

IMPLEMENTATION OF THE MAUT METHOD ASSESSMENT OF THE BEST SALESPERSON

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Abstract

Background: Arif Jaya Stores is a company engaged in sales. Every day, Arif Jaya Stores serves about 1-30 sales transactions and has 25 salespeople. The system used by the Arif Jaya Store is still manual, namely the recording system in the book in searching for data so that it has difficulty. Likewise, the process of evaluating the performance of sales clerks still uses an observation system, which of course takes a long time and the assessment becomes less objective, because it is not based on the proper calculation of criteria. **Method:** This study is using the MAUT method based on criteria and alternatives in making decisions about the best sales assistant at Arif Jaya Air Joman Stores. This research method is carried out by applying decision support system techniques and using the MAUT method. **Result:** The results of this study are that what is worthy of being recommended as the Best Sales Assistant is the 9th alternative on behalf of Lili Fadilla with a total value of 0.9. **Conclusion:** Decision Support System Assessment of the best salesperson at the Arif Jaya Air Joman Store using the MAUT method, so that the results of the assessment that have been carried out through many calculation processes, ranging from weighting the value of all criteria and determining the highest value to getting the best sales clerk candidate at the Arif Jaya Store Joman Water. The implementation was carried out using the Visual Basic.Net programming language and MySQL as the database. It turned out that the same results were obtained with calculations performed manually using Microsoft Excel 2010.

Keywords: MAUT Method, VB.NET, MySQL, Saleswoman

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INTRODUCTION

The rapid development of information technology in the era of globalization is one clear evidence that the use of information technology provides many conveniences in business activities. Human resources also hold an influential position in activities or activities for the progress of the company. Salesperson is one type of profession, so salespeople are required to have a professional performance. Competent and professional salespeople will actually work to improve their performance. So that the results will have an impact on improving the performance and turnover of the company [1].

Arif Jaya Stores is a company engaged in sales. Every day, Arif Jaya Stores serves about 1-30 sales transactions and has 25 salespeople. The system used by the Arif Jaya Store is still manual, namely the recording system in the book in searching for data so that it has difficulty. Likewise, the process of evaluating the performance of sales clerks still uses an observation system, which of course takes a long time and the assessment becomes less objective, because it is not based on the calculation of proper criteria. Arif Jaya Store Manager has been committed to maintaining and improving the quality of his services, which is done by evaluating the performance of his sales assistants and giving rewards in the form of bonuses or salary increases to the best sales assistants to spur even better performance.

The assessment process is still quite complicated, sometimes it is difficult to make the decision. To get the best alternative, the sales clerk's performance

assessment begins with determining the normalization of the matrix that functions to influence the performance appraisal and the calculation results of the Multi Attribute Utility Theory (MAUT) method by multiplying the weight of each predetermined criterion. The purpose of these results for decision making.

There are several references taken by the author as consideration or material to help researchers. The references or reviews are taken from several previous writings by other researchers who discuss almost the same problems, including: Decision Support System for Lecturer Performance Assessment with the MAUT Method (Multi Attribute Utility Theory) [2], Implementation of the Multi Attribute Utility Theory (MAUT) Method in Decision Support Systems in Determining Credit Beneficiaries [3], Decision System With Multi Attribute Utility Theory Method in Employee Performance Appraisal [4], Decision Support System for Selection of the Best Graduate Students Using the Multi Attribute Utility Theory (MAUT) Method at STMIK Between Nations [5], and Decision Support System for Acceptance of Home Renovation Assistance for the Poor Using the Multi Attribute Utility Theory Method [6]. These studies prove that the MAUT method can be used as a method for decision making.

Based on the problems above, the authors are interested in raising the problem and pouring it into this research. Thus, relevant agencies can find out the potential of every salesperson in the company as a measure of effectiveness and work ethic performance. So that the company gets faster and more appropriate





results in determining the best sales clerk at Arif Jaya Stores.

RESEARCH METHODS

In this study, researchers used quantitative methods. Quantitative method is a systematic scientific study of the parts and phenomena and the quality of their relationships. Quantitative methods used in determining which can be grouped. DSS is part of a computer-based decision support system, including a knowledge-based system (knowledge management) that is used to support decision making in an organization or a company. Whereas the DSS method is carried out by making decisions from problems that are structured, semi-structured, or unstructured [7].

