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ANALYSIS OF THE INTERN ELIGIBILITY RECOMMENDATION SYSTEM FOR INTERNSHIP USING THE SPECIFIC-MEASURABLE-ACHIEVABLE-RELEVANT-TIME BOUND METHODOLOGY AT PT PELINDO IV MAKASSAR

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Abstract
An Internships is an activity carried out in the world of work as learning, education, or training tailored to competencies in their fields. Manual processes involving information gathering and student eligibility assessments have traditionally experienced difficulties and delays. In addition, the criteria used to evaluate student eligibility also tend to be subjective and not objectively measurable. Simple Multi-Attribute Ratting Technique is a decision-making method that uses the elements of the decision matrix as an estimate of each alternative for all criteria, as well as takes into account the normalization of the elements of the decision matrix. Based on the data in Table 13, the results of the calculation process using the SMART method are known that alternative students A3 and A2 are the most worthy of being recommended to carry out MPAs at PT Pelindo IV Makassar with a value of >= 0.50. It is concluded that through the application of the SMART method, recommendations can be made on the eligibility of intern at PT Pelindo IV so that prospective intern can be selected objectively. Suggestions for future research are to use hybrid techniques against multiple methods that can support the recommendation process, as well as use more specific criteria.
Keywords: SMART, recommendation, student, internship

INTRODUCTION

Internships are activities carried out in the world of work as learning, education, or training tailored to competencies in their fields (Setiawan et al., 2022). While practical fieldwork is one of the important components that provide practical experience to students, the process of placing students in workplaces that match their interests and qualifications is often challenging. Manual processes involving information gathering and student eligibility assessments have traditionally experienced difficulties and delays. In addition, the criteria used to evaluate student eligibility also tend to be subjective and not objectively measurable.

The industry's needs for interns are very important in preparing students to enter the world of work. Fieldwork experience is an integral part of college courses. PT Pelindo IV Makassar is a State-Owned Enterprise company engaged in providing port services, as well as acting as a port operator in Indonesia, managing and operating a number of ports throughout Indonesia. In general, students have an interest in carrying out MPAs at PT Pelindo because conducting MPAs at PT Pelindo can expand professional networks, build relationships with industry practitioners, and gain insight into career opportunities available in the field of ports and logistics. However, sometimes the selection of fieldwork

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practice places for students is often not in accordance with the abilities possessed by the students themselves so that students cannot carry out fieldwork optimally (Rahayu &; Putra, 2020). Therefore, optimizing the eligibility selection process for students who will carry out Internships at PT. Pelindo IV Makassar. In this study, the development of a feasibility recommendation system for field work study students was carried out using the Specific, Measurable, Achievable, Relevant, Time-bound (SMART) method.

This recommendation system will utilize information technology and intelligent algorithms to identify relevant and objective criteria in assessing students' eligibility for fieldwork. Thus, it is hoped that the process of placing students in the workplace can be faster, more precise, and in accordance with their interests and skills. With the eligibility recommendation system for fieldwork students, it is expected to speed up and facilitate the process of student placement. Students will get workplace recommendations that suit their interests and qualifications, while PT. Pelindo IV Makassar will get an efficient system in selecting the eligibility of KKL students. In the long run, it is expected that this system can improve administrative efficiency and the quality of fieldwork experience undertaken by students.

MATERIALS AND METHODS

Simple Multi-Attribute Ratting Technique is a decision-making method that uses decision matrix elements as estimates of each alternative for all criteria, as well as taking into account the normalization of decision matrix elements (Horpenko et al., 2019). A Decision Support System is a system designed to support managers in deciding on some criteria and some attributes (Mardison et al., 2021). SMART is a multi-criteria decision-making technique based on the theory that each alternative consists of a number of criteria that have values and each criteria has a weight that describes how important it is compared to other criteria. This weighting is used to assess each alternative in order to obtain the best alternative (Suryanto &; Safrizal, 2015).

