SPK Recommendations for Selection of Candidates for Structural Officers Using the Profile Matching Method

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ABSTRACT

Through the State Civil Apparatus Law, the Government is making efforts to reduce nepotism by creating an open competition system among civil servants in the process of filling positions. The Tarakan Regional Civil Service Agency (BKD) already has an employee database and a decision support system that can combine the available databases with assessment models to obtain candidate profiles that match the vacant position profiles needed to support more objective performance. The application of the profile matching method in this decision-making system is expected to assist in the process of recommending candidates for structural officials within the Tarakan City Government according to the capabilities of the fields required in a position. From the results of the study it was concluded that changes in candidate profile values, and the number of sub-criteria used for position criteria, can affect the closeness of candidates to available positions and the use of the profile matching method for cases where the highest score is the best value requires that the ideal value used is the highest score. maximum so that there are no expectations that exceed the ideal value.

Keywords— **Decision Making, System Profile Matching, City of Tarakan**

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1. INTRODUCTION

Placement of civil servants in structural positions is carried out based on objective considerations of competence, qualifications and requirements required by the position without discriminating against gender, ethnicity, religion, race and class to produce professional civil servants [1]. Promotions and transfers are aspects that have an impact on the relevant work performance simultaneously and have a significant positive effect on employee career development in order to add to the experience of each apparatus to improvethe quality of human resources within the framework of performance and responsibility [2].

Baperjakat has not been able to provide arguments in the form of data or information that can give advice to Personnel Development Officials in the appointment, transfer, dismissal from structural positions. This is because the employee data/information is still not good and there is no apparatus for selecting candidates for echelon IIIb and below which is able to provide an objective assessment as stipulated by Permendagri Number 5 of 2005. Many laws and regulations that so far regulate the management of civil servants whose implementation needs to be adjusted with the demands and developments of the times. Baperjakat in giving consideration and determining career development must prioritize the principle of professionalism,

The Tarakan Regional Civil Service Agency (BKD) has developed an employee database to support Baperjakat decision-making. However, the database is only able to provide choices based on an ordered list of ranks. This data can actually support the application of the assessment model contained in Permendagri

Number 5 of 2005 by building a decision support system to provide objective assessments in the selection of structural office candidates. To support Baperjakat's more objective performance, a decision support system is needed that can combine available databases with assessment models to obtain candidate profiles that match the vacant position profiles.

Decision Support Systems are a set of model-based procedures for data processing and assessment to help decision makers to make decisions in semi-structured and unstructured situations quickly and easily [5]. Research on decision-making models in various issues has been carried out quite a lot, including Handojo, namely making decisions about the promotion process and career planning using profile matching and gap analysis [6]. The profile matching algorithm described in Lu's research provides a choice of sport channels according to the user's wishes [7]. In Biesalski's research it was also shown that a success plan for adapting competencies to a particular job is to compare the skill-profile of an available position with the competencies of employees to find the candidate that best fits the needs [8]. Iqbal conducted research aimed at building a decision support system for determining the placement of PTT midwives [9].

Based on the description above, it can be concluded that Baperjakat problems in BKD Tarakan can be solved by making a decision support system. The application of the profile matching method in building a decision-making system is expected to help the process of recommending candidates for structural officials within the Tarakan City Government to be more objective. The decision support system built aims to obtain an order of employee recommendations according to the vacant position profile.

2. RESEARCH METHOD/MATERIAL AND METHOD/LETERATURE REVIEW

2.1 System Description

A decision support system is basically a set of model-based procedures for processing data into assessment results to help managers make decisions. Therefore the decision support system must be simple, fast, easy to control and adaptive complete with important issues [10].

This decision support system as a recommendation tool for selecting candidates for structural officials is a system that will be used by the Head of Planning and Development of the Regional Civil Service Agency of the Tarakan City Government to provide recommendations to the Baperjakat Team in selecting candidates for structural officials within the Tarakan City Government. This system uses the profile matching method to provide recommendations for selected candidates in the selection process for structural officials. The decision support system built is expected to be able to process candidate assessment data, data on job criteria requirements and criteria data used in evaluating structural officials so as to be able to provide alternative candidate ranking results that can be considered for recommendations according to the position needed.

