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VIKOR analysis in determining creditworthiness

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ABSTRACT

Nowadays people are increasingly inclined to buy motorized vehicles because in addition to a light down payment, finance companies also provide convenience for the public in purchasing motorized vehicles. Even though the income level of the people in Indonesia is still relatively low, with a low down payment, the people are not too concerned about it. Honda showrooms carry out various forms of promotion and marketing so that the vehicles they sell get a response from consumers so they want to buy them. However, in fact there are still many forms of promotion that are not appropriate for consumers, so that in the motor vehicle loan process there are often obstacles caused by various factors. This study aims to create an analyst that can later be applied to computer systems, so that it can be said that by testing the system based on existing criteria, it will provide a definite answer in determining the creditworthiness of motorcycles to consumers.

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1. INTRODUCTION

Nationally, the number of motorized vehicles increases every year, especially motorcycles. Based on data from the Indonesian Motorcycle Industry Association (AISI), the population of motorized vehicles in Indonesia in 2010 reached 50,824,128 units and in 2014 increased to 63,530,160 units or an increase of 25%. Nowadays people are increasingly inclined to buy motorized vehicles because in addition to a light down payment, finance companies also provide convenience for the public in purchasing motorized vehicles [1]. Even though the income level of the people in Indonesia is still relatively low, with a low down payment, the people are not too concerned about it. This is in line with banks that are increasingly active in expanding their products and types of business, one of which is motor vehicle loan financing. Banks in carrying out their activities, have created a new system and competitors in the banking world, not only competitors between banks but also between banks and non-bank financial institutions.

The above conditions are an opportunity for motor vehicle providers to continue to innovate to attract consumers to be interested in buying their motorized vehicles, one of which is the Honda showroom. Honda showrooms carry out various forms of promotion and marketing so that the vehicles they sell get a response from consumers so they want to buy them. Marketing or promotion is a form of business to provide and deliver the right goods and services to the right people at the right place and time and at the right price with the right promotion and communication. However, in fact there are still many forms of promotion that are not appropriate for consumers, so that in the motor vehicle loan process there are often obstacles caused by various factors. Motor vehicle transactions involve three parties, namely the creditor as the party providing or providing consumer financing. The consumer as the applicant for consumer financing and who receives financing facilities from creditors. Showroom as the party that sets prices and provides consumer financing goods (motorcycles or cars). The obstacles faced are usually bad credit, the transfer of domicile by the consumer, vehicle damage, loss or other things that result in losses for the dealer. This is of course detrimental to the creditor. For that reason, a system is needed that is able to provide data or solutions for dealers to determine creditworthiness for consumers so that consumers who are given credit are truly appropriate and appropriate. From various research that has been done, it turns out that decision support systems (DSS) are able to overcome these problems.

This study will explain how to use a DSS in determining the creditworthiness of Honda motorcycles for consumers. This DSS has been tested to solve many problems such as determining the best employees, best students, best teachers and so on. In this study, the DSS used will adopt the Vise Kriterijumska Optimizacija I Kompromisno Resenje (VIKOR) method [2]. The VIKOR method itself is one of the multi-criteria decision-making methods or better known as the multi-criteria decision making [3]. Based on various references, the VIKOR method is widely used to resolve situations where decision makers do not have the ability to make choices when the design of a system begins, such as in completing recommendations from multi-criteria cases in determining prospective recipients of routine funding assistance. So that the VIKOR method can be the right solution in determining the recommendation to buy a Honda motorcycle.

2. RESEARCH METHOD

A DSS is a system developed using computers in the decision-making process [4]. A DSS is an information system developed for the purpose of helping management solve immediate problems [5], [6]. DSS are interactive computer-based systems that help decision makers solve unstructured and semi-structured problems using data and models [7], [8]. DSS are interactive information systems that provide information, model data, and manipulate data. This system is used for decision making in semi-structured and unstructured situations [9], [10].

Essentially, DSS is designed to support all stages of decision making, from problem identification, selection of relevant data, determination of approaches to be used in the decision-making process, to evaluation of alternative decisions [11]. DSS are systems that can provide problem-solving and communication skills for problems in semi-structured and unstructured conditions [12], [13]. This system is used to support decision making in semi-structured and unstructured situations where no one knows exactly how to make decisions. DSS is intended to inform, inform, predict, and guide information users to make better decisions [14]–[16].

