IMPLEMENTATION OF PROFILE MATCHING METHOD FOR SELECTION OF THE BEST STUDENT

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Abstract
Growing awareness of the decision support needs and the desire to get better information. Higher Education each year holds a large selection of high achieving students, namely students who have good achievements and meet the applicable requirements that must be met. To help determine the winner determination and find the best alternative, high achieving students who can provide alternative solutions can use the profile matching method. The use is of the Profile Matching method very precise due to this method being able to select some of the best alternatives from aspects of existing criteria. In using this method the weight value for each aspect is required, such as Academic and non-Academic aspects carried out by the Student, after that the ranking is carried out for all prospective students who excel in the selected participants, and the results of selection use for decision-making in the determination of outstanding students.
Keywords: Profile Matching, Decision Support System, Student Achievement

INTRODUCTION

As proof that a student has the best predicate in higher education is measured by the extent of the success and predicate of his students, so students are required to be active and have achievements in academic and non-academic fields, extracurricular or extracurricular. Therefore, each university needs to find and know which students can achieve these two achievements to be awarded as outstanding students (T. Limbong,2018). The stages of the selection and selection of high achieving students currently being carried out have constraints such as, the data processing process in selecting the best students because it requires a relatively long time, and the number of students who meet the requirements in the tertiary institution becomes a difficult indicator to determine the most outstanding students(J. T. Katherine Bertolini & Andrew Stremmel,2012).

A decision support system is a system and specific ways used to help the management to make a decision related to issues that are structured and semi-structured (D. Nofriansyah & S. Defit,2017). This system is equipped with facilities to get results in various alternatives that can be interactively used by users. Another requirement is the use of the model as a benchmark used in the development of alternatives and solutions. The use of this model is related to the nature of the problem that must be solved by the user, namely semi-structured or even unstructured. So the more different models of systems owned by the system, so that alternative decisions can be created and will be richer (a lot), another feature of this system is that most use the function of computer technology as a motor for driving. So often mentioned decision support systems are computer-based intelligent systems (computer-based systems)(T. Limbong,2018 ; K. P. Tripathi,2011).

Resolving a problem requires a technique or way to support and the basis for decision making for the selection of outstanding students, namely the Profile Matching method, the reason for using the method is to be able to select and determine which alternative is the best from all aspects of the existing criteria. Starting from the stage of finding the weight value of each aspect, such as Academic aspects and non-Academic aspects owned by students, after that it ranks the prospective students who participate in the selection of achievers so that the results help the decision maker determine student achievement accurately (*J. Sains& Mat.*,,2015);(S. Mahulae,2019). Profile Matching is a method in the decision making system and as decision support, each alternative competency assessment process is carried out by comparing one profile value with several other competency profile values, so that the results of the difference between the needs of the required competencies are found, the difference between those competencies called a gap, where the results of the smaller value of the gap has a better value (*J. Sains Dan Mat.*,,2015);(S. SunartiR. Y. Rangga,2017)Profile matching method is a method that is often used as a mechanism in deciding by assuming that there is an ideal level of predictor variables that must be met by the object under study, not just limited to the minimum value level that must be met or passed. The process of calculating the profile matching method is generally a process of comparing the actual data value of a profile to be assessed with the expected profile value, intending to know the difference incompetence, also called a gap. The calculation steps in profile matching are as follows: 1. Determine variable data needed.

2. Determine the components of aspects used for assessment.
3. Mapping of GAP profile values.

Gap = Minimum Profile Value - Profile value of the test data

4. After obtaining the GAP value, then weights are made for each GAP value.
5. Calculation and division of Core Factor groups with Secondary Factor. After determining the weight of each gap value, then grouped into 2 groups, namely:
   a. Core Factor, which is the most important and needed criterion (competence) or prominent or is most needed by an assessment that is expected to obtain optimal results.

      NFC = ENC / EIC

      Information:

      NFC : The average value of the core factor

      NC : The total number of core factor values

      IC : Number of core factor items

   b. Secondary Factor (supporting factor), which is an indicator other than that of the core factor which is a supporting factor (supporting conditions) that is less needed in an assessment.

      NFS = ENS / EIS

      Information:

      NFS: The average value of the secondary factor

      NS: The total number of secondary factor values

      IS: Number of secondary factor items

6. Calculation of Total Value. Total value is obtained from the percentage of core factors and secondary factors which are estimated to influence the results of each profile.

   N = (x)% NCF + (x)% NSF

   Information:

   N: Total value of the criteria

   NFS: The average value of the second factor

NFC: The average value of the core factor

(x)%: The percent value inputted

7. Calculation of ranking. The final result of the profile matching process is ranking. Determination of ranking refers to the results of certain calculations.

Ranking = (x)% NMA + (x)% NSA

Information :

