

Decision Support System For Selection of Productive at Sahabat Sampulo Foundation Using The Profile Matching Method

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ABSTRACT

Making decisions is one of the most basic things in everyday life, in the decision-making process humans are often faced with many alternatives to choose from, so that in a problem, several decision makers can make different decisions. The advancement of this technology has also been put to good use by the Sahabat Sampulo Foundation to determine the selection of productive and unproductive employees. Because it still uses traditional methods subjectively and manually, from these problems a system is needed that can help determine employee data decisions for the Sahabat Sampulo Foundation. This Profile Matching method compares the value and actual data of a profile that will be assessed with the profile value that is applied.

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1. INTRODUCTION

The discipline of human resources or employees is one of the many factors that can affect the performance of a company or foundation. Human resource discipline is formed by recording experiences and lessons from various repeated deficiencies in the process of training employee discipline [1].

At the moment, the Sahabat Sampulo Foundation has various problems experienced by several companies and the Sahabat Sampulo Foundation in determining the best employees, the determination is made not only by direct appointment by management and not by means of subjective assessment, but a company must evaluate employee performance in certain period [2].

In addition, the condition that is a problem at the Sahabat Sampulo Foundation in determining the best employee lies in the evaluation process which is still carried out manually. According to [3]. This makes it difficult for companies to determine the eligibility of the best employee [3]. Furthermore, the problem of subjectivity in the selection of productive and unproductive employees is an almost unavoidable problem. Management and employees need a performance appraisal process that is accurate and fast and can provide direct feedback and improvements in the work environment [4]. One of the factors that need serious attention for managers of a company or agency is decision making. To make a decision, careful analysis and calculations are needed, depending on the number of criteria that affect the problems that require a decision to be interrelated [5].

Along with the times, system development efforts have increased in terms of complexity and integration. The system can not only save 10%–20% of the project budget, but also prevent half of all failures [6]. In assessing human resources or employees, companies are starting to follow Information Technology (IT) such as Decision Support Systems (SPK) with the aim that the assessment carried out by the company will suit the company's needs [7].

To overcome some of the problems that have been described by researchers, this study aims to use a Decision Support System (DSS) with the Profile Matching method. The use of this method aims to make it easier for the Sampulo Friends Foundation (YSS) to select productive and unproductive employees.

The reason for using the Profile Matching method is because Profile Matching is an appropriate method for making decisions that is closely related to the value of job performance and competence because the calculations are carried out by weighting and calculating competency gaps [9]. Researchers chose the Profile Matching method compared to other methods in decision support systems because the Profile Matching method considers logical consistency in the assessment used to determine priorities so as to produce alternatives that are not many at the same time have a short time and have better accuracy compared to other methods [9].

2. RESEARCH METHOD

2.1 Types and Research Locations

This research was conducted using this type of research. This research implemented a solution to the problem of selecting employees with a decision support system, namely using the Profile Matching Method. This research was conducted at the Sampulo Friends Foundation (YSS) which is located at Jl. Sultan Dg. No. 4 Malimongan Baru, Bontoala District, Makassar City, South Sulawesi.

2.2 Research Approach

In this study, researchers used both quantitative and qualitative approaches, where the quantitative approach emphasizes using numbers, starting from data collection, interpretation of the data, and the appearance of the results. This study was chosen to determine the effect of decision support system variables on determining productive and unproductive employees at the Sahabat Sampulo Foundation (YSS) using the Profile Matching method.

2.3 Data Source

The source of the data in this study is using library research which is a way of collecting data from several books, journals, theses, which are related to the intent of the management information system which can be used as a reference for discussing this issue. Linkage to online or internet data sources as well as results from previous research as reference material for future researchers.

2.4 Method of collecting data

- 1) Interview: The interview process was conducted to obtain information in the form of: conducting interviews with the managers of the Sahabat Sampulo Foundation to obtain employee information.
- 2) Literature Study: In this study, the literature study was conducted by collecting data sourced from reference books, journals, papers, and theses related to information systems and website decision support systems.
- 3) Observation: Make direct observations of the object of research to the employees of the Sahabat Sampulo Foundation.

2.5 Data Processing and Analysis Methods

- 1) Data Processing: Data processing in question is by assigning an identity code and presenting in a tabulation table each data to be analyzed such as processing report data, report formats and efficiency and effectiveness data obtained from user observations in using the application.
- 2) Data Analysis: The analysis used is the analysis of quantitative and qualitative approaches, where the quantitative approach emphasizes testing theory through measuring variables using statistical procedures.

