Analysis of the Factor Evaluation Process in the Decision-Making of Prospective Cleaning Staff at the BMKG Office in North Sumatera

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Abstract

The process of developing decision in the recruitment of prospective cleaning staff requires methodologies that are objective, systematic, and capable of minimizing subjectivity. The purpose of this study is to analyze the application of the Factor Evaluation Process (FEP) in the development of the for prospective cleaning staff at the BMKG Office in North Sumatra. The FEP method is used to evaluate the number of alternative prospective employee based on a few previously established criteria, such as education level, work experience, age, discipline, physical condition, responsibility, and the ability to work together. This study employs a quantitative deskriptif approach with criteria determination, weight, alternative assessment, and total score to determine the prospective employee. The results of the analysis show that the FEP method can provide a more structured, transparent, and rasional selection process, which will help managers choose employees who are most in line with the needs of the organization. As a result, the application of the FEP method can serve as a solution for decission in the hiring process, especially in positions that require evaluation based on many factors simultaneously.

***Keywords**:* Factor Evaluation Process, Decision-making, Recruitment, Cleaning Staff, DSS

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Introduction

In order to support future regional work operations, the BMKG office in North Sumatra is hiring cleaning personnel, which is a very significant step. The best human resources for the office will come from a careful and precise hiring process for new cleaners. Although they essentially follow the same selection factor norms, the BMKG Sumut region's hiring practices for new cleaning personnel are rather diverse. Interviews, written exams, and field tests are becoming commonplace in the office when choosing new cleaning employees. Every element has a different weight. In order to choose a cleaning staff candidate who satisfies the office's requirements, the weight of each factor will finally be used to compare each application.

One of the key components of human resource management (HRM) is employee performance appraisal, which attempts to gauge how much an employee has contributed favorably to the accomplishment of the organization's objectives [1]. Essentially, an organization's ability to accomplish its objectives is mostly dependent on its human resources' preparedness, understanding of work standards, ability to do tasks given to them, and caliber of work.

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Up until now, the committee in charge of hiring new cleaning employees at the BMKG Sumut office has used a manual process to calculate an applicant's final test score across all phases. The committee in charge of hiring new cleaning employees will find it challenging to evaluate test stages with a high number of job applicants, which will lead to assessments and decision-making considerations that are often prejudiced and subjective. This causes decision-makers to make assessments and considerations "intuitively," which results in a tendency toward a high rate of failure in the acceptance of candidates for limpieza personnel who meet the office's overall requirements. In the scenario under study, the MFEP approach makes decision-making easier [2][3]claim that using the MFEP approach improves decision-making, which helps to accomplish the goals of the research [3]. The goal of the MFEP approach is to examine a number of variable elements that affect the foundation's student acceptance rate [4].

Because of this, developing a decision-making model is crucial to ensuring that decisions are exact, accurate, and, of course, advantageous to all parties involved. The Multi Factor Evaluation Process (MFEP) is one of the models used in decision-making. Every model has different levels of complexity, benefits, and drawbacks. This model serves as a tool for making decisions. The option with the highest value is the solution, according to the MFEP approach. [2] chooses workers qualified for advancement, [5] project tender winners,

Literature Review

2.1 Decision Support System (DSS)

A Decision Support System (DSS) is a system engineered to assist in resolving both organized and unstructured situations. This approach is typically employed to facilitate decision-making in semi-structured and entirely unstructured contexts. Decision Support System (DSS) that makes use of popular techniques including SAW, AHP, and TOPSIS in addition to the MOORA and MOORSA methodologies. The MOORA technique, renowned for its accuracy in managing many criteria, [6]. The Rapid Application Development (RAD) strategy was used to construct the system, allowing for a quick and effective development process employing a sequential and linear methodology. An accuracy rate of 88.88% was attained by the system's use of the MFEP approach, according to a comparison of field data and system processing outcomes. [7].

As a result, a recommendation system that can assist in making judgments fast and

precisely without requiring laborious searches is required. The Multi Factor Evaluation Process (MFEP) method, which takes into account six primary factors—tuition costs, majors, scholarships, college type, admission processes, and accreditation—will be used in this study to create a campus selection recommendation system [8].

