

Customer Relationship Management to Retain Customers using the Topsis Method

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Abstract

In the era of globalization, the increasingly rapid development of technological sophistication is an aspect that can be utilized to achieve convenience, including the flow of information. Each company has its own way of retaining customers. At the Metacom store, efforts to retain customers have not been carried out in an updated and online manner. Customer Relationship Management (CRM) is one way of retaining customers to fulfill this goal by combining CRM and TOPSIS methods. For this reason, customer data analysis was carried out at the Metacom store using the Topsis method, from 10 transaction data, 2 were recommended to be given a discount on the goods. The results of applying TOPSIS use ranking results from goods transaction results. This Topsis analysis can be used to change a CRM application, where this application is equipped with a sales information system as well as goods data collection (Cashier) and a sales application using the Topsis method with a combination of these two methods in the Metacom Store. From the processed data, the ranking results show that the one with the highest preference value is the Flashdisk alternative with a value of 0.78.

Keywords : Customer Relationship Management, TOPSIS Method, Sales, Ranking, Transactions.

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1. Introduction

In the era of globalization, the increasingly rapid development of technological sophistication is an aspect that can be utilized to achieve convenience, including the flow of information. With increasingly advanced technology from time to time, the use of this easy and practical technology cannot be denied that business processes really need information technology which makes an information system a primary need to support the development of an existing system. The large amount of data held can have an impact on the information delivery process. In order to obtain quality information, a collection of data must be processed so as to produce information that is useful for all parties who receive the information [1].

A customer is any individual who receives a type of good or service from some other person or group of people. Customers are defined as people who buy, especially those who buy regularly and continuously. A customer is someone who continuously and repeatedly comes to the same place to satisfy their desires by buying a product or getting a service and paying for that product or service [2]

Customer Relationship Management is an important strategy for every business sector organization. By using Customer Relationship Management, companies can find out more about the extent of CRM utilization and how to provide optimal service to customers [3].

Customer Relationship Management (CRM) is a concept that focuses on maintaining relationships between companies and customers to build long and profitable relationships with customers [4].

CRM is a new approach to managing corporate relationships with customers at a business level so that it can maximize communication and marketing through managing various different contacts. This approach makes it possible to retain customers and provide continuous added value to customers. CRM combines the policies, processes and strategies implemented by the company into one unit. The use of CRM is to interact with customers and also to track customer information. CRM is a new approach to managing relationships between corporations and business customers. With this relationship, it is hoped that there will be communication and marketing through managing various different contacts. This approach is taken to increase customer loyalty to the company and also add continuous value. Currently, CRM implementations almost always use information technology to attract profitable new customers so that they become attached to the company[5].

TOPSIS is a multi-criteria decision support method that was first introduced by Yoon and Hwang (Rahim, et al., 2018). TOPSIS (Technique For Others Reference by Similarity to Ideal Solution) uses the principle that the alternative chosen must have the shortest distance from the positive ideal solution and have the furthest distance from the negative ideal solution from the

geometric point. Using euclidean distance to determine the relative closeness between alternatives to the optimal solution [6].

In previous research conducted by Iin Mutmainah and Yunita in 2021 with the title Application of the TOPSIS Method in Selecting Expedition Services, in this research there were many factors that influenced the selection of expedition services, such as delivery time, prices offered and services provided. In the beginning, the company chose expedition service partners based solely on habit, but problems often occurred such as unsatisfactory service, less neat packaging of goods, quite high prices, etc. The impact is customer disappointment with the service provided. In this research, the TOPSIS method is applied as a problem solver in selecting expedition services. Using the TOPSIS method, you can determine the best expedition service partner by finding the distance value from the positive ideal solution and the negative ideal solution. With the application of this method, determining the selection of the best expedition service becomes objective [7].

