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Decision Support System in Employee Determination Best Using SAW Method in PT.Tri Mitra Resources

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ABSTRACT

In this era of globalization, computers are needed in almost all aspects of life. Computers are tools to help process a job so that it can be easier and more efficient. A company that has core competencies in the telecommunications field that continuously strives to improve the performance of its employees in achieving its company goals, which has a solid professional team with skills, systems and experience in managing networks. This is due to companies that have not implemented a decision support system in determining the best employees in the company in a good and efficient way. Basically a Decision Support System is a further development of a computerized Management Information System that is designed in such a way as to be interactive with the wearer. Interactive with the aim of facilitating integration between various components in the decision-making process such as procedures, policies, analysis, experience and manager's insights to make better decisions. As is well known so far, companies face more problems related to human resources because managing human resources cannot be equated with machines, materials, and funds which are only technical in nature. This is a problem that is quite complicated, so that companies have difficulty in establishing policies, especially those related to human resources. The Simple Additive Weighting method can be applied in building a decision support system to determine and choose the best ISP alternative, and can help decision makers. This method involves a number of respondents, criteria, alternative choices, and preparation of a certain rating scale into a questionnaire.

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1. INTRODUCTION

Advances in computer technology are indeed very helpful for humans. By using computers, people can easily complete their work such as accessing information and shopping, as well as in education and offices. In a company, it must be able to manage its resources, including human resources, because human resources are the main asset that has a big influence on the progress of the company. As is well known so far, companies face more problems related to human resources because managing human resources cannot be equated with machines, materials, and funds which are only technical in nature. This is a problem that is quite complicated, so that companies have difficulty in establishing policies, especially those related to human resources.

The slow process in determining the best employee, reduces the morale of the employee to become the best employee so that the company still has difficulty in overcoming decision making in

determining the best employee, and if there is an analysis of the best candidate for the best employee based on the specified criteria, there will be fraud in determining the best employee. This is due to companies that have not implemented a decision support system in determining the best employees in the company in a good and efficient way.

Based on the description above, the authors conducted research by building a decision support system by applying the Simple Additive Weighting method as a model of analysis. The title of the research raised is "DECISION SUPPORT SYSTEM IN DETERMINING THE BEST EMPLOYEES USING SAW METHOD IN PT. TMR (TRI MITRA RESOURCES) "This system will produce an output in the form of determining the best employee by using the assessment criteria that are each weighted and producing a preference value as the basis for determining the best employee recommendation.

2. RESEARCH METHOD

In making a Decision Support System in Determining the Best Employees with the SAW Method the stages that must be passed to produce solutions to existing problems.

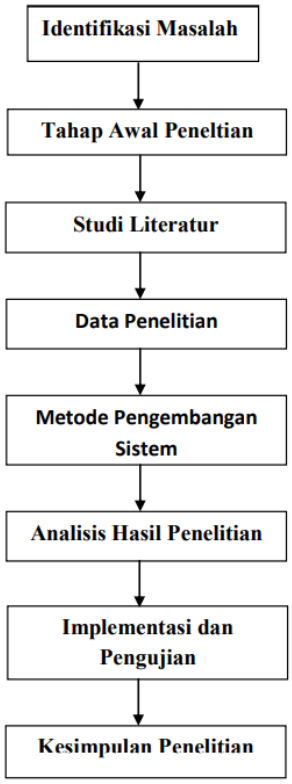

Figure 1. Research Framework

2.1. Decision Support System (DSS)

Decision Support System (DSS), in general, is defined as a system that is able to provide both problem-solving abilities and communication skills for semi-structured problems[1], [2]. In particular, DSS is defined as a system that supports the work of a manager or a group of managers in solving semi-structured problems by providing information or suggestions leading to certain decisions[3]–[6].

2.2. Simple Additive Weighting (SAW)

The basic concept of the SAW method is to find the weighted summation of the performance rating for each alternative on all criteria[7]. The SAW method requires a decision matrix normalization process (X) to a scale that can be compared with all available alternative ratings[8]. The SAW method recognizes 2 (two) attributes, namely the benefit criteria and the cost criteria. The fundamental difference between these two criteria is in the selection of criteria when making decisions[9].

