a criterion in determining lecturer candidates to become Heads of Work Units, while these criteria are :

1. Functional Position
   Because the higher the functional position of a lecturer, the lecturer has the enthusiasm to develop a career in the teaching field. Because to be the head of a work unit at least has a clear career in the field he is engaged in so that he is suitable to be given a position.
2. Work Experience
   Because the longer a lecturer holds this status, the more knowledge he will have in that field. So that later based on the experience of this knowledge it will be able to improve the performance of a field of work.
3. Presence
   It is hoped that better attendance at work will show that a lecturer does have discipline and a strong desire to work. So that with the discipline and desire to set a good example for his subordinates.
4. Loyalty
   It is expected that with high loyalty, a lecturer can be considered to have a positive effect on an institution or field of work, so that with high loyalty, the institution will progress and develop more quickly.

3.3 Lots Of Data

In order to be clearer about the completion of the method that the writer will use in this study, the writer requires data to be processed in the discussion later. There are 10 samples of data that will be used as samples in this study, for more details can be seen in the following table :

Table 1. Sample Lecturer Data to be Used

Nu	Name	Functional	Work Experience	Presence	Loyalty
1	Chitra Hermawan	Lectors 300	7 Year	235	Very Loyal
2	Bustanur	Lectors 300	9 Year	216	Enough Loyalty
3	Sarjan	AA	9 Year	205	Enough Loyalty
4	Helpi Nopriandi	Lectors 300	9 Year	234	Very Loyal
5	Yul Emri Yulis	AA	6 Year	220	Enough Loyalty
6	Seprido	Lectors 300	8 Year	222	Enough Loyalty
7	Fitrianto	Lectors 300	9 Year	225	Very Loyal
8	Rika Ramadanti	Lectors 200	8 Year	228	Enough Loyalty
9	Dwi Putri Musdansi	Lectors 200	7 Year	220	Enough Loyalty
10	Febri Haswan	Lectors 300	9 Year	230	Enough Loyalty

From the data in table 1. above, it will be processed using the method that the author has described in the previous chapters.

3.4 Analyze System

The Decision Support System in determining work unit head candidates is a system built to assist decision makers in determining Work Unit Heads who truly deserve the position of Work Unit Head. In determining the head of the work unit, the decision maker in this case is the Leader. The leader will select the Head of the Work Unit by comparing the results of the sum of each predetermined criterion.

Fuzzy Multiple Attribute Decision Making (FMADM) is a method that will be used to find optimal alternatives from a number of alternatives with certain criteria while the Simple Additive Weighting (SAW) method is a decision-making method that is applied in making this system. Where by using this method the data for lecturer candidates to become Heads of Work Units will be processed so that later it will produce rankings starting from the highest score to the lowest score.

In the process of making a decision support system in determining candidates for Head of Work Units, a system requirement is needed to consider each criterion that will be used. In order to determine which lecturers are truly suitable to assume the role of head of the work unit, there are 4 criteria that will be used. Where are criteria C1 to C4. The criteria are:

1. C1 = Functional Position
2. C2 = Work Experience
3. C3 = Presence
4. C4 = Loyalty

3.5 Criteria and Weighting

In the process of making a Decision Support System to get lecturer candidates as heads of work units, criteria and weighting are needed. The process of criteria and weighting that will be used in determining candidates for Lecturers to occupy the Position of Head of Work Units are as follows:

1. Determine the criteria used as a reference in decision making

In the process of making a Decision Support System to determine Lecturer candidates for the position of Head of Work Unit, weighting is needed on each predetermined criterion. There are 4 (four) criteria that will be used in determining Lecturer candidates to occupy the Position of Work Unit Head. The criteria and fuzzy numbers used in determining the position of Head of Work Unit are as follows :

a. The criteria for the value of Functional Position are converted to fuzzy numbers as follows :

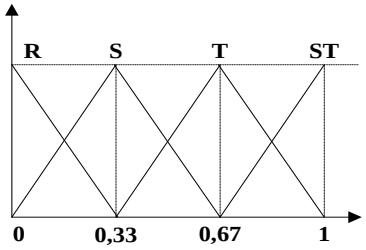

Figure 3. Fuzzy Functional Position Value

In Figure 3. the variable functional position is divided into 4 fuzzy numbers, namely Low (R) with a value of 0, Moderate (S) with a value of 0.33, Middle (T) with a value of 0.67 and Very High (ST) with a value of 1. Table 2. shows the fuzzy numbers along with the crisp values for each functional position value.

