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The Applications Of The Max-Min Soft Burge Matrix In Decision Making On The House Selection Model In The Lubuk Minturun Region

Aplikasi Matriks Lembut Kabur Max-Min Dalam Pengambilan Keputusan Pada Model Pemilihan Rumah Di Daerah Lubuk Minturun

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ABSTRAK
Kebutuhan rumah di Kota Padang masih sangat tinggi. Pada masa sekarang ini, perkembangan perumahan di Kota Padang sangat meningkat dari tahun ke tahun. Banyak perusahaan swasta menawarkan berbagai jenis perumahan untuk masyarakat di Kota Padang. Salah satu tujuan dari pembangunan perumahan ini adalah untuk memenuhi kebutuhan masyarakat sebagai tempat tinggal yang merupakan bagian dari kebutuhan dasar manusia. Dalam memenuhi kebutuhan akan perumahan ini dilakukan untuk meningkatkan kesejahteraan masyarakat serta mewujudkan tempat tinggal yang layak pada lingkungan perumahan yang sehat, aman, selaras, serasi dan teratur. Dengan semakin berkembangnya perumahan di Kota Padang, maka penulis menggunakan metode Matriks Lembut Kabur Max-Min dalam pengambilan keputusan pada pemilihan rumah, khususnya di daerah Lubuk Minturun. Penelitian ini bertujuan untuk memudahkan masyarakat dalam memilih rumah yang baik dengan menggunakan metode Lembut Kabur Max-Min. Penelitian tentang perumahan ini merupakan penelitian kuantitatif dengan menggunakan metode Matriks Lembut Kabur Max-Min. Penilaian pada penelitian ini dilakukan oleh pasangan suami istri, Bapak Risman dan Ibu Memi, mereka mendatangi sebuah agen pembelian rumah untuk membeli sebuah rumah. Rumah yang akan dipilih ada sebanyak 5 rumah yang berbeda lokasi. Dari penerapan metode Matriks Lembut Kabur Max-Min ini diperoleh hasil bahwa rumah yang dipilih oleh Bapak Risman dan Ibu Memi adalah rumah pertama dan ketiga.
Kata kunci: Metode FuzzySoftMatrices Max-Min

ABSTRACT
The need for housing in the city of Padang is still very high. At this time, housing developments in the city of Padang are increasing from year to year. Many private companies offer various types of housing for the people in Padang City. One of the goals of this housing development is to meet the needs of the community as a place to live which is part of basic human needs. In meeting the need for housing, this is done to improve the welfare of the community and to create a decent place to live in a housing environment that is healthy, safe, harmonious, harmonious and orderly. With the development of housing in the city of Padang, the authors use the Max-Min Soft Escape Matrix method in making decisions on house selection, especially in the Lubuk Minturun area. This research on housing is a quantitative study using the Max-Min . Soft Blurred Matrix method. The assessment in this study was carried out by a married couple, Mr. Risman and Mrs. Memi. They went to a house buying agent to buy a house. The houses to be selected were 5 houses in different locations. From the application of the Max-Min Soft Blur Matrix method, it is found that the house chosen by Mr. Risman and Mrs. Memi is the first house and third.
***Keywords**:* FuzzySoftMatrices Max-Min Method

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PRELIMINARY

Housing is a basic need for humans besides the need for clothing and boards. In addition, housing is a manifestation of a place to live which has an important role in carrying out human life. Therefore, housing development has an important role in the formation of urban spatial structures.

Housing is a group of houses equipped with facilities and infrastructure as well as public facilities both in urban and rural areas. From time to time the development of housing in the city of Padang, especially in the Lubuk Minturun area, continues to increase. This results in people often having doubts in choosing quality housing in terms of supporting factors. Therefore, the authors are interested in conducting research on the community in making decisions using the Max-Min Soft Blur Matrix method. The purpose of this research is to facilitate the community in making decisions. Because it is very important in making decisions for the community, the author raises the title Application of the Max-Min Soft Blur Matrix in Decision Making in the House Selection Model in the Lubuk Minturun area.

