International Journal of Information System & Technology
Vol. 3, No. 1, (2019), pp.86-96

Method of TOPSIS in Recipients of Home Improvement Assistance in South Siantar District at Pematangsiantar Tarukim Office

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Abstract

The construction of uninhabitable houses is a government program especially from the Social Service to provide housing development assistance for the poor. However, in its realization, funding assistance from the government is often still lacking and even not on target. Therefore this study aims to build a decision support system that has the ability to analyze in determining the community that is eligible to receive housing repairs. The SPK method used in this study is the TOPSIS method. This method uses the principle that the chosen alternative must have the shortest 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 proximity of an alternative to the optimal solution. Research data obtained from the Department of public housing and residential areas pematangsiantar city using interviews, observation and literature study methods needed to help solve problems. This study uses 10 alternatives and 7 criteria. After calculating the analysis, families who are entitled to help with house repairs are alternative 7 on behalf of the Piatur Siringgo-Ringgo.

Keywords: *DSS, TOPSIS, Assistance, Home Improvement, South Siantar*

1. Introduction

The house as one of the basic human needs becomes a need that must be considered because it involves the welfare of society. The need for livable homes is increasing, but not in line with the increasing standard of living of economically weak people who require to live in uninhabitable homes. Funding for Rutilahu (Unfable Home) is a government program in the form of financial assistance to repair uninhabitable homes [1]. However, there are often target errors because the tarukim service still uses manual methods. This Rutilahu fund assistance must be able to target the poor people who meet the criteria as a condition for the recipient of the Rutilahu fund assistance, so that the poor population who can receive the Rutilahu fund assistance can receive the assistance. In its implementation, disadvantaged people who are entitled to receive unliveable housing assistance are determined by the BKM (Community Self-Reliance Agency).

To determine whether or not feasible, residents must meet predetermined criteria, namely the condition of the house (building) which includes the condition of the area of the room, the condition of the type of floor, the condition of the type of roof, the condition of the type of wall, the condition of the source of lighting (electricity), the condition of the final disposal (WC), and the condition of drinking water sources. However, the determination party, in this case, is the BKM still experiencing difficulties such as the processing of the data requires accuracy, so as to make possible duplication of data also the occurrence of errors in determining the population that must be prioritized, so we need a decision support system that can help in determining who has the right to take precedence in obtaining financial assistance. Houses are not livable. There are many previous studies that use decision support systems to determine something [2]–[8].

ISSN : 2580-7250 IJISTECH
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Therefore, to determine the recipient of the rutilahu grant funds the author uses a decision support system with the TOPSIS method.

2. Research Methodology

2.1. Steps to the TOPSIS Method

a. Building a Normalized decision matrix
   r_{ij} element results from the normalization of the decision matrix R with the Euclidean method length of a vector.

$$r_{ij} = \frac{x_{ij}}{\sqrt{\sum_{i=1}^{m} x_{ij}^2}} \quad (1)$$

   Where :
   r_{ij} = the result of normalization of the decision matrix R
   i = 1,2,3,...,m;
   j = 1,2,3,...,n;

b. Building weighted normalized decision matrix dengan bobot W = (w1,w2,....,wn), then normalizing the weight of the matrix V is :

$$V = \begin{bmatrix} w_{11}r_{11} & \cdots & w_{1n}r_{1n} \\ \vdots & \ddots & \vdots \\ w_{m1}r_{m1} & \cdots & w_{nm}r_{nm} \end{bmatrix} \quad (2)$$

c. Determine the positive ideal solution and the negative ideal solution The positive ideal solution denotes A + and the negative ideal solution denoted as A as follows:
   Menentukan solusi ideal (+) and (-)

$$A^+ = \{(\max v_{ij})(\min v_{ij} \mid j \in J'),\ \iota = 1,2,3,...m\} = \{v_1^+, v_2^+, \ldots v_m^+\}$$
$$A^- = \{(\max V_{ij})(\min V_{ij} \mid j \in J'),\ i = 1,2,3,....m\} = \{V_1^-, V_2^-, \ldots V_m^-\} \quad (3)$$