Table 2. Value of Functional Position

Functional Position Value	*Fuzzy* Numbers	Score
Asisten Ahli (AA)	Low	0
Lektor 200	Currently	0,33
Lektor 300	High	0,67
Lektor Kepala	Very High	1

b. The criteria for the value of Work Experience are converted to fuzzy numbers as follows :

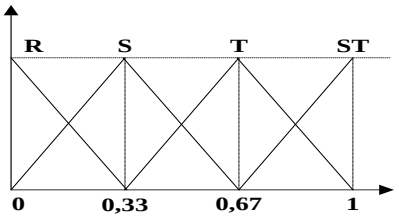

Figure 4. Fuzzy Value of Work Experience

In Figure 4. the work experience value variable is divided into 4 fuzzy numbers, namely Low (R) with a value of 0, Moderate (S) with a value of 0.33, Middle (T) with a value of 0.67 and Very High (ST) with a value of 1 Table 4. shows the fuzzy numbers along with the crisp values for each work experience value.

Table 3. Value of Work Experience

Work Experience Value	*Fuzzy* Numbers	Score
< 5	Low	0
5 s/d 6	Currently	0,33
7 s/d 8	High	0,67
> 9	Very High	1

c. Criteria are converted to fuzzy numbers as follows:

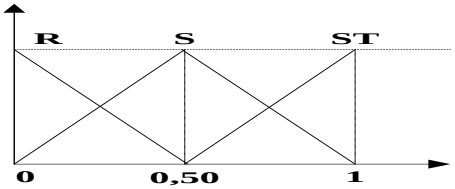

Figure 5. Fuzzy Attendance Value

In Figure 5. the presence variable is divided into 3 fuzzy numbers, namely Low (R) with a value of 0, Moderate (S) with a value of 0.50 and Very High (ST) with a value of 1. Table 4. shows the fuzzy numbers along with the crisp values for each each presence.

Table 4. Attendance Value

Attendance Value	*Fuzzy* Numbers	Score
<215	Low	0
215-230	Currently	0,5
230>	Very high	1

a. Loyalty criteria at work are converted to fuzzy numbers as follows:

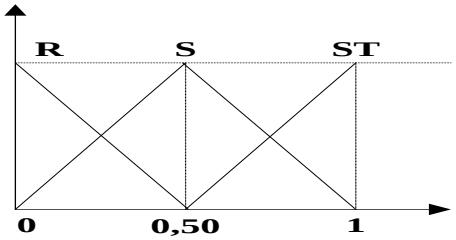

Figure 6. Fuzzy Loyalty Value

In Figure 6 the loyalty variable is divided into 3 fuzzy numbers, namely Low (R) with a value of 0, Moderate (S) with a value of 0.50 and Very High (ST) with a value of 1. Table 5 shows the fuzzy numbers along with the crisp values for each each loyalty.

Table 5. Loyalty Value

Loyalty Value	*Fuzzy* Numbers	Score
No Loyalty	Low	0
Enough Loyalty	Currently	0,5
Very Loyalty	Very high	1

Even though the value assumptions for decisions meet the Eligible and Ineligible criteria based on the ranking of the total scores obtained from Lecturer candidates as heads of work units, there are several decision variables that have minimum standards that must be met as determined by the HR department so that these candidates are eligible to be appointed as Heads of Work Units.

1. Determine the suitability rating of each alternative on each criterion

Based on the steps for solving the problem using the Simple Additive Weighting (SAW) method described earlier, this sub-chapter will discuss the calculation process and the expected output in this study.

1. Determine the criteria that will be used as a reference in decision making, namely C1 to C6.
2. Determine the suitability rating of each alternative. It can be seen in table 6 to table 9
3. Make a decision matrix based on the criteria (Ci), then normalize the matrix based on the equation adjusted for the type of attribute (benefit attribute or cost attribute) so that a normalized matrix is obtained.

