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DECISION SUPPORT SYSTEM BASED ON THE TECHNIQUE FOR ORDER PREFERENCE BY SIMILARITY TO IDEAL SOLUTION (TOPSIS)

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Abstract- Automatic motorbikes have now dominated street sales and have shifted the position of other types of motorbikes in terms of total sales. the reason for the ease of use and economical and powerful to be used makes the motorbike Automatic quickly accepted by consumers in supporting their daily activities. from the rapid increase in sales of Automatic motorbike in Indonesia, it can be concluded that the public's need for private vehicles is still very high.
With the increase in sales of motorbike Automatic, a website application is needed to help potential consumers to search motorbike Automatic, selection according to the needs and de sires of consumers. This decision support application was developed based on the needs of the community, especially in the Tangerang area. S everal brands of automatic motorbike s that have a brand holder agent in the Tangerang area will also work together in this research.
This application will use the Technique for Order Preference by S imilarity to Ideal S olution (TOPSIS) method and the Decision S upport S ystem (DS S) concept. In the first phase of the thesis research is conducting supporting data collection, summarizing literature reviews of theories that will be used during the research, system design methods, designing the Unified Modeling Language (UML) to make it easier to implement theories and data collected into website applications that will be built. After doing all system development Next phase will start developing and implementation of website applications that has been finished has carried out the user acceptance test (UAT) and can be used.
Keywords: Decision Support S ystem (DSS), Technique for Order Preference by S imilarity to Ideal S olution (TOPSIS), S election, Automatic motorbikes

1. INTRODUCT ION

Decision Support System (DSS) applications are used in many diverse fields, including medical diagnosis, credit loan verification, evaluating bids on engineering projects, business and business management, agricultural production at the farm and policy levels, forest management and railroad (for evaluation of defective rails) [1]. Usually prospective consumers are looking for a choice of motorbike motorbikes through the official websites of each motorbike brand, and also conducting surveys directly to the showrooms or dealers of each of the motorbike brands in the Tangerang area. Prospective customers must compare the specifications of a motorbike that varies according to the wishes of prospective customers either through the website of each brand or also ask directly to the sales in the showroom or dealer of each brand of motorbike brand. This has an inefficient effect on the search time for motorbikes by prospective customers, where most business processes, both online and offline, can run faster with the requirements required by each part.

This research refers to the four previous journal which were used as references in developing research supporting decisions on the selection of motorbikes, including:

1. Decision Support System for Selecting M otor Vehicles Using the Technique For Order Preference by Similarity to Ideal Solution (TOPSIS) M ethod [2], the research method using TOPSIS as Decision Support System theory and output of the research in data visualization
2. The behavioral TOPSIS accommodates the loss aversion concept in behavioral economics [3]
3. The optimization of the various manufacturing processes that have been optimized by TOPSIS method is the main focus of this paper [4]
4. In this paper, the rating of the alternatives using respect to the criteria are expressed by means of a decision matrix in terms of mean values and standard deviations the alternatives consist of the algorithms and the criteria are the benchmarks. [5]

Furthermore, with the number of brands and types of motorbikes that are now increasing, the public as consumers sometimes hesitates in deciding the decision to buy a motorbike because of the many aspects that need to be considered adjusting the needs of each consumer. Therefore, in this research develop the web based application using Technique For Order Preference by Similarity to Ideal Solution (TOPSIS) as the decision support system theory [6]. The objective of this research to know the criteria and specifications needed by consumers in choosing a motorbike, help consumers choose an automatic transmission motorbike that fits their needs and can provide motorbike recommendations to the public automatically based on their individual needs and considerations.

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2. PROBLEM STATEMENT AND RESEARCH METHODOLOGY

The object chosen in designing and developing applications is a motorbike brand that has an automatic transmission variant that officially has permission to market motorbikes in Indonesia. The automatic transmission brand chosen by researchers is a motorbike brand that officially has an official showroom or Brand Holder Agent spread in Jakarta and Tangerang. The main problems are: (i) The number of brands and types of motorbike variants circulating in the Tangerang area, (ii) There is no applications that help prospective customers to make it easier to make the decision to purchase a motorbike automatically according to their wishes and tastes. (iii) There is no applications that provides complete information about the brands of motorbike that are sold in the Tangerang area.

