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Analysis of The Support System for Admission Decision of Muhammadiyah Student Association Cadres Using Profile Matching Method

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Abstract - Technological advances at this time are very helpful for humans in doing work, one of which is technology can help humans to make decisions. Muhammadiyah Student Association is a large organization in Indonesia. From the establishment of this organization continues to have progress so as to make a lot of interest from students to join this organization. With many students who want to join, the organization has difficulty in determining the eligibility of each prospective member who wants to join because the organization must pay attention to factors that can support the assessment in the acceptance of its members. The purpose of this research is to conduct the selection process of organizational members using profile matching methods so as to help the organization in solving the problems faced by getting the right decision. Then the result obtained is a decision that is in accordance with the expectations of the organization in the selection of new prospective members. The assessment used in this method consists of four aspects, two of which are core factors and two other aspects are secondary factors. The results of data processing will become a ranking format so that this method can also determine the best candidate members based on ranking.

Keywords: ***Decision Support System, Profile Matching, IMM***

I. INTRODUCTION

Every organization will definitely carry out the recruitment of new members in order to create the next generation that will bring the organization to be better and better known to many people. The Muhammadiyah Student Association (Ikatan Mahasiswa Muhammadiyah), abbreviated as IMM, is an Islamic student movement organization based on Islamic creed which is sourced from the Al-Quran and As-Sunnah [1]. IMM annually recruits its members from various study programs chosen by students. The problem that occurs during organizational recruitment is when the organization conducts a selection of prospective new members. The selection, of course, should not be subjective because it will reduce ethics in the organization. Therefore, a method is needed so that data processing for the selection can be carried out fairly and efficiently [2,3,4].

Decision Support System is a system that solves problems, solving certain problems and can be done in a structured and unstructured way, Decision support systems are designed to be used easily by people with basic computer operating skills. Decision support system is used as an alternative in making a decision [5,6,7].

The Profile Matching method is one of the methods that can be used as an option for the selection of prospective IMM members. Because this method assumes that there is an ideal value that must be owned by the selection participant, not the minimum level that must be met or passe. This method compares the competency of each participant with the standard competency criteria that have been determined by the selection committee, so that the gap or the difference in the assessment of each competency and criteria is obtained. The smaller the gap or the resulting difference, the greater the weight value. Conversely, when the resulting GAP is getting bigger, the weight value is getting smaller. So, prospective members who have a large weight value will have a great chance of graduating in this selection[8,9].

The reference for previous research studies is the research conducted by Agung Deni Wahyudi (2016) which examines the Decision Support System for the Selection of Administrative Staff Admissions Using the Profile Matching Method [10], Entin Sutinah (2017) who researching the Decision Support System Using the Profile Matching Method in the Selection of the Best Salesman [11], Research conducted by Dian Nur Sholihaningtias (2018) researching about decision support systems to level up position using profile matching methods [12], Research conducted by Ermawanita dan Rahmad Fauzi (2020) who researched the Application of Profile Matching Methods in the Support System of The Best Lecturer Selection Decision (Case Study: South Tapanuli Institute of Education) [13], Research conducted by Firdaus Idaman, Agus Junaidi dan Popon Handayani (2019) researching the Selection of the Best Employees Using the Profile Matching Method at PT. Surindo Pure Agung [14].

The Profile Matching method will result in two condition of prospective IMM members, namely the condition of graduating and not graduating. Then the final result of this method can be compiled so that it has a ranking whose result is the ranking of the best prospective IMM members. From these rankings the selection committee can ascertain which participants can be recruited to be able to join the IMM. Therefore, the purpose of this study is to analyze the support system for admission decisions of prospective Muhammadiyah Student Association cadres using the Profile Matching method. While the benefits of this research for the IMM is that it can be one of the options in selecting new prospective members [15,16].

II. METHOD

A. *Data collection*

Data collection is done by means of written tests and practices. At this stage participants will carry out a written test to find out the participants' knowledge about Muhammadiyah and IMM. Then test the practice to find out the participants' ability to read the Qur'an and worship.

B. *Flowchart Profile Matching Method*

The Profile Matching method has several stages in the process of working and can be seen in the following flowchart.