Lecturer data as candidates for work unit heads that have been obtained, are used as alternative decision recipients using the SAW method, where lecturer data will be displayed which will be determined based on predetermined criteria. The lecturer data can be seen in the following table:

Table 6. Name of Candidate Lecturer Head of Work Unit

Nu	Lecturer Name
1	Chitra Hermawan
2	Bustanur
3	Harianja

4	Helpi Nopriandi
5	Yul Emri Yulis
6	Seprido
7	Fitrianto
8	Rika Rahmadanti
9	Dwi Putri Musdansi
10	Febri Haswan

The table above is 10 lecturers who have different criteria that will be ranked to determine candidates for lecturers to occupy the position of Head of Work Unit. By adding up all the weights of the lecturer's scores with the final decision declaring whether a Lecturer is Eligible or Ineligible to Hold the Position of Head of Work Unit who takes the test. Analysis of the discussion and results obtained based on the FMADM algorithm by performing manual calculations to determine the candidate for the Lecturer Occupying the Head of Work Unit position accepted using the SAW method. The results will be obtained by looking for the ranking/ranking of each Lecturer. For examples of cases taken, namely in table 4.6. The steps for the solution:

2. Determine the criteria that will be used as a reference in decision making, namely Ci.
3. Determine the suitability rating of each alternative on each criterion.

For the 2 steps above will be explained in the table as follows.

Table 7. Table of Alternatives and Criteria for Lecturers to Occupy the Position of Head of Work Unit.

No	*Alternative*	*Criteria*			
		C1	**C2**	**C3**	**C4**
1	Chitra Hermawan	Lectors 300	7 Year	235	Very Loyal
2	Bustanur	Lectors 300	9 Year	216	Enough Loyalty
3	Sarjan	AA	9 Year	205	Enough Loyalty
4	Helpi Nopriandi	Lectors 300	9 Year	234	Very Loyal
5	Yul Emri Yulis	AA	6 Year	220	Enough Loyalty
6	Seprido	Lectors 300	8 Year	222	Enough Loyalty
7	Fitrianto	Lectors 300	9 Year	225	Very Loyal
8	Rika Ramadanti	Lectors 200	8 Year	228	Enough Loyalty
9	Dwi Putri Musdansi	Lectors 200	7 Year	220	Enough Loyalty
10	Febri Haswan	Lectors 300	9 Year	230	Enough Loyalty

The table above explains that candidates for Lecturers Holding the Position of Work Unit Head who have carried out various tests will be ranked based on 4 predetermined criteria, namely C1 (Functional Position), C2 (Work Experience), C3 (Attendance), C4 (Loyalty) with a score previously made to fuzzy numbers.

The real data of the 10 lecturers above will be converted into the fuzzy that has been determined in the previous discussion:

Table 8. Table of Alternatives and Lecturer Criteria with Fuzzy Numbers

No	*Alternative*	*Criteria*			
		C1	**C2**	**C3**	**C4**
1	Chitra Hermawan	0,67	0,67	1	1
2	Bustanur	0,67	1	0,5	0,5
3	Sarjan	0	1	0	0,5

4	Helpi Nopriandi	0,67	1	1	1
5	Yul Emri Yulis	0	0,33	0,5	0,5
6	Seprido	0,67	0,67	0,5	0,5
7	Fitrianto	0,67	1	1	1
8	Rika Ramadanti	0,33	0,67	0,5	0,5
9	Dwi Putri Musdansi	0,33	0,67	0,5	0,5
10	Febri Haswan	0,67	1	0,5	1

The table above states all the Lecturer's scores which will later be added up from C1, C2, C3 and C4 so that later you will get a value with a fuzzy number. Next, we will proceed to the third step, namely:

1. Make a decision matrix based on the criteria then normalize the matrix

Make a decision matrix based on Ci criteria, then normalize the matrix based on the equation adjusted for the type of attribute so that a normalized matrix R is obtained.

