

Performance Assessment System of Structural Officers in Supporting Employee Acceptance Decision at Flores University Using AHP Method

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Abstract— One of the problems faced at the University of Flores is the employee performance is not optimal for the placement of prospective employees are carried out subjectively and not seen from the competence of human resources, delays and inaccurate data resulting from the performance of the University of Flores university institution. To solve this problem, the researchers conducted a structural officer performance appraisal system using the AHP method as a support in making decisions to recruit employees at the University of Flores. The method used in this research is the Analytical Hierarchy Process method, the population in this study is all employees of the University of Flores with a sample of 126 people, the data collection technique uses a questionnaire with a Likert scale and the data analysis technique uses the results of the structural official performance evaluation from the AHP method. The results showed that the AHP method for the structural officer appraisal system was very good and consistent as supporting decisions for hiring employees at the University of Flores.

Keywords— Officers' Performance Assessment System, Employee Admission Decision, AHP Method.

I. INTRODUCTION

One of the most important elements in a company is Human Resources (HR). The introduction of HR from a company greatly affects many aspects that determine the success of the work of the company. If HR can be well organized, it is hoped that the company can carry out all business processes properly. The University of Flores is a private university that is developing and continues to make improvements both in terms of quality and quantity, one of which is the Performance Evaluation of Structural Officials to determine work performance and evaluate the performance of structural officials as input for leadership for training programs and human resource development against these officials. So far, the University of Flores has not owned a system for evaluating the performance of structural officials, so that the performance evaluation process for structural officials has not been implemented optimally, so it is not uncommon to make mistakes in decision making regarding the placement of structural positions for certain functions, therefore it is necessary to build a decision support system to evaluate the performance of structural officials. Efforts to improve the performance of structural officials include, among others, welfare, motivation, rewards, education and training, assignments, leadership, work discipline and others. The Analytical Hierarchy Process (AHP) method is a decision support model that can solve complex multi-criteria problems into a hierarchy.

Delays and inaccurate data resulting from the performance of an agency, bureau or institution in a tertiary institution can cause a university to fail to achieve its predetermined vision and mission, less than optimal performance of human resources who work in agencies, bureaus and institutions. This is because, at the time of recruitment, whether to meet the needs of Bodies, Bureaus and Institutions, or even for the needs of other personnel at the University, it is only based on subjectivity and on the basis of the degree of work of the applicant, therefore it is necessary to make improvements in the decision model of recruitment of employees, especially technical executing employees. Selection is one of the stages to decide whether an applicant is accepted or not to work. It is hoped that the decision to accept and place employees who apply is not subjective in nature so that the quality of my human resources (HR) obtained can be in accordance with expectations so that no party is disadvantaged. In order to avoid the subjectivity of the resulting decisions, a Decision Support System (DSS) is needed which can assist Foundation Leaders in deciding whether applicants are accepted to work or not, based on the criteria the applicant must meet.

To overcome this problem, the researcher used the AHP method to determine qualitative values, into quantitative values so that the decision to be taken to carry out a structural officer assessment system at the University of Flores was more active. According to Saaty, hierarchy is a representation of a complex problem in a multi-level structure where the first level is the goal followed by the factor, criteria, sub-criteria level and so on until the final level of the alternative.

II. THEORY ANALYSIS

1. Performance Assessment System

According to Robert L. Mathis and John H. Jackson (2006, p382) performance appraisal is a process of evaluating how well employees do their job, when compared to some predetermined standards, then conveying and communicating this information to employees, whereas in Mathis's opinion and Jackson, Performance appraisal is the process of evaluating employees in doing work

that is comparable to standards and is followed by providing that information to employees. Performance appraisal is often referred to as rating employees through reviewing, evaluating and appraising work results.

2. Decision Support Systems

The definition of a decision support system according to Kusriani (2007) is an information system that provides information, modelling and data manipulation, Mcloed & Schell (2008) said that decision support systems are used to describe systems designed to help managers solve certain problems, while according to Turban, Sharda & Delen (2011) Decision Support System is a computer-based information system that is flexible, interactive and adaptable, which is developed to support solutions to specific unstructured management problems. Decision Support Systems use data, provide an easy user interface and can incorporate decision-making thinking.