This research will implement the Technique For Order Preference by Similarity to Ideal (TOPSIS) model to help make decisions on the selection of automatic transmission motorbikes for potential customers in Tangerang which will be displayed through web-based applications. The decision support system that will be used in this study is Technique for Order Preference by Similarity to Ideal Solution (TOPSIS). TOPSIS is a popular term from Technique for Order Preference by Similarity to Ideal Solution is the method that was first introduced by Yoon and Hwang, where the chosen alternative has the closest distance to the positive ideal solution and has the farthest distance from the ideal elative solution [7]. TOPSIS uses the principle that the selected alternative must have the closest distance from the positive ideal solution and the longest (farthest) distance from the ideal relative solution from a geometric point of view using Euclidean distance (distance between two points) to determine the relative proximity of an alternative to the solution optimal. Positive ideal solutions are defined as the sum of all the best values that can be achieved for each attribute while the relative-ideal solution consists of all the worst values achieved for each attribute. TOPSIS considers both the distance to the positive ideal solution and the distance to the relative ideal solution by taking proximity relative to the positive ideal solution [8].

This study is more suitable to use the TOPSIS method because TOPSIS considers positive ideal solutions and negative ideal solutions for each alternative criterion that is needed in this study to rank each predetermined criterion to make it easier to determine the results of each combination of searches. Website application users select when using the website applicat ion. Besides that, TOPSIS can be flexible and dynamic where both of these properties are very suitable for website applications that are being made because the motorbike data in the system is sure to always change to be able to follow the existing market conditions. The aim of the research is to create a system that is useful for facilitate prospective motorbike consumers to choose motorbikes that are in accordance with aspects that support their individual needs and provide information on the specifications of the details of a motorbike in full in accordance with the existing criteria on the system including price information.

3. SOLUTION PROCEDURE AND THE IMPLEMENTATION

The location that has been determined for this study is the official dealer of seven brands and twenty -eight types of automatic motorbikes located in the vicinity of Tangerang. In determining the criteria in this study, a field survey was conducted using a questionnaire distributed to the correspondent at random. The results of the questionnaire will be used as criteria in the website application where the highest value from the results of the questionnaire will be set as criteria [9, 10]. In making a decision, people are faced with a variety of choices including taking a decision by judging from the positive and negative aspects that will be taken after making the decision. In the case of selecting a motorbike, when the community wants to do the selection of a motorbike, of course, think about how the decisions that will be taken later can be a good, right and accurate decision. The analysis carried out to correct the data to be generated requires a variable arrangement, several variables taken from the criteria compiled the TOPSIS method steps and those used are based on priorities where priority scales are arranged based on the first criteria and so on which are squeezed in choose criteria on the website [11, 12].

3.1 There are steps that must be passed in forming a model with TOPSIS

Determine the types of criteria commonly used as a consideration for prospective consumers to choose a motorbike Criteria are determined based on the results of a predetermined questionnaire. Ranking or weight in each criterion is also determined based on a questionnaire that has been distributed to the correspondent at random and domiciled in the Tangerang area. Ranking or weight in each criterion will be guided by the ranking table below:

Table 1 Value of Criteria

Value of Criteria	Value Weight
Not Important	1
Less Important	2
Important Enough	3
Important	4
Very Important	5

In table 1 it can be seen that the greater the weight value, the more important or close to the ideal positive solution. brands and types of motorbikes are used as alternatives for website applications. Besides that, the type of motorbike is also used as a second alternative. The total alternatives to be used are two alternatives and thirteen criteria for motorbikes. the following

pictures are the TOPSIS weights of each criterion in the application to support the decision to choose a motorbike. Weight values are taken based on questionnaire data that has been filled out by respondents randomly and domiciled in the Tangerang area.

#	Capacity	Point
1	150	7
2	125	6
3	250	5
4	110	4
5	115	3
6	200	2
7	400	1

Figure 1. Preferences and Criteria for Capacity of Automatic motorbike engines

Figure 1 dividing preferences and criteria for the capacity of a motorbike engine as many as 7 criteria based on the usual engine capacity sold by the brand.