Based on table 3.8 above, a decision matrix X can be formed using formula (1) of the following data:

$$X = \begin{pmatrix} 0,67 & 0,67 & 1 & 1 \\ 0,67 & 1 & 0,5 & 0,5 \\ 0 & 1 & 0 & 0,5 \\ 0,67 & 1 & 1 & 1 \\ 0 & 0,33 & 0,5 & 0,5 \\ 0,67 & 0,67 & 0,5 & 0,5 \\ 0,67 & 1 & 1 & 1 \\ 0,33 & 0,67 & 0,5 & 0,5 \\ 0,33 & 0,67 & 0,5 & 0,5 \\ 0,67 & 1 & 0,5 & 1 \end{pmatrix}$$

After the decision matrix is formed, then normalize the decision matrix using the equation with the formula in chapter 2.

The calculation process using the formula in chapter 2 for the data contained in the X matrix, is as follows:

A. Normalization for Criteria (C1) Value of Functional Position

$$R11 = \frac{0,67}{\text{Max}\{0,67;0,67;0;0,67;0;0,67;0,67;0,67;0,33;0,33;0,67\}} = \frac{0,67}{0,67} = 1$$

$$R12 = \frac{0,67}{\text{Max}\{0,67;0,67;0;0,67;0;0,67;0,67;0,67;0,33;0,33;0,67\}} = \frac{0,67}{0,67} = 1$$

$$R13 = \frac{0}{\text{Max}\{0,67;0,67;0;0,67;0;0,67;0,67;0,67;0,33;0,33;0,67\}} = \frac{0}{0,67} = 0$$

$$R14 = \frac{0,67}{\text{Max}\{0,67;0,67;0;0,67;0;0,67;0,67;0,67;0,33;0,33;0,67\}} = \frac{0,67}{0,67} = 1$$

$$R15 = \frac{0}{\text{Max}\{0,67;0,67;0;0,67;0;0,67;0,67;0,67;0,33;0,33;0,67\}} = \frac{0}{0,67} = 0$$

$$R16 = \frac{0,67}{\text{Max}\{0,67;0,67;0;0,67;0;0,67;0,67;0,67;0,33;0,33;0,67\}} = \frac{0,67}{0,67} = 1$$

$$R17 = \frac{0,67}{\text{Max}\{0,67;0,67;0;0,67;0;0,67;0,67;0,33;0,33;0,67\}} = \frac{0,67}{0,67} = 1$$

$$R18 = \frac{0,33}{\text{Max}\{0,67;0,67;0;0,67;0;0,67;0,67;0,33;0,33;0,67\}} = \frac{0,33}{0,67} = 0,49$$

$$R19 = \frac{0,33}{\text{Max}\{0,67;0,67;0;0,67;0;0,67;0,67;0,33;0,33;0,67\}} = \frac{0,33}{0,67} = 0,49$$

$$R110 = \frac{0,67}{\text{Max}\{0,67;0,67;0;0,67;0;0,67;0,67;0,33;0,33;0,67\}} = \frac{0,67}{0,67} = 1$$

B. Normalization for Criteria (C2) Value of Work Experience

$$R21 = \frac{0,67}{\text{Max}\{0,67;1;1;1;0,33;0,67;1;0,67;0,67;1\}} = \frac{0,67}{1} = 0,67$$

$$R22 = \frac{1}{\text{Max}\{0,67;1;1;1;0,33;0,67;1;0,67;0,67;1\}} = \frac{1}{1} = 1$$

$$R23 = \frac{1}{\text{Max}\{0,67;1;1;1;0,33;0,67;1;0,67;0,67;1\}} = \frac{1}{1} = 1$$

$$R24 = \frac{1}{\text{Max}\{0,67;1;1;1;0,33;0,67;1;0,67;0,67;1\}} = \frac{1}{1} = 1$$

$$R25 = \frac{0,33}{\text{Max}\{0,67;1;1;1;0,33;0,67;1;0,67;0,67;1\}} = \frac{0,33}{1} = 0,33$$

$$R26 = \frac{0,67}{\text{Max}\{0,67;1;1;1;0,33;0,67;1;0,67;0,67;1\}} = \frac{0,67}{1} = 0,67$$

$$R27 = \frac{1}{\text{Max}\{0,67;1;1;1;0,33;0,67;1;0,67;0,67;1\}} = \frac{1}{1} = 1$$

$$R28 = \frac{0,67}{\text{Max}\{0,67;1;1;1;0,33;0,67;1;0,67;0,67;1\}} = \frac{0,67}{1} = 0,67$$

$$R29 = \frac{0,67}{\text{Max}\{0,67;1;1;1;0,33;0,67;1;0,67;0,67;1\}} = \frac{0,67}{1} = 0,67$$

$$R210 = \frac{1}{\text{Max}\{0,67;1;1;1;0,33;0,67;1;0,67;0,67;1\}} = \frac{1}{1} = 1$$