2.2 Multi Factor Evaluation Process

The Multi Factor Evaluation Process (MFEP) method is a fundamental method in the development of methods for Decision Support Systems. The technique for solving this method involves subjective and intuitive assessments of indicators or causal factors of a problem that are considered important. These considerations involve assigning weights (weighting system) based on a priority scale according to their level of importance [9]. The Multi Factor Evaluation Process method is one approach used in decision selection. or more often known as the MFEP approach. MFEP is a technique with few and straightforward computations. The MFEP approach is used in this study to identify internet service providers based on predetermined criteria or requirements. According to the research, choosing the finest internet service provider will be made easier by the system that will be implemented later. Make suggestions for users based on the criteria [10].

This study will address how to design decision support using the Multi Factor Evaluation Process (MFEP) Algorithm, which can assist the new student admissions committee in making decisions that can help solve problems that exist in the Baabussalam Foundation. Data recording is still done by entering data into the ledger to prepare a report, and how to select students who still use how to gather Prospective New Students in a room and then conduct tests on New Students one by one. It can effectively and suitably choose potential new pupils with the help of this decision assistance system [11]. keputusan is developed subjectively and intuitively using a variety of factors that have a significant impact on the choice that becomes an alternative in the process of developing keputusan with numerous factors (multifactor).

The Multi Factor Evaluation Process (MFEP) is a quantitative approach that heavily influences alternative choices in multi-factor decision-making through the application of a weighting system [3].

1. The computation is effective;
2. The notion is straightforward and easy to comprehend; and
3. It can quantify relative performance and choice options in a straightforward mathematical form.

The following formula is used to realize the MFEP approach.

$WE = FW \times E$

$\Sigma WE = \Sigma (FW \times E)$

Keterangan:

WE = Weighted Evaluation
FW = Factor Weight
E = Evaluation

Research Methodology

This study employs a decision support system approach along with a descriptive quantitative research methodology. The Factor Evaluation Process (FEP) approach is utilized in descriptive quantitative research to methodically characterize the decision-making process in the hiring of cleaning personnel at the BMKG North Sumatra Office. This approach was selected because it can convert several predefined criteria into an objective basis for evaluation in order to identify the best option.

Separating the test score files of potential cleaning employees with test weight values below the minimal weight value is the First Selection Procedure, the initial assessment. The potential cleaning staff is deemed unsuccessful if one of the three test factor scores is lower than the minimal factor score. The BMKG Sumut office's personnel department will take into

account all placement criteria that can be derived from the cleaning staff's final test results during the second stage. It has been decided that any score below the minimum value of all current criteria will be deemed unsuccessful, as stated in the criterion section. Sorting from the best score to the limit of the search for the best scores, up to the limit of the number of new cleaning staff to be employed, is the last step in determining the final selection score for cleaning staff. The placement criterion will take into account the final scores of every cleaning employee that advances to this stage. The cleaning staff factor scores are averaged based on the priority test factors of each current criterion before the final selection is made.

Results

3.1 Analysis of the Multifactor Evaluation Process Algorithm

The "Multifactor Evaluation Process" (MFEP) is a quantitative method that use a "weighting system" to choose the optimal option. Subjective and intuitive decision-making in multifactor decision-making considers a variety of aspects that significantly impact their alternative options. It is better to utilize a quantitative method like MFEP for decisions that have strategic implications.

PW1=Miswanto, PW2=Arifin, PW3=Sumarni, PW4=Rahmad, and PW5=Lisnawati are the five prospective cleaning staff members that BMKG North Sumatra Region will pick. Three of these five participants will be removed, and the two who meet the requirements and earn the highest marks will move on to the selection.

When making decisions, the following three criteria are taken into consideration:

a. f1 = Question and Response score 0,15
b. f2 = Health score 0,60
c. f3 = Personality 0,25

Health is found to be the most significant element in this selection example, followed by personality and, finally, the psychotest. Assigning weights to the elements that were used is the next stage, and the total weight must equal 1 (∑weights = 1).

After weighting has been done, the police candidates who applied will be weighed, namely Subsequently, Miswanto, Arifin, Sumarni, Rahmad, Lisnawati, will be evaluated and given weighted scores for each criterion as listed in table 1.