#	Min Capacity	Max Capacity	Point
1	9	11	4
2	12	15	3
3	6	8	2
4	3	5	1

Figure 2. Preferences and Criteria for Gas Tank

Figure 2 dividing the preferences and criteria of the automatic motorbike gas tank into four criteria according to the capacity of the gas tank that is on each type of automatic motorbike.

#	ABS Status	ABS Point
1	ABS	2
2	Non - ABS	1

Figure 3. Preferences and Criteria for ABS and Non-ABS Options

Figure 3 gives preference weight and criteria for motorbikes that feature ABS and non-ABS brakes in accordance with what has been produced by manufacturers of motorbike brands.

#	Type Of Lamp	Point
1	LED Multi Reflektor	3
2	LED Proyektor	2
3	Bohlam Halogen	1

Figure 4. Preferences and Criteria for Headlamp Types

Figure 4 and Figure 5 dividing the preferences and criteria of the main types of lights and brake lights from an automatic motorbike into three criteria according to those produced by brand manufacturers respectively .

#	Type Of Lamp	Point
1	LED Bar	3
2	LED Titik-Titik	2
3	Bohlam Halogen	1

Figure 5. Preference and Criteria for Stop Lamp Types

Figure 6 dividing preferences and criteria for the type of turn signal for an automatic motorbike into three criteria according to those produced by brand manufacturers, while Figure 7 dividing preferences and criteria for motorbike transmission into two adjusting criteria that have been produced by brand manufacturers.

#	Type Of Lamp	Point
1	LED Bar	3
2	LED Titik-Titik	2
3	Bohlam Halogen	1

Figure 6. Preferences and Criteria for Sign Lamp Types

#	Tranmision	Point
1	CVT	2
2	Dual Clutch	1

Figure 7. Preferences and Criteria for Transmission Options

Figure 8 dividing preferences and criteria for the types of automatic motorbike rear brakes according to those produced by brand manufacturers.

#	Rear Brake	Point
1	Disc Brake (Cakram)	2
2	Drum Brake (Tromol)	1

Figure 8. Preferences and Criteria for Rear Brake Options

Figure 9 dividing preferences and criteria for color types of motorbike into two types of criteria following the color produced by the manufacturer, namely the type of metallic and matte colors. Figure 10 is a preference and criteria for luggage capacity that is owned by the specifications of an automatic motorbike in accordance with those produced by motorbike manufacturers. In making a decision, humans are faced with a variety of choices including taking a decision by assessing in terms of the positive and relative aspects that will be taken after making the decision. In the case of selecting a motorbike, when the community wants to do the selection of a motorbike, of course, think about how the decisions that will be taken later can be a good, right and accurate decision. The analysis carried out to correct the data that will be generated requires a variable arrangement, several variables are taken from the criteria that have been collected and the ones used are based on priorities where the priority scale is arranged based on the first criteria and so on which criteria are selected on the website. TOPSIS uses the principle that the chosen alternative must have the closest distance from the positive ideal solution and the longest (farthest) distance from the elative ideal solution from a geometric point of view using Euclidean distance (distance between two points) to determine the relative closeness of an alternative with the optimal solution.

#	Color	Point
1	Mettalic Black	12
2	Mettalic Red	11
3	Mettalic Silver	10
4	Mettalic Grey	9
5	Mettalic White	8
6	Mettalic Green	7
7	Mettalic Blue	6
8	Mettalic Yellow	5
9	Mettalic Brown	4
10	Mettalic Gold	3
11	Mettalic Orange	2
12	Mettalic Pink	1
13	Matte Black	9
14	Matte Grey	8
15	Matte White	7
16	Matte Blue	6
17	Matte Red	5
18	Matte Gold	4
19	Matte Silver	3
20	Matte Brown	2
21	Matte Bronze	1

Figure 9. Preferences and Criteria Colors Options

#	Capacity	Point
1	8.7	21
2	10.0	20
3	10.1	19
4	11.0	18
5	12.8	17
6	13.0	16
7	14.0	15
8	15.4	14
9	5.0	13
10	7.0	12
11	7.5	11
12	28.8	9
13	30.0	8
14	23.0	7
15	23.3	6
16	25.0	5
17	18.0	10
18	20.6	4
19	40.7	3
20	42.7	2
21	48.0	1

