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Decision Support System for Premises Assessment of PT. Bank Perkreditan Rakyat NBP 33 with TOPSIS Method

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ABSTRACT

The premises assessment at PT. BPR NBP 33 still relies on a manual evaluation based solely on the highest number of votes, without considering premises criteria. The method employed is the TOPSIS method. This method has advantages such as a simple and easy-to-understand concept, efficient computation, and the ability to measure the relative performance of decision alternatives in a simple mathematical form. There are 5 (five) criteria used as measurement tools for premises assessment, including banking hall equipment, room comfort, toilets, parking facilities, and transaction facilities. Four (4) alternatives are considered. Based on the ranking results of the alternatives, the branch office with the best premises assessment is KCP. Batang Kuis, with a final score of 0.84440, securing the top ranking. This decision support system is developed using PHP programming language and MySQL database.

1. INTRODUCTION

Along with the development of the current era, every company is required to improve the quality of good service in order to excel and have high competitiveness, especially companies in the service sector such as rural banks [1]. The company must be able to compete, namely by improving the quality of the best service for its customers [2]. To improve the quality of service of a rural bank company, one way is to evaluate and assess premises for each branch office and cash office with the aim that customers feel comfortable and get good service [3]. For this reason, the use of current technology in the field of organization of rural bank companies is needed, one of which is in making decisions for premises assessment at PT. BPR NBP 33 easily and quickly and efficiently.

PT BPR NBP 33 is engaged in rural banks with customer savings and loan services, which has been established since July 15, 1997, located at Jl. Sultan Hasanuddin No. 14 Deli Mas Market Complex, Kec. Lubuk Pakam, Deli Serdang. Premises assessment at PT BPR NBP 33 is an important thing to note, because it can affect the quality of service and customer comfort while at the company's location. This premises assessment is carried out not only measured from existing facilities, but also measured from customer service facilities[4]. One of the things that really has an influence in assessing the premises of rural banks is the comfort of customers when they are in the company.

Premises assessment at PT BPR NBP 33 is an inspection and supervision provided by the OCC (Office of the Comptroller of the Currency) from the head office to branch offices and cash offices regarding banking facilities owned by each branch office and cash office with the aim that customers feel comfortable and get good service. To determine the assessment of premises in each branch office and cash office at PT BPR NBP 33 still uses a manual assessment, which is only based on the highest number of votes, not based on premises criteria. By using a manual assessment, the determination of the premises assessment at each branch office and the selected cash office is not optimal or less effective because it is only based on subjective. Based on the description above, a premises assessment method is needed that has premises assessment criteria including banking hall equipment, room comfort, toilets, parking facilities, and transaction facilities, so that the determination of premises assessment for each branch office and cash office is more objective.

Decision support system is a decision-making process with the help of computer media in the decision-making process using certain data and models to solve several unstructured problems that can help problems in making accurate and targeted decisions [5]. The TOPSIS (Technique for Order by Similarity to Ideal Solution) method is a method that is widely used in solving a problem when making decisions practically when solving problems in decision making with the principle that the selected alternative must have the closest distance from the positive ideal solution and the farthest from the negative ideal solution [6].

2. LITERATUR REVIEW

Previous research that successfully utilized the TOPSIS method in decision-making yielded the following conclusions: The method applied in this study is a Decision Support System using the TOPSIS method for selecting suppliers of cassava chips at Rona Jaya Lampung. The criteria used for assessment include flavor variants, expiration dates, product weight, and price. The information system built is desktop-based with a system management database using SQL. The results of testing 4 samples produced the best value of 0.61, where the assessment is between 0-1, with a maximum value of 1. The outcome of this research is an application that can aid in understanding the selection of cassava chip product suppliers that are more marketable [7]. Furthermore, successful research has demonstrated that the Decision Support System for Scholarship Selection using the TOPSIS Method can assist in facilitating a more objective and efficient decision-making process in the selection of scholarship recipients. With this system in place, institutions providing scholarships can have a more measurable reference in choosing students who meet the established requirements and criteria [8].