Table 1. Factor Evaluation

Factor	Miswanto	Arifin	Sumarni	Rahmad	Lisnawati
Question and Response	3	2	5	7	2
Health	4	8	2	4	6
Personality	2	2	4	3	5

With the information provided above, the total evaluation score for each alternative or selection participant is obtained. Each selection participant has an evaluation score for the three factors that are considered, in order to obtain the total evaluation score for each applicant, Lismawati Score 3, 35, Arifin Score 6,35, Sumarni score 2, 95, Rahmad score 4, 2 and Lisnawati score 5,51. From the results of the MFEP Method calculation, it is determined that the alternative with the highest value is the best solution based on the selected criteria. In the example used, the first highest value is held by participant Lisnawati, and the second highest value is held by participant Rahmad.

Calculation Steps Evaluation value for each factor. Each factor weight value is multiplied by the factor evaluation, as shown below:

PW1 Miswanto = (0,15 x 3) + (0,60 x 4) + (0,25 x 2)
= 0,45 + 2,4 + 0.5
= 3,35
PW2 Arifin = (0,15 x 2) + (0,60 x 8) + (0,25 x 5)
= 0,3 + 4,8 + 1,25

= 6,35

PW3 Sumarni = (0,15 x 5) + (0,60 x 2) + (0,25 x 4)
= 0,75 + 1,2 + 1
= 2,95

PW4 Rahmad = (0,15 x 7) + (0,60 x 4) + (0,25 x 3)
= 1,05 + 2,4 + 0.75
= 4,2

PW5 Lisnawati = (0,15 x 2) + (0,60 x 6) + (0,25 x 5)
= 0,3 + 3,6 + 1.25
= 5,15

3.2 Flowchart

A program flowchart is a symbol that explains how a program runs from the moment it is displayed until it is completed. Here is the designed program flowchart.