2.1.1 System structure analysis

The decision support system as a recommendation tool for selecting candidates for structural office is built on three parts of the system, namely input, process and output. The structure of the decision support system is shown in Figure 1.

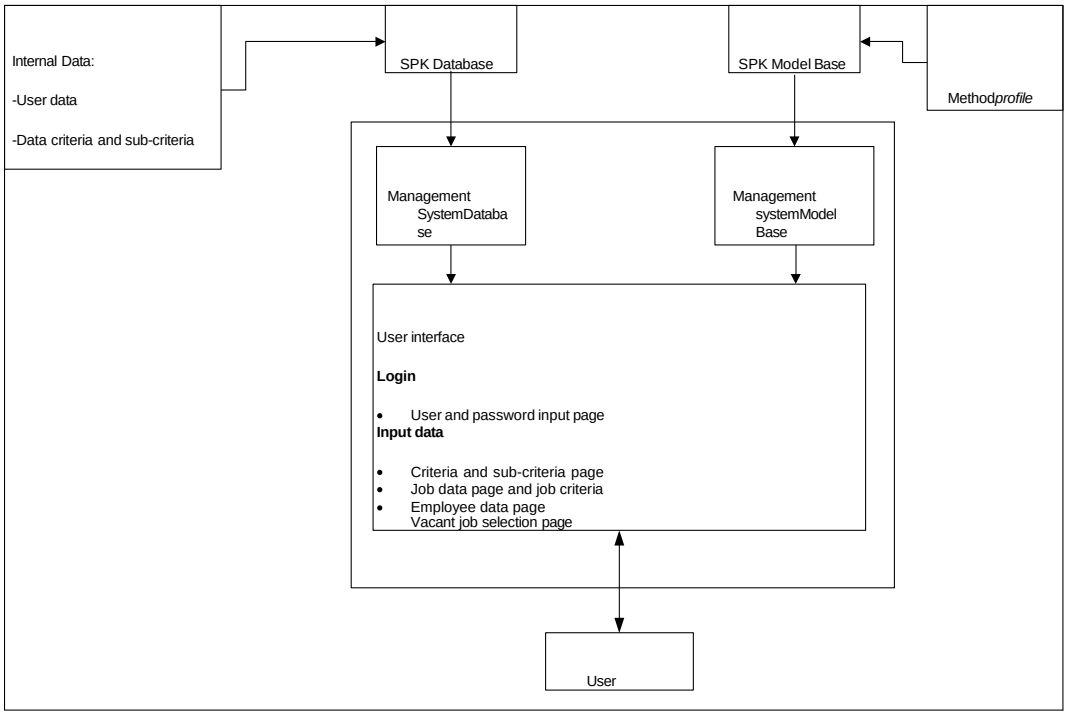


Figure 1. The structure of the decision support system for the selection of candidates for structural office using the profile matching method

2.2 Decision Model Design Process

The decision support system for structural official recommendations is determined in several stages, namely:

1. *decision maker*determine the input criteria for vacant positions. Then choose a list of candidates to be carried out the profile matching calculation process. The user of this system is the Head of Employee Planning and Development (Kabid Rembang).
2. Determines the parameter values for each sub-criteria. On the other hand, the assessment of employee data must also refer to system requirements.
3. The process that the decision maker goes through is the process of calculating the profile matching with the difference in the gap between the candidate profile and the target profile (in this case the vacant position), calculating the weighted value of the gap using the linear interpolation method and then calculating the total value.
4. The next process is to sort the recommendations for structural office candidates based on the calculation results and adjusted to the applicable policies.

Based on the stages mentioned above, the decision support system model for the recommendation of candidates for structural office within the Tarakan City Government uses profile matching which is illustrated through the flowchart in Figure 2.