Multi Attribute Utility Theory (MAUT) is a scheme in which the final evaluation, $v(x)$, of an object x is defined as a weight that is summed with a value relevant to its dimension value. The expression commonly used to refer to it is utility value. Multi-Attribute Utility Theory is used to convert from multiple importance into a numeric value with a scale of 0-1 with 0 representing the worst choice and 1 being the best. This allows direct comparison of various sizes [8]. In summary, the steps in the MAUT method are as follows:

1. Determine the relative weight of each criterion, where the total of the weights is 1.

$$\sum_{i=1}^n W_i = 1 \quad (1)$$

Where W_i = Criteria Weight.

2. Calculating the utility value of matrix normalization for each alternative according to its attributes:

$$U(x) = \frac{x - x_i^-}{x_i^+ - x_i^-} \quad (2)$$

Where $U(x)$ = Normalized alternative weight, x_i^- = Minimum criteria value (worst weight), x_i^+ = Maximum criteria value (best weight), x = Alternative weight.

3. Multiply the weight of the criteria by the utility value to determine the ranking value for each alternative:

$$V(x) = \sum_{i=1}^n W_i \cdot V_i(x) \quad (3)$$

Where $v(x)$ is the evaluation value of the i th object and w_i is the weight that determines the value of how important the i th element is to other elements. While n is the number of elements.

RESULTS AND DISCUSSION

A. Calculation with the MAUT Method

The following are the data and calculations used in the assessment of the best sales assistants at Arif Jaya Stores:

1. Determination of Criteria Weight Value

The value of the weight of the criteria required for the best salesperson Rating:

Definition	Score
Not important	1
Not too important	2
Quite important	3
Important	4
Very important	5

Table 1. Criteria Weight Value

The weighting of the criteria for honesty, responsibility, initiative, discipline and cooperation has been





approved by the leadership of the Arif Jaya Air Joman Store. The following is a table of 2 weighting criteria:

Criteria	Scale	Score
	10 – 30	1
	31 – 50	2
Honest, Responsibility, Initiative, Discipline, Cooperation	51 – 70	3
	71 – 80	4
	81 – 100	5

Table 2. Criteria Weighting

In this criterion, twenty-five (25) samples of the best sales clerk data will be used. The following is a table of 3 samples of the best sales assistant assessment data, then gives weight to the criteria for each of the best sales clerk assessment data:

No	C1	C2	C3	C4	C5
A1	5	4	5	5	4
A2	5	4	5	4	3
A3	4	3	5	4	3
...
A24	4	3	3	5	4
A25	5	3	4	5	2

Table 3. Value of Criteria Weight for each Best Salesperson's Assessment

2. Calculation Using the MAUT method

The troubleshooting steps using the Multi Attribute Utility Theory method are as follows:

a. Determine the relative weight on each criterion, where the total of the weights is 1.

Criteria	C1	C2	C3	C4	C5	ΣW
Value	0,28	0,17	0,22	0,17	0,17	1,00

Table 4. The sum of the weights is equal to one

b. Determine the smallest value (Min) and the largest value (Max) in table 5.

No	C1	C2	C3	C4	C5
A1	5	4	5	5	4
A2	5	4	5	4	3
A3	4	3	5	4	3
...
A24	4	3	3	5	4
A25	5	3	4	5	2
Min	3	3	3	2	2
Max	5	5	5	5	5

Table 5. Criteria Value for Each Alternative

c. Calculating the utility value of matrix normalization for each alternative according to its attributes:

No	C1	C2	C3	C4	C5
A1	1	0.5	1	1	0.67
A2	1	0.5	1	0.67	0.33
A3	0.5	0	1	0.67	0.33
...
A24	0.5	0	0	1	0.67
A25	1	0	0.5	1	0

Table 6. Results of Matrix Normalization Utility Values

d. Multiply the weight of the criteria by the utility value to determine the ranking value for each alternative:

No	Total Preference	Ranking
A1	0.8689	2
A2	0.755	5
A3	0.53	11
...
A24	0.4239	14
A25	0.56	9

Table 7. Value of Criteria Calculation Results from Each Alternative

As for what is obtained from the calculation of the evaluation of the best sales assistant evaluation above, the decision to choose from the alternative is chosen from the highest value, then what is worthy of being recommended as the Best Salesperson is the **9th alternative** on





behalf of **Lili Fadilla** with a total value of **0.9**.