Figure 10. Preferences and Criteria for Baggage Capacity Options

In determining a decision, humans are faced with a variety of choices including taking a decision by judging from the positive and negative aspects that will be taken after making the decision. In a matter of choosing a motorbike, when a prospective buyer wants to make a selection of a motorbike, of course, thinking about how the decision will be taken can later be a good, accurate and accurate decision. The analysis carried out to correct the data to be generated requires a variable arrangement , the following examples of variables used based on priorities that have been analyzed first:

1. Based on price (C1)

Table 2. Data Criteria and Alternative M atic M otorbikes

No	Brands	Price
1	Yamaha M io M 3 125	Rp 15.200.000,00
2	Honda Scoopy	Rp 18.300.000,00
3	Honda PCX ABS	Rp 30.800.000,00

Table 2 are three alternatives and the criteria chosen as samples using TOPSIS among t hem Yamaha M io M 3 125, Honda Scoopy and Yamaha Nmax.

2. Based on engine capacity (C2)

Table 3. Engine Capacity

No.	Brand	Engine Capacity
1	Yamaha M io M 3 125	125 CC
2	Honda Scoopy	125 CC
3	Honda PCX ABS	155 CC

Table 3 is the engine capacity possessed by three alternatives and criteria in table 2

3. Based on Gas Tank (C3)

Table 4. Fuel Tank Capacity

No.	Brand	Fuel Tank Capacity
1	Yamaha M io M 3 125	4,2 Liter

2	Honda Scoopy	4 Liter
3	Honda PCX ABS	8 Liter

Table 4 is the capacity of the gas tank which owned by three alternatives and the criteria in table 2

4. Based on Baggage Capacity

Table 5. Baggage Capacity

No.	Brand	Baggage Capacity
1	Yamaha M io M 3 125	10,1 Liter
2	Honda Scoopy	15,4 Liter
3	Honda PCX ABS	28,8 Liter

Table 5 is the baggage capacity owned by the three alternatives and criteria in table 2

5. Based on Headlamp

Table 6. Headlamp

No.	Nama Sepeda M otor	Headlamp options
1	Yamaha M io M 3 125	Halogen
2	Honda Scoopy	LED Proyektor
3	Honda PCX ABS	LED M ulti Reflektor

Table 6 is the headlamp typer owned by the three alternatives and the criteria in table 2

3.2 Scenario Example:

User A is a student and he wants to buy a motorbike, so that the trip from home to campus is faster and not late. And the motorbike that User A wants is high speed but not too expensive, comfortable and has extensive luggage. Which of the three alternative motorbikes are suitable for User A? Settlement Table 7 describes five criteria determined by the user in the scenario of motorbike selection:

Table 7. Criteria Value

No.	Criteria	Value
1	Price	4
2	Engine Capacity	5
3	Fuel Tank Capacit	3
4	Baggage Capacity	4
5	Headlamp Options	2

Decision matrix formed from a match ranking table in table 8:

Table 8. Ranking Table

	Kriteria				
Alternatif	C1	C2	C3	C4	C5
Yamaha M io M 3 125	3	1	3	1	3
Honda Scoopy	2	1	2	3	1
Honda PCX ABS	1	3	2	1	2

In general, the procedure of the TOPSIS method follows the steps as follows:

Determine normalized decision matrices. TOPSIS requires a rating or performance weight for each alternative on normalized criteria, which can be written with the equation:

$$Rij = \frac{Xij}{\sqrt{\sum_i^m = 1\ Xij^2}}$$

i = 1,2,…..m; and j = 1,2…..n;

Where : R = Motorbike automatic point
X = Criteria Point
ij = Alternative
$\sum_i^m$ = Number of criteria in squared

$|x1| = \sqrt{3^2 + 2^2 + 1^2} = 3{,}7417$
$r\,11 = \frac{x_{11}}{|x1|} = \frac{3}{3{,}7417} = 0{,}8018$
$r\,21 = \frac{x_{21}}{|x1|} = \frac{2}{3{,}7417} = 0{,}5345$
$r\,31 = \frac{x_{31}}{|x1|} = \frac{1}{3{,}7417} = 0{,}2673$