Soft Set and Fuzzy Set

(Molodtsov, 1999) first introduced the theory of soft sets as a mathematical concept. Soft set is one of the tools used to handle cases that contain uncertainty and ambiguity. Meanwhile, fuzzy sets were introduced by (Zadeh, 1965) as an extension of the notion of classical (crisp) sets. The classical set is a set with a membership weight of 1 (one) if it is included in the member of the set and 0 (zero) if it is not included in the member of the set. In applying soft set theory to solve decision-making problems, (Maji, P. K. Biswas, R. and Roy, 2002) use rough mathematics. According to (Maji, P. K. Biswas, R. and Roy, 2003), suppose $\boldsymbol{U}$ is a universal set, $\boldsymbol{E}$is a set of parameters, $\boldsymbol{A} \subseteq \boldsymbol{E}$and $\boldsymbol{\gamma_A(x)}$is the fuzzy set over $\boldsymbol{U}$for all $\boldsymbol{x} \in \boldsymbol{E}$.Then the fuzzy soft set $\boldsymbol{\Gamma_A}$ over $\boldsymbol{U}$is the set defined by the $\boldsymbol{\gamma_A}$function presented in the form of an ordered pair set

$$\boldsymbol{\Gamma_A} = \{(\boldsymbol{x}, \boldsymbol{\gamma_A}(\boldsymbol{x})) : \boldsymbol{x} \in \boldsymbol{E}, \boldsymbol{\gamma_A}(\boldsymbol{x}) \in \boldsymbol{F}(\boldsymbol{U})\},$$

where $\boldsymbol{F}(\boldsymbol{U})$is a collection of fuzzy sets on $\boldsymbol{U}$ and

$$\boldsymbol{\gamma_A}: \boldsymbol{E} \rightarrow \boldsymbol{F}(\boldsymbol{U}) \text{such that } \boldsymbol{\gamma_A}(\boldsymbol{x}) = \emptyset \text{if } \boldsymbol{x} \notin \boldsymbol{A}.$$

According to (Cagman, N. Enginoglu, S. dan Citak, 2011), soft fuzzy sets can be applied in some cases in everyday life for decision making. In addition, (Maji, P. K. Biswas, R. and Roy, 2001) also generalize the concept of a soft expert set to a fuzzy soft expert set, which will be more effective and useful in decision making. In the fuzzy soft set, (Majumdar, 2010) also introduce the generalized fuzzy soft set and some of its properties in decision making problems.

Soft Set Products

According to (Cagman, N. Enginoglu, 2010), defining the binary operation of the soft set depends on the approximate function of one variable. Furthermore, in defining the product of this soft set there are four types of products namely And-product, Or-product, And-Non-product and Or-Not-product.

Fuzzy Soft Matrices

Soft fuzzy matrix is a matrix that is represented by fuzzy soft set. (Cagman, N. and Enginoglu, 2012) explained that $\boldsymbol{\Gamma_A} \in \boldsymbol{F}(\boldsymbol{U})$. so that the form of the relation is blurred from $\boldsymbol{\Gamma_A}$ is defined by

$$\boldsymbol{R_A} = \{(\boldsymbol{\mu_{R_A}}(\boldsymbol{u}, \boldsymbol{x})/(\boldsymbol{u}, \boldsymbol{x}) : (\boldsymbol{u}, \boldsymbol{x}) \in \boldsymbol{U} \times \boldsymbol{E}\},$$

Where the membership function of $\boldsymbol{\mu_{R_A}}$ is written as

$$\boldsymbol{\mu_{R_A}} : \boldsymbol{U} \times \boldsymbol{E} \rightarrow [\boldsymbol{0}, \boldsymbol{1}].$$

If$\boldsymbol{U} = \{\boldsymbol{u_1}, \boldsymbol{u_2}, \dots, \boldsymbol{u_m}\}, \boldsymbol{E} = \{\boldsymbol{x_1}, \boldsymbol{x_2}, \dots, \boldsymbol{x_n}\}$ and $\boldsymbol{A} \subseteq \boldsymbol{E}$, then $\boldsymbol{R_A}$ can be presented in **Table 1** as follows:

R_A	x_1	x_2	$\dots$	x_n
u_1	$\mu_{R_A}(u_1, x_1)$	$\mu_{R_A}(u_1, x_2)$	$\dots$	$\mu_{R_A}(u_1, x_n)$
u_2	$\mu_{R_A}(u_2, x_1)$	$\mu_{R_A}(u_2, x_2)$	$\dots$	$\mu_{R_A}(u_2, x_n)$
$\dots$	$\dots$	$\dots$	$\dots$	$\dots$
u_m	$\mu_{R_A}(u_m, x_1)$	$\mu_{R_A}(u_m, x_2)$	$\dots$	$\mu_{R_A}(u_m, x_n)$

If $\boldsymbol{a_{ij}} = \boldsymbol{\mu_{R_A}}(\boldsymbol{u_i}, \boldsymbol{x_j})$, then we can define a matrix

$$[\boldsymbol{a_{ij}}]_{m\times n} = \begin{bmatrix} \boldsymbol{a_{11}} & \boldsymbol{a_{12}} \cdots & \boldsymbol{a_{1n}} \\ \boldsymbol{a_{21}} & \boldsymbol{a_{22}} \cdots & \boldsymbol{a_{2n}} \\ & & \vdots \\ \boldsymbol{a_{m1}} & \boldsymbol{a_{m2}} \cdots & \boldsymbol{a_{mn}} \end{bmatrix}$$

referred to as fuzzy soft matrix $m \times n$ from the soft fuzzy set $\boldsymbol{\Gamma_A}$ top $\boldsymbol{U}$.

The definition of fuzzy soft set expressed by (Cagman, N. and Enginoglu, 2012), that a soft set is fuzzy $\boldsymbol{\Gamma_A}$ is uniquely defined by the matrix $[\boldsymbol{a_{ij}}]_{m\times n}$. This means that a fuzzy soft set $\boldsymbol{\Gamma_A}$ is generally equal to itssoft matrix $[\boldsymbol{a_{ij}}]_{m\times n}$. Therefore, a fuzzy soft set can be identified by its fuzzy soft matrix and use these two concepts as interchangeable.

The set of all fuzzy soft matrices $m \times n$ top $\boldsymbol{U}$ is denoted by $FSM_{m\times n}$. For further writing, we will remove the subscript $m \times n$ from $[\boldsymbol{a_{ij}}]_{m\times n}$, use $[\boldsymbol{a_{ij}}]$ instead of $[\boldsymbol{a_{ij}}]_{m\times n}$. The notation $[\boldsymbol{a_{ij}}] \in FSM_{m\times n}$ means that $[\boldsymbol{a_{ij}}]$ is a matrix soft blur measuring $m \times n$ for $i = 1,2, \dots, m$ and $j = 1,2, \dots, n$.

Example 2.3. Le t$U = \{u_1, u_2, u_3, u_4, u_5\}$ is the universal set and $E = \{x_1, x_2, x_3, x_4\}$ is the parameter set. If $A = \{x_2, x_3, x_4\}$ and $\boldsymbol{\gamma_A}(\boldsymbol{x_2}) = \{0.3/u_2, 0.5/u_4\}$, $\boldsymbol{\gamma_A}(\boldsymbol{x_3}) = \emptyset$, $\boldsymbol{\gamma_A}(\boldsymbol{x_4}) = U$, then the relation form of $\boldsymbol{\Gamma_A}$ is written as

$R_A = \{0.5/(u_2, x_2), 0.8/(u_4, x_2), 1/(u_1, x_4), 1/(u_2, x_4), 1/(u_3, x_4), 1/(u_4, x_4), 1/(u_5, x_5)\}$.

Then, the soft matrix escapes from $[\boldsymbol{a_{ij}}]$ can be written as follows:

$$[\boldsymbol{a_{ij}}] = \begin{bmatrix} 0 & 0 & 0 & 0 \\ 0 & 0.3 & 0 & 1 \\ 0 & 0 & 0 & 1 \\ 0 & 0.5 & 0 & 1 \\ 0 & 0 & 0 & 1 \end{bmatrix}.$$

On the fuzzy soft matrix, the Max-Min decision making method can be used which is applied to problems that contain uncertainty (Cagman, N. Enginoglu, 2010a). In this study, the Max-Min Soft Blur Matrix method was used in the selection of houses by determining the parameters and their respective weights.