2.6 System Testing Techniques

In this study, researchers will test each released feature using black box testing. Then, to test the effectiveness and efficiency, observations will be made on the tasks assigned to the user. Observations were made on the success of the user performing the task and the time needed to complete the given task.

2.7 System Development Method

In this study, the system development method used was Waterfall in the system development proposed by the researcher. The Waterfall model is a model whose development is sequential.

3. RESULTS AND DISCUSSION

3.1 Waterfall

In the development process using extreme programming, two releases were carried out, such as:

- 1) Running system,

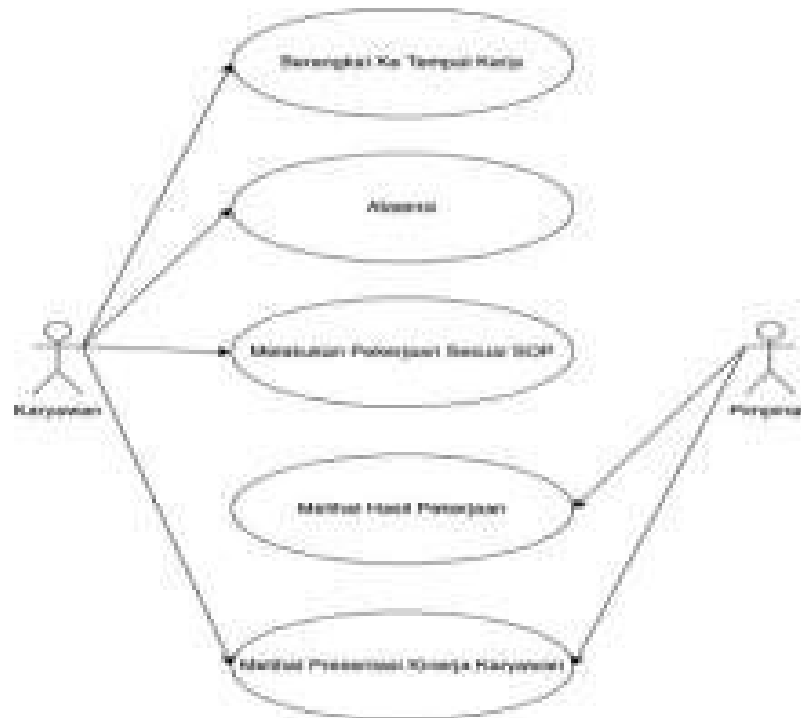


Fig. 1. Running System Analysis

3.2 System Implementation

In the development process we create interface of this system, which can be seen in Fig. 2. (a) and (b)

No	Karyawan	Kriteria	Sub Kriteria	Nilai	Skala (Max-Min)	Nilai Cap
1	Melisa Harti	Disiplin	Pakaian Rapi dan Sopan	1	1-3=-2	3
2	Melisa Harti	Disiplin	Tanggung jawab	1	1-3=-4	1
3	Melisa Harti	Disiplin	Tepat Waktu	2	2-3=-2	3
4	Melisa Harti	Disiplin	Disiplin Waktu	3	3-3=-1	4
5	Arapp Marita	Disiplin	Pakaian Rapi dan Sopan	2	2-3=-1	4
6	Arapp Marita	Disiplin	Tanggung jawab	2	2-3=-3	2
7	Arapp Marita	Disiplin	Tepat Waktu	1	1-3=-3	2
8	Arapp Marita	Disiplin	Disiplin Waktu	2	2-3=-2	3

Fig. 2. (a) System Interface

The screenshot shows a web application interface with two main sections. On the left, under the heading 'Karyawan', there is a table with columns 'No', 'Nama Karyawan', and 'Action'. It lists six employees: Melisa Hart, Anggi Marito, Rimar Calista, Yoga, Deni, and Budi. Each row has two buttons: 'edit' (green) and 'hapus' (red). On the right, under the heading 'Nilai Total & Akhir', there is a table with columns 'No', 'Karyawan', 'Kriteria', 'Nilai Total (Rata2 Cocok + 60%) + (Ukasi2 Secondary + 40%)', and 'Nilai Akhir (Rata Total + Percentage Kriteria)'. It shows calculations for each employee based on their criteria and scores.