2.1. VIKOR

VIKOR is better known as a multi-criteria decision-making method, or multi-criteria decision-making (MCDM) [17]. MCDM is used to solve problems with inconsistent and imbalanced criteria. This method focuses on ranking and selecting from a set of alternative, conflicting criteria for making decisions [18], [19] in order to reach a final decision.

In this method, decisions are made on near-ideal solutions and each option is evaluated against all established criteria. VIKOR evaluates alternatives and determines a solution close to the ideal compromise in Shekhovtsov and Sałabun [20], Wang *et al*. [21]. The VIKOR method is very useful in situations where decision makers are unable to make decisions at the beginning of system design [22]. The calculation steps with the VIKOR method are:

a. Perform normalization using [23], [24]:

$$R_{ij} = \left(\frac{x_j^+ - x_{ij}}{x_j^+ - x_j^-}\right) \tag{1}$$

b. Calculate the value of S and R using [25]:

$$S_i = \sum_{j=1}^{n} W_j \left(\frac{x_j^+ - x_{ij}}{x_j^+ - x_j^-}\right) \tag{2}$$

And

$$R_i = Max\, j\left[W_j \left(\frac{x_j^+ - x_{ij}}{x_j^+ - x_j^-}\right)\right] \tag{3}$$

Where W_j is the weight of each criterion j.

c. Determine the index value

$$Q_i = \left[\frac{S_i - S^+}{S^+ - S^-}\right] V + \left[\frac{R_i - R^+}{R^+ - R^-}\right] (1 - V) \quad (4)$$

Where:
$S^- = min\ S_i$,
$S^+ = max\ S_i$ and
$R^- = min\ R_j$,
$R^- = max\ R_j$ and
$V = 0.5$

d. The ranking result is the result of sorting from S, R, and Q.

e. The best ranked alternative solution based on the minimum Q value becomes the best rank with the conditions.

$$Q(A^{(2)}) - Q(A^{(1)}) = DQ \quad (5)$$

Where:
A^2 = alternative with second order in the ranking of Q and
A^1 = alternative with the best order on the ranking of Q while
$DQ = 1 – (m - 1)$, where m is the number of alternatives
Alternative $A^{(1)}$ must be ranked best on S and/or R.

3. RESULTS AND ANALYSIS

To obtain material for analysis, observations were made at the Honda showroom. The following are data obtained from observations at the Honda Medan showroom. There is a lot of consumer data recorded in the Honda Medan showroom, but for testing only 10 consumer data are taken randomly. Table 1 is the data to be tested.

After obtaining consumer data for testing. The next stage is to determine the criteria that will be used for testing consumer data. The following are the criteria for determining the eligibility of motorcycle credit to consumers in the Honda showroom. Table 2 is the criteria data to be used.

Table 1. Consumer data

No	Code	Name	Phone	Address
1	KM0001	Muhammad Rizaldi	082356473321	Jl. Gatot Subroto No.10 C
2	KM0002	Rosmawati	081235673241	Jl. Karya Jaya Gg. Karya Muda
3	KM0003	Fikri Andriansyah	087754322145	Jl. Letdjan Sudjono
4	KM0004	Eva Risnawaty	082365342677	Jl. Karya Muda ujung
5	KM0005	Jumiati	085234612378	Jl. Karya Jaya Gg. Karya Bersama
6	KM0006	Pitto Pasaribu	085658004040	Kwala Bekala
7	KM0007	Anggi Husein Harahap	081269144502	Perumnas Simalingkar
8	KM0008	Rohdewarni Munte	087754701010	Perumnas Simalingkar
9	KM0009	Halimah	085296354957	Jl. Karya Jaya Gg. Karya Muda
10	KM0010	Heru Kurniawan	087751561341	Perumnas Simalingkar

Table 2. Criteria weight value

No	Code	Criteria	Weight (W_j)	Description
1	C1	Income	0.25	Benefit
2	C2	File equipment	0.25	Benefit
3	C3	Down payment	0.20	Benefit
4	C4	Dependent	0.15	Cost
5	C5	Other expenses	0.15	Cost

After determining the criteria to be used, the next step is normalization. Before normalizing, what must be done is to provide alternative values for each criterion. The goal of normalization is to generate a new decision matrix from consumer data. Table 3 is an alternative assessment for each criterion.