3. RESEARCH METHOD

3.1 Research Stages

3.2.1 Problem Identification

At this stage, it identifies the problems experienced by PT. BPR NBP 33 in assessing premises at each branch of PT. BPR NBP 33. Then explain the solution to dealing with the problem of assessing premises, namely by making a decision support system application using TOPSIS method.

3.2.2 Data Collection

The data collection stage was carried out in two ways, as follows:

a. Literature Study, which is looking for theoretical references that are relevant to the case under study in the form of *text books*, electronic books (*e-books*), scientific journals, research report articles, and searching sites on the internet.
b. Interviews, namely conducting direct interviews with Mr. Marolop Apries Hutabarat, S.E as Director on May 8, 2023 to obtain data regarding the assessment criteria for company branch premises and data on branch offices and cash offices at PT BPR NBP 33.

3.2.3 Data Analysis

This stage is the process of cleaning, transforming and processing raw data, as well as extracting relevant information that can be followed up in building a premises assessment decision support system at PT. BPR NBP 33.

3.2.4 Application Of TOPSIS Method

This stage is data processing using the TOPSIS method to solve problems regarding the assessment of branch office premises at PT. BPR NBP 33 then the data is processed and analyzed by applying the TOPSIS method.

3.2.5 System Design

At this stage, the modeling of the premises assessment support system at PT. BPR NBP 33 using UML in the form of use cases, activity diagrams and class diagrams, database design, interface design in the form of HIPO diagrams, data input menu design and data output menu design.

3.2 Topsis Method

TOPSIS is a multicriteria decision-making method first introduced by Yoon and Hwang in 1981[9]. The principle of this method is that the selected alternative must have the closest distance from the positive ideal solution and the farthest from the negative ideal solution from a geometric point of view by using the Euclidean distance to determine the relative closeness of an alternative to the optimal solution [10]. The calculation stages of the TOPSIS (Technique for Order of Preference by Similarity to Ideal Solution) algorithm are as follows[11]:

a. Preparing the decision matrix

Is the first step of every solution in decision making. This initial stage determines the alternatives (i) that are included with the attributes/criteria (j) that will be used as a reference in decision making.

$$X_{ij} = \begin{bmatrix} x_{11} & x_{12} & x_{13} \\ x_{21} & x_{22} & x_{23} \\ . & . & . \\ x_{m1} & x_{m2} & x_{mn} \end{bmatrix} \quad \ldots\ldots\ldots\ldots(1)$$

with i=1, 2, ..., m; and j=1, 2, ..., n;

b. Normalize the decision matrix (rij) using the following formula.

$$r_{ij} = \frac{x_{ij}}{\sqrt{\sum_{i=1}^{m} x_{ij}2}} \text{ dengan } i=1,2,\ldots,m; \text{dan } j=1,2,\ldots,n \ldots\ldots\ldots(2)$$

Where:
Rij = Normalized matrix
Xij = Decision matrix
m = Number of alternatives
i = row (alternative)
j = column (criteria)

c. Calculating the weighted normalized matrix (vij), the following equation formula to obtain the weighted normalized matrix.

$$Vij = wj.rij \quad \ldots\ldots\ldots\ldots(3)$$

Where:
Vij = Weighted normalized matrix
rij = The normalized matrix
wj = jth weight

d. Search for positive ideal solution (A*) and negative ideal solution (A-)

1. Search for positive ideal solution (A)*

The positive ideal solution is obtained from the sum of the best values contained in each attribute. If it is a profit attribute, it is the highest value, if it is a cost attribute, it is the lowest value [12]. The positive ideal solution can be described in the following equation formula:

$$A^* = \left\{ \left(\underset{i}{\max} v_{ij} \mid j \in J \right), \left(\underset{i}{\min} v_{ij} \mid j \in J' \right) \right\} \; i=1,2,\ldots,m \ldots\ldots\ldots(4)$$
$$= \{v_1^*, v_2^*, \ldots\ldots, v_j^*, \ldots, v_n^*\}$$