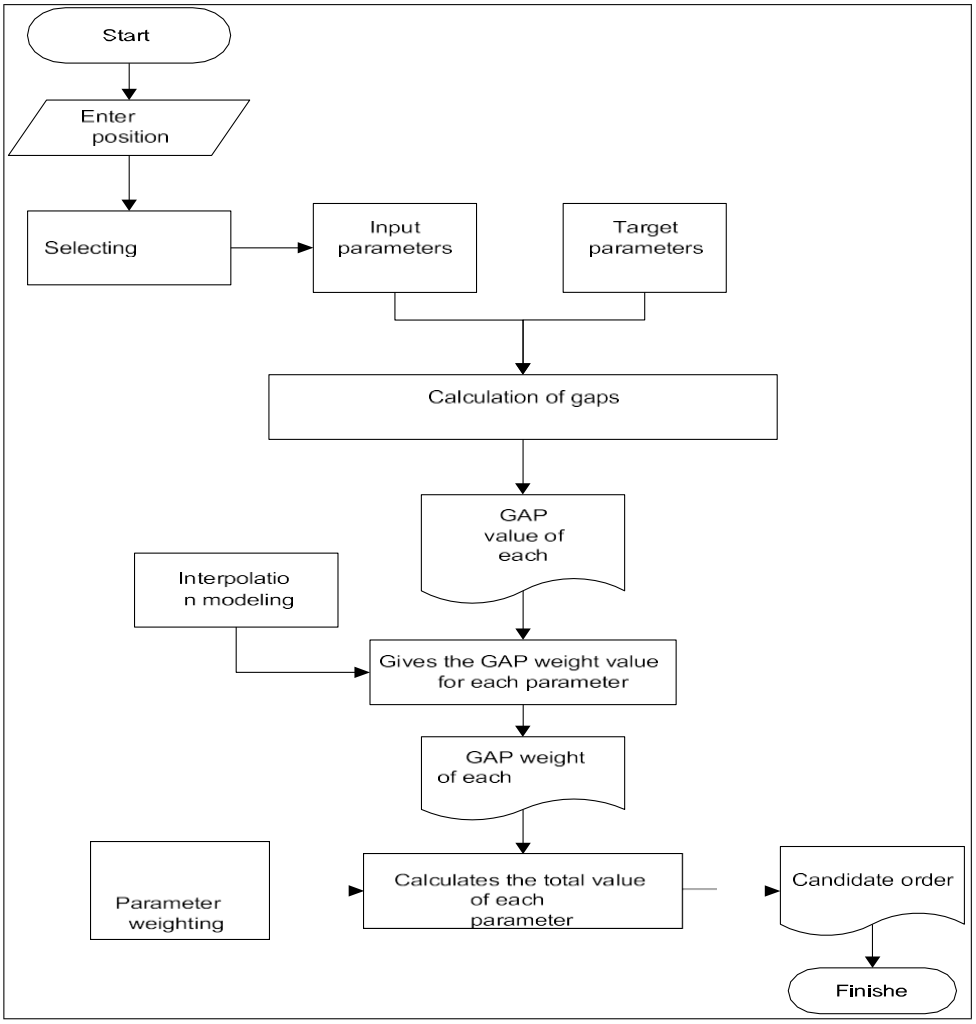


Figure 2 Flowchart of a decision support system using the profile matching method

2.2.1 Linear Interpolation Modeling

Linear interpolation modeling is performed to calculate the value of the gap weight. If the data obtained on the criteria is numerical data, then the gap calculation is carried out by calculating the difference between the target profile and the candidate profile. However, if the data obtained is in the form of non-numeric data, a rating is used to determine the value of the gap. Then the resulting gap value will be used for the process of assigning a gap weight value to each parameter using the linear interpolation method. This is done so that the value of giving weight is more accurate than using a rating.

2.2.2 Profile Matching Criteria Modeling

The process of selecting structural office candidates requires an assessment from the Baperjakat team, however, the real time list of candidates cannot be provided for this assessment due to data confidentiality reasons. The end result of the profile matching method is to get the most ideal candidate profile for the vacant position requirements and in accordance with applicable policies. The steps that must be carried out in this study in profile matching modeling are:

Stages of the gap mapping process

This stage is a process of comparing candidate profiles with vacant position profiles by producing a difference in values called the gap value, the smaller the gap value difference obtained, the closer/ideal the value of the candidate and the vacant position value.