3. Analytical Hierarchy Process (AHP)

According to Saaty in (Sumiati, 2007) the AHP method helps solve complex problems by structuring a hierarchy of criteria, interested parties, results and by drawing various considerations in order to develop weights or priorities. This method also combines the power of feeling and the logic involved in various problems, then synthesizes the various considerations into results that match our expectations intuitively as presented in the judgments that have been made. Understanding the AHP (Analytical Hierarchy Process) Method According to Kazibudzki and Tadeusz (2013) Analytic Hierarchy Process (AHP) is a multi-criteria decision making with the support of a methodology that has been recognized and accepted as a priority which theoretically can provide different answers to decision-making problems and provide ratings on an alternative solution.

III. RESEARCH METHOD

The method used in this research is AHP (Analytic Hierarchy Process). The population in this study is all employees of the University of Flores with a sample of 126 people, and the techniques used in data collection are using a questionnaire with a Likert scale and data analysis using the results of the performance evaluation of structural officials. To analyse the performance appraisal of structural officials, use the AHP method as follows:

1. Define the problem and find a solution to solve the problem
2. Determine which elements will be prioritized
3. Perform synthesis with the following steps:
 - a) Sum the values in each column of the matrix
 - b) The sum of the total values in each column is divided to determine the normalization of the matrix
 - c) The average value is obtained from the total sum of the values for each row divided by the sum of each element
4. Measure consistency

In making decisions it is important to know how good the consistency is because we don't want decisions based on considerations with low consistency.

1. Calculate the consistency index (CI) with the formula:

$$CI = \frac{\lambda_{maks} - n}{n}$$

N = Number of Elements

2. Calculate the consistency ratio (CR) with the formula:

$$CR = \frac{CI}{IR}$$

CR = Consistency ratio

CI = Consistency Index

IR = Index Random

3. Checking the hierarchy of consistency.

If the value is more than 10% then the data assessment must be corrected, but if the consistency ratio (CI / CR) is less or equal to 0.1 then the calculation result can be declared correct.

The list of consistency random index can be seen in the table below:

Table 1. List of Consistency Random Index

Matrix Size	IR Score
1.2	0.00
3	0.58
4	0.90
5	1.12
6	1.24
7	1.32
8	1.41
9	1.45
10	1.49

11	1.51
12	1.48
13	1.56
14	1.57
15	1.59

In this case, the problem analysis is the use of AHP for appraising official performance as a support in making decisions.

IV. RESULT OF ANALYSIS AND DISCUSSION

A. Structural Officer Assessment System

1. Prioritization

To carry out a system for assessing structural officials who will take a position, each criterion will be assessed relative to support the decision to recruit employees at the University of Flores, and look at several elements to be compared with other elements.

2. Prioritization Criteria

The criteria that will be used to carry out a structural official assessment system to support employee recruitment decisions at the University of Flores are as follows:

1. Managerial Skills
2. Knowledge and Skill
3. Responsibility
4. Communication and Cooperation
5. Work Discipline.

To obtain the criteria that will be prioritized is:

- a. Create a pairwise comparison matrix like the table below

Table 1. Pairwise criteria comparison matrix

Criteria	A	B	C	D	E
A	1	1	2	2	2
B	1	1	2	1	3
C	0.5	0.5	1	3	0.5
D	0.5	1	0.3	1	1
E	0.5	0.3	2	1	1
Amount	3.5	3.8	7.3	8	7.5

From the matrix table above shows that the numbers to be presented are relative from one element to another with a ratio on a scale of 1- 9, number one in the criterion column A (Managerial Ability), criterion B (knowledge and skill) shows that there is a level of importance of the two criteria. Number 3 in the criterion column E (work discipline) and on the criteria row B (knowledge and skills) shows that criterion B is more important than Criterion E (work discipline).