Where:
J = Profit attribute
j'= Cost attribute

2. Search for negative ideal solution (A-)

The negative ideal solution is the lowest value of each attribute. If it is a profit attribute, then what is taken is the lowest value, but if it is a cost attribute, then what is taken is the highest value. The following equation formula is used.[13]

$A^- = \left\{ \left(\min_i v_{ij} \mid j \in J \right), \left(\max_i v_{ij} \mid j \in J' \right) \right\}$ i=1,2,…,m ....(5)

$= \{ v_1^-, v_2^-, \ldots, v_j^-, \ldots, v_n^- \}$

Where:

J = Profit attribute

j'= Cost attribute

e. Calculating the distance with positive and negative ideal solutions, to calculate the distance between alternatives to i with positive ideal solutions and negative ideal solutions using the following equation formula[14].

1. Calculating the distance to the positive ideal solution

$S_i^* = \sqrt{\sum_{j=1}^{n} (v_{ij} - v_j^*)^2}$ i=1,2,…,m...(6)

Where:

vij = Weighted normalized matrix

v_j^* = Positive ideal solution to j

2. Calculating the distance to the negative ideal solution (S_i^-)

$S_i^- = \sqrt{\sum_{j=1}^{n} (v_{ij} - v_j^-)^2}$ i=1,2,…,m ....(7)

Where:

vij = Weighted normalized matrix

v_j^- = Negative ideal solution to j

f. Calculating relative closeness (C_i^*), To find the relative proximity value, the following equation is used.

$C_i^* = \frac{S_i^*}{S_i^* + S_j^-}$ ....(8)

Where:

S_i^* = Distance of positive ideal solution to i

S_i^* = Distance of negative ideal solution to i

g. Ranking the order of preference

The last step is sorting from relative (C_i^*) closeness to the lowest. The best decision alternative will be indicated by the highest relative closeness. relative closeness. The highest preference value is the best alternative [15].

4. RESULT AND DISCUSSION

TOPSIS method analysis is a multi-criteria decision-making method that aims to determine the positive ideal solution and negative ideal solution, where in this method the optimal alternative is the closest to the positive ideal solution and the farthest from the negative ideal solution[16].

4.1 Forming Alternative Values

The alternative assessments used in this study are as follows:

Table 1. Alternative assessment

No	Alternative Name	Criterion				
		C1	C2	C3	C4	C5
1	KCP. Batang Kuis	Lengkap dan Terpasang Jelas	Sangat Nyaman	Cukup Bersih dan Wangi	Luas	Sangat Lengkap dan Terbaru
2	KCP. Galang	Lengkap dan Terpasang Jelas	Cukup Nyaman	Kurang Bersih dan Wangi	Luas	Sangat Lengkap dan Terbaru
3	KCP. Lubuk Pakam	Cukup Lengkap dan Terpasang Jelas	Sangat Nyaman	Bersih dan Wangi	Luas	Lengkap dan Terbaru
4	KK. Tanjung Morawa	Cukup Lengkap dan Terpasang Jelas	Cukup Nyaman	Cukup Bersih dan Wangi	Luas	Cukup Lengkap dan Terbaru

4.2 Determining Criteria Data

The following are the assessment criteria for determining premises

Table 2. Criteria

No	Code	Criterion Name	Weight	Criteria Type
1	C1	Banking Hall	0.30	*Benefit*
2	C2	Room Comfort	0.20	*Benefit*
3	C3	Toilet	0.10	*Benefit*
4	C4	Parking Facilities	0.15	*Benefit*
5	C5	Transaction Facilities	0.25	*Benefit*

4.3 Alternative Value Suitability Rating

The first step is to normalize the decision matrix (x) of each alternative. Based on the alternative assessment in Table 1. above, the conversion of alternative values into the form of weight values is carried out as in the following table.