The Concept of Calculation with the SAW Method
The settlement steps in using the SAW method are as follows[10]–[13]:

1. Determine the alternative, namely Ai.
2. Determine the criteria that will be used as a reference in making decisions, namely Cj.
3. Determine the weight of preference or level of importance (W) of each criterion.
   W = [W1, W2, W3,…, Wj]
4. Create a table of suitability rating for each alternative on each criterion.
5. Make a decision matrix (X) which is formed from the results of the suitability rating table of each alternative on each criterion. The X value of each alternative (Ai) on each criterion (Cj) that has been determined where, i = 1,2,… m and j = 1,2,… n.

$$X=\begin{bmatrix} x_{11} & x_{12} & \dots & x_{1j} \\ . & & & . \\ . & & & . \\ x_{i1} & x_{i2} & \dots & x_{ij} \end{bmatrix}$$

6. Normalizing the decision matrix by calculating the normalized performance rating (r_{ij}) value of alternative A_i with the C_j criteria.

$$r_{ij} = \begin{cases} \frac{x_{ij}}{max_i x_{ij}} \\ \frac{x_{ij}}{min_i x_{ij}} \end{cases}$$

   Information :
   a. The profit criterion is carried out if the value provides an advantage for the decision maker. Conversely, the cost criterion is carried out if it incurs costs to decision makers.
   b. If it is a profit criterion, the value is divided by the value of each column. As for the cost criterion, the value of each column is divided by the value.
7. The results of the normalized performance rating (r_{ij}) form a normalized matrix (R).

$$R = \begin{bmatrix} r_{11} & r_{12} & \dots & r_{1j} \\ . & & & . \\ . & & & . \\ r_{i1} & r_{i2} & \dots & r_{ij} \end{bmatrix}$$

8. The final result of the preference value (V_i) is obtained from the addition and multiplication of the normalized matrix row elements (R) with the preference weight (W) corresponding to the matrix column element (W).

$$V_i = \sum_{j=1}^{n} W_j r_{ij}$$

   The result of the calculation of a greater Vi value indicates that the alternative Ai is the best alternative.

3. RESULTS AND DISCUSSION

At this stage analysis and discussion are carried out as steps in order to display the SAW calculation results and get the best employees. Based on the results of the data analysis required in the application of the SAW method, it is described in the following table.

1. Design This table will explain the tables in this system.

Table 1. User

No	*Field*	*Type*	*Length*	Keterangan
1	*Username*	*varchar*	50	*Primary Key*
2	*Password*	*varchar*	50	

Table 2. Employee data

No	*Field Name*	type	Keterangan
Kode_id	*Varchar*	40	*Primary Key*
Nama_pegawai	*Varchar*	40	
Disiplin	*Int*	10	
Sikap	*Int*	10	

Table 3. Employee value

No	*Field Name*	*Type*	*Length*	Keterangan
1	*id_nilai*	*Varchar*	50	*Primary Key*
2	Nama_pegwai	*Varchar*	50	
3	Absensi	*Varchar*	50	

2. Assessment criteria
   By using the SAW method, there are criteria needed to determine which best employees are best for promotion. The criteria are as follows:

Table 4. Assessment criteria

Inisialisai Kriteria	Kriteria
C1	Absensi
C2	Bermotivasi Tinggi
C3	Jujur
C4	Loyalitas Terhadap Perusahaan

Table 5. weight criteria

Kedisplinan	Bobot	Nilai
Tidak Displin	R	3
Kurang Disiplin	C	2
Displin	T	1

Table 6. disciplinary criteria

Bobot Nilai	
Bobot	Nilai
Rendah [R]	>3
Cukup [C]	>2
Tinggi (T)	<1

Table 7. behavior criteria

Komunikasi		
Komunikasi	Bobot	Nilai
Tidak Baik	R	3
Baik	C	2
Sangat Baik	T	1

Table 8. Teamwork criteria

Kerjasama Team	Bobot	Nilai
Tidak Baik	R	3
Kurang Baik	C	2
Baik	T	1

Table 9. Responsibility criteria

Tanggung Jawab		
Tanggung Jawab	Bobot	Nilai
Tidak Bertanggung Jawab	R	3
Kurang Bertanggung Jawab	C	2
Bertanggung Jawab	T	1

4. CONCLUSION

With the calculation of the SAW method, the promotion of the Pancur Batu Police is easier because of the computerized system. Based on the system design to make it easier for the admin to determine the promotion at the Pancur Batu Police, the authors use the PHP programming language and MySQL database by inputting promotion criteria for HRD.

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