Stages of determining the value of the criteria

The list of candidate recommendations that will be processed in the system has the same sub-criteria assessment that refers to system requirements. Through the sub-criteria scores a match is made between the candidate profile and the target profile based on a predetermined score. In this study, the portion of the weight of the criteria has been determined by the decision maker based on the percentage of weight. Details of the criteria weight can be seen in Table 1.

Table 1 Criteria Weight

Criteria Name	Criteria Weight
Rank	30 %
Education and Training	10 %
Formal education	20 %
Position History	20 %
Training	10 %
Discipline	10 %

Ranking stages

The end result of the profile matching process is the ranking of the candidates. Determination of ranking refers to the results of calculating the criteria. If the selected candidates have the same final score, the ranking is based on the applicable laws and regulations, namely by placing the more senior candidate at the top.

2.3 Implementation of Data Processing Process

The implementation of data processing in this system consists of several pages, namely, login page, criteria page, sub-criteria page, employee data page. The following is the implementation for each system creation process.

2.3.1 Login page

This login process is used to access the system, users will be able to operate the menus on the main page of the system according to their access rights as bank administrators or staffing staff. The login page display is shown in Figure 3.

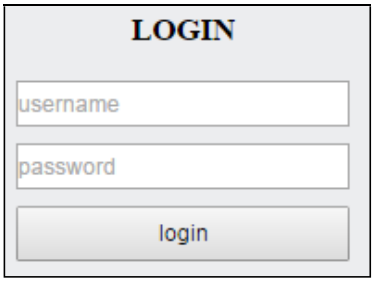


Figure 3 Login page

If the user successfully logs in, the user will enter the main page as the Baperjakat admin or staffing staff according to the username and password contained in the database, so that the menu displayed on the main page is in accordance with the access rights of each user. Figure 4 main page for baperjakat admin and Figure 5 main page for personnel admin

Figure 4 Main page for baperjakat admin

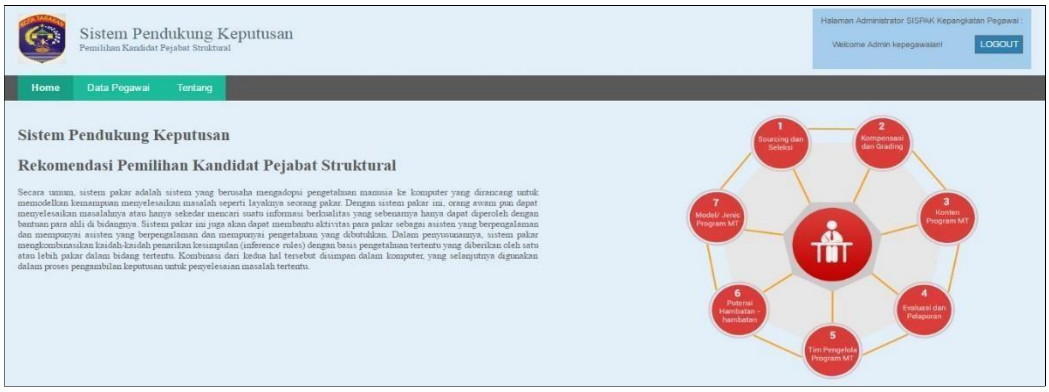


Figure 5 Main page for staffing admin

2.3.2 Criteria data processing page

The criteria data processing menu is used by the Baperjakat admin to enter criteria data into the database. This processing system includes the process of storing new criteria, the process of changing criteria, and the process of deleting criteria by the Baperjakat admin as shown in Figure 6.