Table 3. Alternative assessment on each criteria

No	Alternative		Criteria				
	Code	Name	C1	C2	C3	C4	C5
1	KM0001	Muhammad Rizaldi	70	80	60	70	60
2	KM0002	Rosmawati	80	70	80	90	80
3	KM0003	Fikri Andriansyah	90	80	90	70	80
4	KM0004	Eva Risnawaty	80	70	60	90	80
5	KM0005	Jumiati	70	70	80	70	70
6	KM0006	Pitto Pasaribu	80	70	80	70	80
7	KM0007	Anggi Husein Harahap	80	70	90	70	80
8	KM0008	Rohdewarni Munte	80	70	80	80	80
9	KM0009	Halimah	80	80	70	70	90
10	KM0010	Heru Kurniawan	90	70	80	80	80

a. Normalize

– Normalize alternative values for each criterion:

$$R_{ij} = \left(\frac{x_j^+ - x_{ij}}{x_j^+ - x_j^-}\right) \tag{6}$$

– Criteria 1 ($C1$):

$R_{11} = \frac{(90-70)}{(90-70)} = 1$

$R_{21} = \frac{(90-80)}{(90-70)} = 0.5$

$R_{31} = \frac{(90-90)}{(90-70)} = 0$

$R_{41} = \frac{(90-80)}{(90-70)} = 0.5$

$R_{51} = \frac{(90-70)}{(90-70)} = 1$

$R_{61} = \frac{(90-80)}{(90-70)} = 0.5$

$R_{71} = \frac{(90-80)}{(90-70)} = 0.5$

$R_{81} = \frac{(90-80)}{(90-70)} = 0.5$

$R_{91} = \frac{(90-80)}{(90-70)} = 0.5$

$R_{101} = \frac{(90-90)}{(90-70)} = 0$

– Criteria 2 ($C2$):

$R_{12} = \frac{(80-80)}{(80-70)} = 0$

$R_{22} = \frac{(80-70)}{(80-70)} = 1$

$R_{32} = \frac{(80-80)}{(80-70)} = 0$

$R_{42} = \frac{(80-70)}{(80-70)} = 1$

$R_{52} = \frac{(80-70)}{(80-70)} = 1$

$R_{62} = \frac{(80-70)}{(80-70)} = 1$

$R_{72} = \frac{(80-70)}{(80-70)} = 1$

$R_{82} = \frac{(80-70)}{(80-70)} = 1$

$R_{92} = \frac{(80-80)}{(80-70)} = 0$

$R_{102} = \frac{(80-70)}{(80-70)} = 1$

– Criteria 3 ($C3$):

$R_{13} = \frac{(90-60)}{(90-60)} = 1$

$R_{23} = \frac{(90-80)}{(90-60)} = 0.33$

$R_{33} = \frac{(90-90)}{(90-60)} = 0$

$R_{43} = \frac{(90-60)}{(90-60)} = 1$

$R_{53} = \frac{(90-80)}{(90-60)} = 0.33$

$R_{63} = \frac{(90-80)}{(90-60)} = 0.33$

$R_{73} = \frac{(90-90)}{(90-60)} = 0$

$R_{83} = \frac{(90-80)}{(90-60)} = 0.33$

$R_{93} = \frac{(90-70)}{(90-60)} = 0.67$

$R_{103} = \frac{(90-80)}{(90-60)} = 0.33$

– Criteria 4 ($C4$):

$R_{14} = \frac{(90-70)}{(90-70)} = 1$

$R_{24} = \frac{(90-90)}{(90-70)} = 0$

$R_{34} = \frac{(90-70)}{(90-70)} = 1$

$R_{44} = \frac{(90-90)}{(90-70)} = 0$

$R_{54} = \frac{(90-70)}{(90-70)} = 1$

$R_{64} = \frac{(90-70)}{(90-70)} = 1$

$R_{74} = \frac{(90-70)}{(90-70)} = 1$

$R_{84} = \frac{(90-80)}{(90-70)} = 0.5$

$R_{94} = \frac{(90-70)}{(90-70)} = 1$

$R_{104} = \frac{(90-80)}{(90-70)} = 0.5$

– Criteria 5 ($C5$):

$R_{15} = \frac{(90-60)}{(90-60)} = 1$

$R_{25} = \frac{(90-80)}{(90-60)} = 0.33$

$R_{35} = \frac{(90-80)}{(90-60)} = 0.33$

$R_{45} = \frac{(90-80)}{(90-60)} = 0.33$

$R_{55} = \frac{(90-70)}{(90-60)} = 0.67$

$R_{65} = \frac{(90-80)}{(90-60)} = 0.33$

$R_{75} = \frac{(90-80)}{(90-60)} = 0.33$

$R_{85} = \frac{(90-80)}{(90-60)} = 0.33$

$R_{95} = \frac{(90-90)}{(90-60)} = 0$

$R_{105} = \frac{(90-80)}{(90-60)} = 0.33$

From consumer data and criteria data, the normalization stage is carried out. The normalization stage aims to get the matrix value. Table 4 there are values from the normalization results.

