Decision support system determination of acceptance of employees not civilian state employees (PBPNS) in LPP RRI Merauke using simple additive weighting method

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Abstract. This study aims to answer the problems encountered from the procedure for receiving non-civil servants of the LPR RRI Merauke, which is not digitally accommodated for assessment files to be considered as the feasibility of graduation. Making a decision support system determining the receipt of non-civil servant employees of LPP RRI Merauke is useful in answering existing problems in the institution, supported by archiving and computerized data collection that can make decisions with accurate results, as well as assisting decision-makers in determining non-civil servant employee recruitment - PBPNS by utilizing the results of the manual exam conducted by various criteria and conditions of LPP RRI Merauke. The method used in this study is Multiple Attribute Decision Making (MADM) and uses the method of clarifying Simple Additive Weighting Method (SAW). The basic concept of the SAW method is to find a weighted sum of performance ratings on each alternative on all attributes. The system created can process the selection results of PBPNS candidates who take the test and can be used to process PBPNS data and produce a decision in the form of recommendations on the selection process at LPP RRI, along with PBPNS data reports and PBPNS graduation data reports accurately all of which are carried out computerized with 85 percent accuracy.

1. Introduction
The advancement of computer technology as a media that has become the main component of every data processing in various fields, both business and science, is expected to increase the effectiveness and efficiency of labor time and produce accurate data [1]. The Radio Republik Indonesia (RRI) Public Broadcasting Agency (LPP) Merauke is an organization under the auspices of the LPP RRI center in Jakarta. Founded in 1963, LPP RRI Merauke located at Jl. Ahmad Yani No. 11 Merauke has several fields of affairs that are interrelated with the administration. This time, LPP RRI Merauke has 80 employees. Administration, especially the HR affairs department, which is one of the places where the current employee data is processed, data collection and documentation (archiving) of employee data in the scope of the Merauke RP LPP both Civil Servants (PNS) and Non Civil Servants (PBPNPS). Based on the procedures that apply to LPP RRI related to employee acceptance, especially Non-Civil Servants (PBPNPS), who must go through a separate test process that is based on the results of tests from 5 test areas, namely general knowledge, RRI knowledge, language knowledge, interviews, and psychology test. The results of this test are then recapitulated manually then discussed in meetings with policymakers. The problem encountered from this procedure was not digitally accommodating the assessment files to be considered as the feasibility of graduation. In the face of globalization, human
resources (HR) play a very dominant role in the activities or activities of the company. The success or failure of the company in achieving its stated goals depends on the ability of its human resources (employees) in carrying out the tasks assigned to them [2]. Therefore, every company needs to think about ways that can be done to develop its human resources in order to encourage progress for the company and how to make these employees have high productivity, which of course company leaders need to motivate their employees [3]. In determining the acceptance of scholarships, there are many criteria that must be owned by individuals as a condition in obtaining a scholarship. Each school must have criteria to determine who will be selected to receive a scholarship. The distribution of scholarships is carried out by several institutions to help someone who is less fortunate or achievers during his studies. To help determine in determining someone who deserves a scholarship, a decision support system is needed [4]. The Decision Support System is used in the process of mapping agricultural areas in order that the system built can be developed using technology because of one form of information system with DSS, by collecting data which will be taken into consideration such as soil type, rainfall, waters, temperature, and soil texture [5]. Information can be used to help make decisions in decision support systems (DSS) starting from identifying problems, selecting relevant data, and determining the approach used in the decision-making process, to evaluating alternative choices, evaluating, changing criteria, and changing weight value. This is useful to facilitate decision making related to the problem of receiving prospective new employees at PT PLN (Persero) Head Office [6,7]. For each method of retrieving information data for the reception, there are advantages and disadvantages. For decision-making, methods have the same process of data retrieval, namely by using Simple Additive Weighting Method. However, in this study SAW supporters were used, namely assisted with Multiple Attribute Decision Making and MySQL [8].

2. Methods

The SAW method is known as the weighted sum method. The way the SAW method works is to find the total weighted number of performance ratings for each alternative on all attributes. SAW requires the process of normalizing the decision matrix (X) to a scale that can be compared with all available alternative ratings [9].