   Where :
   V_{ij} = matrix element V line to –*i* and column to *j*
   J = { j = 1,2,3,...,n and j associated with *benefit criteria}*
   J = { j = 1,2,3,....,n and j associated with *cost criteria}*

d. Calculate separation
   This separation measure is a measurement of the distance from an alternative to a potential ideal solution and a negative ideal solution. The mathematical calculation is as follows:

$$S_i^+ = \sqrt{\sum_{j=1}^{n}(V_{ij} - V_j^+)^2} \text{ with } i = 1,2,3,...,m \quad (4)$$

   Where :
   J = {1,2,3,...,n and j is a *benefit criteria}*
   J' = {j= 1,2,3,....,n andj is a *cost criteria}*
   Separation measure for negative ideal solutions

$$S_i^- = \sqrt{\sum_{j=1}^{n}(V_{ij} - V_j^-)^2}, \text{ with } i = 1,2,3,...,n \quad (5)$$

   Where :
   J = {j = 1,2,3,....,n and j is a *benefit criteria}*
   J' = { j= 1,2,3,...,n and j is a *cost criteria*}

e. Calculates proximity relative to an ideal solution
   The relative closeness of the alternative A + with the ideal solution A 'is presented.

f. Alternate ranking
   Alternatives can be ranked by Ci * order. Therefore, the best alternative is the shortest one to the ideal solution and the farthest distance to the negative ideal solution.

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2.2. Method of collecting data

In general, the methods used in collecting data to solve problems in completing research are interviews, observation, and study of literature.

a. Interview
   At this stage, the authors conducted interviews in the field of information processing to obtain the data needed in the best decision to prioritize families who need to get help repairing homes in the Department of Public Housing and Settlement Areas Pematangsiantar.
b. Observation
   The author makes direct observations on the processing of information on the Administration of Home Improvement Assistance to obtain the required data.
c. Study ofi Literature
   The author collects relevant references to the problems found. This reference can be found in books, journals, proceedings, thesis, and articles on the internet.

3. Results and Discussion

3.1. Determine Criteria and Alternative Data

Before entering the calculation phase using the TOPSIS algorithm, the writer first prepares the data by determining the criteria and alternatives that will be used as a reference in making decisions and gives weight to each criterion. Based on data obtained from the results of interviews and field observations obtained criteria data as shown in the following table.

Table 1. Weighting Criteria and Value Data

ID	Sub Criteria	Information	Criteria Weight
C1	Foundation	There is	1
		There is no	2
C2	Column and Beam	Damaged lightly	1
		Medium damaged	2
		Severely damaged	3
C3	Roof Conditions	Damaged lightly	1
		Medium damaged	2
		Severely damaged	3
C4	Wall Conditions	Damaged lightly	1
		Medium damaged	2
		Severely damaged	3
C5	Income	> 2,5 million	1
		1,5 - 2,5 million	2
		0 - 1,5 million	3

After determining the criteria, sub-criteria, weight criteria and value of sub-criteria. Then the authors do the calculations to determine who will get home improvement using the TOPSIS method. Before doing the calculations with the two methods, the authors determine the alternative to be selected and as a later alternative of this Decision Support System, the authors take 10 surnames as samples to be rated according to criteria owned using the TOPSIS method, the following are 10 families.

Table 2. Alternative Data

No	Name	Alternative
1	Polman Tampubolon	A1
2	Manuntun Silalahi	A2

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No	Name	Alternative
3	Nursiti Purba	A3
4	Julfan Efendi Siregar	A4
5	Zulfikar Siregar	A5
6	Maimunah Daulay	A6
7	Piatur Siringgi-Ringgo	A7
8	Darmansyah Tarigan	A8
9	Andiel Situmorang	A9
10	Saut Siahaan	A10

After the alternative data is known, then an assessment is made for each alternative in accordance with the criteria of the initial data as in the following table.