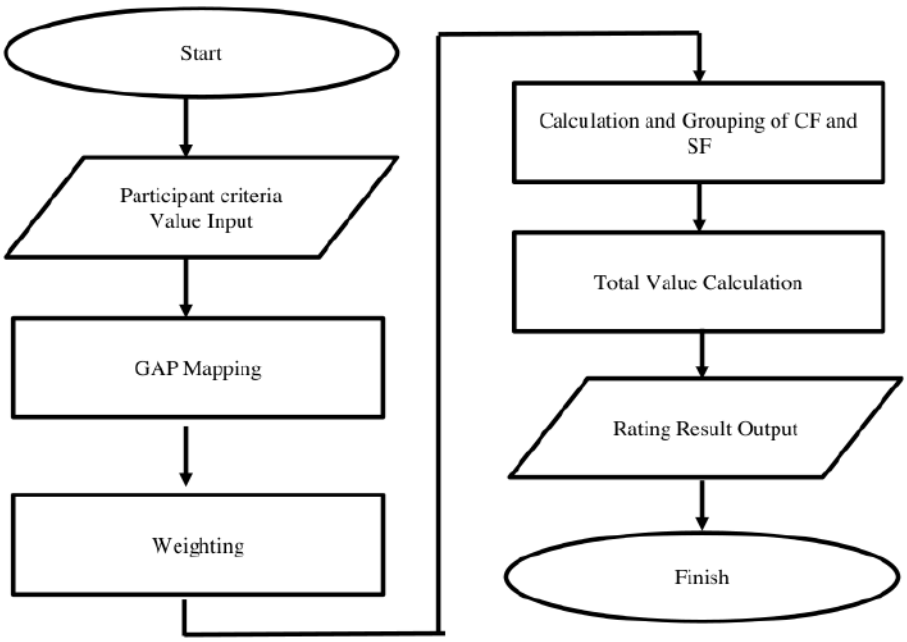

Fig. 1 Flowchart Stages Of Profile Matching Method

From the flowchart it can be concluded that there are 6 stages in the Profile Matching method, namely:

1) Input participant criteria value: At this stage the selection committee will conduct the process of inputting criteria data for each participant in accordance with the criteria value.

2) Gap mapping: For gap value mapping, it takes the ideal value of each criterion. The ideal value is the maximum value of each criterion that has been determined in tables I through IV. Then the criterion value is reduced by the ideal value so as to produce a gap / difference value [17].

3) Weighting: Each gap that has been generated will be coverted into weights [18].

4) Calculation and grouping of CF and SF: All aspects of the criteria are divided into two parts. In the Core Factor section there is the Qur'an and Worship. While the Secondary Factor section there are Muhammadiyah and IMM. The ratio used by Core Factor and Secondary Factor is 60: 40. The formula used is as follows [19,20]:

a. *Formula for calculating Core Factor*

$$NCF = \frac{\sum NC(Criteria)}{\sum IC}$$

Description :
NCF : Value Core Factor
NC (criteria) : Number of values Core Factor
IC : Number of items Core Factor

b. *Calculating formula Secondary Factor*

$$NSF = \frac{\sum NS(Criteria)}{\sum IS}$$

Description :
NSF : Value *Secondary Factor*
NS (criteria) : Number of values *Secondary Factor*
IS : Number of items *Secondary Factor*

5) Total Value Calculation: After getting the Core Factor and Secondary Factor values, the next step is to get the total value with the formula [21]:

(x)%NCF(criteria) + (x)%NSF(criteria) = Ntotal(criteria)
Description :
NCF(criteria) : Core factor average value
NSF(criteria) : The average value of the secondary factor.
N(criteria) : Total value of criteria
(x)% : Entered percent value

6) Rating: The rating is given based on the total score with the highest to the lowest score (descending) [22].

III. RESULTS AND DISCUSSION

Based on the stages described in the previous chapter. So the implementation of the Profile Matching method requires 6 stages.

1. Input criteria value: At the initial stage in using this method is to assign a value to each of the required criteria.