$|x2| = \sqrt{1^2 + 1^2 + 3^2} = 3{,}3166$
$r\,12 = \frac{x_{12}}{|x2|} = \frac{1}{3{,}3166} = 0{,}3015$
$r\,22 = \frac{x_{22}}{|x2|} = \frac{1}{3{,}3166} = 0{,}3015$
$r\,32 = \frac{x_{32}}{|x2|} = \frac{3}{3{,}3166} = 0{,}9045$

$|x3| = \sqrt{3^2 + 2^2 + 2^2} = 4{,}1231$
$r\,13 = \frac{x_{13}}{|x3|} = \frac{3}{4{,}1231} = 0{,}7276$
$r\,23 = \frac{x_{23}}{|x3|} = \frac{2}{4{,}1231} = 0{,}4851$
$r\,33 = \frac{x_{33}}{|x3|} = \frac{2}{4{,}1231} = 0{,}4851$

$|x4| = \sqrt{1^2 + 3^2 + 1^2} = 3{,}3166$
$r\,14 = \frac{x_{14}}{|x4|} = \frac{1}{3{,}3166} = 0{,}3015$
$r\,24 = \frac{x_{24}}{|x4|} = \frac{3}{3{,}3166} = 0{,}9045$
$r\,34 = \frac{x_{34}}{|x4|} = \frac{1}{3{,}3166} = 0{,}3015$

$|x5| = \sqrt{3^2 + 1^2 + 2^2} = 3{,}7417$
$r\,15 = \frac{x_{15}}{|x5|} = \frac{3}{3{,}7417} = 0{,}8018$
$r\,25 = \frac{x_{25}}{|x5|} = \frac{1}{3{,}7417} = 0{,}2673$
$r\,35 = \frac{x_{35}}{|x5|} = \frac{2}{3{,}7417} = 0{,}5345$

Calculate weighted normalized decision matrices.
With the weight of W = (w1, w2, ……., Wn),
the normalized weighting rating can be defined as: Y_ij = W_i r_i
With i = 1,2 ……., M ; and j = 1,2 …… n;

$$R = (4,5,3,4,2) \times \begin{matrix} 0{,}8018 & 0{,}3015 & 0{,}7276 & 0{,}3015 & 0{,}8018 \\ 0{,}5345 & 0{,}4685 & 0{,}4851 & 0{,}9045 & 0{,}2673 \\ 0{,}2673 & 0{,}6247 & 0{,}4851 & 0{,}3015 & 0{,}5345 \end{matrix}$$

$$Y = \begin{matrix} 3{,}2071 & 1{,}5076 & 2{,}1828 & 1{,}2060 & 1{,}6036 \\ 2{,}1381 & 2{,}3426 & 1{,}4552 & 3{,}6181 & 0{,}5345 \\ 1{,}0690 & 3{,}1235 & 1{,}4552 & 1{,}2060 & 1{,}0690 \end{matrix}$$

Calculates the matrix of ideal positive solutions and matrix ideal elative solutions. The ideal positive A+solution and the ideal elative A−can be determined based on the normalized weight ranking ( )As follows:

A+ = y1+ , 2+, … … . , +; A− = y1− , 2−, … … . , −;
Where :
+are:
maxif J is the profit attribute
minif J is the cost attribute
+are :
maxif J is the profit attribute
minif J is the cost attribute
Ideal Positive and Negative Solutions
So, the ideal positive solution:
1+ = max {3,2071 ; 2,1381 ; 1,0690} = 3,2071
2+ = max {1,5076 ; 2,3426 ; 3,1235} = 3,1235

3+ = max {2,1828 ; 1,4552 ; 1,4552} = 2,1828
4+ = max {1,2060 ; 3,6181 ; 1,2060} = 3,6181
5+ = max {1,6036 ; 0,5345 ; 1,0690} = 1,6036
+ = {3,2071 ; 3,1235 ; 2,1828 ; 3,6181 ; 1,6036}

So, the ideal negative solution:
1− = min {3,2071 ; 2,1381 ; 1,0690} = 1,0690
2− = min {1,5076 ; 2,3426 ; 3,1235} = 1,5076
3− = min {2,1828 ; 1,4552 ; 1,4552} = 1,4552
4− = min {1,2060 ; 3,6181 ; 1,2060} = 1,2060
5− = min {1,6036 ; 0,5345 ; 1,0690} = 0,5345
− = {1,0690 ; 1,5076 ; 1,4552 ; 1,2060 ; 0,5345}