- b. Create a criteria of matrix

Table 2. A Criteria of Matrix Value

Criteria	A	B	C	D	E	Amount	Priority
A	0.285714	0.263158	0.273973	0.25	0.266667	1.339511	0.267902
B	0.285714	0.263158	0.273973	0.125	0.4	1.347845	0.269569
C	0.142857	0.131579	0.136986	0.375	0.066667	0.853089	0.170618
D	0.142857	0.263158	0.041096	0.125	0.133333	0.705444	0.141089
E	0.142857	0.078947	0.273973	0.125	0.133333	0.75411	0.150822

The score of 0.285714 in the criteria row and column A (managerial ability) in the table above is obtained from the value of the row and column criterion A (managerial ability) divided by the number of criteria column A in the criteria comparison matrix table, the value of the number column in the criteria value matrix table is the result of The sum of each criterion in each row, while the priority value is obtained from the value of each row in the column amount divided by the number of criteria, namely five.

- c. Create a matrix for the addition of each row of criteria

Table 3. Matrix for the addition of each criterion row

Criteria	A	B	C	D	E	Amount
A	0.267902	0.267902	0.535805	0.535805	0.535805	2.143218
B	0.269569	0.269569	0.539138	0.269569	0.808707	2.156552
C	0.085309	0.085309	0.170618	0.511853	0.085309	0.938398
D	0.070544	0.141089	0.042327	0.141089	0.141089	0.536138
E	0.075411	0.045247	0.301644	0.150822	0.150822	0.723946

d. Consistency Ratio Calculation

Table 4. The sum of the fixed priority criteria

Criteria	Amount per Line	Priority	Result
A	2.143218	0.267902	2.411121
B	2.156552	0.269569	2.426121
C	0.938398	0.170618	1.109016
D	0.536138	0.141089	0.677226
E	0.723946	0.150822	0.874768
Total			7.498252

The score in the number per row column is obtained from the total value in the matrix table for the addition of each criterion row, the value in the priority column is obtained from the priority value in the criteria value matrix table while the result value is obtained from the number per row + priority.

3. Alternative Prioritization

At this stage we analyze alternatives to the performance appraisal of a structural official in one of the officials where the output results are APPROPRIATE and INAPPROPRIATE. The value of the feasible and unfit criteria is determined by the decision maker, as a standard for assessment, the alternative pairing comparison matrix can be seen in the table below:

Table 5. Alternative pairing comparison matrix

Criteria	Eligible	Ineligible
Eligible	1	2
Ineligible	0.5	1
Amount	1.5	3

For the alternative value matrix, in the DECENT column the value is obtained from the calculation of the DUE criteria column and row, namely one divided by the amount for the APPROPRIATE criteria as well as for the calculation process on the DECENT criteria. The calculation process for column sum is obtained from the total sum of the feasible and improper row values. Meanwhile, the priority value is obtained from the total value divided by the number of criteria (two). The results can be seen in the table below:

Table 6. Alternative Value Matrix

Criteria	Eligible	Ineligible	Amount	Priority
Eligible	0.666667	0.666666667	1.333333	0.666667
Ineligible	0.333333	0.333333333	0.666667	0.333333

On the summation of each alternative row the values that are in the eligible and ineligible criteria are obtained from the values in the eligible and ineligible columns in the alternative pairing comparison matrix table multiplied by the priority value in the alternative value matrix table. The calculation results can be seen in the table below

Table 7. The sum of each alternative row

Criteria	Eligible	Ineligible	Amount
Eligible	0.666667	1.333333333	2
Ineligible	0.166667	0.333333333	0.5

For the sum of the alternative corresponding priorities, the value in the number per line column is obtained from the number column in the summation table for each alternative row, the priority value is obtained from the alternative value matrix table, while the results are obtained from the sum of the number per row column with priority. The calculation results can be seen in the table below:

Table 8. Summation of according to alternatives fixed priority

Criteria	Amount per line	Priority	Result
Eligible	2	0.666666667	2.666667
Ineligible	0.5	0.333333333	0.833333
Total			3.5

After determining alternative priorities, the next step is to calculate the performance appraisal of structural officials where the steps are in accordance with the method used. For the performance appraisal of structural officials and the results of scores and priorities can be seen in the table below:

Table 9. Performance appraisal of structural officials and results multiplied by score and priority

