

# Performance Appraisal of Managerial Civil Servants Using the ANP Method and Rating Scale at the Human Resource Development Agency

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**Abstract.** Employee performance appraisal is very necessary to know the skills or abilities of each employee. Employee performance appraisal carried out at the Human Resources Development Agency still require employee performance evaluations for the performance of each employee. The purpose of this study was to determine the performance of employee using the *Analytic Network Process* and *Rating Scale* methods, where the ANP was used to weight each criteria and sub-criteria with the result of the weighting of the criteria namely: service orientation (0,051197), Integrity (0,254363), commitment (0,150948), discipline (0,190137), cooperation (0,353354) and for the weight of each sub-criterion, being friendly (0,060724), completing work quickly and precisely (0,129413), working properly, honestly and regularly (0,080407), working well even though not supervised by the leadership (0,132196), have good character (0,041760), have loyalty (0,175543), have responsibility (0,108780), do not delay work (0,069031), never go absent without clear reasons (0,107260), are able to work together with colleagues (0,043688), like to help colleagues who are in trouble (0,014759), able to communicate well (0,036438). While using the Rating Scale methods has different values, employees with the highest performance is Rosniari (4,762981) and lowest is Masdalifah (3,770376).

**Keyword:** Employee Performance, *Analytic Network Process* (ANP), *Rating Scale*

**Abstrak.** Penilaian kinerja pegawai sangat diperlukan untuk mengetahui skill atau kemampuan dari masing-masing pegawai. Penilaian kinerja pegawai yang dilakukan di Badan Pengembangan Sumber Daya Manusia terlebih dibagian manajerial masih memerlukan evaluasi kinerja pegawai guna mengetahui kinerja dari masing-masing pegawai. Tujuan dari penelitian ini adalah untuk mengetahui kemampuan/kinerja pegawai menggunakan metode *Analytic Network Process* (ANP) dan *Rating Scale*, dimana ANP digunakan untuk membobotkan setiap kriteria dan subkriteria dengan hasil pembobotan kriteria yaitu orientasi pelayanan (0,051197), integritas (0,254363), komitmen (0,150948), disiplin (0,190137), kerjasama (0,353354) dan subkriteria adalah bersikap ramah (0,060724), menyelesaikan pekerjaan dengan cepat dan tepat (0,129413), bekerja dengan benar, jujur dan teratur (0,080407), bekerja dengan baik walau tidak diawasi oleh pimpinan (0,132196), mempunyai akhlak yang baik (0,041760), Memiliki loyalitas (0,175543), mempunyai tanggung jawab (0,108780), tidak menunda-nunda pekerjaan (0,06931), tidak pernah absen tanpa alasan yang jelas (0,0107260), mampu bekerja sama dengan rekan kerja (0,043688), suka membantu rekan kerja yang kesulitan (0,014759), mampu berkomunikasi dengan baik (0,036438). Sedangkan menggunakan metode *Rating Scale* memiliki nilai yang berbeda, pegawai dengan nilai tertinggi adalah Rosniari (4,762981) dan terendah Masdalifah (3,770376).

**Kata Kunci:** Penilaian Kinerja, *Analytic Network Process* (ANP), *Rating Scale*

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## **1. Introduction**

Human resources are one of the most important factors that cannot even be separated from a company or agency. In the current era of globalization, human resources are a control factor that can determine the sustainability of a company [1]. While the quality of human resources (HR) is a factor to increase the productivity of an agency's performance. Therefore, human resources are needed who have high competence [2] and have good performance. Employee performance appraisal is very necessary in order to determine the skills or abilities of each employee. Employee performance appraisal conducted at the Human Resources Development Agency, especially in the managerial section, still requires employee performance evaluation, by determining employees who have high performance. In the Human Resources Development Agency in the Managerial section, there is no category of the best employees or those with high performance, there is only an assessment of superiors on their subordinates [3]. Employee performance appraisal is not only a formality of giving grades, but determining the best or high-performing employees needs to be done to encourage employees to be more active and be an encouragement to other employees in carrying out their duties. In the managerial section, almost all of the employees are civil servants, 8 employees are considered civil servants. In the performance appraisal process, several aspects of the assessment will be used based on the aspects of work behavior assessment in government regulation number 46 of 2011 namely: 1) Service Orientation, 2) Integrity, 3) Cooperation, 4) Commitment, 5) Discipline [4].