After obtaining the normalization value. The next step is to normalize the matrix by multiplying the criteria weights. In Table 5 it can be seen the multiplication between the normalization and the weight of the criteria. After the normalization stage, then the normalization is multiplied by the criterion weight. Then we get the results of normalizing the alternative value matrix. In Table 6 there are the results of the normalization multiplication with alternative values.

Table 4. Normalization of alternative values

No	Alternative Name	Criteria				
		C1	C2	C3	C4	C5
1	Muhammad Rizaldi	1	0	1	1	1
2	Rosmawati	0.5	1	0.33	0	0.33
3	Fikri Andriansyah	0	0	0	1	0.33
4	Eva Risnawaty	0.5	1	1	0	0.33
5	Jumiati	1	1	0.33	1	0.67
6	Pitto Pasaribu	0.5	1	0.33	1	0.33
7	Anggi Husein Harahap	0.5	1	0	1	0.33
8	Rohdewarni Munte	0.5	1	0.33	0.5	0.33
9	Halimah	0.5	0	0.67	1	0
10	Heru Kurniawan	0	1	0.33	0.5	0.33

Table 5. Normalization of alternative value matrix

No	Alternative Name	Criteria				
		C1	C2	C3	C4	C5
1	Muhammad Rizaldi	1×0.25	0×0.25	1×0.20	1×0.15	1×0.15
2	Rosmawati	0.5×0.25	1×0.25	0.33×0.20	0×0.15	0.33×0.15
3	Fikri Andriansyah	0×0.25	0×0.25	0×0.20	1×0.15	0.33×0.15
4	Eva Risnawaty	0.5×0.25	1×0.25	1×0.20	0×0.15	0.33×0.15
5	Jumiati	1×0.25	1×0.25	0.33×0.20	1×0.15	0.67×0.15
6	Pitto Pasaribu	0.5×0.25	1×0.25	0.33×0.20	1×0.15	0.33×0.15
7	Anggi Husein Harahap	0.5×0.25	1×0.25	0×0.20	1×0.15	0.33×0.15
8	Rohdewarni Munte	0.5×0.25	1×0.25	0.33×0.20	0.5×0.15	0.33×0.15
9	Halimah	0.5×0.25	0×0.25	0.67×0.20	1×0.15	0×0.15
10	Heru Kurniawan	0×0.25	1×0.25	0.33×0.20	0.5×0.15	0.33×0.15

Table 6. Results of alternative value matrix normalization

No	Alternative Name	Criteria				
		C1	C2	C3	C4	C5
1	Muhammad Rizaldi	0.25	0	0,2	0.15	0.15
2	Rosmawati	0.125	0.25	0.066	0	0.0495
3	Fikri Andriansyah	0	0	0	0.15	0.0495
4	Eva Risnawaty	0.125	0.25	0.2	0	0.0495
5	Jumiati	0.25	0.25	0.066	0.15	0.1005
6	Pitto Pasaribu	0.125	0.25	0.066	0.15	0.0495
7	Anggi Husein Harahap	0.125	0.25	0	0.15	0.0495
8	Rohdewarni Munte	0.125	0.25	0.066	0.075	0.0495
9	Halimah	0.125	0	0.134	0.15	0
10	Heru Kurniawan	0	0.25	0.066	0.075	0.0495

b. Calculation of S and R values

− Finding S value of each option

$$S_i = \sum_{j=1}^{n} W_j \left(\frac{x_j^+ - x_{ij}}{x_j^+ - x_j^-}\right) \quad (7)$$