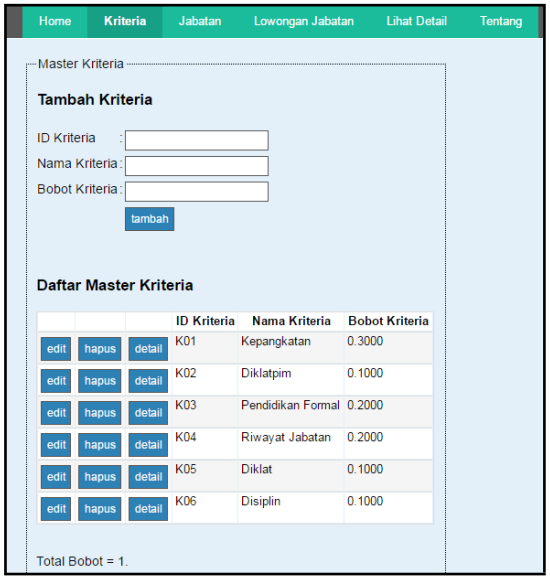


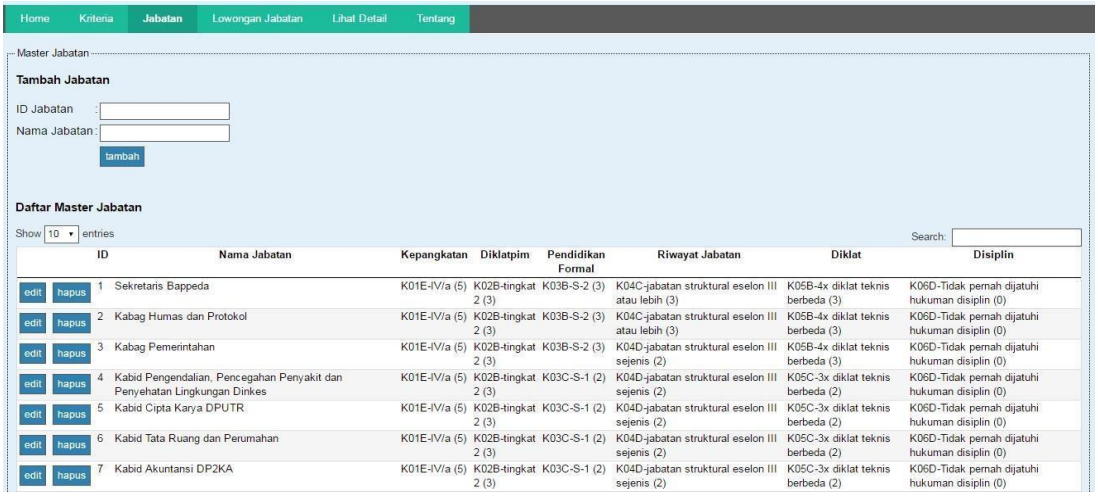
Figure 6 Criteria data processing page

2.3.3 Sub-criteria data processing page

Sub-criteria data processing is used to enter sub-criteria data into the database. This processing system includes the process of storing new sub-criteria, the process of changing sub-criteria, and the process of deleting sub-criteria as shown in Figure 7.

Figure 7 Sub-criteria data processing page

2.3.4 Position data processing page



Job data processing is used to enter job data into the database. This processing system includes the process of storing, modifying and deleting position data as shown in Figure 8. Figure 9 shows the page for filling in the position criteria data.