TABLE I
CRITERIA FOR READING AND WRITING AL-QURAN VALUE

Category	Value
Can't read Al-Quran	0
Can not read well	1
Can read less well	2
Can read well	3
Can read very well	4

TABLE II
WORSHIP CRITERIA VALUE

Category	Value
Unable to worship	0
Can worship less well	1
Can worship well	2

TABLE III
MUHAMMADIYAH KNOWLEDGE CRITERIA VALUE

Category	Value
Do not know	0
know a little	1
Knowing	2

TABLE IV
IMM KNOWLEDGE CRITERIA VALUE

Category	Value
Do not know	0
know a little	1
Knowing	2

Tables 1 to IV are the weight values of the competency standards on each aspect of the criteria or the value of the provisions of each variable used.

TABLE V
PARTICIPANT DATA VALUE

Num	Participant Name	Faculty	BTQ	Worship	Muh	IMM
1	Novi Aziz	FPP	3	2	2	2
2	Ryan Chauama Aditya	FPP	1	1	2	2
3	Rio Saputra	FPP	2	1	1	1
4	Tusi Gudoto	FPP	3	1	2	1
5	Pandu Muhammad Soleh	FPP	1	1	1	1
6	Alam Adi Putra	FPP	3	1	3	2
7	Rahmat Kunto Lakito	FPP	2	1	2	2
8	Juwanda Jaya Saputra	TEKNIK	1.5	1	0	1
9	Reza Saputra	FPP	1	2	0	1
10	Firnan Putra Erdiansyah	FPP	2	1	2	0
11	Hendra Yandi	FPP	2	1	2	0
12	Aji Putra Utama	FIKES	1	2	0	1
13	Novran Anggriawan	FEBI	2	1	1	1
14	Miko Julianto	FEBI	1	1	1	1
15	Khairil Akmal	FPP	3	2	3	3
16	Muhammad Dedek Rizky	FPP	3	1	1	1
17	Taufik Ramadhan	FPP	1	0	1	1
18	Randy Reza Vahlevi	FAI	3.5	1	2	2

19	Aprianto	FAI	4	2	2	2
20	Muhammad Aditya Rizky	FPP	2	2	2	1
21	Novran Rizky Alfando	FPP	1	2	1	1

In Table V, the data on the value of participants in this study were obtained from the results of the Screening Test on the basic cadre activities of the Muhammadiyah Student Association.

2. *Gap Mapping:* The required gap value is the result of subtracting the criteria value with the ideal value. The ideal value is determined from the maximum value based on tables I to IV. Then the ideal value obtained is as follows:

TABLE VI
IDEAL VALUE

Num	Criteria	Ideal Value
1	Reading and writing the Qur'an	4
2	Worship	2
3	Kemuhammadiyahan	2
4	IMM	2

In table VI, the ideal value is determined from the maximum value for each of the criteria in table I to table IV.

TABLE VII
GAP MAPPING

Num	Name	Criteria Value			
		BTQ	Worship	Muhammadiyah	IMM
1	Novi Aziz	3	2	2	2
2	Ryan CA	1	1	2	2
3	Rio Saputra	2	1	1	1
3	Tusi Gudoto	3	1	2	1
5	Pandu MS	1	1	1	1
6	Alam AP	3	1	3	2
7	Rahmat KL	2	1	2	2
8	Juwanda JY	1.5	1	0	1
9	Reza Saputra	1	2	0	1
10	Firnan PE	2	1	2	0
Ideal Value		4	2	2	2

In table VII Mapping the gap/difference is a reduction in the value of the criteria with the ideal value. in this discussion the researcher only takes 10 participants as an example for the calculation.

TABLE VIII
GAP RESULTS VALUE

No.	Name	GAP BTQ	GAP Worship	GAP Muh	GAP IMM
1	Novi Aziz	-1	0	0	0
2	Ryan CA	-3	-1	0	0
3	Rio Saputra	-2	-1	-1	-1
4	Tusi Gudoto	-1	-1	0	-1
5	Pandu MS	-3	-1	-1	-1
6	Alam AP	-1	-1	1	0
7	Rahmat KL	-2	-1	0	0
8	Juwanda JY	-2.5	-1	-2	-1
9	Reza Saputra	-3	0	-2	-1
10	Firnan PE	-2	-1	0	-2

In Table VIII are the result values of the gap/difference obtained from reducing the criteria value with the ideal value.