Calculate the distance between the values of each alternative with a matrix of positive ideal solutions and a matrix of negative ideal solutions.Distance is an alternative to A, with a positive ideal solution formulated as:

$$D_i^+ = \sqrt{\sum_j^n = 1\left(y_i^+ - y_{ij}\right)}$$
$$\text{i} = 1,2,\ldots,\text{m.}$$

Distance is an alternative A, with an ideal elative solution formulated as:

$$D_i^+ = \sqrt{\sum_j^n = 1\left(y_i^+ - y_{ij}\right)}$$
$$\text{i} = 1,2,\ldots,\text{m.}$$

Distance between weighted values of alternative values to positive ideal solutions

$$D_1^+ = \sqrt{\begin{matrix}(3{,}2071-3{,}2071)^2+(3{,}1235-1{,}5076)^2+\\(2{,}1828-2{,}1828)^2+\\(3{,}6181-1{,}6036)^2+(1{,}6036-1{,}6036)^2\end{matrix}}$$
$$= 2{,}9033$$

$$D_2^+ = \sqrt{\begin{matrix}(3{,}2071-2{,}1381)^2+(3{,}1235-2{,}3426)^2+\\(2{,}1828-1{,}4552)^2+\\(3{,}6181-3{,}6181)^2+(1{,}6036-0{,}5345)^2\end{matrix}}$$
$$= 1{,}8506$$

$$D_3^+ = \sqrt{\begin{matrix}(3{,}2071-1{,}0690)^2+(3{,}1235-3{,}1235)^2+\\(2{,}1828-1{,}4552)^2+\\(3{,}6181-1{,}2060)^2+(1{,}6036-1{,}0690)^2\end{matrix}}$$
$$= 3{,}3473$$

Distance between weighted values of alternative values to negative ideal solutions

$$D_1^- = \sqrt{\begin{matrix}(1{,}0690-3{,}2071)^2+(1{,}5076-1{,}5076)^2+\\(1{,}4552-2{,}1828)^2+\\(1{,}2060-1{,}6036)^2+(0{,}5345-1{,}6036)^2\end{matrix}}$$
$$= 2{,}4987$$

$$D_2^- = \sqrt{\begin{matrix}(1{,}0690-2{,}1381)^2+(1{,}5076-2{,}3426)^2+\\(1{,}4552-1{,}4552)^2+\\(1{,}2060-3{,}6181)^2+(0{,}5345-0{,}5345)^2\end{matrix}}$$
$$= 2{,}7674$$

$$D_3^- = \sqrt{\begin{matrix}(1{,}0690-1{,}06090)^2+(1{,}5076-3{,}1235)^2+\\(1{,}4552-1{,}4552)^2+\\(1{,}2060-1{,}2060)^2+(0{,}5345-1{,}0690)^2\end{matrix}}$$
$$= 1{,}7020$$

Calculate preference values for each alternative. The preference value for each alternative (Vi) is given as:

$$V_i = \frac{D_i^-}{D_i^- + D_i^+} \qquad i = 1,2,\ldots\ldots,m$$

A larger Vi value indicates that the alternative Ai is preferred.

$$V1 = \frac{2,4987}{2,4987+2,9033} = 0,4626$$

$$V2 = \frac{2,7674}{2,7674+1,8506} = 0,5993$$

$$V2 = \frac{1,7020}{1,7020+3,3473} = 0,3371$$

Based on the results of the values listed above, the best results User A can choose is the Honda Scoopy .

User interface in this report is the result of the development of a mock up that was previously designed to simplify the implementation of HTM L and PHP programs. User Interface is designed as intuitively as possible so users can use website applications easily and understandably so that the use of applications can be used optimally .

Figure 11. Home Page M atic For M atic Web Application

Figure 11 on Home page, users can directly use the application to select the criteria and specifications of a motorbike according to their wishes, tastes and budget on the "create my own scooter" web page. Users simply click on each criterion displayed and choose one that suits their taste. After all the criteria and specifications are filled, the user can immediately start t he search by clicking the "start create my own scooter" button. The system will immediately calculate all the values of the inputted criteria. Users can also refill criteria and specifications by clicking one reset button on the same page.