In performance appraisal, there are many ways of calculating that can be done, one of which is by creating a system that can help provide decisions or what is often called a Decision Support System (DSS) or Decision Support System (DSS). DSS has many methods that can be applied in solving the problem, one of which is the Analytic Network Process (ANP). In the process of using the ANP method, it is necessary to have a weighting that will produce weighted performance appraisal criteria and use pairwise comparisons between the same elements. Then the employee performance appraisal process is carried out using the Rating Scale method with a value of 1-5. The data obtained by the Rating Scale method are quantitative data (numbers) which are then interpreted in a qualitative sense [5].

## **2. Methodology**

This research was conducted at the Human Resources Development Agency (BPSDM) Jalan Ngalengko No1. Medan. Starting from February 2020 to completion. Based on the results to be achieved, this type of research is an applied research with a quantitative approach, namely taking or collecting secondary data needed and analyzing it using the Analytic Network Process (ANP) and Rating Scale methods. States that the research variables are basically all something that is determined by the researcher to be studied so that information is obtained about it, then conclusions are drawn [6,7].

**2.1. Research Procedure**

The steps taken in this research are:

1. Conduct studies from journals, articles from the internet related to the Analytic Network Process (ANP) method and Rating Scale
2. Field studies, namely through direct observation (observation) and questionnaires given to the respondents.
3. Data Collection:

Through Questionnaire: This data was obtained through the distribution of questionnaires to respondents to determine the weight value of the criteria and sub-criteria in order of priority to other criteria and sub-criteria. The criteria used are based on aspects of work behavior assessment in government regulation number 46 of 2011 and sub-criteria based on the results of the respondents. Table of Criteria and Sub-criteria.

4. Data Processing

The criteria used are based on aspects of work behavior assessment in government regulation number 46 of 2011 and the sub-criteria are based on the results of the respondents.

**Table 1.** Criteria and Sub-criteria

| Criteria            | Sub-criteria  |
|---------------------|---|
| Service Orientation | <ol style="list-style-type: none"> <li>1. Be friendly</li> <li>2. Get the job done quickly and accurately</li> </ol>  |
| Integrity           | <ol style="list-style-type: none"> <li>1. Work properly, honestly and regularly</li> <li>2. Work well even if not supervised by the leader</li> <li>3. Have good morals</li> </ol>      |
| Commitment          | <ol style="list-style-type: none"> <li>1. Have loyalty</li> <li>2. Have a responsibility</li> </ol>   |
| Discipline          | <ol style="list-style-type: none"> <li>1. Don't procrastinate</li> <li>2. Never absent for apparent reason</li> </ol>   |
| Cooperation         | <ol style="list-style-type: none"> <li>1. Able to work together with co-workers</li> <li>2. Likes to help co-workers who are in trouble</li> <li>3. Able to communicate well</li> </ol> |

Make a pairwise comparison questionnaire to give weight to each criterion and sub-criteria so that it can be seen which alternative has the highest criterion weight. This questionnaire has three parts, namely pairwise comparisons between criteria clusters, pairwise comparisons between sub-criteria.

**Table 2.** Paired Comparison Scale

| Intensity of Interest | Description   |
|-----------------------|---|
| 1                     | Both elements are equally important                                       |
| 3                     | One element is slightly more important than the other elements            |
| 5                     | One elements is more important than the other                             |
| 7                     | One elements is clearly more absolutely important than the other elements |
| 9                     | One elements is absolutely important than the other elements              |
| 2,4,6,8               | The values between two values of adjacent considerations                  |

**Table 3.** Pairwise Comparisons Between Criteria

| Criteria A  | Evaluation |   |   |   |   |   |   |   |   |   |   |   |   |   |   | Criteria B |   |                     |
|-------------|------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|------------|---|---------------------|
| Discipline  | 9          | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8          | 9 | Integrity           |
| Discipline  | 9          | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8          | 9 | Cooperation         |
| Discipline  | 9          | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8          | 9 | Commitment          |
| Discipline  | 9          | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8          | 9 | Service Orientation |
| Integrity   | 9          | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8          | 9 | Cooperation         |
| Integrity   | 9          | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8          | 9 | Commitment          |
| Integrity   | 9          | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8          | 9 | Service Orientation |
| Cooperation | 9          | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8          | 9 | Commitment          |
| Cooperation | 9          | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8          | 9 | Service Orientation |
| Commitment  | 9          | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8          | 9 | Service Orientation |

Calculate the weight of each criterion and sub-criteria using the ANP method. To get the weight of each criterion and sub-criteria using the steps of completion of the ANP method, namely:

1. Calculate the weighted average by calculating the geometric mean. The geometric mean can be calculated by the formula:  $GM = \sqrt[n]{X_1, X_2, \dots, X_n}$ .
2. Each column element is divided by the number of the respective column. Calculation normalization matrix and the partial weight of the criteria.