Table 3. Preliminary Data

No	Name	Alternative	C1	C2	C3	C4	C5
1	Polman Tampubolon	**A1**	1	2	2	2	3
2	Manuntun Silalahi	**A2**	1	3	3	3	2
3	Nursiti Purba	**A3**	2	3	3	3	3
4	Julfan Efendi Siregar	**A4**	2	1	3	2	2
5	Zulfikar Siregar	**A5**	2	1	1	3	3
6	Maimunah Daulay	**A6**	1	1	1	1	3
7	Piatur Siringgi-Ringgo	**A7**	2	3	3	3	3
8	Darmansyah Tarigan	**A8**	2	2	3	3	3
9	Andiel Situmorang	**A9**	1	1	2	2	3
10	Saut Siahaan	**A10**	1	2	3	3	3

3.2. Calculations Using TOPSIS

After the initial data values are obtained, the next step is to do the calculations from table 2 using the TOPSIS method. Here are the steps to determine who is more entitled to get home improvement assistance using the TOPSIS method.

a. Determine a normalized decision matrix (R)

Before making a normalized decision matrix (R), the authors determine the matrix or the value of X first follows the matrix or value of X to determine the normalized matrix (R).

$$X = \begin{bmatrix} 1 & 2 & 2 & 2 & 3 \\ 1 & 3 & 3 & 3 & 2 \\ 2 & 3 & 3 & 3 & 3 \\ 2 & 1 & 3 & 2 & 2 \\ 2 & 1 & 1 & 3 & 3 \\ 1 & 1 & 1 & 1 & 3 \\ 2 & 3 & 3 & 3 & 3 \\ 2 & 2 & 3 & 3 & 3 \\ 1 & 1 & 2 & 2 & 3 \\ 1 & 2 & 3 & 3 & 3 \end{bmatrix}$$

Before determining the normalized matrix, first look for the divisor result of the rank root value for each criterion (x = √C ^ 2). The following is a search formula for finding the roots of the results of the rank value of each criterion. (x=√C^2):

$$X_1 = \sqrt{((1^2) + (1^2) + (2^2) + (2^2) + (2^2) + (1^2) + (2^2) + (2^2) + (1^2) + (1^2))}$$

$$X_1 = \sqrt{(1 + 1 + 4 + 4 + 4 + 1 + 4 + 4 + 1 + 1)}$$

$$X_1 = \sqrt{25}$$

$$X_1 = 5$$

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Table 4. Divider Data for Each Criteria

	X1	X2	X3	X4	X5
Divider	5	6,557438524	8	8,185352772	8,94427191

After the results of the divisor value are found, the writer looks for a normalized matrix value with the initial data formula divided by the divisor value:
R = 1/5
R = 0,2
ere are the results of the overall normalization value:

Table 5. Normalization Value

Alternative	C1	C2	C3	C4	C5
A1	0,2	0,304997141	0,25	0,244338889	0,335410197
A2	0,2	0,457495711	0,375	0,366508333	0,223606798
A3	0,4	0,457495711	0,375	0,366508333	0,335410197
A4	0,4	0,15249857	0,375	0,244338889	0,223606798
A5	0,4	0,15249857	0,125	0,366508333	0,335410197
A6	0,2	0,15249857	0,125	0,122169444	0,335410197
A7	0,4	0,457495711	0,375	0,366508333	0,335410197
A8	0,4	0,304997141	0,375	0,366508333	0,335410197
A9	0,2	0,15249857	0,25	0,244338889	0,335410197
A10	0,2	0,304997141	0,375	0,366508333	0,335410197

Here is a normalization decision matrix:

$$R = \begin{pmatrix} 0,2 & 0,304997141 & 0,,25 & 0,244338889 & 0,335410197 \\ 0,2 & 0,457495711 & 0,375 & 0,366508333 & 0,223606798 \\ 0,4 & 0,457495711 & 0,375 & 0,366508333 & 0,335410197 \\ 0,4 & 0,15249857 & 0,375 & 0,244338889 & 0,223606798 \\ 0,4 & 0,15249857 & 0,375 & 0,366508333 & 0,335410197 \\ 0,2 & 0,15249857 & 0,375 & 0,122169444 & 0,335410197 \\ 0,4 & 0,457495711 & 0,375 & 0,366508333 & 0,335410197 \\ 0,4 & 0,304997141 & 0,375 & 0,366508333 & 0,335410197 \\ 0,2 & 0,15249857 & 0,25 & 0,244338889 & 0,335410197 \\ 0,2 & 0,304997141 & 0,375 & 0,366508333 & 0,335410197 \end{pmatrix}$$