3. *Weighting:* After the gap value is obtained, the value must be converted into a weight value with the following conditions:

TABLE IX
WEIGHT VALUE

Num	difference	Weight Value	Description
1	0	5	No difference (competence as required)
2	1	4,5	Individual competence excess 1 levels/level
3	-1	4	Individual competence is less than 1 level/level
4	2	3,5	Individual competence excess 2 levels / level
5	-2	3	Individual competence less than 2 levels/level
6	3	2,5	Individual competence excess 3 levels / level
7	-3	2	Individual competence lacks 3 levels/level
8	4	1,5	Individual competence lacks 4 levels/level
9	-4	1	Individual competence lacks 4 levels/level

Table IX is the provision or reference for the weight value, then after the gap value is obtained, the value is converted into a weighted value.

TABLE X
CONVERSION RESULTS INTO WEIGHT VALUE

Num	Participant Name	BGAP BTQ	BGAP IBADAH	BGAP MUH	BGAP IMM
1	Novi Aziz	4	5	5	5
2	Ryan CA	2	4	5	5
3	Rio Saputra	3	4	4	4
4	Tusi Gudoto	4	4	5	4
5	Pandu MS	2	4	4	4
6	Alam AP	4	4	4.5	5
7	Rahmat KL	3	4	5	5
8	Juwanda JY	3	4	3	4
9	Reza Saputra	2	5	3	4
10	Firnan PE	3	4	5	3

In table X is the result of the conversion of the value of the gap/difference into the value of weight

4. *Calculation and grouping of Core Factor and Secondary Factor:* In calculating the Core Factor, the formula used is

$$NCF = \frac{\sum NC(Criteria)}{\sum IC}$$

Where NC is the sum of the weight values on the BTQ and Worship criteria. While IC is the number of selected criteria items to be grouped into Core Factors. From the above formula, the calculation is as follows:

$$NCF(Novi\ Aziz) = \frac{4+5}{2} = 4.5$$

So, Novi Aziz's Core Factor Value is 4.5.

While the Secondary Factor Value can be determined by the following formula:

$$NSF = \frac{\sum NS(Criteria)}{\sum IS}$$

Where NS is the sum of the weight values on the Muhammadiyah and IMM criteria. While IS is the number of selected criteria items to be grouped into Secondary Factors. From the above formula, the calculation is as follows:

$$NSF(Novi\ Aziz) = \frac{5+5}{2} = 5$$

Then, Novi Aziz's Secondary Factor Value is 5.

5. *Total Value Calculation:* With the ratio of Core Factor and Secondary Factor is 60: 40. Then the Core Factor and Secondary Factor values need to be converted according to a predetermined ratio. To get the total value, the calculation is as follows:

$$Ntotal = (60)\%NCF(criteria) + (40)\%NSF(criteria)$$

Ntotal(Novi Aziz = (60% x 4.5) + (40% x 5)
= 4.7

Thus, Novi aziz got a total value of 4.7.

6. *Rangking Result Output*

TABLE XI
RANGKING

Rating	Name	Total Value
2	Novi Aziz	4.7
10	Ryan CA	3.8
11	Rio Saputra	3.7
6	Tusi Gudoto	4.2
19	Pandu MS	3.4
5	Alam AP	4.3
8	Rahmat KL	4.1
16	Juwanda JY	3.5
17	Reza Saputra	3.5
12	Firnan PE	3.7

In table XI the ranking is the result of sorting based on the highest to lowest scores of the 10 participants calculated in the discussion of this study.

IV. CONCLUSION

This study combines a decision support system with the Profile Matching method. As a result, this method can provide objective recommendations if follow the steps of this method correctly. So that it can be used in determining prospective IMM members to be recruited as well as finding the best participants. However, the Profile Matching method will be more effective if the criteria items are more varied and more numerous so as to produce optimal results. From the final results or rankings, Novi Aziz got a score of 4.7 ranked 2nd, Ryan Chauma Aditya 3.8 ranked 10th and Rio Saputra 3.7 ranked 11. And from the total results calculated, there were three participants who did not pass with a value of 3.4 and below.

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