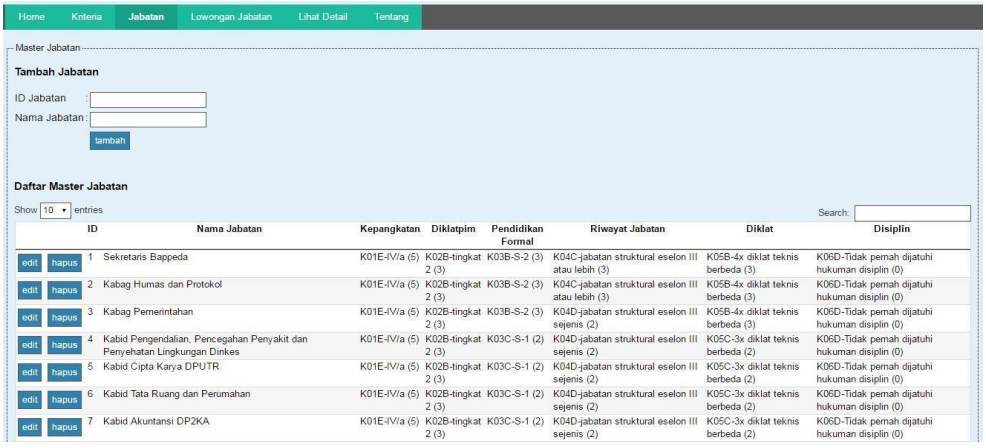


Figure 8 Job data processing page

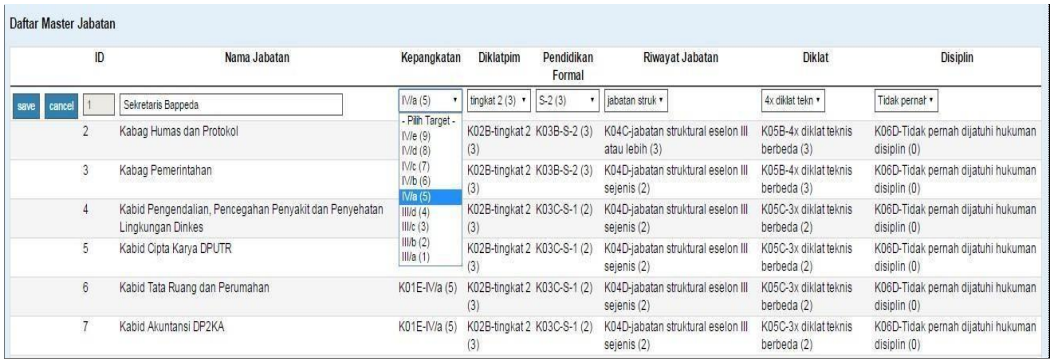


Figure 9 Filling page for position criteria

2.3.5 Employee data processing page

The employee data processing menu is used by staffing staff to enter employee data information needed by the system. This processing system includes the process of storing, changing and deleting data by personnel staff. The employee data page is shown in Figure 10.

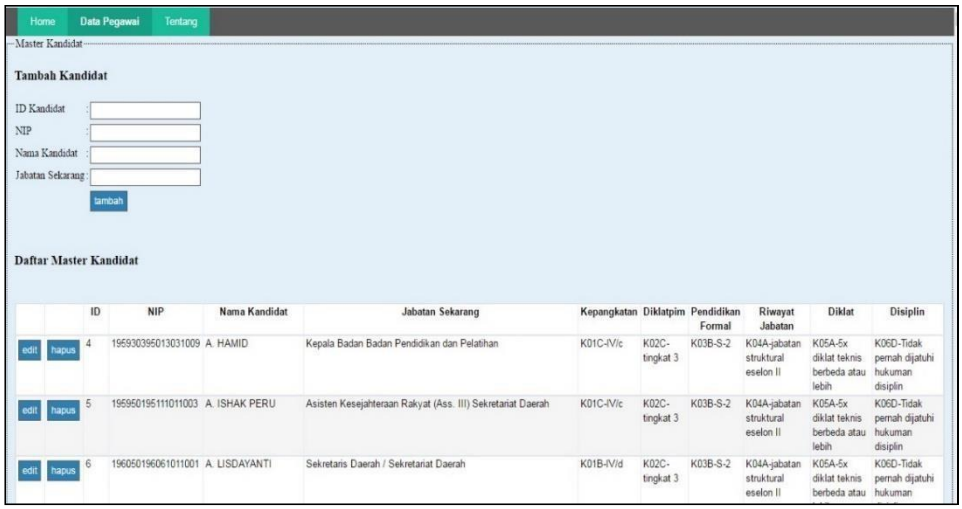


Figure 10 Employee data processing page

3. RESULTS AND DISCUSSION

In this section, it is explained the results of research and at the same time is given the comprehensive discussion. Results can be presented in figures, graphs, tables and others that make the reader understand easily [2, 5]. The discussion can be made in several sub-chapters.

Each sub-chapter title must be marked with letters such as A, B & C. And if you have sub-sub-chapters, then start with a number.

3.1 Testing the suitability of employees in structural positions

Placement of employees in appropriate structural positions is determined using the profile matching method. For testing the suitability of employees in structural positions, 5 positions are used which can represent echelon IIIa, echelon IIIb, echelon IVa, echelon IVb, echelon Va. Table 2 shows the positions selected for testing the system and Table 3 shows the job criteria needs that have been mapped according to the system design.

Testing was carried out in 3 conditions, namely:

1. Using candidate assessment data with the best recommendation results according to the needs of the position criteria.
2. Using candidate assessment data with 3 criteria that are similar to the job requirements.
3. Using criteria assessment data that is very dissimilar to job requirements.