In previous research conducted by Muhammad Alhafa Ardhy and Said Salim in 2022 with the title Selection of Coconut Fruit Suppliers using the AHP and TOPSIS Method at PT XYZ, in this research the quality and availability of raw materials played an important role in the production process. To overcome buyer problems and produce quality goods, supplier selection needs to be carried out further to ensure the quality and safety of production supplies. From the results of this research, it can be concluded that the AHP method is known to get the best supplier results with the highest value, namely the Head of Singaraja farmers, then using the TOPSIS method also gets the same results, namely the Singaraja coconut farmers in first place. In this way, both methods obtain similar decisions to determine the best coconut supplier [8].

Many other studies such as

2. Research methodology

Research methodology is a branch of science that explains or discusses procedures for carrying out research based on scientific facts or symptoms, which includes activities of formulating, analyzing and preparing reports. The research framework created in the research methodology has a goal, namely to get results that are in line with what is expected and to make it easy to solve problems and so that they do not deviate or leave the subject of discussion so that they are easier to understand. Therefore, a research framework is needed like Figure 1 below:

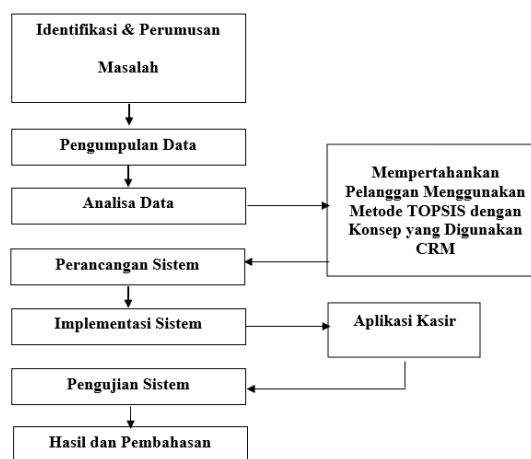


Figure 1. Research Framework

In general, the TOPSIS procedure follows these steps:

1. Create a normalized decision matrix.
2. Create a weighted normalized decision matrix.
3. Determine the positive ideal solution matrix and the negative ideal solution matrix.
4. Determine the distance between the value of each alternative and the positive ideal solution matrix and negative ideal solution matrix.
5. Determine the preference value for each alternative.

TOPSIS requires a work rating for each alternative A1 on each normalized Cj criterion which can be seen in equation (1).

$$r_{ij} = \frac{X_{ij}}{\sqrt{\sum_{i=1}^m X_{ij}^2}}$$

With $i=1,2,\dots,m$; and $j=1,2,\dots,n$; r_{ij} is the normalized matrix $[i][j]$ while x_{ij} is the decision matrix $[i][j]$. The positive ideal solution A^+ and negative ideal solution A^- can be determined based on the normalized weight rating (y_{ij}) which can be seen in equation (2).

$$Y_{ij} = w_i \times r_{ij}$$

With $i=1, 2, \dots, m$; and $j=1, 2, \dots, n$

$A^+ = (y_{1+}, y_{2+}, \dots, y_{n+})$;

$A^- = (y_{1-}, y_{2-}, \dots, y_{n-})$;

Where y_{ij} is the weighted normalized matrix $[i][j]$ and w_i is the weight vector $[i]$. In order to calculate the value of the ideal solution, you must first determine whether it is a benefit or a cost. Where if j is the profit attribute then y_{j+} is $\max y_{ij}$ and y_{j-} is $\min y_{ij}$, conversely if j is the cost attribute then y_{j+} is $\min y_{ij}$ and y_{j-} is $\max y_{ij}$.

The distance between alternative A_i and the positive ideal solution can be seen in equation (3).

$$D_i^+ = \sqrt{\sum_i^m (y_i^+ - y_{ij})^2} \quad i = 1, 2, \dots, m$$

Where D_i^+ is the distance between alternative A_i and the positive ideal solution, y_i^+ is the positive ideal solution [i] and y_{ij} is the weighted normalization matrix [i][j]. The formula for the distance between alternative A_i and the negative ideal solution can be seen in equation (4).

$$D_i^- = \sqrt{\sum_i^m (y_{ij}^- - y_i^-)^2} \quad i = 1, 2, \dots, m$$

Where D_i^- is the alternative distance A_i to the negative ideal solution, y_i^- is the positive ideal solution[i] and y_{ij} is the weighted normalization matrix [i][j]. The preference value for each alternative (V_i) can be seen in equation (5).