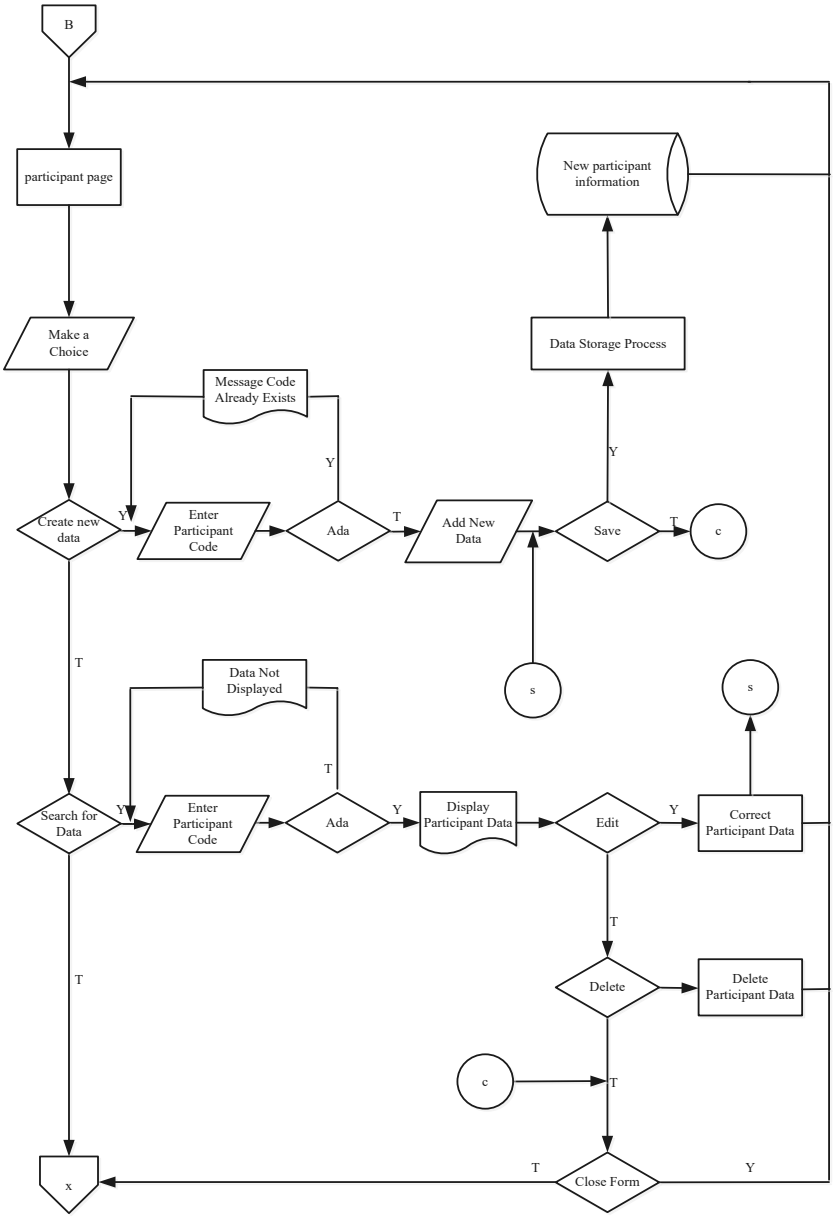

Figure 1. Flowchart of the Participant Page

3.3 System Modelling

The initial stage of the product or system engineering development process is design. The process of utilizing different methods and concepts to precisely define a piece of machinery, a procedure, or a system so that it can be physically realized is called design. The technological foundation of the software engineering process is this stage. The components of the analytical model are transformed during this stage. The design phase will result in UML design, database, database relations, interface design, design, flowchart, and program construction utilizing one of numerous design techniques.

Use Case is a construct to describe how the system appears in the eyes of the user. The goal of use case modelling includes defining the functional and operational needs of the system by outlining usage scenarios communicated between users and developers. From the identification of the actors involved above, the use case diagram for the decision support system in the recruitment of new cleaning staff can be seen as follows:

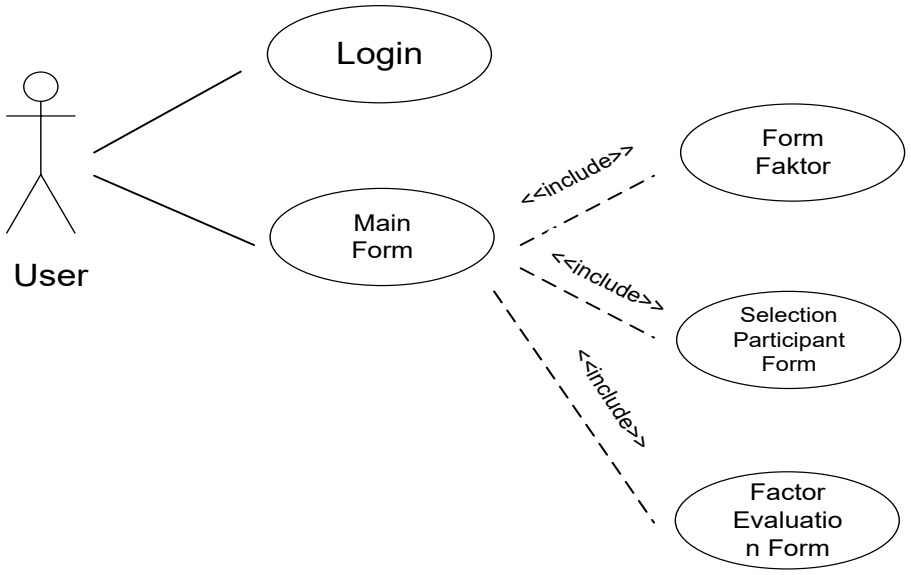

Figure 2. Use Case Diagram System

Conclusion

Based on the research results, it can be concluded that the application of the Factor Evaluation Process (FEP) method in the decision-making of prospective cleaning staff at the BMKG North Sumatra Office can provide a more objective, systematic, and structured selection process. This method helps the institution evaluate each prospective employee based on predetermined criteria, such as education, work experience, age, discipline, physical condition, responsibility, honesty, and teamwork ability.

Through the weighting and assessment process of each employee candidate alternative, the FEP method can produce a final score that serves as the basis for determining the ranking of candidates. Thus, the decisions made are no longer solely based on subjective evaluations, but are grounded in logical and measurable calculations. This shows that the FEP method is worthy of being used as one of the approaches in supporting the recruitment process for cleaning staff. Furthermore, this research also shows that the use of the Factor Evaluation Process method can enhance the effectiveness and accuracy in selecting candidates who are most suitable for the needs of the BMKG North Sumatra Office. Therefore, this method can be used as a decision support solution to assist the agency in obtaining human resources that are more appropriate, competent, and meet the required criteria.

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