NMA: Total value of the main Aspect criteria

NSA: Total value of Supporting Aspect criteria

(x)%: The percent value inputted

RESEARCH METHODS

A description of the flow of research carried out in the form of flowcharts or flow diagrams to facilitate the implementation and development stages in implementing methods into the programming language, this diagram also explains how the method works in the system from beginning to end(T. Limbong, E. Napitupulu, 2018)Following is the flowchart image of the profile matching method:
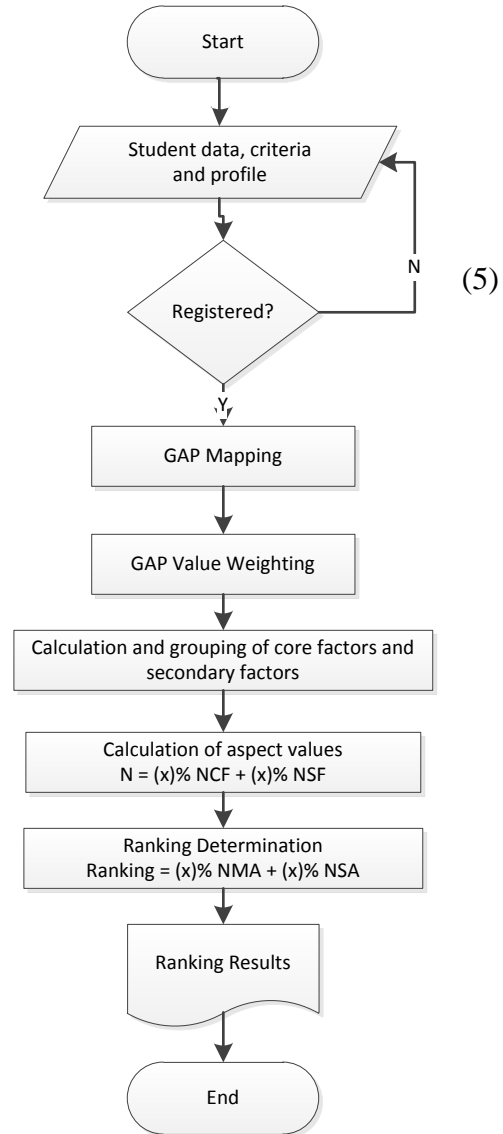

Figure 1. Flowchart profile matching method

RESULTS AND DISCUSSION

Decision making in the selection of outstanding students is carried out starting from collecting all alternatives and existing criteria and have been formulated before to solve a problem or conflict that occurs in tertiary institutions(J. T. Katherine Bertolini&Andrew Stremmel,2012). Decision model is a technique for developing a logical relationship that underlies the decision problem into a mathematical model, which will describe the relationship that occurs between the factors involved (K. P. Tripathi,2011);(T. Limbong,2018)

Table 1. Analysis of the evaluation of aspects of the criteria

No	Aspects	Sub criteria description
1	Academic achievement	Mastery of language EL / FL = English / Foreign Language Prec = Presence Character a. Disp = Discipline b. Po = politeness Cognitive a. Psy = Psychological test b. GPA = cumulative achievement index
2	Non Academic Achievement	TMR = Training in marching regulations Research and Service a. SW = Scientific Work b. ComS = Community Service Inter-University Contest a. LOC = Local Level b. NAT = National Level

Where the sub-aspect criteria are as follows:

Table 2. Value of sub-aspect criteria

Criteria	Value Weight	Value
Not eligible	1	0 – 55
Less	2	56 – 74
Enough	3	75 – 80
Well	4	81 – 90
Very good	5	91 – 100

Table 3. Weight of the GPA criterion values

GPA	Value
> 3.60	5
> 3.40 – 3.60	4
>3.20 – 3.40	3
>2.50 – 3.20	2
2.50	1

2. Calculation of GAP competency mapping based on aspects
1. Academic Aspects

Table 4. Calculation of Academic aspects gap

2. Calculation of GAP competency mapping based on aspects
1. Academic Aspects

Table 4. Calculation of Academic aspects gap

No	Student Name	Student ID Number	Major	EL / FL	Prec	Po	Disp	Psy	GPA	
1	Destri Gultom	160840003	Technical Information	3	4	3	4	2	3	
2	Rolas Meiputra Nababan	160840015	Technical Information	4	5	2	3	4	4	
3	Fera Novianti Sibagariang	160810008	Information systems	2	3	2	4	3	2	
4	Nelby Amelia Kasandra Manurung	160810011	Information systems	3	3	4	3	2	3	
5	Ropita Hotrezkina Malau	160810010	Information systems	5	4	5	4	3	4	
Profile of outstanding students				5	4	4	3	3	4	
1	Destri Gultom	160840003	Technical Information	-2	0	-1	1	-1	-1	
2	Rolas Meiputra Nababan	160840015	Technical Information	-1	1	-2	0	1	0	GAP
3	Fera Novianti Sibagariang	160810008	Information systems	-3	-1	-2	1	0	-2	
4	Nelby Amelia Kasandra Manurung	160810011	Information systems	-2	-1	0	0	-1	-1	
5	Ropita Hotrezkina Malau	160810010	Information systems	0	0	1	1	0	0	

2. Non-Academic Aspects

Table 5. Calculation of GAP non Academic aspects

No	Student Name	Student ID Number	Major	TMR	SW	ComS	LOC	NAT	
1	Destri Gultom	160840003	Technical Information	3	4	4	3	4	
2	Rolas Meiputra Nababan	160840015	Information systems	4	3	4	5	2	
3	Fera Novianti Sibagariang	160810008	Information systems	4	5	5	4	3	
4	Nelby Amelia Kasandra Manurung	160810011	Technical Information	5	3	5	5	4	
5	Ropita Hotrezkina Malau	160810010	Information systems	2	5	4	5	3	
Profile of outstanding students				3	4	2	3	5	
1	Destri Gultom	160840003	Technical Information	0	0	2	0	-1	
2	Rolas Meiputra Nababan	160840015	Information systems	1	-1	2	2	-3	GAP
3	Fera Novianti Sibagariang	160810008	Information systems	1	1	3	1	-2	

CONCLUSION

From the research results of the Implementation of Profile Matching Method in the decision making for the selection of outstanding students, several conclusions can be drawn, including:

1. With this research, it can provide an understanding of how the procedures in the selection requirements for achieving students and in making a decision in the selection of outstanding students, but the most absolute decisions are still in the hands of decision makers or leaders.
2. The profile matching method is used to determine the ranking of outstanding students, starting with weighting criteria then grouping and calculating core factors and secondary factors, calculating the total value and then calculating the ranking.
3. In the selection of outstanding students can be combined with other methods, in order to get better and accurate results.

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