Table 3. Decision matrix (x)

No	Alternative Names	Criterion				
		C1	C2	C3	C4	C5
1	KCP. Batang Kuis	4	5	3	4	5
2	KCP. Galang	4	3	2	4	5
3	KCP. Lubuk Pakam	3	5	4	4	4
4	KK. Tanjung Morawa	3	3	3	4	3

4.4 Determining Criteria Weight (W)

The next step is to calculate the weighted normalization matrix (R). before calculating the normalization matrix (R), first find the total value of rij, as follows:

Table 4. Criterion weights (w)

Banking Hall Equipment	Room Comfort	Toilet	Parking Facilities	Transaction Facilities
0.3	0.2	0.1	0.15	0.25

4.5 Creating a Normalization Matrix (R)

The next step is to calculate the weighted normalization matrix (R). before calculating the normalization matrix (R), first find the total value of rij, as follows:

$|X_1| = \sqrt{4^2+4^2+3^2+3^2} = \sqrt{50} = 7.07107$

$|X_2| = \sqrt{5^2+3^2+5^2+3^2} = \sqrt{68} = 8.24621$

$|X_3| = \sqrt{3^2+2^2+4^2+3^2} = \sqrt{38} = 6.16441$

$|X_4| = \sqrt{4^2+4^2+4^2+4^2} = \sqrt{64} = 8.00000$

$|X_5| = \sqrt{5^2+5^2+4^2+3^2} = \sqrt{75} = 8.66025$

After getting the value of Xn, the next step is to calculate the value of rij as follows.

$R_{1.1}$ = 4/7.07107 = 0.56569
$R_{1.2}$ = 4/7.07107 = 0.56569
$R_{1.3}$ = 3/7.07107= 0.42426
$R_{1.4}$ = 3/7.07107= 0.42426
$R_{2.1}$ = 5/8.24621 = 0.60634
$R_{2.2}$ = 3/8.24621 = 0.36380
$R_{2.3}$ = 5/8.24621 = 0.60634
$R_{2.4}$ = 3/8.24621 = 0.36380
$R_{3.1}$ = 3/6.16441 = 0.48666
$R_{3.2}$ = 2/6.16441 = 0.32444
$R_{3.3}$ = 4/6.16441 = 0.64889
$R_{3.4}$ = 3/6.16441 = 0.48666
$R_{4.1}$ = 4/8.00000 = 0.50000
$R_{4.2}$ = 4/8.00000 = 0.50000
$R_{4.3}$ = 4/8.00000 = 0.50000
$R_{4.4}$ = 4/8.00000 = 0.50000
$R_{5.1}$ = 5/8.66025 = 0.57735
$R_{5.2}$ = 5/8.66025 = 0.57735
$R_{5.3}$ = 4/8.66025 = 0.46188
$R_{5.4}$ = 3/8.66025 = 0.34641

Based on the calculations carried out, the normalization matrix (R) is obtained:

$$R = \begin{bmatrix} 0.56569 & 0.60634 & 0.48666 & 0.50000 & 0.57735 \\ 0.56569 & 0.36380 & 0.32444 & 0.50000 & 0.57735 \\ 0.42426 & 0.60634 & 0.64889 & 0.50000 & 0.46188 \\ 0.42426 & 0.36380 & 0.48666 & 0.50000 & 0.34641 \end{bmatrix}$$

4.6 Creating a Normalized Matrix (Y)

The next step is to calculate the weighted normalized matrix (Y) by multiplying each normalized matrix value by the importance weight (W), where the weight Wi = (W1, W2, W3, ..., Wn), Wj is the weight of the jth criterion and n j = 1 Wj = 1 then the normalized weight matrix V is Vij = Wj*Rij.