METHOD

This research on housing is a quantitative study using the Max-Min . Soft Blurred Matrix method. Five houses were assessed randomly in the Lubuk Minturun area, which parameters and their respective weights were then determined.

The steps for solving it are using the following algorithm:

1. Determine the factors of parameters considered in assessing each house,
2. Determine the fuzzy soft matrix of each parameter set,
3. Using *And-product* on a soft fuzzy matrix,
4. Determine the FSmMDM matrix,
5. Determine the house that has the highest weight value of all the houses assessed.

RESULT AND DISCUSSION

This study is limited to housing in the Lubuk Minturun area with five different locations. The housing data taken in this study were five houses located in the Lubuk Minturun area. The assessment was carried out by a husband and wife couple, Mr. Risman and Mrs. Memi, they went to a house buying agent to buy a house. There were 5 houses to choose from in different location. The five houses are denoted successively byr_1, r_2, r_3, r_4, r_5, which is then expressed as the set $R = \{r_1, r_2, r_3, r_4, r_5\}$which is the set of the Universe. Each of the selected houses has several factors to consider which are called the parameter set and are denoted by $E = \{z_1, z_2, z_3, z_4\}$.The following is an explanation of the parameters used, namely z_1 = strategic location, z_2 = cheap, z_3 = modern dan z_4 =large.

In selecting houses using the max-min fuzzy soft matrix method, we use algorithm as follows.

1) Determine the factors considered by each Mr. Risman and Memi's mother in assessing each house,
2) Determine the fuzzy soft matrix of each parameter set,
3) Using *And-product* on a soft fuzzy matrix,
4) Define the FSMmDM matrix,
5) Determine the value of r_1 which has the maximum value for $i = 1, 2, 3, 4, 5$.

In this study, Mr. Risman uses the parameter $X = \{z_2, z_3, z_4\}$, while Mrs. Memi uses the parameter $Y = \{z_1, z_3, z_4\}$,so the selection of houses based on each parameter using FSMmDM are:

The first step: Parameters Mr. Risman and Mrs. Memi, namely:

$$X = \{z_2, z_3, z_4\} \text{ dan } Y = \{z_1, z_3, z_4\}.$$

Step two: Define a soft fuzzy matrix.

Mr. Risman gave an assessment for each house as follows:

$$[x_{ij}] = \begin{bmatrix} 0 & 0,1 & 0 & 0,2 \\ 0 & 0,3 & 0,9 & 0,2 \\ 0 & 0,4 & 0,7 & 0,5 \\ 0 & 0,3 & 0 & 0 \\ 0 & 0 & 1 & 0,4 \end{bmatrix}$$

and

$$[y_{ik}] = \begin{bmatrix} 1 & 0 & 0,3 & 0,5 \\ 0,1 & 0 & 0 & 0,3 \\ 0,5 & 0 & 0,2 & 0,5 \\ 0 & 0 & 0,3 & 0,5 \\ 0 & 0 & 1 & 0 \end{bmatrix}$$

Rows in matrix $[x_{ij}]$ represent each house that will be bought by Mr. Risman and Mrs. Memi. From the matrix $[x_{ij}]$, it can be explained that Mr. Risman gave an assessment the parametersz_2 = cheap, z_3 = modern andz_4 = large. In the first row and first column of the $[x_{ij}]$ matrix, it can be stated that the first house is given a weighted value of 0 for the first parameter, namely a strategic location, in the second row and second column of the matrix $[x_{ij}]$, it can be stated that the second house is given a weighted value of 0,3 for the second parameter, namely cheap and so on, each entry of the matrix $[x_{ij}]$ and $[y_{ik}]$ can be expressed by similar way.