B. System Implementation

Implementation is the implementation of an application. In the implementation of this system will show the implementation of the interface design. The implementation of this interface design consists of the implementation of the user interface design. The implementation of the user interface consists of several menu options including the home menu, criteria data, alternative data, criteria weight values, alternative weight values, calculations and changing passwords.

No	Nama	Jenis	Kategori	Status	Uraian	Merkas
1	Alfa	1	0.5	1	0.0007	
2	Alfa	1	0.5	1	0.0007	
3	Alfa	1	0.5	1	0.0007	
4	Alfa	1	0.5	1	0.0007	
5	Alfa	1	0.5	1	0.0007	
6	Alfa	1	0.5	1	0.0007	
7	Alfa	1	0.5	1	0.0007	
8	Alfa	1	0.5	1	0.0007	
9	Alfa	1	0.5	1	0.0007	
10	Alfa	1	0.5	1	0.0007	
11	Alfa	1	0.5	1	0.0007	
12	Alfa	1	0.5	1	0.0007	
13	Alfa	1	0.5	1	0.0007	
14	Alfa	1	0.5	1	0.0007	
15	Alfa	1	0.5	1	0.0007	
16	Alfa	1	0.5	1	0.0007	
17	Alfa	1	0.5	1	0.0007	
18	Alfa	1	0.5	1	0.0007	
19	Alfa	1	0.5	1	0.0007	
20	Alfa	1	0.5	1	0.0007	
21	Alfa	1	0.5	1	0.0007	
22	Alfa	1	0.5	1	0.0007	
23	Alfa	1	0.5	1	0.0007	
24	Alfa	1	0.5	1	0.0007	
25	Alfa	1	0.5	1	0.0007	
26	Alfa	1	0.5	1	0.0007	
27	Alfa	1	0.5	1	0.0007	
28	Alfa	1	0.5	1	0.0007	
29	Alfa	1	0.5	1	0.0007	
30	Alfa	1	0.5	1	0.0007	
31	Alfa	1	0.5	1	0.0007	
32	Alfa	1	0.5	1	0.0007	
33	Alfa	1	0.5	1	0.0007	
34	Alfa	1	0.5	1	0.0007	
35	Alfa	1	0.5	1	0.0007	
36	Alfa	1	0.5	1	0.0007	
37	Alfa	1	0.5	1	0.0007	
38	Alfa	1	0.5	1	0.0007	
39	Alfa	1	0.5	1	0.0007	
40	Alfa	1	0.5	1	0.0007	
41	Alfa	1	0.5	1	0.0007	
42	Alfa	1	0.5	1	0.0007	
43	Alfa	1	0.5	1	0.0007	
44	Alfa	1	0.5	1	0.0007	
45	Alfa	1	0.5	1	0.0007	
46	Alfa	1	0.5	1	0.0007	
47	Alfa	1	0.5	1	0.0007	
48	Alfa	1	0.5	1	0.0007	
49	Alfa	1	0.5	1	0.0007	
50	Alfa	1	0.5	1	0.0007	

Figure 1. Alternative Data Form

No	Nama	Merkas	Bobot
1	Alfa	0.5	0.5
2	Alfa	0.5	0.5
3	Alfa	0.5	0.5
4	Alfa	0.5	0.5
5	Alfa	0.5	0.5
6	Alfa	0.5	0.5
7	Alfa	0.5	0.5
8	Alfa	0.5	0.5
9	Alfa	0.5	0.5
10	Alfa	0.5	0.5
11	Alfa	0.5	0.5
12	Alfa	0.5	0.5
13	Alfa	0.5	0.5
14	Alfa	0.5	0.5
15	Alfa	0.5	0.5
16	Alfa	0.5	0.5
17	Alfa	0.5	0.5
18	Alfa	0.5	0.5
19	Alfa	0.5	0.5
20	Alfa	0.5	0.5
21	Alfa	0.5	0.5
22	Alfa	0.5	0.5
23	Alfa	0.5	0.5
24	Alfa	0.5	0.5
25	Alfa	0.5	0.5
26	Alfa	0.5	0.5
27	Alfa	0.5	0.5
28	Alfa	0.5	0.5
29	Alfa	0.5	0.5
30	Alfa	0.5	0.5
31	Alfa	0.5	0.5
32	Alfa	0.5	0.5
33	Alfa	0.5	0.5
34	Alfa	0.5	0.5
35	Alfa	0.5	0.5
36	Alfa	0.5	0.5
37	Alfa	0.5	0.5
38	Alfa	0.5	0.5
39	Alfa	0.5	0.5
40	Alfa	0.5	0.5
41	Alfa	0.5	0.5
42	Alfa	0.5	0.5
43	Alfa	0.5	0.5
44	Alfa	0.5	0.5
45	Alfa	0.5	0.5
46	Alfa	0.5	0.5
47	Alfa	0.5	0.5
48	Alfa	0.5	0.5
49	Alfa	0.5	0.5
50	Alfa	0.5	0.5