$V_{1.1} = W_1 * R_{1.1}$ = 0.3 * 0.56569 = 0.16971
$V_{1.2} = W_1 * R_{1.2}$ = 0.3 * 0.56569 = 0.16971
$V_{1.3} = W_1 * R_{1.3}$ = 0.3 * 0.42426 = 0.12728
$V_{1.4} = W_1 * R_{1.4}$ = 03 * 0.42426 = 0.12728
$V_{2.1} = W_2 * R_{2.1}$ = 0.2 * 0.60634 = 0.12127
$V_{2.2} = W_2 * R_{2.2}$ = 0.2 * 0.36380 = 0.07276
$V_{2.3} = W_2 * R_{2.3}$ = 0.2 * 0.60634 = 0.12127
$V_{2.4} = W_2 * R_{2.4}$ = 0.2 * 0.36380 = 0.07276
$V_{3.1} = W_3 * R_{3.1}$ = 0.1 * 0.48666 = 0.04867
$V_{3.2} = W_3 * R_{3.2}$ = 0.1 * 0.32444 = 0.03244
V3.3 = W3 * R3.3 = 0.1 * 0.64889 = 0.06489
V3.4 = W3 * R3.4 = 0.1 * 0.48666 = 0.04867
V4.1 = W4 * R4.1 = 0.15 * 0.50000 = 0.07500
V4.2 = W4 * R4.2 = 0.15 * 0.50000 = 0.07500
V4.3 = W4 * R4.3 = 0.15 * 0.50000 = 0.07500
V4.4 = W4 * R4.4 = 0.15 * 0.50000 = 0.07500
V5.1 = W5 * R5.1 = 0.25 * 0.57735 = 0.14434
V5.2 = W5 * R5.2 = 0.25 * 0.57735 = 0.14434
V5.3 = W5 * R5.3 = 0.25 * 0.46188 = 0.11547
V5.4 = W5 * R5.4 = 0.25 * 0.34641 = 0.08660

Based on the above calculations, the weighted normalization matrix (Y) is obtained:

$$Y = \begin{bmatrix} 0.16971 & 0.12127 & 0.04867 & 0.07500 & 0.14434 \\ 0.16971 & 0.07276 & 0.03244 & 0.07500 & 0.14434 \\ 0.12728 & 0.12127 & 0.06489 & 0.07500 & 0.11547 \\ 0.12728 & 0.07276 & 0.04867 & 0.07500 & 0.08660 \end{bmatrix}$$

4.7 Determining the Idealsolution A^+ and A^-

The next step is to determine the matrix of positive ideal solutions (A+) and negative ideal solution matrix (A-). The ideal solution matrix (A+) is the optimal value for each of the criteria of several solution alternative values. The ideal solution sought consists of two values for each criterion, namely a positive ideal solution (A+) and a negative ideal solution (A-).

4.2.1 Positive Ideal Solution (A^+)

A positive ideal solution (A+) is the maximum (largest) optimal value of a criterion for several alternative solution values in one criterion.

MAX(C1) = 0.16971; 0.16971; 0.12728; 0.12728 = 0.16971
MAX(C2) = 0.12127; 0.07276; 0.12127; 0.07276 = 0.12127
MAX(C3) = 0.04867;0.03244;0.06489;0.04867=0.06489
MAX(C4) = 0.07500; 0.07500; 0.07500; 0.07500 = 0.07500
MAX(C5) = 0.14434;0.14434;0.11547;0.08660=0.14434

Table 5. Positive Ideal Solutions (A^+)

Banking Hall Equipment	Room Comfort	Toilet	Parking Facilities	Transaction Facilities
0.12728	0.07276	0.03244	0.07500	0.08660

4.2.2 Negative Ideal Solution (A^-)

Positive ideal solution (A-) is the minimum (smallest) optimal value of a criterion for several alternative solution values in one criterion.

MIN(C1) = 0.16971; 0.16971; 0.12728; 0.12728 = 0.12728
MIN(C2) = 0.12127; 0.07276; 0.12127; 0.07276 = 0.07276
MIN(C3 = 0.04867; 0.03244; 0.06489; 0.04867 = 0.03244
MIN(C4) = 0.07500; 0.07500; 0.07500; 0.07500 = 0.07500
MIN(C5) = 0.14434; 0.14434; 0.11547; 0.08660 = 0.08660

Table 6. Negative Ideal Solutions (A^-)

Banking Hall Equipment	Room Comfort	Toilet	Parking Facilities	Transaction Facilities
0.12728	0.07276	0.03244	0.07500	0.08660