No	Karyawan	Kriteria	Nilai Total (Rata2 Cocok + 60%) + (Ukasi2 Secondary + 40%)	Nilai Akhir (Rata Total + Percentage Kriteria)
1	Melisa Hart	Disiplin	(2x60%) + (4x40%) = 2,6	2,8 x 30% = 0,78
2	Anggi Marito	Disiplin	(2x60%) + (4x40%) = 2,6	2,8 x 30% = 0,78
3	Rimar Calista	Disiplin	(2x60%) + (4x40%) = 4	2,8 x 30% = 1,2
4	Yoga	Disiplin	(2x60%) + (4x40%) = 4,45	2,8 x 30% = 1,335
5	Deni	Disiplin	(2x60%) + (4x40%) = 4,45	2,8 x 30% = 1,335
6	Budi	Disiplin	(2x60%) + (4x40%) = 3,9	2,8 x 30% = 1,17

Fig. 2. (b) System Interface

3.3 Black Box Testing

Testing the system's main menu can be seen in the following table:

Table 1. Login Test

Input Data	Expectation	Observation	Conclusion
System accessed. Edit text and login button Pressed	A login form will appear consisting of a username and password after that enter the user database validation.	Login interface. Displays a login form consisting of a username and password and can perform user validation	Accepted
Information	Display data in the form of employee information.	Displays data in the form of employee information	Accepted
Employee	Display an employee's data	Displays data in the form of employee information	Accepted
Choose to add data	Show details of adding employee data.	Successfully displays detailed data on the addition of employees	Accepted
Change analysis module.	It shows that the analysis module has registered	Shows the analysis module has registered	Accepted
Choose the delete button	Delete the selected sub criteria data.	Deletes the selected sub criteria data	Accepted
Process information	Display data in the form of process information	Displays data in the form of process information	Accepted
Select the Details button.	Show data	Displays detailed data	Accepted

3.4 SUS Testing

Testing of the Decision Support System software is carried out by testing Usability Testing, to test usability the author uses the System Usability Scale (SUS) which is used to assess the overall usability of a system. The SUS test is carried out by giving the user ten questions and five alternative answer scales. the answers consist of strongly agree to strongly disagree [10].

Table 2. The calculated score

Responden	Skor Hasil Hitung (Data Contoh)										Jumlah	Nilai (Jumlah x 2.5)
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10		
1	3	3	3	2	3	2	3	3	3	2	27	68
2	3	3	3	4	3	3	3	3	3	3	31	78
3	3	4	4	3	4	4	3	3	4	3	35	88
4	4	4	4	4	4	4	4	4	4	4	40	100
5	3	3	4	4	3	3	4	3	3	3	33	83
6	3	4	3	3	3	3	3	4	3	4	33	83
7	4	4	4	3	3	4	3	3	3	4	35	88
8	3	3	3	3	3	3	3	3	3	4	31	78
9	4	4	3	2	3	3	3	3	3	3	31	78
10	3	3	4	3	4	3	4	3	3	0	30	75
11	4	4	4	4	4	3	4	4	4	3	38	95
12	4	3	3	4	4	4	3	3	4	4	36	90
13	4	4	4	4	4	4	4	4	4	4	40	100
14	4	4	4	4	4	3	3	4	4	4	38	95
15	3	3	4	4	4	3	4	4	4	2	35	88
16	4	4	4	4	4	4	4	4	4	4	40	100
17	4	3	4	3	3	4	4	3	4	4	36	90
18	4	4	4	3	4	3	3	4	4	2	35	88
19	3	3	4	4	4	4	4	4	4	4	38	95
20	3	4	4	3	4	3	4	4	4	4	37	93
Skor Rata-rata (Hasil Akhir)												1748

The results of the SUS (System Usability Scale) test showed 87% and received an "Excellent" ive rating and received Grade "A". This means that in terms of usability or usability, this has been appropriate and acceptable to Una. And after being tested functional, this is also functioning properly and can produce Profile Matching calculations that are the same as manual calculations.

3.5 Profile Matching Test

The Profile Matching method is as follows:

- 1) Determine the criteria for the data needed.
- 2) Determine the aspects used for assessment

The following are the stages in using the Profile Matching Method:

- 1) Gap Profile Mapping. The gap referred to here is the difference/difference in the value of each aspect with the target value. The following is the profile gap mapping formula: Gap = Applicant Profile – Profile Value.
- 2) Weighting. After calculating the gaps for each applicant, then each employee profile is given a weighted value based on the gap value weight table.
- 3) Calculation and grouping of core factors and secondary factors. After determining the weight of the gap value, then each aspect is further divided into two groups, namely the core factor group and the secondary factor group. Core factors, criteria (competencies) that are most important or prominent or most needed

by an assessment that is expected to obtain optimal results. Secondary factors are items other than those in the core factor.