No	Name of Structural Officers	Score						Score x Priority				
		A	B	C	D	E	Total od Score	A	B	C	D	E
1	Dean of FKIP 1	3.5	2.5	3	2.8	2	13.8	0.937658	0.673922392	0.511853	0.395049	0.301644
2	Dean of FKIP 2	2	1.25	1.75	1.8	1	7.8	0.535805	0.336961196	0.298581	0.25396	0.150822
3	Dean of FKIP 3	4	2.5	3	3	2	14.5	1.071609	0.673922392	0.511853	0.423267	0.301644
4	Head Office of Computer	2.5	3	3.75	2.8	2.666667	14.71667	0.669756	0.80870687	0.639817	0.395049	0.402192
5	Chair Person of PGSD 1	3	3.5	3.25	3.8	3.666667	17.21667	0.803707	0.943491348	0.554508	0.536138	0.553014
6	Chair Person of PGSD 2	2.5	3.25	3	3.2	4	15.95	0.669756	0.876099109	0.511853	0.451484	0.603288
7	Dean of Literature	3	3.25	3.75	3.2	3	16.2	0.803707	0.876099109	0.639817	0.451484	0.452466
8	EDP 1	3.5	3.125	3	3.4	3	16.025	0.937658	0.842402989	0.511853	0.479702	0.452466
9	EDP 2	4	3.125	3.25	3.2	3.333333	16.90833	1.071609	0.842402989	0.554508	0.451484	0.50274
	Priority	0.267902	0.269569	0.170618	0.141089	0.150822						

To make an assessment of an official, it is based on the determined criteria and the output or output to be obtained in this case is eligible and ineligible. The value in the number per line column, priority and the result is obtained from the sum of the priorities according to the previously determined alternatives. The results can be seen in the table below:

Table 10. The sum of the alternative suitability priorities

Criteria	Amount per line	Priority	Result
Eligible	2	0.666667	2.666667
Ineligible	0.5	0.333333	0.833333
Total			3.5

The score of the table for calculating the feasibility of the FKIP dean assessment is obtained from the table for the performance appraisal of structural officials and the product of the priority score in column A multiplied by the priority value in the alternative matching priority sum table. For the process of calculating the feasibility of officials, especially Dean of FKIP, the steps are the same as the process of determining alternatives; only the final result will determine the assessment output of the calculation process. The results can be seen in the tables below:

Table 11. Eligibility calculations for Dean of FKIP

Criteria	A	B	C	D	E	Amount
Eligible	0.625105	0.449282	0.341236	0.263366	0.201096	1.880085
Ineligible	0.312553	0.224641	0.170618	0.131683	0.100548	0.940042

Table 12. Comparison of criteria for Dean of FKIP

Criteria	A	B	C	D	E
Eligible	0.625105	0.449282	0.341236	0.263366	0.201096
Ineligible	0.312553	0.224641	0.170618	0.131683	0.100548
Amount	0.937658	0.673922	0.511853	0.263366	0.301644

Table 13. Alternative scoring matrix for Dean of FKIP

Criteria	A	B	C	D	E	Amount	Priority
Eligible	0.666667	0.666667	0.666667	0.666667	0.666667	3.333333	0.666667
Ineligible	0.333333	0.333333	0.333333	0.333333	0.333333	1.666667	0.333333

Table 14. Sum of each alternative line for Dean of FKIP

Criteria	A	B	C	D	E	Amount
Eligible	0.416737	0.299521	0.22749	0.175577	0.134064	1.25339
Ineligible	0.104184	0.07488	0.056873	0.043894	0.033516	0.313347

Table 15. The sum of alternatives fixed priorities for Dean of FKIP

Criteria	Amount per line	Priority	Result
Eligible	1.25339	0.666667	1.920056
Ineligible	0.313347	0.333333	0.646681
Total			2.566737

In the process of determining the results of the feasibility calculation for the Eigen score, it is obtained from the total value in the table of priority summing according to the alternative divided by two, while the value of CI is obtained from the Eigen score minus two then divided by two or $(\text{eigen}-2) / 2$ CR itself is obtained by CI / IR . The calculation results can be seen in the table below:

Table 16. Results of eligibility calculations

Eigen score (Amount/n)	1.283368557
CI (eigen-n/n)	-0.35815721
CR (CI/IR)	-0.288964291

Based on the results of the calculation of the performance analysis of structural officials using the AHP method, $\text{CR} = 0.288964391 < 0.1$, the performance appraisal of Dean of FKIP is Ineligible because the CR or Consistency Ratio is less than 0.1.