C. Normalization for Criteria (C3) Attendance Value

$$R31 = \frac{1}{\text{Max}\{1;0,5;0;1;0,5;0,5;1;0,5;0,5;0,5\}} = \frac{1}{1} = 1$$

$$R32 = \frac{0,5}{\text{Max}\{1;0,5;0;1;0,5;0,5;1;0,5;0,5;0,5\}} = \frac{0,5}{1} = 0,5$$

$$R33 = \frac{0}{\text{Max}\{1,5;0,5;0;1;0,5;0,5;1;0,5;0,5;0,5\}} = \frac{0}{1} = 0$$

$$R34 = \frac{1}{\text{Max}\{1,5;0,5;0;1;0,5;0,5;1;0,5;0,5;0,5\}} = \frac{1}{1} = 1$$

$$R35 = \frac{0,5}{\text{Max}\{1,5;0,5;0;1;0,5;0,5;1;0,5;0,5;0,5\}} = \frac{0,5}{1} = 0,5$$

$$R36 = \frac{0,5}{\text{Max}\{1,5;0,5;0;1;0,5;0,5;1;0,5;0,5;0,5\}} = \frac{0,5}{1} = 0,5$$

$$R37 = \frac{1}{\text{Max}\{1,5;0,5;0;1;0,5;0,5;1;0,5;0,5;0,5\}} = \frac{1}{1} = 1$$

$$R38 = \frac{0,5}{\text{Max}\{1,5;0,5;0;1;0,5;0,5;1;0,5;0,5;0,5\}} = \frac{0,5}{1} = 0,5$$

$$R39 = \frac{0,5}{\text{Max}\{1,5;0,5;0;1;0,5;0,5;1;0,5;0,5;0,5\}} = \frac{0,5}{1} = 0,5$$

$$R310 = \frac{0,5}{\text{Max}\{1,5;0,5;0;1;0,5;0,5;1;0,5;0,5;0,5\}} = \frac{0,5}{1} = 0,5$$

D. Normalization for Criteria (C4) Loyalty Value

$$R41 = \frac{1}{\text{Max}\{1;0,5;0,5;1;0,5;0,5;1;0,5;0,5;1\}} = \frac{1}{1} = 1$$

$$R42 = \frac{0,5}{\text{Max}\{1;0,5;0,5;1;0,5;0,5;1;0,5;0,5;1\}} = \frac{0,5}{1} = 0,5$$

$$R43 = \frac{0,5}{\text{Max}\{1;0,5;0,5;1;0,5;0,5;1;0,5;0,5;1\}} = \frac{0,5}{1} = 0,5$$

$$R44 = \frac{1}{\text{Max}\{1;0,5;0,5;1;0,5;0,5;1;0,5;0,5;1\}} = \frac{1}{1} = 1$$

$$R45 = \frac{0,5}{\text{Max}\{1;0,5;0,5;1;0,5;0,5;1;0,5;0,5;1\}} = \frac{0,5}{1} = 0,5$$

$$R46 = \frac{0,5}{\text{Max}\{1;0,5;0,5;1;0,5;0,5;1;0,5;0,5;1\}} = \frac{0,5}{1} = 0,5$$

$$R47 = \frac{1}{\text{Max}\{1;0,5;0,5;1;0,5;0,5;1;0,5;0,5;1\}} = \frac{1}{1} = 1$$

$$R48 = \frac{0,5}{\text{Max}\{1;0,5;0,5;1;0,5;0,5;1;0,5;0,5;1\}} = \frac{0,5}{1} = 0,5$$

$$R49 = \frac{0,5}{\text{Max}\{1;0,5;0,5;1;0,5;0,5;1;0,5;0,5;1\}} = \frac{0,5}{1} = 0,5$$

$$R410 = \frac{1}{\text{Max}\{1;0,5;0,5;1;0,5;0,5;1;0,5;0,5;1\}} = \frac{1}{1} = 1$$