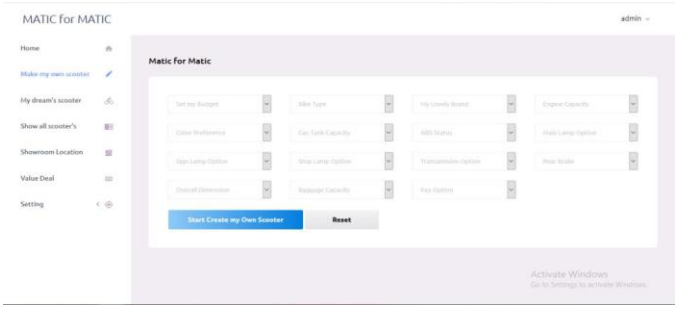

Figure 12. Page of "Create my own scooters"

Figure 12 on p age of "create my own scooters" Users can save the results of the "make my own scooter" on the page "my dreiam's scooter" for documentation and also useful information to make it easier for users to consider the options that best suit their tastes, specifications and prices. In addition, users can still access detailed information on every motorbike that goes on the "my dream's scooter" page.

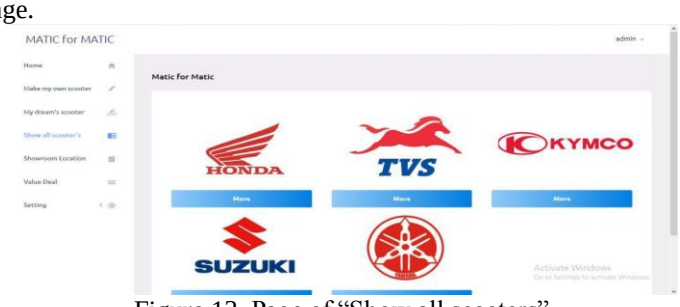

Figure 13. Page of "Show all scooters"

Figure 13 p age of “show all scooters” Users not only fill in the criteria and specifications to display the final results of the calculation criteria, but also get free access to see the motorbike available in the system database and check the availability of units from the showroom that have worked with the application.

Based on the result:

1. The research project and website application development decision support for motorbike selection are run using one of the decision support system methods, namely TOPSIS (Technique for Order preference by Ideality to Ideal Solution) with a website application platform using PHP as the main programming language, M ySQL as the database applications that are helped to use PHP M yAdmin to manage data, tables and database administration.
2. Reference data used to determine the weighting of alternatives and criteria for motorbikes are collected through questionnaires randomly distributed to communities residing in the area of Tangerang (Tangerang City, Tangerang Regency and Tangerang Selatan City).
3. Catalog information used in the website application is compiled from five official motorbike sites where in the dealer column of the official site there is information about the certainty of availability of dealers / showrooms in the Tangerang area (Kota Tangerang, Tangerang Regency and Kota Tangerang Selatan) . Brands that have dealers in Tangerang are Yamaha, Honda, Suzuki, Kymco and TVS.
4. The criteria selected and entered into the website application are the top 15 top chosen by the community based on the questionnaire that has been previously distributed, including Price, Brand type, Brand, Engine capacity, Color, Gas tank capacity, ABS Braking Status, M ain Light, Turn Signal, Brake Light, Transmission Type, Rear brake type, Overall dimensions, Luggage capacity, and Lock type.
5. Website applications are developed based on predetermined criteria and alternatives successfully created and can produce results that are in accordance with user expectations and improve the quality of user experience through good and intuitive display through the development of using HTM L and PHP.
6. The website application has been successfully created and has passed the verification stage through the UAT (User Acceptance Test) process and several maintenance activities to ensure that the data on the back office and front office runs well.

4. CONCLUSIONS

In this research, users feel a new experience using a website application that can help choose a motorbike automatically according to the criteria filled by the user based on the needs and tastes of each user by open the application to search for and choose automatic motorbikes in various types and brands according to the selected criteria and as desired. The search menu and selection are carried out automatically according to the criteria chosen by the user based on TOPSIS decision support theory so that they can calculate the weight of each criterion and can produce accurate results in accordance with user expectations. Furthermore, other problems in other problem, such as: usage criteria can be added to increase the use of website applications that are more dynamic and provide more varied results because they involve more criteria can be solved and finding a better solution procedure will be studied in future research.

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