After doing the matrix or the value of X, the authors use the following equation to determine the normalized decision matrix (R).

b. Determine the Weighted Normalized Matrix (Y)

After determining the normalized matrix (R) value, the next step in the TOPSIS method is to determine the weighted normalized (Y) weight. Before getting a weighted normalized matrix first look for weights W_{ij}.

W_{ij} = w/10
W_1 = 2/10
W_1 = 0, 2

Table 6. Weighted Normalized Matrix

Criteria	C1	C2	C3	C4	C5
Weight	2	1	2	3	2
	0,2	0,1	0,2	0,3	0,2

$Y_{ij} = W_{ij} * R_{ij}$

Using the above equation, the following is a calculation to find the weighted normalized decision matrix (Y).

$Y_{11} = W_1 * R_{11}$
$Y_{11} = 0,2 * 2$
$Y_{11} = 4$

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From the above calculation we get the results of the calculation of the weighted normalized matrix (Y) is as follows:

$$Y = \begin{bmatrix} 04 & 0,304997141 & 0,5 & 0,733016666 & 0,670820393 \\ 0,4 & 0,475495711 & 0,75 & 1,099524999 & 0,447213595 \\ 0,8 & 0,475495711 & 0,75 & 1,099524999 & 0,670820393 \\ 0,8 & 0,15249857 & 0,75 & 0,733016666 & 0,447213595 \\ 0,8 & 0,15249857 & 0,25 & 1,099524999 & 0,670820393 \\ 0,4 & 0,15249857 & 0,25 & 0,366508333 & 0,670820393 \\ 0,8 & 0,457495711 & 0,75 & 1,099524999 & 0,670820393 \\ 0,8 & 0,304997141 & 0,75 & 1,099524999 & 0,670820393 \\ 0,4 & 0,15249857 & 0,5 & 0,733016666 & 0,670820393 \\ 0,4 & 0,304997141 & 0,75 & 1,099524999 & 0,670820393 \end{bmatrix}$$

c. Determine a positive ideal solution matrix (A^+) and negative ideal solution matrix (A^-).

Positive ideal solution (A^+)

$A^+ = (y_1^+, y_2^+, y_3^+, ...,y_n^+)$

$Y_1^+ = \max \{0,4; 0,4; 0,8; 0,8; 0,8; 0,4; 0,8; 0,8; 0,4; 0,4\} = 0,8$

$Y_2^+ = \max \{0,304; 0,458; 0,458; 0,152; 0,152; 0,152; 0,458; 0,304; 0,152; 0,304\} = 0,458$

$Y_3^+ = \max \{0,5; 0,75; 0,75; 0,75; 0,25; 0,25; 0,75; 0,75; 0,5; 0,75\} = 0,75$

$Y_4^+ = \max \{0,733; 1,099; 1,099; 0,733; 1,099; 0,366; 1,099; 1,099; 0,733; 1,099\} = 1,099$

$Y_5^+ = \max \{0,670; 0,448; 0,670; 0,447; 0,670; 0,670; 0,670; 0,670; 0,670; 0,670\} = 0,670$

$A^+ = \{0,8; 0,458; 0,75; 1,099; 0,670\}$

Negative ideal solution (A^-)

$A^- = (y_1^-, y_2^-, y_3^-, ...,y_n^-)$

$Y_1^- = \min \{0,4; 0,4; 0,8; 0,8; 0,8; 0,4; 0,8; 0,8; 0,4; 0,4\} = 0,4$

$Y_2^- = \min \{0,304; 0,457; 0,457; 0,152; 0,152; 0,152; 0,457; 0,304; 0,152; 0,304\} = 0,152$