Figure 2. Criteria Data Form

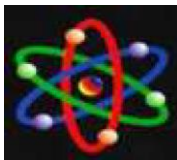
No	Nama	Jenis	Kategori	Status	Uraian	Merkas
1	Alfa	1	0.5	1	0.0007	
2	Alfa	1	0.5	1	0.0007	
3	Alfa	1	0.5	1	0.0007	
4	Alfa	1	0.5	1	0.0007	
5	Alfa	1	0.5	1	0.0007	
6	Alfa	1	0.5	1	0.0007	
7	Alfa	1	0.5	1	0.0007	
8	Alfa	1	0.5	1	0.0007	
9	Alfa	1	0.5	1	0.0007	
10	Alfa	1	0.5	1	0.0007	
11	Alfa	1	0.5	1	0.0007	
12	Alfa	1	0.5	1	0.0007	
13	Alfa	1	0.5	1	0.0007	
14	Alfa	1	0.5	1	0.0007	
15	Alfa	1	0.5	1	0.0007	
16	Alfa	1	0.5	1	0.0007	
17	Alfa	1	0.5	1	0.0007	
18	Alfa	1	0.5	1	0.0007	
19	Alfa	1	0.5	1	0.0007	
20	Alfa	1	0.5	1	0.0007	
21	Alfa	1	0.5	1	0.0007	
22	Alfa	1	0.5	1	0.0007	
23	Alfa	1	0.5	1	0.0007	
24	Alfa	1	0.5	1	0.0007	
25	Alfa	1	0.5	1	0.0007	
26	Alfa	1	0.5	1	0.0007	
27	Alfa	1	0.5	1	0.0007	
28	Alfa	1	0.5	1	0.0007	
29	Alfa	1	0.5	1	0.0007	
30	Alfa	1	0.5	1	0.0007	
31	Alfa	1	0.5	1	0.0007	
32	Alfa	1	0.5	1	0.0007	
33	Alfa	1	0.5	1	0.0007	
34	Alfa	1	0.5	1	0.0007	
35	Alfa	1	0.5	1	0.0007	
36	Alfa	1	0.5	1	0.0007	
37	Alfa	1	0.5	1	0.0007	
38	Alfa	1	0.5	1	0.0007	
39	Alfa	1	0.5	1	0.0007	
40	Alfa	1	0.5	1	0.0007	
41	Alfa	1	0.5	1	0.0007	
42	Alfa	1	0.5	1	0.0007	
43	Alfa	1	0.5	1	0.0007	
44	Alfa	1	0.5	1	0.0007	
45	Alfa	1	0.5	1	0.0007	
46	Alfa	1	0.5	1	0.0007	
47	Alfa	1	0.5	1	0.0007	
48	Alfa	1	0.5	1	0.0007	
49	Alfa	1	0.5	1	0.0007	
50	Alfa	1	0.5	1	0.0007	