SMART uses linear adaptive models to predict the value of each alternative. The best analysis is transparent so that this method provides a high understanding of the problem and is acceptable to the decision-maker. The weighting on SMART uses a scale of 0 to 100, making it easier to calculate and compare values on each alternative. (Yunitarini, 2013). The stages in the SMART method are as follows (Goodwin &; Wright, 2014) :

a. Detemining of Criteria

Determine the criteria used in solving decision-making problems.

b. Determining of Weight

Determine the weight used in solving decision-making problems.

c. Normalization of criteria weight

Calculates the normalized weight of each criteria by comparing the value of the criteria weight with the sum of the criteria weights, using the equation :

$$w_i = \frac{w_i'}{\sum_{j=1}^{m} w_j} \quad (1)$$

Details :

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w_i = Normalized Criteria Weights for the i criteria
w'_i = criteria weight i
w_j = criteria weight j
j = 1,2,3, ... , m number of criteria

d. Provide Parameter Values for Each Criteria

Provide a criteria value for each alternative, the criteria value for each alternative can be in the form of quantitative data or in the form of qualitative data.

e. Specifying Utility Values

Define utility values by converting the criteria values on each criteria into raw data criteria values. The value of this utility depends on the nature of the criteria itself, calculated using equations :

$$u_i(a_i) = \frac{(C_{max} - C_{out})}{(C_{max} - C_{min})} \quad (2)$$

Details:
$u_i(a_i)$ = utility criteria value i for alternative -i
C_{max} = criteria value maksimum
C_{min} = criteria minimum
C_{out} = criteria value i

f. Determining the Final Value

Determine the final value of each by multiplying the value obtained from the normalized value of the standard data criteria by the normalized value of the criteria weight. Written in formulas

$$u(a_i) = \sum_{j=1}^{m} w_j * u_j(a_i) \quad (3)$$

Details:
u(ai) = Total value for alternatives i
wj = Total value for alternatives j that have normalized
uj (ai) = Criteria Utility value variable j for alternative i

Decision support systems are designed to help support decision making by processing information with necessary data, but not to take over that decision-making (Sukmawati et al., 2016).

RESULTS AND DISCUSSIONS

Recommendation systems play an important role in the modern era and are used by many prestigious applications. Heuristic similarity recommendation systems and trust measures are worked on to address the problem of the level of trust in the resulting decision (Yang et al., 2018). In the application of the SMART method to determine the eligibility recommendations for intern at PT Pelindo IV Makassar, the stages of the process of using the SMART method are :

Alternative Indentifiaction

Based on the alternative data obtained, the author can input alternatives. More details can be seen in Table 1 as follows:

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Table 1 List of Alternative

CODE	INTERNS
090122900	Student 1
090122901	Student 2
090122902	Student 3
090122903	Student 4

Determining of Criteria

Based on the criteria data obtained, you can input the criteria. More details can be seen in table 2 as follows :

Table 2 List of Criteria

Code	Criteria	Type
C1	Practical Skills	Benefit
C2	IPK	Benefit
C3	Campus Achievements	Benefit
C4	Verbal Skills	Benefit

Determining of Criteria Weights

The next stage is to give the value of the criteria weight based on importance. In this case, the researcher uses a scale of values from 0 - 100 to determine the weights as shown in table 3 as follows:

Table 3 Criteria Weights value

Criteria	Bobot
C1	40
C2	20
C3	10
C4	30
TOTAL	100

Normalization of Criteria Weights

After assigning the weight of each criteria, then normalize using formula 2, as in Table 4, as follows :

Table 4 Normalization of Criteria Weights

Criteria	Weight	Normalization
C1	40	0.400
C2	20	0.200
C3	10	0.100
C4	30	0.300

Counting of wieght normalization:

Criteria C1 : $w_i = \frac{w_i'}{\sum_{j=1}^{m} w_j} = \frac{40}{100} = 0.400$

Criteria C2 : $w_i = \frac{w_i'}{\sum_{j=1}^{m} w_j} = \frac{20}{100} = 0.200$

Criteria C3 : $w_i = \frac{w_i'}{\sum_{j=1}^{m} w_j} = \frac{10}{100} = 0.100$

Criteria C4 : $w_i = \frac{w_i'}{\sum_{j=1}^{m} w_j} = \frac{30}{100} = 0.300$

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Scoring of Alternatives

Based on the value in the criteria, then fill in the value in the alternative for each criteria by looking at the value that has been determined. The filling of the value in the alternate can be seen in Table 5 as follows:

Table 5 Scoring of Alternatives

Alternative	C1	C2	C3	C4
A1	1	1	5	1
A2	3	1	10	0
A3	2	2	6	1
A4	0	3	9	0

Counting of Utility Value

The determination of utility values C1, C2, C3, C4 for each alternative is calculated using equation (3). It is known that all Criteria use type benefit criteria, so each utility value of each alternative can be calculated as follows:

Criteria utility value for C1 :

$C_{max(C1)} = \{1; 3; 2; 0\} = 3$

$C_{min(C1)} = \{1; 3; 2; 0\} = 0$

$$u_{C1(a_1)} = \frac{(C_{out(a_1)} - C_{min(C1)})}{(C_{max(C1)} - C_{min(C1)})} = \frac{(1-0)}{(3-0)} = 0.333$$

$$u_{C1(a_2)} = \frac{(C_{out(a_2)} - C_{min(C1)})}{(C_{max(C1)} - C_{min(C1)})} = \frac{(3-0)}{(3-0)} = 1.000$$

$$u_{C1(a_3)} = \frac{(C_{out(a_3)} - C_{min(C1)})}{(C_{max(C1)} - C_{min(C1)})} = \frac{(2-0)}{(3-0)} = 0.667$$

$$u_{C1(a_4)} = \frac{(C_{out(a_4)} - C_{min(C1)})}{(C_{max(C1)} - C_{min(C1)})} = \frac{(0-0)}{(3-0)} = 0.000$$

Criteria utility value for C2:

$C_{max(C2)} = \{1; 1; 2; 3\} = 3$

$C_{min(C2)} = \{1; 1; 2; 3\} = 1$

$$u_{C2(a_1)} = \frac{(C_{out(a_1)} - C_{\min(C2)})}{(C_{max(C2)} - C_{\min(C2)})} = \frac{(1-1)}{(3-1)} = 0.000$$

$$u_{C2(a_2)} = \frac{(C_{out(a_2)} - C_{min(C2)})}{(C_{max(C2)} - C_{min(C2)})} = \frac{(1-1)}{(3-1)} = 0.000$$

$$u_{C2(a_3)} = \frac{(C_{out(a_3)} - C_{min(C2)})}{(C_{max(C2)} - C_{min(C2)})} = \frac{(2-1)}{(3-1)} = 0.500$$

$$u_{C2(a_4)} = \frac{(C_{out(a_4)} - C_{min(C2)})}{(C_{max(C2)} - C_{min(C2)})} = \frac{(3-1)}{(3-1)} = 1.000$$

Criteria utility value for C3:

$C_{max(C3)} = \{5; 10; 6; 9\} = 10$

$C_{min(C3)} = \{5; 10; 6; 9\} = 5$

$$u_{C3(a_1)} = \frac{(C_{out(a_1)} - C_{\min(C3)})}{(C_{max(C3)} - C_{\min(C3)})} = \frac{(5-5)}{(10-5)} = 0.000$$

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$$u_{C3(a_2)} = \frac{(C_{out(a_2)} - C_{min(C3)})}{(C_{max(C3)} - C_{min(C3)})} = \frac{(10-5)}{(10-5)} = 1.000$$
$$u_{C3(a_3)} = \frac{(C_{out(a_3)} - C_{min(C3)})}{(C_{max(C3)} - C_{min(C3)})} = \frac{(6-5)}{(10-5)} = 0.200$$
$$u_{C3(a_4)} = \frac{(C_{out(a_4)} - C_{min(C3)})}{(C_{max(C3)} - C_{min(C3)})} = \frac{(9-5)}{(10-5)} = 0.800$$

Criteria utility value for C4
$C_{max(C4)} = \{1; 0; 1; 0\} = 1$
$C_{min(C4)} = \{1; 0; 1; 0\} = 0$

$$u_{C4(a_1)} = \frac{(C_{out(a_1)} - C_{min(C4)})}{(C_{max(C4)} - C_{min(C4)})} = \frac{(1-0)}{(1-0)} = 1.000$$
$$u_{C4(a_2)} = \frac{(C_{out(a_2)} - C_{min(C4)})}{(C_{max(C4)} - C_{min(C4)})} = \frac{(0-0)}{(1-0)} = 0.000$$
$$u_{C4(a_3)} = \frac{(C_{out(a_3)} - C_{min(C4)})}{(C_{max(C4)} - C_{min(C4)})} = \frac{(1-0)}{(1-0)} = 1.000$$
$$u_{C4(a_4)} = \frac{(C_{out(a_4)} - C_{min(C4)})}{(C_{max(C4)} - C_{min(C4)})} = \frac{(0-0)}{(1-0)} = 0.000$$

Based on the results of calculating the utility value against each criteria, the results are obtained as shown in Table 6.