4.8 Determining the Ideal Distance D^+ and D^-

The next step is to calculate the distance value of the positive ideal solution (D+) and the distance of the negative ideal solution (D-) using the following equation formula:

4.2.1 Positive Ideal Solution Distance (D+)

The positive ideal solution distance (D+) is the *euclidean distance* between the alternative value and the positive ideal solution value for each criterion. To determine the distance of the positive ideal solution for the alternatives include the following:

$$D_1^+ = \sqrt{\begin{matrix}(0.16971-0.16971)^2+(0.12127-0.12127)^2+ \\ (0.06489-0.04867)^2+(0.07500-0.07500)^2 \\ +(0.14434-0.14434)^2\end{matrix}} = 0.01622$$

$$D_2^+ = \sqrt{\begin{matrix}(0.16971-0.16971)^2+(0.12127-0.07276)^2+ \\ (0.06489-0.03244)^2+(0.07500-0.07500)^2 \\ +(0.14434-0.14434)^2\end{matrix}} = 0.05836$$

$$D_3^+ = \sqrt{\begin{matrix}(0.16971-0.12728)^2+(0.12127-0.12127)^2+ \\ (0.06489-0.06489)^2+(0.07500-0.07500)^2 \\ +(0.14434-0.11547)^2\end{matrix}} = 0.05132$$

$$D_4^+ = \sqrt{\begin{matrix}(0.16971-0.12728)^2+(0.12127-0.07276)^2+ \\ (0.06489-0.04867)^2+(0.07500-0.07500)^2 \\ +(0.14434-0.08660)^2\end{matrix}} = 0.08803$$

Based on the calculation above, the value of the positive ideal solution distance (D+) is as follows:

Table 7. Positive Ideal Solution Distance (D^+)

No	Code	Alternative Names	D+
1	A1	KCP. Batang Kuis	0.01622
2	A2	KCP. Galang	0.05836
3	A3	KCP. Lubuk Pakam	0.05132
4	A4	KK. Tanjung Morawa	0.08803

4.2.2 Negative Ideal Solution Distance (D^-)

The negative ideal solution distance (D^-) is the *euclidean distance* between the alternative value and the negative ideal solution value for each criterion. To determine the distance of negative ideal solutions for alternatives include the following:

$$D_1^- = \sqrt{\begin{array}{c}(0.12728-0.16971)^2+(0.07276-0.12127)^2+ \\ (0.03244-0.04867)^2+(0.07500-0.07500)^2 \\ +(0.08660-0.14434)^2\end{array}} = 0.08803$$

$$D_2^- = \sqrt{\begin{array}{c}(0.12728-0.16971)^2+(0.07276-0.07276)^2+ \\ (0.03244-0.03244)^2+(0.07500-0.07500)^2 \\ +(0.08660-0.14434)^2\end{array}} = 0.07165$$

$$D_3^- = \sqrt{\begin{array}{c}(0.12728-0.12728)^2+(0.07276-0.12127)^2+ \\ (0.03244-0.06489)^2+(0.07500-0.07500)^2 \\ +(0.08660-0.11547)^2\end{array}} = 0.06511$$

$$D_4^- = \sqrt{\begin{array}{c}(0.12728-0.12728)^2+(0.07276-0.07276)^2+ \\ (0.03244-0.04867)^2+(0.07500-0.07500)^2 \\ +(0.08660-0.08660)^2\end{array}} = 0.01662$$

Based on the calculation of the negative ideal distance above, the value of the negative ideal solution distance (D^-) from each alternative is as follows:

Table 8. Negative Ideal Solution Distance (D^-)

No	Code	Alternative Names	D^-
1	A1	KCP. Batang Kuis	0.08803
2	A2	KCP. Galang	0.07165
3	A3	KCP. Lubuk Pakam	0.06511
4	A4	KK. Tanjung Morawa	0.01622

4.9 Calculating Alternative Preferences (C_i)

The next step is to calculate the preference value for each alternative (Ci).