$Y_3^- = \min \{0,5; 0,75; 0,75; 0,75; 0,25; 0,25; 0,75; 0,75; 0,5; 0,75\} = 0,75$

$Y_4^- = \min \{0,733; 1,099; 1,099; 0,733; 1,099; 0,366; 1,099; 1,099; 0,733; 1,099\} = 1,099$

$Y_5^- = \min \{0,670; 0,448; 0,670; 0,447; 0,670; 0,670; 0,670; 0,670; 0,670; 0,670\} = 0,447$

$A^- = \{0,4; 0,152; 0,25; 0,366; 0,447\}$

d. Determine alternatives to the ideal solution

Determining the ideal solution distance can be calculated using the following formula:

Calculate Alternative Distance From Positive Ideal Solution (D^+)

$$D_1^+ = \sqrt{\begin{matrix}(0,4-0,8)^2 + (0,305-0,458)^2 + (0,5-0,75)^2 \\ +(0,733-1,099)^2 + (0,670-0,670)^2 \\ = 0,617\end{matrix}}$$

$$D_2^+ = \sqrt{\begin{matrix}(0,4-0,8)^2 + (0,458-0,458)^2 + (0,75-0,75)^2 \\ +(1,099-1,099)^2 + (0,448-0,670)^2 \\ = 0,459\end{matrix}}$$

$$D_3^+ = \sqrt{\begin{matrix}(0,8-0,8)^2 + (0,458-0,458)^2 + (0,75-0,75)^2 \\ +(1,099-1,099)^2 + (0,670-0,670)^2 + \\ = 0\end{matrix}}$$

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$$D_4^+ = \sqrt{\begin{matrix}(0{,}8-0{,}8)^2+(0{,}152-0{,}458)^2+(0{,}75-0{,}75)^2\\+(0{,}733-1{,}099)^2+(0{,}447-0{,}670)^2\\=0{,}527\end{matrix}}$$

$$D_5^+ = \sqrt{\begin{matrix}(0{,}8-0{,}8)^2+(0{,}152-0{,}458)^2+(0{,}25-0{,}75)^2\\+(1{,}099-1{,}099)^2+(0{,}670-0{,}670)^2\\=0{,}585\end{matrix}}$$

$$D_6^+ = \sqrt{\begin{matrix}(0{,}4-0{,}8)^2+(0{,}152-0{,}458)^2+(0{,}25-0{,}75)^2\\+(0{,}366-1{,}099)^2+(0{,}670-0{,}670)^2\\=1{,}019\end{matrix}}$$

$$D_7^+ = \sqrt{\begin{matrix}(0{,}8-0{,}8)^2+(0{,}457-0{,}457)^2+(0{,}75-0{,}75)^2\\+(1{,}099-1{,}099)^2+(0{,}670-0{,}670)^2\\=0{,}152\end{matrix}}$$

$$D_8^+ = \sqrt{\begin{matrix}(0{,}8-0{,}8)^2+(0{,}304-0{,}458)^2+(0{,}75-0{,}75)^2\\+(1{,}099-1{,}099)^2+(0{,}670-0{,}670)^2\\=0{,}152\end{matrix}}$$

$$D_9^+ = \sqrt{\begin{matrix}(0{,}4-0{,}8)^2+(0{,}152-0{,}458)^2+(0{,}5-0{,}75)^2\\+(0{,}733-1{,}099)^2+(0{,}670-0{,}670)^2\\=0{,}670\end{matrix}}$$

$$D_{10}^+ = \sqrt{\begin{matrix}(0{,}4-0{,}8)^2+(0{,}304-0{,}458)^2+(0{,}75-0{,}75)^2\\+(1{,}099-1{,}099)^2+(0{,}670-0{,}670)^2\\=0{,}429\end{matrix}}$$