Table 6 Result of Utility Value

Alternative	C1	C2	C3	C4
A1	0.333	0.000	0.000	1.000
A2	1.000	0.000	1.000	0.000
A3	0.667	0.500	0.200	1.000
A4	0.000	1.000	0.800	0.000

Determining Result Value

Next, determine the final value of each by multiplying the value obtained from the normalization of the Criteria value of the standard data with the normalized value of the Criteria weight using the equation (2.4) and obtain the following results :

The final alternative value for alternative A1

$$u(a_1) = \sum_{j=1}^{m} w_j * u_j\,(a_1)$$

$$(w_{C1} \times u_{C1(a1)}) + (w_{C2} \times u_{C2(a1)}) + (w_{C3} \times u_{C3(a1)}) + (w_{C4} \times u_{C4(a1)})$$
$$(0.333 \times 0.400) + (0.000 \times 0.200) + (0.000 \times 0.100) + (1.000 \times 0.300)$$

Obtained last value u(a1) sebesar = 0.433

The final alternative value for alternative A2

$$u(a_2) = \sum_{j=1}^{m} w_j * u_j\,(a_2)$$

$$(w_{C1} \times u_{C1(a2)}) + (w_{C2} \times u_{C2(a2)}) + (w_{C3} \times u_{C3(a2)}) + (w_{C4} \times u_{C4(a2)})$$

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$(1.000 \times 0.400) + (0.000 \times 0.200) + (1.000 \times 0.100) + (0.000 \times 0.300)$

Obtained last value u(a2) sebesar = 0.500

The final alternative value for alternative A3

$$u(a_3) = \sum_{j=1}^{m} w_j * u_j(a_3)$$

$$= (w_{C1} \times u_{C1(a3)}) + (w_{C2} \times u_{C2(a3)}) + (w_{C3} \times u_{C3(a3)}) + (w_{C4} \times u_{C4(a3)})$$

$$(0.667 \times 0.400) + (0.500 \times 0.200) + (0.200 \times 0.100) + (1.000 \times 0.300)$$

Obtained last value u(a3) sebesar = 0.687

The final alternative value for alternative A4

$$u(a_4) = \sum_{j=1}^{m} w_j * u_j(a_4)$$

$$(w_{C1} \times u_{C1(a4)}) + (w_{C2} \times u_{C2(a4)}) + (w_{C3} \times u_{C3(a4)}) + (w_{C4} \times u_{C4(a4)})$$

$$(0.000 \times 0.400) + (1.000 \times 0.200) + (0.800 \times 0.100) + (0.000 \times 0.300)$$

It obtained final value for u(a4) is = 0.280

Based on the result of the utility value, it is obtained that final value is shown in Table 7:

Table 7 Result of utility value for alternatives

Alternatives	C1	C2	C3	C4	u
A1	0.133	0.000	0.000	0.300	0.433
A2	0.400	0.000	0.100	0.000	0.500
A3	0.267	0.100	0.020	0.300	0.687
A4	0.000	0.200	0.080	0.000	0.280

The Recommendation

Based on the results of the calculation of the previous final value, by sorting the data values from the largest to the smallest obtained the results as in Table 8 below:

Table 8 Result of Recommendation of Alternatives

Alternative	C1	C2	C3	C4	u	Decision
A3	0.267	0.100	0.020	0.300	0.687	Accepted
A2	0.400	0.000	0.100	0.000	0.500	Accepted
A1	0.133	0.000	0.000	0.300	0.433	Rejected
A4	0.000	0.200	0.080	0.000	0.280	Rejected

Based on the data in Table 13, the results of the calculation process using the SMART method are known that alternative students A3 and A2 are the most worthy of being recommended to carry out MPAs at PT Pelindo IV Makassar with a value of >= 0.50.

CONCLUSIONS & RECOMMENDATIONS

The conclusion in this study is that based on the results of the analysis that has been carried out, through the application of the SMART method, recommendations can be made for the feasibility of Interns at PT. Pelindo IV so that prospective Internships students can be selected objectively. Suggestions for

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future research are to use hybrid techniques against multiple methods that can support the recommendation process, as well as use more specific criteria.

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