$$C_1 = \frac{D_1^-}{D_1^-+D_1^+} = \frac{0.08803}{0.08803+0.01622} = \frac{0.08803}{0.01622} = 0.84440$$

$$C_2 = \frac{D_2^-}{D_2^-+D_2^+} = \frac{0.07165}{0.07165+0.05836} = \frac{0.07165}{0.05836} = 0.55112$$

$$C_3 = \frac{D_3^-}{D_3^-+D_3^+} = \frac{0.06511}{0.06511+0.05132} = \frac{0.06511}{0.05132} = 0.55923$$

$$C_4 = \frac{D_4^-}{D_4^-+D_4^+} = \frac{0.01622}{0.01622+0.08803} = \frac{0.01622}{0.08803} = 0.15561$$

Based on the above calculations, the alternative preference value (C_i) is obtained as follows:

Table 9. Alternative Preference (Ci)

No	Code	Alternative Name	C-value$_i$
1	A1	KCP. Batang Kuis	0.84440
2	A2	KCP. Galang	0.55923
3	A3	KCP. Lubuk Pakam	0.55112
4	A4	KK. Tanjung Morawa	0.15561

4.10 Rangking

The last step of the TOPSIS method is the ranking of alternatives as in the following table:

Table 10. Ranking of alternatives

Alternative Names	Value	Ranking	Information
KCP. Batang Kuis	0.84440	1	Best
KCP. Lubuk Pakam	0.55923	2	Good
KCP. Galang	0.55112	3	Good
KK. Tanjung Morawa	0.15561	4	Very Bad

Here are some pictures of the application system display that has been built using the PHP programming language and MySQL database.

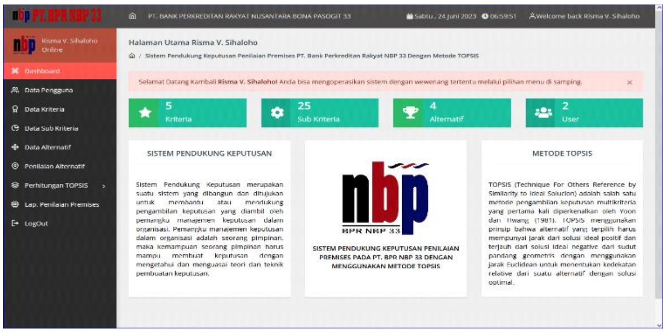

Figure 1. System Main Home Page Display

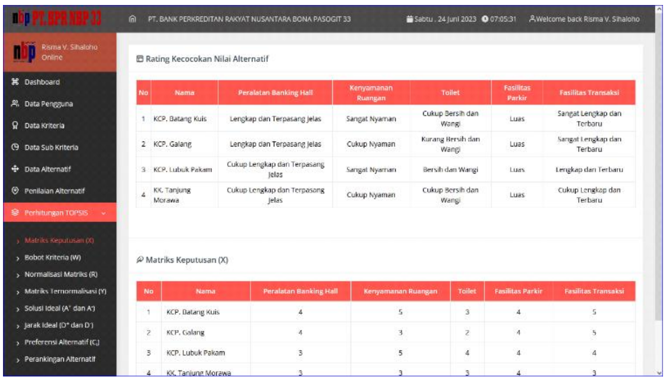

Figure 2. Display of Decision Matrix *Output Form*

5. CONCLUSIONS

Based on the results obtained from the calculation of the TOPSIS method shows the ranking results of the alternatives inputted. Based on system testing using 4 (four) alternatives, it can be stated that the alterantif on behalf of KCP. Batang Kuis can be recommended as a branch office with the "Best" premises assessment and is in the first ranking position with a total final result value of 0.84440.

The design of the decision support system for assessing the premises of PT. Bank Perkreditan Rakyat NBP 33 using the TOPSIS method is designed using UML modeling in the form of use case diagrams, activity diagrams and class diagrams, and built using the PHP programming language and MySQL database. So that with this system that has been built later, the director at PT. Bank Perkreditan Rakyat NBP 33 is easier to choose the best branch offices and cash offices quickly and efficiently every period.

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