- 4) Calculation of Total Value. From the calculation of the core factor and secondary factor of each aspect, the total value of each aspect is calculated which is estimated to affect the performance of each profile. Calculation of the total value can be shown in the equation below:

$$N = (X)\% \text{NCF} + (X)\% \text{NSF} \quad (1)$$

Information :

N : The total value of each aspect

NCF : The average value of the core factor

NSF : Average value of secondary factor

(X)% : The percentage value that is inputted

- 5) Rank Determination Calculation The end result of the Profile Matching process is ranking. Determination of ranking refers to the results of certain calculations. Calculation of the total value can be shown in the equation below:

$$\text{Ranking} = (x)\% \text{Npd} + (x)\% \text{Nu} + (x)\% \text{Npg} \quad (2)$$

Information :

Ranking: Final Result

Npd : Value of Educational Aspects

Nu : Age Aspect Value

Npg : Value Aspects of Experience

(X)% : The percentage value entered.

For example:

Unsatisfactory = 0

Needs repair = 1

Meet expectations = 2

Exceeded expectations = 3

Awesome = 4

Nama	CF 20% Loyalitas			SF 20% Kreatifitas			SF 20% Prestasi			CF 20% Komitmen			CF 20% Disiplin		
	0	3	5.0	0	3	5.0	0	3	5.0	0	3	5.0	-1	4	4.0
A	0	3	5.0	0	3	5.0	0	3	5.0	0	3	5.0	-1	4	4.0
B	1	2	4.5	1	2	4.5	0	3	5.0	0	3	5.0	0	3	5.0
C	-1	4	4.0	-1	4	4.0	0	3	5.0	0	3	5.0	1	2	4.5
D	1	2	4.5	-1	4	4.0	1	2	4.5	1	2	4.5	1	4	4.5
E	0	3	5.0	1	2	4.5	0	3	5.0	0	3	5.0	1	4	4.5
Rata-Rata	3			3			3			3			3		

Nilai Konversi GAP: Core Factor

GAP Conversion Value: Core Factor

$$A = (4.0 + 5.0 + 5.0) / 3 = 4.6$$

$$B = (5.0 + 5.0 + 4.5) / 3 = 4.8$$

$$C = (4.5 + 5.0 + 4.0) / 3 = 4.5$$

$$D = (4.5 + 5.0 + 4.5) / 3 = 4.6$$

$$E = (4.5 + 5.0 + 5.0) / 3 = 4.8$$

GAP Conversion Value: Secondary Factor

$$A = (5.0 + 5.0) / 2 = 5$$

$$B = (5.0 + 4.5) / 2 = 4.75$$

$$C = (5.0 + 4.0) / 2 = 4.5$$

$$D = (4.5 + 4.0) / 2 = 4.25$$

$$E = (5.0 + 4.5) / 2 = 4.75$$

Nama	CF + SF	Nilai Akhir	Hasil	Peringkat
A	$(4.6 * 60\%) * (5.0 * 40\%)$	2.76 + 2	4.76	2
B	$(4.8 * 60\%) * (4.75 * 40\%)$	2.88 + 1.9	4.78	1
C	$(4.5 * 60\%) * (4.5 * 40\%)$	2.7 + 1.8	4.5	3
D	$(4.6 * 60\%) * (4.25 * 40\%)$	2.76 + 1.68	4.44	4
E	$(4.8 * 60\%) * (4.75 * 40\%)$	2.88 + 1.9	4.78	1

4. CONCLUSION

The conclusions of the thesis research entitled "Decision Support System for Selection of Productive and Non-productive Employees at Sahabat Sampulo Foundation Using the Profile Matching Method" are as follows:

- 1) The researcher conducted an interview, the researcher concluded the user's needs based on the running system problems, the expected interface, and the desired output or output by the Sahabat Sampulo Foundation (YSS) to facilitate the selection of productive and unproductive employees. The needs of the Sahabat Sampulo Foundation include: The system that will be created is expected to have an interface that is easily understood by users or user experience. The system that will be created can provide the results of selecting productive and unproductive employees effectively and efficiently. The system that will be created can provide results that can be relied upon by Managers in selecting productive and unproductive employees.
- 2) Based on the results of the questionnaire, it can be concluded that 80% of the presentation of concise and direct information is achieved with an interface that is easy to use and understand and predictable with a percentage of 60%. The navigation mechanism runs well with a percentage rate of 40-80%, and with the application function running properly with a percentage result of 80%.
- 3) In the Profile Matching Method, all criteria have a specified weight. So that it is likely to have an influence on the assessment therein.
- 4) The test results of the System Usability Scale (SUS) on this system are 87.4 with grade "A", this shows that this system is feasible to use and can facilitate solving the problem of selecting productive and unproductive employees at the Sahabat Sampulo Foundation.

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