B. Result of Decision Support System Assessment

To support the decision to recruit employees at the University of Flores, there are seven criteria applied by the Flores Higher Education Foundation, including:

1. Educational Administration Assessment
2. Work Experience Administrative Assessment
3. Academic Competency Test Assessment
4. Assessment of Work Experience Tests
5. Skills Test Assessment
6. Research on Cooperation Test
7. Appearance Assessment

The calculation results of the priority score of the criteria obtained by AHP analysis.

Table 17. Criteria Value Matrix

Criteria	Education	Expertise	Work experience	Competence	Collaboration	Performance	Amount	Priority
Education	0.25	0.286	0.333	0.203	0.176	0.133	1.381	0.230
Expertise	0.25	0.286	0.333	0.305	0.265	0.2	1.639	0.273
Work experience	0.125	0.143	0.167	0.305	0.265	0.2	1.205	0.201
Competence	0.125	0.095	0.056	0.102	0.176	0.2	0.754	0.126
Cooperation	0.125	0.095	0.056	0.051	0.088	0.2	0.615	0.102
Performance	0.125	0.095	0.056	0.034	0.029	0.067	0.406	0.068

The score of 0.25 in the education column row is obtained from the education column row element, namely i divided by the total number of education columns, namely 4. To run the number per line it is needed to look for the value of the consistency between ratio assessments and the importance of criteria.

The sum is as shown in the table below.

Table 18. The Summation of criteria fixed priorities

Criteria	Amount per line	Priority	Result
Education	2.3	0.230	2.53
Expertise	3.522	0.273	3.825
Work experience	2.213	0.201	2.414
Competence	0.903	0.126	1.029
Collaboration	0.578	0.102	0.68
Performance	0.194	0.068	0.262

Consistency ratio calculation is to find out how good the consistency is. The limitation of the consistency ratio value is less than or equal to 0.1.

Result Table 19. Calculation of the value of alternative placement

Criteria	Education	Expertise	Work experience	Competence	Cooperation	Pperformance	Total
BPDE	0.199	0.236	0.145	0.109	0.088	0.058	0.835
BAAK	0.146	0.173	0.106	0.080	0.043	0.043	0.612
BAU	0.138	0.163	0.100	0.075	0.040	0.040	0.577
LPU	0.059	0.070	0.043	0.032	0.017	0.017	0.247
LPPP	0.059	0.070	0.043	0.032	0.017	0.017	0.247
LPM	0.059	0.070	0.043	0.032	0.017	0.017	0.247
LBhs	0.028	0.033	0.020	0.015	0.008	0.008	0.116

Based on the results of the analysis of the calculation and testing of the data, it can be concluded that with the results of the calculations obtained and coupled with the test score data and the assessment of prospective employees, it can be submitted to the leadership of the Flores Higher Education Foundation as information and consideration for the leadership to accept and place candidates of employees.

According to the researcher's opinion, it simultaneously shows that the performance appraisal system for structural officers is based on predetermined indicators, as a support for good decisions so that employee performance is very good and feasible based on the system that has been determined by the AHP Method.

V. CONCLUSION

By the results of the above research, it shows that the performance appraisal system for structural officials to support employee acceptance decisions at the University of Flores that

1. The use of the AHP method can solve problems in taking quite a lot of criteria so that this method is used as a performance appraisal system to support decision making for hiring based on consistent and inconsistent values.
2. The AHP method is used as a system of appraisal for officials to support the leadership of the University of Flores to determine the placement of accepted candidates for technical executing employees and reduce the element of subjectivity.
3. AHP method has the ultimate goal where from several criteria can determine the eligibility level of employee acceptance based on a reference value for making decisions.

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