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

Where V_i is the closeness of each alternative to the ideal solution, D_i^+ is the distance between alternative A_i and the positive ideal solution and D_i^- is the distance between alternative A_i and the negative ideal solution. A greater V_i value indicates that the A_i alternative is preferred.

3. Results and Discussion

This research was conducted at the Metacom Store, in front of the Midwife Ani Clinic, Jl. Dr. Moh. Hatta, Cupak Tengah, District. Pauh, Padang City, West Sumatra 25162. In this case the author made direct observations at the place under study in order to obtain research data such as alternative sampling and the criteria to be tested in Table 1 below:

Table 1 Alternative Data and Criteria

No	Transaction Name	Transaction Type	Price	Request
1	Pen	Goods	7000	2
2	Paper	Goods	42000	1
3	Flashdisk	Goods	90000	1
4	Glue	Goods	10000	3
5	Mouse	Goods	35000	1
6	Keyboard	Goods	55000	1
7	Scans	Service	2000	15
8	Photocopy	Service	1000	20
9	Volume	Service	4000	4
10	Laptop Service	Service	70000	3

Assessment of the Importance Weight of Each Criteria includes :

1. Transaction Type Criteria

Table 2 Transaction Type Criteria

No	Transaction Type	Weight
1	Service	1
2	Goods	4

2. Price Criteria

Table 3 Price Criteria

Price	Weight	
>=1000	Very low	1
>=10000	Low	2
>=20000	Enough	3
>=50000	Tall	4
>80000	Very high	5

3. Request Criteria

Table 4 Demand Criteria

No	Request	Weight
1	1 to 5	1
2	6 to 10	2
3	10 to 15	3
4	16 onwards	4

Assessment Data

The value of each criterion is the result of inputting alternative shopping customer data in 1 month which has been converted based on the criteria weight values that have been determined through the calculation process. Assessment data can be seen in Table 5 below.

Table 5 Customer Transaction Data in 1 month

No	Transaction Name	Transaction Type	Price	Request
1	Pen	4	1	1
2	Paper	4	3	1
3	Flashdisk	4	5	1
4	Glue	4	1	1
5	Mouse	4	3	1
6	Keyboard	4	4	1
7	Scans	1	1	3
8	Photocopy	1	1	4
9	Volume	1	1	1
10	Laptop Service	1	4	1

To determine the weight of customer transactions, it is formed in Table 6 below:

Table 6 Criteria value weights for Request Transactions

Criteria	Weight	Mark
K1	Very High (ST)	1
K2	Height (T)	0.5
K3	Medium (S)	0.2

1. Decision Matrix Normalization

Based on Equation 1, alternative normalization values will be calculated based on the criteria.

$$|x1| = \sqrt{4^2 + 4^2 + 4^2 + 4^2 + 4^2 + 4^2 + 1^2 + 1^2 + 1^2 + 1^2 + 1^2} = \sqrt{100} = 10$$

$$y18 = (0.1) * (1) = 0.1 \quad y28 = (0.11) * (0.5) = 0.06$$

$$y19 = (0.1) * (1) = 0.1 \quad y29 = (0.11) * (0.5) = 0.06$$

$$y110 = (0.1) * (1) = 0.1 \quad y210 = (0.45) * (0.5) = 0.23$$

$$R_{11} = \frac{4}{10} = 0,4 \quad R_{16} = \frac{4}{10} = 0,4$$

$$R_{12} = \frac{4}{10} = 0,4 \quad R_{17} = \frac{1}{10} = 0,1$$

$$R_{13} = \frac{4}{10} = 0,4 \quad R_{18} = \frac{1}{10} = 0,1$$

$$R_{14} = \frac{4}{10} = 0,4 \quad R_{19} = \frac{1}{10} = 0,1$$

$$R_{15} = \frac{4}{10} = 0,4 \quad R_{110} = \frac{1}{10} = 0,1$$

$$|x2| = \sqrt{1^2 + 3^2 + 5^2 + 1^2 + 3^2 + 4^2 + 1^2 + 1^2 + 1^2 + 1^2 + 1^2} = \sqrt{80} = 8.94$$