$S(A1)$ = 0.25 + 0 + 0.2 + 0.15 + 0.15 = 0.75
$S(A2)$ = 0.125 + 0.25 + 0.066 + 0 + 0.0495 = 0.4905
$S(A3)$ = 0 + 0 + 0 + 0.15 + 0.0495 = 0.1995
$S(A4)$ = 0.125 + 0.25 + 0.2 + 0 + 0.0495 = 0.6245
$S(A5)$ = 0.25 + 0.25 + 0.066 + 0.15 + 0.1005 = 0.8165
$S(A6)$ = 0.125 + 0.25 + 0.066 + 0.15 + 0.0495 = 0.6405
$S(A7)$ = 0.125 + 0.25 + 0 + 0.15 + 0.0495 = 0.5745
$S(A8)$ = 0.125 + 0.25 + 0.066 + 0.075 + 0.0495 = 0.5655
$S(A9)$ = 0.125 + 0 + 0.134 + 0.15 + 0 = 0.409
$S(A10)$ = 0 + 0.25 + 0.066 + 0.075 + 0.0495 = 0.4405

– Finding the R value of each alternative

$$R_i = Max\ j \left[W_j \left(\frac{x_j^+ - x_{ij}}{x_j^+ - x_j^-}\right)\right] \tag{8}$$

$R(A1)$ = 0.25
$R(A2)$ = 0.25
$R(A3)$ = 0.15
$R(A4)$ = 0.25
$R(A5)$ = 0.25
$R(A6)$ = 0.25
$R(A7)$ = 0.25
$R(A8)$ = 0.25
$R(A9)$ = 0.15
$R(A10)$ = 0.25

After the normalization matrix multiplication stage, the next step is to calculate the utility measure (S) value. Then the next stage is regreate measure (R). Table 7 shows the results of calculating the S and R values from the data for each alternative.

Table 7. S and R values for each alternative

No	Name	Value S	Value R
1	Muhammad Rizaldi	0.75	0.25
2	Rosmawati	0.4905	0.25
3	Fikri Andriansyah	0.1995	0.15
4	Eva Risnawaty	0.6245	0.25
5	Jumiati	0.8165	0.25
6	Pitto Pasaribu	0.6405	0.25
7	Anggi Husein Harahap	0.5745	0.25
8	Rohdewarni Munte	0.5655	0.25
9	Halimah	0.409	0.15
10	Heru Kurniawan	0.4405	0.25

– Determine the index value

The smallest Q value is the best value. The following is the calculation of the VIKOR value index, which is:

Value $Q1 = \frac{[0.75-0.8165]}{[0.8165-0.1995]} \times 0.5 + \frac{[0.25-0.25]}{[0.25-0.15]} \times (1-0.5)$
$= (-0.10778 \times 0.5) + (0 \times 0.5)$
$= -0.05389$

Value $Q2 = \frac{[0.4905-0.8165]}{[0.8165-0.1995]} \times 0.5 + \frac{[0.25-0.25]}{[0.25-0.15]} \times (1-0.5)$
$= (-0.52836 \times 0.5) + (0 \times 0.5)$
$= -0.26418$

Value $Q3 = \frac{[0.1995-0.8165]}{[0.8165-0.1995]} \times 0.5 + \frac{[0.15-0.25]}{[0.25-0.15]} \times (1-0.5)$
$= (-1 \times 0.5) + (-1 \times 0.5)$
$= -1$

Value $Q4 = \frac{[0.6245-0.8165]}{[0.8165-0.1995]} \times 0.5 + \frac{[0.25-0.25]}{[0.25-0.15]} \times (1-0.5)$
$= (-0.31118 \times 0.5) + (0 \times 0.5)$
$= -0.15559$

Value $Q5 = \frac{[0.8165-0.8165]}{[0.8165-0.1995]} \times 0.5 + \frac{[0.25-0.25]}{[0.25-0.15]} \times (1-0.5)$
$= (0 \times 0.5) + (0 \times 0.5)$
$= 0$

Value $Q6 = \frac{[0.6405-0.8165]}{[0.8165-0.1995]} \times 0.5 + \frac{[0.25-0.25]}{[0.25-0.15]} \times (1-0.5)$
$= (-0.28525 \times 0.5) + (0 \times 0.5)$
$= -0.14263$

Value $Q7 = \frac{[0.5745-0.8165]}{[0.8165-0.1995]} \times 0.5 + \frac{[0.25-0.25]}{[0.25-0.15]} \times (1-0.5)$
$= (-0.39222 \times 0.5) + (0 \times 0.5)$
$= -0.19611$