Table 2 List of positions selected for testing the system

ID	Position	Echelon		Education and Training	Education Formal	History Position	Training	Discipline
				10%	20%	20%	10%	10%

1	Secretary Bappeda	III a		Level 2	S2	Position structural echelon III or more	4 x training different	Never been sentenced discipline
6	Head of Spatial Planning and Housing	III b	IV/a	Level 2	S1/D4	Structural position echelon III of the same kind	3 x different training	Never been sentenced discipline
10	village chief East Mambird	IV a	III/d	Level 3	S1/D4	-	2x different training	Never sentenced discipline
38	Ward Secretary Lingkas Mountain	IV b		Level 3	S1/D4	-	2 x training different	Never been sentenced discipline
31	Tata Subdivision Head SMPN 9 Enterprises Education Office	V a		Level 2	S1/D4	-	2x different training	Never sentenced discipline

Table 3 Value of position criteria

ID	Position	Echelon	Rank	Education and Training	Education Formal	History Position	Training	Discipline
			30%	10%	20%	20%	10%	10%
1	Secretary Bappeda	III a	5	3	3	3	3	0
6	Head of Administration Space and Housing	III b	5	3	2	2	2	0
10	Mambird Village Chief East	IV a	4	2	2	0	1	0
38	Secretary WardLingkas Mountain	IV b	3	2	2	0	1	0
31	Tata Subdivision HeadSMP N 9 Service Business Education	V a	2	2	2	0	1	0

Test 1 uses candidate assessment data with the best recommendation results for 5 positions with each position having a list of candidate names that are closest to the needs of the available position criteria. One example of the results of test 1 is the echelon IIIa test data with the title of Secretary of Bappeda. The recommended order is the order that matches the list of selected candidates. If there is more than 1 candidate who has the same final score, then the list of candidates is sorted by age. This is accommodated by looking at the list of Employee Identification Numbers (NIP). From the tests conducted on 7 candidates, it was found that 5 candidates had the most ideal value for the position with a final total score of 3, 1 candidate with a final score of 2.

Test 2 uses candidate assessment data with 3 criteria that are similar to the job requirements. In this test, the selected candidate data is those that have criteria 'Rank', 'Number of Education and Training' and 'Discipline' are ideal with the needs of the position, while for other criteria candidates are selected who do not have the same value as the needs of the position. One example of the results of test 2 is the echelon IIIa test data with the title of Secretary of Bappeda. From the tests conducted on seven candidates, it was found that one candidate had a score of 2.7, three candidates had a final score of 2.4, one candidate had a final score of 2.25 and two candidates had a final score of 2.1.

Test 3 uses criteria assessment data on candidates that are very dissimilar to job requirements. In this test, the selected candidate data is different from the job criteria requirements. One example of the results of test 3 is the echelon IIIa test data with the title of Secretary of Bappeda. From tests conducted on seven candidates, it is known that one candidate with a final score of 1.9, one candidate with a final score of 1.55, one candidate with a final score of 1.4, one candidate with a final score of 0.3, two candidates with a final score of 0.15 and one candidate with a final score of 0 .

Based on the three test results, candidates who have ideal criteria also have a higher score compared to candidates who only have some of the same criterion values and have criterion values that are much different

from the criteria for the position required. The candidate value that is closer to the job criteria needs, the higher the value generated by the system and vice versa. This can provide recommendations for the order of the right candidates according to the needs of the position criteria.

4. CONCLUSION

The conclusions obtained from this study are:

1. The proposed decision support system can produce the best candidate recommendation sequence in the selection of structural positions within the Tarakan City Government.
2. The need for job criteria that are in accordance with the candidate's assessment can produce different values according to the calculation results.
3. Changes in candidate profile values, and the number of sub-criteria used for position criteria, can affect a candidate's closeness to available positions.
4. The use of the profile matching method for cases where the highest value is the best value requires that the ideal value used is the maximum value so that expectations do not exceed the ideal value.
5. By utilizing the profile matching method, the system can evaluate candidates, thereby helping to overcome problems that arise because previously this process was only done manually so that the system is able to minimize subjective decisions.
6. Changes in the weight of the criteria affect the resulting alternative decisions.

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