Based on the results of the normalization of the X matrix, it can be determined that the normalized matrix R is as follows:

$$R = \begin{pmatrix} 1 & 0,67 & 1 & 1 \\ 1 & 1 & 0,5 & 0,5 \\ 0 & 1 & 0 & 0,5 \\ 1 & 1 & 1 & 1 \\ 0 & 0,33 & 0,5 & 0,5 \\ 1 & 0,67 & 0,5 & 0,5 \\ 1 & 1 & 1 & 1 \\ 0,49 & 0,67 & 0,5 & 0,5 \\ 0,49 & 0,67 & 0,5 & 0,5 \\ 1 & 1 & 0.5 & 1 \end{pmatrix}$$

1. Multiply the normalized matrix R with a vector

After the normalization process is carried out or the normalized matrix has been obtained, the next step is to determine the level of importance of each criterion determined by the decision maker, symbolized by (W). From the criteria that have been determined, then a level of importance of the criteria is made based on the weight value that has been determined into fuzzy numbers with the formula, namely the n/n-1 variable. The suitability of each alternative for each criterion is as follows:

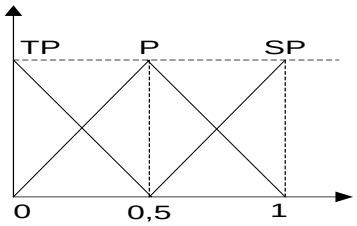

Figure 7. Fuzzy Importance of Each Criterion

In Figure 3.5 the importance variable for each criterion is divided into 3 fuzzy numbers, namely Not Important (TP) with a weight value of 0, Important (P) with a weight value of 0.5 and Very Important (SP) with a weight value of 1. Table 9. shows the fuzzy numbers along with the crisp value for each file completeness value.

Table 9. The Importance Level of Each Criterion

Criteria	*Fuzzy number*	*Weight*
(C1) Functional Position	Important (I)	0,5
(C2) Work Experience	Very Important (VI)	1
(C3) Presence	Very Important (VI)	1
(C4) Loyalty	Very Important (VI)	1

From table 9, the 4 existing criteria are weighted by changing them to fuzzy numbers, namely (P) Important with a weight value of 0.5 and (SP) Very Important with a weight value of 1, so the range of weights taken is between 1. The weighting of fuzzy number values is :

W = [0,5 1 1 1]

Then the last stage is calculated to get the ranking process by multiplying the weight (W) with the normalized matrix (R) as follows :

V1 = (1)(0,5) + (0,67)(1) + (1)(1) + (1)(1)
= 0,5 + 0,67 + 1 + 1
= 3,17

V2 = (1)(0,5) + (1)(1) + (0,5)(1) + (0,5)(1)
= 0,5 + 1 + 0,5+ 0,5
= 2,5

V3 = (0)(0,5) + (1)(1) + (0)(1) + (0,5)(1)
= 0 + 1 + 0 + 0,5
= 1,5
V4 = (1)(0,5) + (1)(1) + (1)(1) + (1)(1)
= 0,5 + 1 + 1 + 1
= 3,5
V5 = (0)(0,5) + (0,33)(1) + (0,5)(1) + (0,5)(1)
= 0 + 0,33 + 0,5 + 0,5
= 1,33
V6 = (1)(0,5) + (0,67)(1) + (0,5)(1) + (0,5)(1)
= 0,5 + 0,67+ 0,5 + 0,5
= 2,17
V7 = (1)(0,5) + (1)(1) + (1)(1) + (1)(1)
= 0,5 + 1 + 1 + 1
= 3,5
V8 = (0,49)(0,5) + (0,67)(1) + (0)(1) + (0.5)(1)
= 0,24 + 0,67 + 0,5 + 0,5
= 1,91
V9 = (0,49)(0,5) + (0,67)(1) + (0,5)(1) + (0.5)(1)
= 0,24 + 0,67 + 0,5 + 0,5
= 1,91
V10 = (1)(0,5) + (1)(1) + (0,5)(1) + (1)(1)
= 0,5 + 1 + 0,5 + 1
= 3