$$y31 = (0.17) * (0.2) = 0.03$$

$$y32 = (0.17) * (0.2) = 0.03$$

$$y33 = (0.17) * (0.2) = 0.03$$

$$y34 = (0.17) * (0.2) = 0.03$$

$$y35 = (0.17) * (0.2) = 0.03$$

$$y36 = (0.17) * (0.2) = 0.03$$

$$y37 = (0.52) * (0.2) = 0.1$$

$$y38 = (0.7) * (0.2) = 0.14$$

$$y39 = (0.17) * (0.2) = 0.03$$

$$y310 = (0.17) * (0.2) = 0.03$$

So the results are as follows:

$$R_{21} = \frac{1}{8,94} = 0.11 \quad R_{26} = \frac{4}{8,94} = 0.45$$

$$R_{22} = \frac{3}{8,94} = 0.34 \quad R_{27} = \frac{1}{8,94} = 0.11$$

$$R_{23} = \frac{5}{8,94} = 0.56 \quad R_{28} = \frac{1}{8,94} = 0.11$$

$$R_{24} = \frac{1}{8,94} = 0.11 \quad R_{29} = \frac{1}{8,94} = 0.11$$

$$R_{25} = \frac{3}{8,94} = 0.34 \quad R_{210} = \frac{4}{8,94} = 0.45$$

$$|x3| = \sqrt{1^2 + 1^2 + 1^2 + 1^2 + 1^2 + 1^2 + 3^2 + 4^2 + 1^2 + 1^2 + 1^2} = \sqrt{33} = 5,74$$

$$R_{31} = \frac{1}{5,74} = 0.17 \quad R_{36} = \frac{1}{5,74} = 0.17$$

$$R_{32} = \frac{1}{5,74} = 0.17 \quad R_{37} = \frac{3}{5,74} = 0.52$$

$$R_{33} = \frac{1}{5,74} = 0.17 \quad R_{38} = \frac{4}{5,74} = 0,70$$

$$R_{34} = \frac{1}{5,74} = 0.17 \quad R_{39} = \frac{1}{5,74} = 0.17$$

$$R_{35} = \frac{1}{5,74} = 0.17 \quad R_{310} = \frac{1}{5,74} = 0.17$$

Table 7 So the Normalized Matrix (R) is as follows

No	Alternative (R)	W1	W2	W3
1	Pen	0.4	0.11	0.17
2	Paper	0.4	0.34	0.17
3	Flashdisk	0.4	0.56	0.17
4	Glue	0.4	0.11	0.17
5	Mouse	0.4	0.34	0.17
6	Keyboard	0.4	0.45	0.17
7	Scans	0.1	0.11	0.52
8	Photocopy	0.1	0.11	0.70
9	Volume	0.1	0.11	0.17
10	Laptop Service	0.1	0.45	0.17

2. Calculating a weighted normalized matrix (Y)

The following weight calculations are carried out:

$$y11 = (0.4) * (1) = 0.4 \quad y21 = (0.11) * (0.5) = 0.06$$

$$y12 = (0.4) * (1) = 0.4 \quad y22 = (0.34) * (0.5) = 0.17$$

$$y13 = (0.4) * (1) = 0.4 \quad y23 = (0.56) * (0.5) = 0.28$$

$$y14 = (0.4) * (1) = 0.4 \quad y24 = (0.11) * (0.5) = 0.06$$

$$y15 = (0.4) * (1) = 0.4 \quad y25 = (0.34) * (0.5) = 0.17$$

$$y16 = (0.4) * (1) = 0.4 \quad y26 = (0.45) * (0.5) = 0.23$$

$$y17 = (0.1) * (1) = 0.1 \quad y27 = (0.11) * (0.5) = 0.06$$

Table 8 Normalized Matrix

No	Alternative (R)	K1	K2	K3
1	Pen	0.4	0.06	0.03
2	Paper	0.4	0.17	0.03
3	Flashdisk	0.4	0.28	0.03
4	Glue	0.4	0.06	0.03
5	Mouse	0.4	0.17	0.03
6	Keyboard	0.4	0.23	0.03
7	Scans	0.1	0.06	0.1
8	Photocopy	0.1	0.06	0.14
9	Volume	0.1	0.06	0.03
10	Laptop Service	0.1	0.23	0.03

3. Calculating Ideal Solution (A+) and Ideal Solution (A-)

$$A^+ = (y1^+, y2^+, \dots, yn^+)$$

So the values for the ideal solution (A+) and ideal solution (A-) are as follows:

Table 9 Ideal Solution

No	Alternative (R)	K1	K2	K3
1	Pen	0.4	0.06	0.03
2	Paper	0.4	0.17	0.03
3	Flashdisk	0.4	0.28	0.03
4	Glue	0.4	0.06	0.03
5	Mouse	0.4	0.17	0.03
6	Keyboard	0.4	0.23	0.03
7	Scans	0.1	0.06	0.1
8	Photocopy	0.1	0.06	0.14
9	Volume	0.1	0.06	0.03
10	Laptop Service	0.1	0.23	0.03
	Max	0.4	0.28	0.14
	Min	0.1	0.06	0.03

4. Calculating the Distance to the Ideal Solution (D+) and the Distance to the Ideal Solution (D-)

$$D_1^+ = \sqrt{(0.4 - 0.4)^2 + (0.28 - 0.06)^2 + (0.14 - 0.03)^2} = \sqrt{0 + 0.05 + 0.01} = \sqrt{0.06} = 0.25$$

$$D_2^+ = \sqrt{(0.4 - 0.4)^2 + (0.28 - 0.17)^2 + (0.14 - 0.03)^2} = \sqrt{0 + 0.01 + 0.01} = \sqrt{0.02} = 0.15$$

$$D_3^+ = \sqrt{(0.4 - 0.4)^2 + (0.28 - 0.28)^2 + (0.14 - 0.03)^2} = \sqrt{0 + 0 + 0.01} = \sqrt{0.01} = 0.1$$

$$D_4^+ = \sqrt{(0.4 - 0.4)^2 + (0.28 - 0.06)^2 + (0.14 - 0.03)^2}$$

$$\begin{aligned}
 &= \sqrt{0} + 0.05 + 0.01 = \sqrt{0.06} = 0.25 \\
 D_5^+ &= \sqrt{(0.4 - 0.4)^2 + (0.28 - 0.17)^2 + (0.14 - 0.03)^2} \\
 &= \sqrt{0} + 0.01 + 0.01 = \sqrt{0.02} = 0.15 \\
 D_6^+ &= \sqrt{(0.4 - 0.4)^2 + (0.28 - 0.23)^2 + (0.14 - 0.03)^2} \\
 &= \sqrt{0} + 0.003 + 0.01 = \sqrt{0.013} = 0.12 \\
 D_7^+ &= \sqrt{(0.4 - 0.1)^2 + (0.28 - 0.06)^2 + (0.14 - 0.1)^2} \\
 &= \sqrt{0.09} + 0.05 + 0 = \sqrt{0.14} = 0.38 \\
 D_8^+ &= \sqrt{(0.4 - 0.1)^2 + (0.28 - 0.06)^2 + (0.14 - 0.14)^2} \\
 &= \sqrt{0.09} + 0.05 + 0 = \sqrt{0.14} = 0.37 \\
 D_9^+ &= \sqrt{(0.4 - 0.1)^2 + (0.28 - 0.06)^2 + (0.14 - 0.03)^2} \\
 &= \sqrt{0.09} + 0.05 + 0.01 = \sqrt{0.15} = 0.39 \\
 D_{10}^+ &= \sqrt{(0.4 - 0.1)^2 + (0.28 - 0.23)^2 + (0.14 - 0.03)^2} \\
 &= \sqrt{0.09} + 0.003 + 0.01 = \sqrt{0.103} = 0.32
 \end{aligned}$$