The formulas for normalizing are as follows:

\[ r_{ij} = \begin{cases} \frac{x_{ij}}{Max_{ij}} & \text{If } j \text{ is the benefit attribute (Benefit)} \\ \frac{1}{x_{ij}} & \text{If } j \text{ is the cost attribute (Cost)} \end{cases} \]

with \( r_{ij} \) the normalized performance rating of the alternative \( A_i \) on the attribute \( C_j \); \( i = 1, 2, ..., m \) and \( j = 1, 2, ..., n \). Preference value for each alternative \( (V_i) \) given as:

\[ V_i = \sum_{j=1}^{n} w_j r_{ij} \]
A larger Vi value indicates that alternative Ai is more chosen.

3. Results and discussion
The process of determining the acceptance of Non-Civil Servant Employees (PBPNS) LPP RRI Merauke that is currently happening is not optimal. This is based on the results of a system analysis that runs with the method of field observation. Based on the results of observations made, it can be concluded that the needs - requirements needed for the progress of the system are as follows.

3.1. Needs:
The acceptance process for the criteria of Non-Civil Servants (PBPNS) LPP RRI Merauke, Knowledge, Interviews and Psychotest is done using a method of decision making

3.2. Problem:
1) The acceptance process for the criteria of Non-Civil Servants (PBPNS) LPP RRI Merauke, Knowledge, Interviews and Psychotest is carried out without using benchmarks (decision-making system methods) of these criteria. Data processing, storage, data processing, and reporting systems: still manual, meaning, data on prospective non-civil servant employees (PBPNS) LPP RRI Merauke that have been recommended are recorded in the receipt book and the book on determining the section, this method is vulnerable to damage, loss and manipulation.
2) Data storage: it is still limited to archiving, which means that the recommended data for receipt of Non-Civil Servant Employees (PBPNS) from LPP RRI Merauke is still stored in archival books based on the year of entry, known together, using methods such as this is vulnerable to lose and damage, because the storage area is in the location of the storage inside the business section.
3) Data Search: still done manually, this method makes it difficult in the data search process of the many Non Civil Servant Employees (PBPNS) LPP RRI Merauke that have been received.

3.3. Which is conducted:
Make a decision support system in making decisions to determine the acceptance of Non-Civil Servant Employees (PBPNS) in LPP RRI Merauke using the Simple Additive Weighting Method (SAW) method so that it can assist the Station Head of LPP RRI Merauke in determining decisions.

![Figure 1. Proposed Diagram of SPK Determining Acceptance of Non-Civil Servant Employees (PBPNS) in LPP RRI Merauke](image-url)
At this stage, it is analyzed why LPP RRI Merauke needs a decision support system in determining the Acceptance of Non-Civil Servants (PBPNS) in the LPP RRI Merauke. The following is a table of the stages in the process of determining the acceptance of Non-Civil Servants (PBPNS) in LPP RRI Merauke.

3.4 **Data Flow Diagram**

Data flow diagrams (DFD) are one of the important model tools or modeling tools and are used to describe the flow of data in the new system, the source, and destination of data, the process that processes the data and also stores data [1]. Data flow diagrams in this system can be seen in the following figure:

*Figure 2. Context Diagram*

*Figure 3. DFD Level 0*

Data Flow Diagram Description Level 0
Process 1.0
Process Name: PBPNS Prospective Data Input
Input: PBPNS Candidate Data
Output: PBPNS Candidate Data

Process 2.0
Process Name: Calculation of the value of 5 criteria
Input: PBPNS Candidate Data
Value of General Knowledge
RRI Knowledge Value
Indonesian and English Knowledge Value
Interview Value
Psychotest Value
Output: Data Selection

Process 3.0
Process Name: Report Process
Input: PBPNS candidate data
Data Selection Results
Output: Information Report on Selection Results

Description of Data Flow Diagram Level 1 process 1
Process 1.1
Process Name: Reporting Process
Input: PBPNS Candidate Data
Data on Recommendations for Selection Results
Output: Reporting to the Head of LPP RRI Merauke Station

4. Conclusion
After conducting research and completing the making of Decision Support System for Determining Revenue for Non-Civil Servant Employees in LPP RRI Merauke, using the (SAW) method, can be concluded.

1. The support system for determining the revenue for non-civil servant employees in LPP RRI Merauke using the SAW able to help users in making decisions to determine the receipt of non-civil servant employees of LPP RRI Merauke.
2. This Decision Support System can process PBPNS data and produce a decision in the form of recommendations on the results of the selection and placement process in LPP RRI

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