All ranking values V1-V10 from the results of multiplication with normalization are combined in table 10, so that the ranking results are obtained in the table below:

Table 10. Total Score of Candidate Lecturers Head of Work Units

No	*Alternative*	*Criteria*				*Results*
		C1	**C2**	**C3**	**C4**	
1.	Chitra Hermawan	0,5	0,67	1	1	3,17
2.	Bustanur	0,5	1	0,5	0,5	2,5
3.	Sarjan	0	1	0	0,5	1,5
4.	Helpi Nopriandi	0,5	1	1	1	3,5
5.	Yul Emri Yulis	0	0,33	0,5	0,5	1,33
6.	Seprido	0,5	0,67	0,5	0,5	2,17
7.	Fitrianto	0,5	1	1	1	3,5
8.	Rika Ramadanti	0,24	0,67	0,5	0,5	1,91
9.	Dwi Putri Musdansi	0,24	0,67	0,5	0,5	1,91
10.	Febri Haswan	0,5	1	0,5	1	3

The results of the grouping above have not yet obtained actual results for the 10 candidate lecturers for heads of work units which are made as an alternative, so it is necessary to carry out a ranking process by sorting the highest result values to the lowest results.

In determining the candidate lecturers for the heads of work units at the Kuantan Singingi Islamic University, only a few people were selected because the positions of the heads of work units could vary at the Kuantan Singingi Islamic University, various selections were carried out, and if there was the same ranking, only the university leadership could make a decision. Islamic Kuantan Singingi.

Table 11. Results of Lecturer Candidate Heads of Work Unit Decisions

No	*Alternative*	*Criteria*				*Results*	*Rank*	*Information*
		C1	**C2**	**C3**	**C4**			
1.	Helpi Nopriandi	0,5	1	1	1	3,5	1	L
2.	Fitrianto	0,5	1	1	1	3,5	2	L
3.	Chitra Hermawan	0,5	0,67	1	1	3,17	3	L
4.	Febri Haswan	0,5	1	0,5	1	3	4	L
5.	Bustanur	0,5	1	0,5	0,5	2,5	5	L
6.	Seprido	0,5	0,67	0,5	0,5	2,17	6	TL
7.	Rika Ramadanti	0,24	0,67	0,5	0,5	1,91	7	TL
8.	Dwi Putri Musdansi	0,24	0,67	0,5	0,5	1,91	8	TL
9.	Sarjan	0	1	0	0,5	1,5	9	TL
10.	Yul Emri Yulis	0	0,33	0,5	0,5	1,33	10	TL

From table 11. above, there is a decision result stating that 5 lecturers are candidates for work unit heads who are declared eligible (L) because these 5 lecturers are in the best rank of the 10 candidates selected using the SAW method. Or it could also be made a minimum standard that must be met to be declared worthy or not feasible. If these criteria meet the minimum score standards, then the lecturer candidate for the head of the work unit is declared eligible to be appointed as the Head of the Work Unit at the Kuantan Singingi Islamic University with a record that the decision is still held by the highest leadership at the Kuantan Singingi Islamic University.

4. CONCLUSIONS

After analyzing with the Decision Support System to Determine Lecturer Candidates for the Position of Head of Work Unit at Kuantan Singingi Islamic University By Applying the Simple Additve Weighting (SAW) Method, several conclusions can be drawn as follows With the application of Fuzzy Multiple Attribute Decision Making (FMADM) using the Simple Additive Weighting (SAW) method, the weight, criteria and ranking values of each Lecturer who are candidates for Head of Work Units are obtained.With the calculation of the Decision Support System to Determine Lecturer Candidates for the Head of Work Unit Positions at the Islamic University of Kuantan Singingi By applying the Simple Additve Weighting (SAW) method it can assist users in determining Lecturer candidates for the position of head of work units at the Islamic University of Kuantan Singingi. After the writer completed the final stages of this research, the writer realizes that there are still many shortcomings. The suggestions for further development in this research are as follows The system with this calculation can later be further developed in accordance with the existing alternatives at the Kuantan Singingi Islamic University so that it can be used in determining other positions This system can be further developed in the future using other methods so that it will produce a better decision.

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