Calculating Alternative Distance From Negative Ideal Solutions

$$D_1^- = \sqrt{\begin{matrix}(0{,}4-0{,}4)^2+(0{,}304-0{,}152)^2+(0{,}5-0{,}25)^2\\+(0{,}733-0{,}367)^2+(0{,}670-0{,}447)^2\\=0{,}519\end{matrix}}$$

$$D_2^- = \sqrt{\begin{matrix}(0{,}4-0{,}4)^2+(0{,}458-0{,}152)^2+(0{,}75-0{,}25)^2\\+(1{,}099-0{,}367)^2+(0{,}448-0{,}448)^2\\=0{,}938\end{matrix}}$$

$$D_3^- = \sqrt{\begin{matrix}(08-0{,}4)^2+(0{,}458-0{,}152)^2+(0{,}75-0{,}25)^2\\+(1{,}099-0{,}366)^2+(0{,}670-0{,}447)^2\\=1{,}044\end{matrix}}$$

$$D_4^- = \sqrt{\begin{matrix}(0{,}8-0{,}4)^2+(0{,}152-0{,}152)^2+(0{,}75-0{,}75)^2\\+(0{,}733-0{,}3366)^2+(0{,}447-0{,}447)^2\\=0{,}737\end{matrix}}$$

$$D_5^- = \sqrt{\begin{matrix}(0{,}8-0{,}4)^2+(0{,}125-0{,}125)^2+(0{,}25-0{,}25)^2\\+(1{,}099-0{,}366)^2+(0{,}670-0{,}447)^2\\=0{,}864\end{matrix}}$$

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$$D_6^- = \sqrt{\begin{matrix}(0{,}8-0{,}4)^2+(0{,}152-0{,}152)^2+(0{,}25-0{,}25)^2\\+(0{,}366-0{,}366)^2+(0{,}670-0{,}447)^2\\=0{,}223\end{matrix}}$$

$$D_7^- = \sqrt{\begin{matrix}(0{,}8-0{,}4)^2+(0{,}457-0{,}152)^2+(0{,}75-0{,}25)^2\\+(1{,}099-0{,}366)^2+(0{,}670-0{,}447)^2\\=1{,}044\end{matrix}}$$

$$D_8^- = \sqrt{\begin{matrix}(0{,}8-0{,}4)^2+(0{,}304-0{,}152)^2+(0{,}75-0{,}25)^2\\+(1{,}099-0{,}366)^2+(0{,}670-0{,}447)^2\\=1{,}010\end{matrix}}$$

$$D_9^- = \sqrt{\begin{matrix}(0{,}4-0{,}4)^2+(0{,}152-0{,}152)^2+(0{,}5-0{,}25)^2\\+(0{,}733-0{,}366)^2+(0{,}670-0{,}447)^2\\=0{,}496\end{matrix}}$$

$$D_{10}^- = \sqrt{\begin{matrix}(0{,}4-0{,}4)^2+(0{,}304-0{,}152)^2+(0{,}75-0{,}25)^2\\+(1{,}099-0{,}366)^2+(0{,}670-0{,}447)^2\\=0{,}927\end{matrix}}$$

e. Calculating Alternative Preference Values

$$V = \frac{D_i^-}{D_i^- + D_i^+}$$

$$V_1 = \frac{0{,}520}{0{,}520+0{,}617} = \frac{0{,}520}{1{,}137} = 0{,}457$$

$$V_2 = \frac{0{,}938}{0{,}938-0{,}458} = 0{,}671$$

$$V_3 = \frac{1{,}044}{1{,}044-0} = 1$$

$$V_4 = \frac{0{,}737}{0{,}737-0{,}527} = 0{,}583$$

$$V_5 = \frac{0{,}864}{0{,}864-0{,}586} = 0{,}596$$

$$V_6 = \frac{0{,}223}{0{,}223-1{,}019} = 0{,}179$$

$$V_7 = \frac{1{,}044}{1{,}044-0} = 1$$

$$V_8 = \frac{1{,}010}{1{,}010-0{,}152} = 0{,}868$$

$$V_9 = \frac{0{,}496}{0{,}496-0{,}670} = 0{,}425$$

$$V_{10} = \frac{0{,}927}{0{,}927-0{,}428} = 0{,}684$$

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f. From the above preference values obtained values V_7 is the highest value of 1 with the name of the Ringgo-Ringgo Piatu, then the ranking of residents who get you for rutilahu assistance is as follows:

Table 7. Ranking Results

No	Name	Alternative	Value	Rank
1	Piatur Siringgo-Ringgo	A7	**1**	1
2	Nursiti Purba	A3	**1**	2
3	Darmansyah Tarigan	A8	**0.8688**	3
4	Saut Siahaan	A10	**0.6842**	4
5	Manuntun Silalahi	A2	**0.6719**	5
6	Zulfikar Siregar	A5	**0.5961**	6
7	Julfan Efendi Siregar	A4	**0.5835**	7
8	Polman Tampubolon	A1	**0.4574**	8
9	Andiel Situmorang	A9	**0.4255**	9
10	Maimunah Daulay	A6	**0.1798**	10

3.3. Web Based Ranking Results

Manual calculation from the beginning to the ranking results as can be seen in table 7 is also the same as the web program that the author has made. The web program results from the ranking of table 7 can be seen in the following figure.

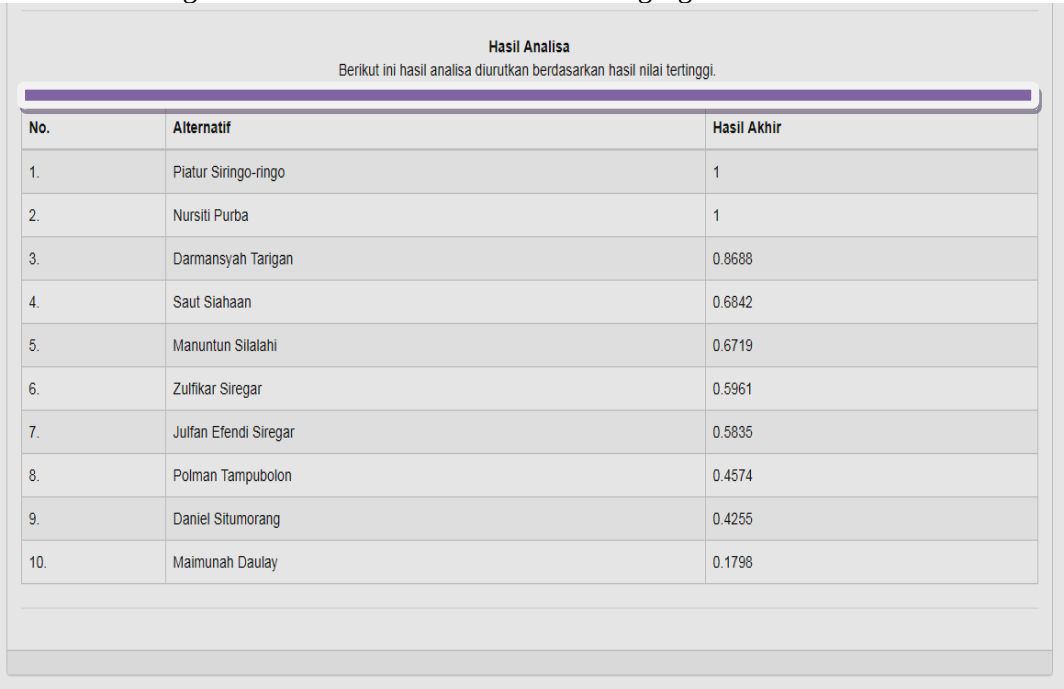

Figure 1. Ranking Results with Web Programming

Based on Figure 1 it can be seen that the results of the analysis of families entitled to receive home improvement assistance with the application of computerized web-based programming, together with manual calculations using formulas of TOPSIS methods are calculated with the help of Microsoft Excel.

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4. Conclusion

a. Determination of home beneficiary winners using the TOPSIS algorithm, both manual and computerized calculations based on web programming shows the same results as shown in Table 7 and Figure 1.
b. The final result of the TOPSIS method based on the preference values that have been outlined in the discussion, obtained the value of V7 is the highest value (Ranking 1). Then ranking people who get you for your routine assistance is the Piatur Siringgo-Ringgo.

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