$$D_i^- = \sqrt{\sum_j^n = 1 (y_j^- - y_{ij})^2 \quad i = 1, 2, \dots, m}$$

$$\begin{aligned}
 D_1^- &= \sqrt{(0.1 - 0.4)^2 + (0.06 - 0.06)^2 + (0.03 - 0.03)^2} \\
 &= \sqrt{0.09} + 0 + 0 = \sqrt{0.09} = 0.3 \\
 D_2^- &= \sqrt{(0.1 - 0.4)^2 + (0.06 - 0.17)^2 + (0.03 - 0.03)^2} \\
 &= \sqrt{0.09} + 0.01 + 0 = \sqrt{0.1} = 0.32 \\
 D_3^- &= \sqrt{(0.1 - 0.4)^2 + (0.06 - 0.28)^2 + (0.03 - 0.03)^2} \\
 &= \sqrt{0.09} + 0.05 + 0 = \sqrt{0.14} = 0.37 \\
 D_4^- &= \sqrt{(0.1 - 0.4)^2 + (0.06 - 0.06)^2 + (0.03 - 0.03)^2} \\
 &= \sqrt{0.09} + 0 + 0 = \sqrt{0.09} = 0.3 \\
 D_5^- &= \sqrt{(0.1 - 0.4)^2 + (0.06 - 0.17)^2 + (0.03 - 0.03)^2} \\
 &= \sqrt{0.09} + 0.01 + 0 = \sqrt{0.1} = 0.32 \\
 D_6^- &= \sqrt{(0.1 - 0.4)^2 + (0.06 - 0.23)^2 + (0.03 - 0.03)^2} \\
 &= \sqrt{0.09} + 0.03 + 0 = \sqrt{0.12} = 0.34 \\
 D_7^- &= \sqrt{(0.1 - 0.1)^2 + (0.06 - 0.06)^2 + (0.1 - 0.03)^2} \\
 &= \sqrt{0} + 0 + 0.0049 = \sqrt{0.0049} = 0.07 \\
 D_8^- &= \sqrt{(0.1 - 0.1)^2 + (0.06 - 0.06)^2 + (0.14 - 0.03)^2} \\
 &= \sqrt{0} + 0 + 0.01 = \sqrt{0.01} = 0.1 \\
 D_9^- &= \sqrt{(0.1 - 0.1)^2 + (0.06 - 0.06)^2 + (0.03 - 0.03)^2} \\
 &= \sqrt{0} + 0 + 0 = \sqrt{0} = 0 \\
 D_{10}^- &= \sqrt{(0.1 - 0.1)^2 + (0.06 - 0.23)^2 + (0.03 - 0.03)^2} \\
 &= \sqrt{0} + 0.03 + 0 = \sqrt{0.03} = 0.17
 \end{aligned}$$

5. Calculating the Preference Value of each Alternative

$$\begin{aligned}
 v_1 &= \frac{0.25}{0.3 + 0.25} = 0.3 \\
 v_2 &= \frac{0.15}{0.32 + 0.15} = 0.32 \\
 v_3 &= \frac{0.1}{0.37 + 0.1} = 0.37 \\
 v_4 &= \frac{0.25}{0.3 + 0.25} = 0.3 \\
 v_5 &= \frac{0.15}{0.32 + 0.15} = 0.32 \\
 v_6 &= \frac{0.12}{0.34 + 0.12} = 0.34 \\
 v_7 &= \frac{0.07}{0.37 + 0.07} = 0.07 \\
 v_8 &= \frac{0.1}{0.1 + 0.37} = 0.1 \\
 v_9 &= \frac{0}{0 + 0.39} = 0 \\
 v_{10} &= \frac{0.17}{0.17 + 0.32} = 0.17
 \end{aligned}$$