Value $Q8 = \frac{[0.5655-0.8165]}{[0.8165-0.1995]} \times 0.5 + \frac{[0.25-0.25]}{[0.25-0.15]} \times (1-0.5)$
$= (-0.40681 \times 0.5) + (0 \times 0.5)$
$= -0.2034$

Value $Q9 = \frac{[0.409-0.8165]}{[0.8165-0.1995]} \times 0.5 + \frac{[0.15-0.25]}{[0.25-0.15]} \times (1-0.5)$
$= (-0.66045 \times 0.5) + (-1 \times 0.5)$
$= -0.83023$

Value $Q10 = \frac{[0.4405-0.8165]}{[0.8165-0.1995]} \times 0.5 + \frac{[0.25-0.25]}{[0.25-0.15]} \times (1-0.5)$
$= (-0.6094 \times 0.5) + (0 \times 0.5)$
$= -0.3047$

After calculating the value of the utility measure (S) and the increase measure (R) value. The next step is to determine the index value (Q). From the calculation above, the VIKOR index value can be obtained. In Table 8 it can be seen the value of the VIKOR index.

c. Alternative solutions with the highest score based on the lowest Q value representing the highest score. In addition, the last effort is to deliver motorcycle loans to consumers in Honda showrooms. Based on the Table 8, we have the feasibility results which can be seen in Table 9.
d. The best ranking alternative solution based on the minimum Q value becomes the best ranking. From the results of the calculations that have been done, the minimum value is taken as the best value. Next is to provide motorcycle loans to consumers in the Honda showroom. Table 10 shows the results of consumer eligibility.

Table 8. VIKOR index value

No	Nama	Value
1	Muhammad Rizaldi	-0.05389
2	Rosmawati	-0.26418
3	Fikri Andriansyah	-1
4	Eva Risnawaty	-0.15559
5	Jumiati	0
6	Pitto Pasaribu	-0.14263
7	Anggi Husein Harahap	-0.19611
8	Rohdewarni Munte	-0.2034
9	Halimah	-0.83023
10	Heru Kurniawan	-0.3047

Table 9. Ranking of Q values

No	Name	Value	Rank
1	Fikri Andriansyah	-1	Rank 1
2	Halimah	-0.83023	Rank 2
3	Heru Kurniawan	-0.3047	Rank 3
4	Rosmawati	-0.26418	Rank 4
5	Rohdewarni Munte	-0.2034	Rank 5
6	Anggi Husein Harahap	-0.19611	Rank 6
7	Eva Risnawaty	-0.15559	Rank 7
8	Pitto Pasaribu	-0.14263	Rank 8
9	Muhammad Rizaldi	-0.05389	Rank 9
10	Jumiati	0	Rank 10

Table 10. Results table

No	Name	Value	Recommendation
1	Fikri Andriansyah	-1	Worthy
2	Halimah	-0.83023	Worthy
3	Heru Kurniawan	-0.3047	Worthy
4	Rosmawati	-0.26418	Worthy
5	Rohdewarni Munte	-0.2034	Worthy
6	Anggi Husein Harahap	-0.19611	not feasible
7	Eva Risnawaty	-0.15559	not feasible
8	Pitto Pasaribu	-0.14263	not feasible
9	Muhammad Rizaldi	-0.05389	not feasible
10	Jumiati	0	not feasible

After carrying out all the stages of the VIKOR method, the calculation results are obtained from consumer data that is feasible or not for credit applications. In Table 10, it can be seen that consumers who are eligible to be given motorbike loans at the Honda showroom are ranked 1–5. Meanwhile, rank 6 and so on are declared ineligible to be given motorbike loans at the Honda showroom.

4. CONCLUSION

In analyzing the problem of determining the creditworthiness of motorcycles to consumers at the Honda showroom, namely by determining the criteria that influence in determining the creditworthiness of motorcycles to consumers, then each criterion is given a weight value based on the provisions of the VIKOR method, than the calculation process is carried out by adopting the VIKOR method. In applying the VIKOR method in problem solving to determine the creditworthiness of motorcycles to consumers at the Honda showroom, namely by entering the calculation algorithm into the program source code, than the algorithm that has been entered into the program source code will automatically calculate the process in determining eligibility. motorcycle loans to consumers. The system that has been designed is then implemented by entering the data in accordance with those in the previous chapters, then if the output results are in accordance with the manual data then in this test the system runs well, adds data to the database, updates commands to change data in the database, delete command to delete data in the database.

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