Matrix Normalization:  $\frac{\text{column values}}{\text{Total}}$

Partial Weight:  $\frac{\text{Normalized matrix column values}}{\text{Number of column}}$

3. Calculating consistency ratio (The geometric mean calculation matrix) x (Weight vector per row)
4. Calculating consistency vector (Consistency ratio divided by the weight vector of each row)
5. Calculate the average of entries ( $\lambda_{max}$ )

$$\lambda_{max} = \frac{\sum_{i=1}^n \text{Ratio consistent}}{n}$$

6. Calculate index consistency (CI)

$$CI = \frac{\lambda_{max} - n}{n - 1}$$

7. Calculate ratio consistency (CR)

$$CR = \frac{CI}{\text{Random CI}}$$

**Table 4.** Pairwise Comparisons Between Criteria

| Matrix Size(N) | IR Value | $\lambda_{\max}$ |
|----------------|----------|------------------|
| 1              | 0,0      | 1                |
| 2              | 0,0      | 2                |
| 3              | 0,58     | 3,104            |
| 4              | 0,90     | 4,267            |
| 5              | 1,12     | 5,444            |
| 6              | 1,24     | 6,781            |
| 7              | 1,32     | 7,81             |
| 8              | 1,41     | 8,98             |
| 9              | 1,45     | 10,16            |

8. Testing is consistent, if the obtained  $CR < 0.1$ , then the respondent's answer is consistent. If it is above 10% then the assessment and calculation of the data is corrected again.
9. Create an unweighted supermatrix from the priority of each element, the weighted supermatrix and the limiting supermatrix using Super Decision Software version 2.10. The result of limiting supermatrix which will be the global weight (final value).
10. Calculating employee performance appraisal scores using the Rating Scale method. The weighted of each criterion obtained using the ANP method is multiplied by the value of each criterion (Score = weight x value)

**Table 5.** Performance Appraisal Scale

| No. | Scale Value | Category                | Value Interval       |
|-----|-------------|-------------------------|----------------------|
| 1   | A           | Very high performance   | $4,20 < n \leq 5,00$ |
| 2   | B           | High performance        | $3,40 < n \leq 4,20$ |
| 3   | C           | Standart performance    | $2,60 < n \leq 3,40$ |
| 4   | D           | Low performance         | $1,80 < n \leq 2,60$ |
| 5   | E           | Innefective performance | $1 \leq n \leq 1,80$ |

### 3. Result and Discussion

#### 3.1 Determination of Relationships Between Subcriteria and Network Structure

Based on the results of questionnaires that have been distributed to respondents, it can be identified whether or not there is a relationship between criteria and sub-criteria. The relationship can be seen from the number of respondents who choose, both inner dependence and outer dependence, where inner dependence is the relationship between sub-criteria within the same criteria while outer dependence is the relationship between sub-criteria and other sub-criteria on different criteria. The data from the determination between these sub-criteria can be used to create an ANP model.