6. Ranking Results

Table 10 Ranking

No	Trans name	Results	Ranking
1	Flashdisk	0.78	1
2	Keyboard	0.74	2
3	Paper	0.68	3
4	Mouse	0.68	4
5	Pen	0.55	5
6	Glue	0.55	6
7	Laptop Service	0.34	7
8	Photocopy	0.22	8
9	Scans	0.16	9
10	Volume	0	10

From the ranking results, the result that has the highest preference value is the Flashdisk alternative with a value of 0.78.

3.1 System Testing

This page is the first page seen by cashiers and admins when opening *the website*. Before entering the home page, you must *log in* first by entering the username and password that have been registered in the database.

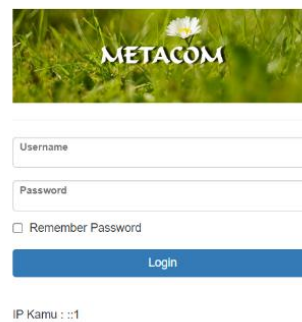


Figure 1 Login page display

The sales data page will display sales data on the Metacom Store. This sales data is obtained from the sales data input made by the cashier. The sales data page can be seen in the admin and cashier.

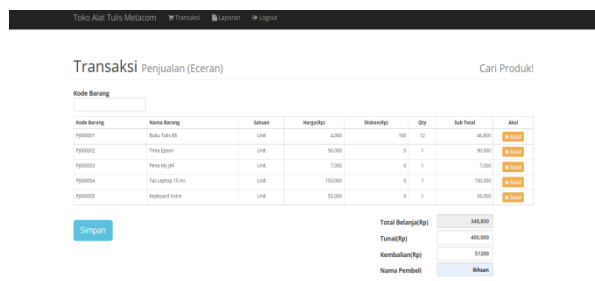


Figure 3 Sales Page Display

This page will display data on goods available at the Metacom Store. Here the admin can also add new item data, make changes to item data, and delete existing item data.

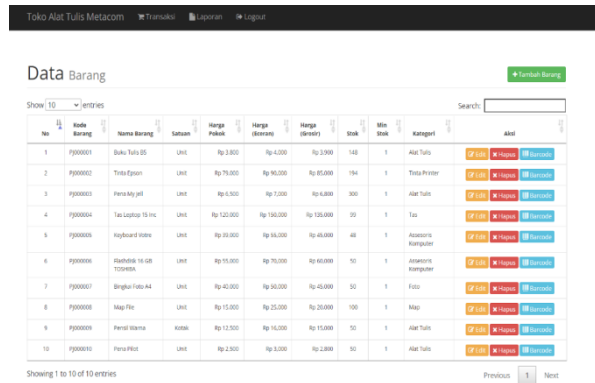


Figure 4 Display of the Stock Items Page

This page will display goods and sales report data. Admin can view goods and sales reports. Apart from that, admins can also print existing sales reports.

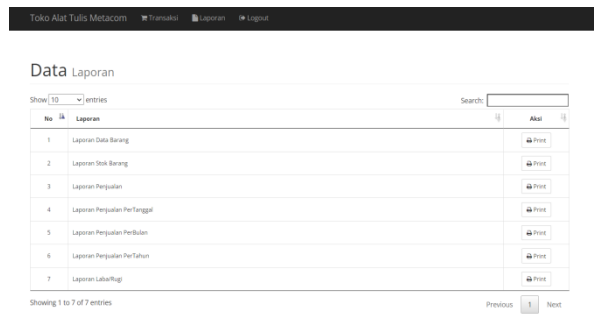


Figure 5 Report page display

On this page we can input the name of the criteria and the type of criteria and weight from the criteria to carry out the Topsis process.