Figure 3. Alternative Value Data Per Criteria

No	Nama	Jenis	Kategori	Status	Uraian	Merkas
1	Alfa	1	0.5	1	0.0007	
2	Alfa	1	0.5	1	0.0007	
3	Alfa	1	0.5	1	0.0007	
4	Alfa	1	0.5	1	0.0007	
5	Alfa	1	0.5	1	0.0007	
6	Alfa	1	0.5	1	0.0007	
7	Alfa	1	0.5	1	0.0007	
8	Alfa	1	0.5	1	0.0007	
9	Alfa	1	0.5	1	0.0007	
10	Alfa	1	0.5	1	0.0007	
11	Alfa	1	0.5	1	0.0007	
12	Alfa	1	0.5	1	0.0007	
13	Alfa	1	0.5	1	0.0007	
14	Alfa	1	0.5	1	0.0007	
15	Alfa	1	0.5	1	0.0007	
16	Alfa	1	0.5	1	0.0007	
17	Alfa	1	0.5	1	0.0007	
18	Alfa	1	0.5	1	0.0007	
19	Alfa	1	0.5	1	0.0007	
20	Alfa	1	0.5	1	0.0007	
21	Alfa	1	0.5	1	0.0007	
22	Alfa	1	0.5	1	0.0007	
23	Alfa	1	0.5	1	0.0007	
24	Alfa	1	0.5	1	0.0007	
25	Alfa	1	0.5	1	0.0007	
26	Alfa	1	0.5	1	0.0007	
27	Alfa	1	0.5	1	0.0007	
28	Alfa	1	0.5	1	0.0007	
29	Alfa	1	0.5	1	0.0007	
30	Alfa	1	0.5	1	0.0007	
31	Alfa	1	0.5	1	0.0007	
32	Alfa	1	0.5	1	0.0007	
33	Alfa	1	0.5	1	0.0007	
34	Alfa	1	0.5	1	0.0007	
35	Alfa	1	0.5	1	0.0007	
36	Alfa	1	0.5	1	0.0007	
37	Alfa	1	0.5	1	0.0007	
38	Alfa	1	0.5	1	0.0007	
39	Alfa	1	0.5	1	0.0007	
40	Alfa	1	0.5	1	0.0007	
41	Alfa	1	0.5	1	0.0007	
42	Alfa	1	0.5	1	0.0007	
43	Alfa	1	0.5	1	0.0007	
44	Alfa	1	0.5	1	0.0007	
45	Alfa	1	0.5	1	0.0007	
46	Alfa	1	0.5	1	0.0007	
47	Alfa	1	0.5	1	0.0007	
48	Alfa	1	0.5	1	0.0007	
49	Alfa	1	0.5	1	0.0007	
50	Alfa	1	0.5	1	0.0007	

Figure 4. Normalized Value Data

No	Nama	Jenis	Kategori	Status	Uraian	Merkas
1	Alfa	1	0.5	1	0.0007	
2	Alfa	1	0.5	1	0.0007	
3	Alfa	1	0.5	1	0.0007	
4	Alfa	1	0.5	1	0.0007	
5	Alfa	1	0.5	1	0.0007	
6	Alfa	1	0.5	1	0.0007	
7	Alfa	1	0.5	1	0.0007	
8	Alfa	1	0.5	1	0.0007	
9	Alfa	1	0.5	1	0.0007	
10	Alfa	1	0.5	1	0.0007	
11	Alfa	1	0.5	1	0.0007	
12	Alfa	1	0.5	1	0.0007	
13	Alfa	1	0.5	1	0.0007	
14	Alfa	1	0.5	1	0.0007	
15	Alfa	1	0.5	1	0.0007	
16	Alfa	1	0.5	1	0.0007	
17	Alfa	1	0.5	1	0.0007	
18	Alfa	1	0.5	1	0.0007	
19	Alfa	1	0.5	1	0.0007	
20	Alfa	1	0.5	1	0.0007	
21	Alfa	1	0.5	1	0.0007	
22	Alfa	1	0.5	1	0.0007	
23	Alfa	1				



are functioning as expected. If the system that has been made is still considered inadequate, then improvements must be made so that the system made is complete and accurate. The system that has been repaired will be retested until the system is complete and accurate, and is feasible to use.

Input	Observation	Con
Click the calculate button in the main menu for the best sales assistant assessment	Count button as expected	[√]
Click the calculate button	The calculate button is as expected.	[√]
Click the Print result button	The print button results as expected.	[√]
Click the exit button	The exit button is as expected.	[√]
Click the calculate button	The calculate button is as expected.	[√]

Table 8. Testing the Calculation of the MAUT Method

Based on the results of testing the MAUT method calculation system with the calculations carried out by Arif Jaya Stores using the Microsoft Excel application, the final results are close to the same. Decision Support System (SPK) Assessment of the best salesperson using the MAUT method gives results, namely a method with calculations that begin with giving weight to each criterion that has been determined by Arif Jaya Stores and processed using the MAUT method to get ranking results.

From the results of the implementation, it is explained that the decision support system for evaluating the best sales assistant is a system that provides convenience in solving problems. The assessment of the best sales clerk at Arif Jaya Stores based on existing criteria is easily and quickly obtained in

accordance with the results expected by Arif Jaya Stores.

CONCLUSION

The application of the Decision Support System application in determining the best salesperson assessment at the Arif Jaya Store was made to get more objective and efficient results. After implementing the programming language using Visual Basic.Net and MySQL as the database, it turned out that the same results were obtained with calculations performed manually using Microsoft Excel 2010.

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