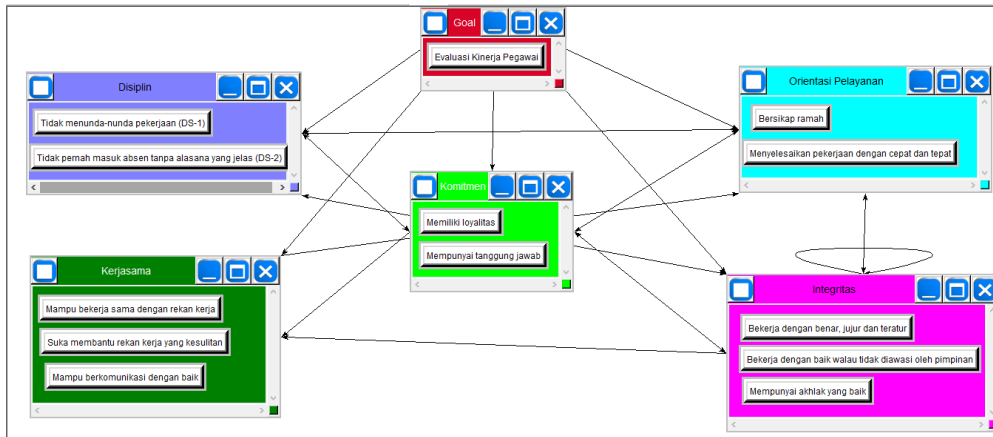


Figure 1. Structure Network Employee Performance Appraisal

3.2 ANP Processing

1. Create a pairwise comparison matrix
2. Calculate the geometric mean

Table 6. Geometric Mean Calculation for Pairwise Comparison matrix Between Discipline Clusters

| Element                    | Discipline    | Integrity     | Cooperation   | Commitment    | Service Orientation |
|----------------------------|---------------|---------------|---------------|---------------|---------------------|
| <b>Discipline</b>          | 1,0000        | 1,5874        | 1,8171        | 1,1856        | 1,1856              |
| <b>Integrity</b>           | 0,6299        | 1,0000        | 0,4367        | 0,5848        | 0,6299              |
| <b>Cooperation</b>         | 0,5503        | 2, 2894       | 1,0000        | 1,2599        | 0,6299              |
| <b>Commitment</b>          | 0,8434        | 1, 7099       | 0,7937        | 1,0000        | 0,4054              |
| <b>Service Orientation</b> | 0,8434        | 1,5874        | 1,5874        | 2,4662        | 1,0000              |
| <b>Total</b>               | <b>3,8670</b> | <b>8,1741</b> | <b>5,6385</b> | <b>6,4965</b> | <b>3,8508</b>       |

3. Matrix normalization and Partial weight

Table 7. Matrix Normalization and Partial Weight for Discipline Clusters

| Element                    | Discipline | Integrity | Cooperation | Commitment | Service Orientation | Partial Weight |
|----------------------------|------------|-----------|-------------|------------|---------------------|----------------|
| <b>Discipline</b>          | 0,2505     | 0,1941    | 0,3222      | 0,1824     | 0,3078              | 0,2530         |
| <b>Integrity</b>           | 0,1628     | 0,1223    | 0,0872      | 0,0900     | 0,1635              | 0,1251         |
| <b>Cooperation</b>         | 0,1423     | 0,2800    | 0,1773      | 0,1939     | 0,1635              | 0,1924         |
| <b>Commitment</b>          | 0,2181     | 0,2091    | 0,1407      | 0,1539     | 0,1052              | 0,1654         |
| <b>Service Orientation</b> | 0,2181     | 0,1941    | 0,2815      | 0,3796     | 0,2596              | 0,2665         |
| <b>Total</b>               | 1,0000     | 1,0000    | 1,0000      | 1,0000     | 1,0000              | 1,0000         |

4. Employee Performance Using the Rating Scale Method

Table 8. Employee Performance Ranking Results

| Name     | Value    | Scala Value | Description           |
|----------|----------|-------------|-----------------------|
| Rosniari | 4,762981 | A           | Very high performance |

|                |          |   |                       |
|----------------|----------|---|-----------------------|
| M. Arbi Suroso | 4,708435 | A | Very high performance |
| Muhsin, S.Sos  | 4,649748 | A | Very high performance |
| Hj. Rohayati   | 4,591807 | A | Very high performance |
| Syafruddin     | 4,392591 | A | Very high performance |
| Dame Hasiholan | 4,340501 | A | Very high performance |
| Ilham Fadhly   | 3,999996 | B | High performance      |
| Masdalifah     | 3,770376 | B | High performance      |

#### 4. Conclusion

From the results of the research on the Managerial Section of PNS Performance Assessment Using the ANP Method and Rating Scale, it can be concluded that the results of the weighting of criteria and sub-criteria using the ANP method, where the highest weight criterion component is cooperation (0.353354) and the lowest weight is service orientation (0.051197). . Meanwhile, the highest weight sub-criteria is having loyalty (0.175543) and the lowest weight is being able to communicate well (0.036438). Assessment of employee performance using the Rating Scale method obtained very high performance scores there are 6 people and high performance there are 2 people.

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