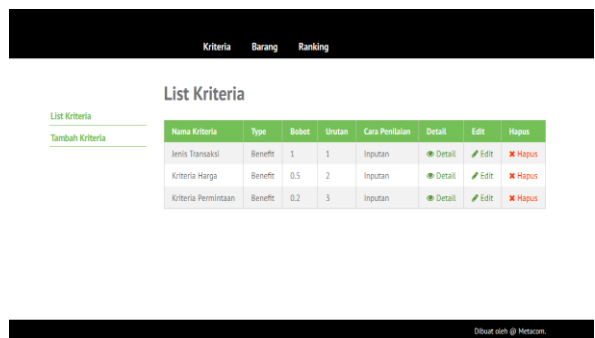


Figure 6 Display of TOPSIS Criteria List Page

On this page we can input the item number and item name and determine the weight of goods based on predetermined weight criteria.

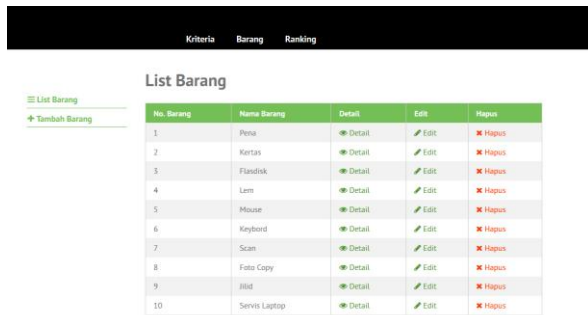


Figure 7 Display of Criteria List Page

The following is an example of the results of inputting a list of items which is referred to as a decision matrix (x):

Matriks Keputusan (X)

No. Barang	Kriteria		
	Jenis Transaksi	Kriteria Harga	Kriteria Permintaan
1	4	1	1
2	4	5	1
3	4	5	1
4	4	1	1
5	4	5	1
6	4	4	1
7	1	1	3
8	1	1	4
9	1	1	1
10	1	4	1

Figure 2 Example of Goods Decision Matrix Results

On this page, the admin can see the results of the Topsis calculations that have been carried out previously, so what is recommended below are types of goods that have high selling prices and low demand.

Step 7: Perangkingan (V)

Nama Barang	No. Barang	Ranking	Keputusan
Flasdisk	3	0.78	Direkomendasikan (tidak laris)
Keyboard	6	0.74	Direkomendasikan (tidak laris)
Kertas	2	0.68	Tidak Direkomendasikan (laris)
Mouse	5	0.68	Tidak Direkomendasikan (laris)
Pena	1	0.55	Tidak Direkomendasikan (laris)
Lem	4	0.55	Tidak Direkomendasikan (laris)
Servis Laptop	10	0.34	Tidak Direkomendasikan (laris)
Foto Copy	8	0.22	Tidak Direkomendasikan (laris)
Scan	7	0.16	Tidak Direkomendasikan (laris)
Jilid	9	0	Tidak Direkomendasikan (laris)

KETERANGAN :
 Direkomendasikan berdasarkan barang yang harga jualnya tinggi dan kurang laku jati diberikan diskon.
 Tidak Direkomendasikan berdasarkan barang yang harga jualnya rendah dan laku.

Figure 9 TOPSIS Ranking Results

4. Conclusion

Using the TOPSIS method in the Customer Relationship Management (CRM) system, 10 data tables were obtained where calculations were carried out to obtain the recommended results of 2 out of 10, so that Metacom Store owners can find out which products have high prices and are not selling well so that product marketing can be improved. This means that if more than 1 product is purchased, a discount will be given at a price determined by the shop owner in order to maintain customers in the shop. Metacom Stores can build relationships with customer-buyers so that regular customers are formed who always shop at Metacom Stores. This of course increases sales while keeping customers always shopping at Metacom Stores.

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