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Multi-purpose Decision Support System Recommended Case of Relocation Site Selection to North Sumatra Province by Optimization by Evaluation Analysis (MOORA) Method BKD North Sumatra

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ABSTRACT

A well-prepared abstract enables the reader to identify the basic content of a document quickly and accurately, to determine its relevance to their interests, and thus to decide whether to read the document in its entirety. The Abstract should be informative and completely self-explanatory, provide a clear statement of the problem, the proposed approach or solution, and point out major findings and conclusions. The Abstract should be 100 to 200 words in length. The abstract should be written in the past tense. Standard nomenclature should be used and abbreviations should be avoided. No literature should be cited. The keyword list provides the opportunity to add keywords, used by the indexing and abstracting services, in addition to those already present in the title. Judicious use of keywords may increase the ease with which interested parties can locate our article (9 pt).

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1. INTRODUCTION

The transfer of public service (PNS) from one agency to another, or movement within agencies of both central and local government, is part of the personnel mobility process.

In addition to personal mutation procedures depending on the type of mutation, mutations can also be carried out on submission by officials themselves. In addition to service- and/or location-related transfers by six mutation types, civil servants may also submit service- and/or location-related mutations at their request. The agency develops a PNS mutation plan for her within the environment, taking into account organizational needs and based on the PNS's competencies and fit with job requirements, job classifications, and career patterns. In addition, mutations are carried out for a minimum of 2 (two) years and a maximum of 5 (five) years. The technical requirements for submitting a transfer include a letter requesting a transfer from civil servants, a letter proposing a transfer from

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the Personnel Development Officer (PPK) of the receiving agency stating the position to be occupied and a letter of approval for the transfer from the PPK of the original agency stating the position to be occupied, a statement from the agency of origin that the proposed Civil Servants are not in the process of or undergoing disciplinary punishment and/or judicial processes issued by the PPPK or other officials who handle the lowest level of staff occupying the Pratama High Leadership Position

Proposals for transfers from Agency PPPK submitted to BKN for technical consideration must also be accompanied by a document of Job Analysis and Workload Analysis of the Civil Servant to be transferred, a valid copy of the decision on the last rank and/or position; valid copy of work performance appraisal with good grades in the last 2 (two) years; certificate not currently undergoing study assignments; and a statement of absence of findings issued by the Inspectorate of the Civil Servant from which the transfer was submitted.

Recognizing the importance in determining the choice of relocating assignment locations for ASN, it is necessary to create a Decision Support System (SPK) using the Multi-Objective Optimization of Ration Analysis (MOORA) method, this system will provide recommendations to users according to the available criteria, this system is a program application that has been computerized so that it helps users get recommendations for new work locations according to their criteria. The user will enter the weight of the criteria they have and the system will process it

2. RESEARCH METHOD

2.1 Decision Support System

Decision support system is a computer-based system capable of solving management problems in generating the best alternative to support decisions made by decision makers (Turban, E., Aronson, J., & Liang 2005).

2.2 Multi-Objective Optimization on The Basis of Ratio Analysis (MOORA)

Multi-objective optimization (or programming), also called multi-criteria optimization or multi-attribute optimization, is the process of simultaneously optimizing two or more competing attributes (objectives) subject to specific constraints.

Step 1: Create a Decision Matrix

$$x = \begin{bmatrix} x_{11} & x_{12} & . & x_{1n} \\ x_{21} & x_{22} & . & x_{2n} \\ . & . & . & . \\ x_{m1} & x_{m2} & . & x_{mn} \end{bmatrix} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Step 2: Normalize the Decision Matrix

Brauers (2008) concludes that for this denominator, the best option is the square root of the sum of squares of each alternative per attribute. This ratio can be expressed as follows:

$$x_{ij}^{*} = x_{ij} / \sqrt{\left[\sum_{i=1}^{m} x_{ij}^{2}\right]} \; (j = 1,2, \ldots, n) \quad \ldots\ldots\ldots\ldots (2)$$

Step 3: Optimize attributes.

For multi-objective optimization, these normalized performances are added in case of maximization (for favorable attributes) and reduced in case of minimization (for non-beneficial attributes). Then the optimization problem becomes:

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$$y_i = \sum_{j=1}^{g} x_{ij}^* - \sum_{j=g+1}^{n} x_{ij}^* \quad \text{.....(3)}$$

Where g is the number of attributes to be maximized, (n-g) is the number of attributes to be minimized, and yi is the normalized value of the alternative value against all attributes. In some cases, it is often observed that some attributes are more important than others. In order to give more importance to the attribute, it can be multiplied by the corresponding weight (coefficient of significance).

When the weight of this attribute is considered, Eq. 3 being as follows:

$$y_i = \sum_{j=1}^{g} w_j x_{ij}^* - \sum_{j=g+1}^{n} w_j x_{ij}^* \ (j = 1,2,\dots,n) \ \text{.....(4)}$$

Where wj is the weight of jth attribute, which can be determined applying an analytic hierarchy process (AHP) or an entropy method.

Step 4: The value of yi can be positive or negative depending on its maximal number (favorable attribute) and minimal (unfavorable attribute) in the decision matrix.

The ordinal rank of yi shows the final preference. Thus, the best alternative has the highest yi value, while the worst alternative has the lowest Yi value.

3. RESULTS AND DISCUSSIONS

Acceptability of switching officers based on the number of officers recommended for mutation and the number of officers recommending themselves as an example for implementing the Basics of Ratio Analysis (MOORA) to judge Tables 1 and 2 show standards and alternatives. Studies need weights and criteria to determine who gets picked. The criteria are:

C1 = Age
C2 = Work Experience
C3 = Education
C4 = Position
C5 = State
Each criterion has its own score and weight. Below you can see the table of each criterion and its weights. Age Weight Calculation.

Table 1. Criteria 1 (C1) Age

AGE	WEIGHTS
21-22	5
23-24	4
25-26	3
27-28	2
29-30	1

Calculation of work experience weight.

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Table 1. Criteria 2 (C2) Work Experience

WORK EXPERIENCE	WEIGHTS
1-2	1
3-4	2
5-6	3
7-8	4
9-10	5

Calculation of education weight.

Table 3. Criteria 3 (C3) Education

EDUCATION	WEIGHTS
S1	5
D3	3
SMK	1

Calculation of position weight.

Table 4. Criteria 4 (C4) Position

POSITION	WEIGHTS
GOLONGAN 1	5
GOLONGAN 2	3
GOLONGAN 3	1

Calculation of state weight.

Table 5. Criteria 5 (C5) State

EDUCATION	WEIGHTS
MARRIED	5
NOT MARRIED	1

Establish weight criteria for moving officers.

Table 6. Criteria

EDUCATION	WEIGHTS
MARRIED	5
NOT MARRIED	1

4. CONCLUSION

From the above description, it is very easy to apply the MOORA method to the transfer of civil servants. Decision makers simply list the criteria and weights that are prioritized against those criteria. In this case, using a computer can help you make more effective and objective decisions. Applying the MOORA method is very easy and effective in making the desired decisions.

REFERENCES

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The main references are international journals and proceedings. All references should be to the most pertinent, up-to-date sources and the minimum of references are 25. References are written in IEEE style. Please use a consistent format for references – see examples below (9 pt):

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