Third step: Using *And-product*

The*And-product*of the matrices $[x_{ij}]$ and $[y_{ik}]$ is

a) For $i = 1, j = 1$ and$k = 1$, we get $p = 1$, then we get
$c_{11} = min\{x_{11}, y_{11}\} = min\{0,1\} = 0$.

b) For $i = 1, j = 1$ and$k = 2$, we get $p = 2$,then we get
$c_{12} = min\{x_{11}, y_{12}\} = min\{0,0\} = 0$.

c) For $i = 1, j = 1$and $k = 3$, we get $p = 3$,then we get
$c_{13} = min\{x_{11}, y_{13}\} = min\{0, (0,3)\} = 0$.

d) For $i = 1, j = 1$and $k = 4$, we get $p = 4$, then we get
$c_{14} = min\{x_{11}, y_{14}\} = min\{0, (0,5)\} = 0$.

e) For $i = 1, j = 2$ and $k = 1$, we get $p = 5$, then we get
$c_{15} = min\{x_{12}, y_{11}\} = min\{(0,1),1\} = 0,1$.

f) For $i = 1, j = 2$ and $k = 2$, we get $p = 6$, then we get
$c_{16} = min\{x_{12}, y_{12}\} = min\{(0,1),0\} = 0$.

g) For $i = 1, j = 2$ and $k = 3$, we get $p = 7$, then we get

$c_{17} = min\{x_{12}, y_{13}\} = min\{(0,1), (0,3)\} = 0,1.$

h) For $i = 1, j = 2$ and $k = 4$, we get $p = 8$, then we get

$c_{18} = min\{x_{12}, y_{14}\} = min\{(0,1), (0,5)\} = 0,1.$

i) For $i = 1, j = 3$ and $k = 1$, we get $p = 9$, then we get

$c_{19} = min\{x_{13}, y_{11}\} = min\{0,1\} = 0.$

j) For $i = 1, j = 3$ and $k = 2$, we get $p = 10$, then we get

$c_{110} = min\{x_{13}, y_{12}\} = min\{0,0\} = 0.$

k) For $i = 1, j = 3$ and $k = 3$, we get $p = 11$, then we get

$c_{111} = min\{x_{13}, y_{13}\} = min\{0, (0,3)\} = 0.$

l) For $i = 1, j = 3$ and $k = 4$, we get $p = 12$, then we get

$c_{112} = min\{x_{13}, y_{14}\} = min\{0, (0,5)\} = 0.$

m) For $i = 1, j = 4$ and $k = 1$, we get $p = 13$, then we get

$c_{113} = min\{x_{14}, y_{11}\} = min\{(0,2), 1\} = 0,2.$

n) For $i = 1, j = 4$ and $k = 2$, we get $p = 14$, then we get

$c_{114} = min\{x_{14}, y_{12}\} = min\{(0,2), 0\} = 0.$

o) For $i = 1, j = 4$ and $k = 3$, we get $p = 15$, then we get

$c_{115} = min\{x_{14}, y_{13}\} = min\{(0,2), (0,3)\} = 0,2.$

p) For $i = 1, j = 4$ and $k = 4$, we get $p = 16$, then we get

$c_{116} = min\{x_{14}, y_{14}\} = min\{(0,2), (0,5)\} = 0,2.$

In a similar way it is done for $i = 2, 3, 4, 5$, as well as $j = 1, 2, 3, 4$ and $k = 1, 2, 3, 4$ to obtain the value of C_{2p} where $p = 1, 2, \dots, 16$. So that the obtained matrix soft blur as follows:

$$\begin{bmatrix} 0 & 0 & 0 & 0 & 0,1 & 0 & 0,1 & 0,1 & 0 & 0 & 0 & 0 & 0,2 & 0 & 0,2 & 0,2 \\ 0 & 0 & 0 & 0 & 0,1 & 0 & 0 & 0,3 & 0,1 & 0 & 0 & 0,3 & 0,1 & 0 & 0 & 0,2 \\ 0 & 0 & 0 & 0 & 0,4 & 0 & 0,2 & 0,4 & 0,5 & 0 & 0,2 & 0,5 & 0,5 & 0 & 0,2 & 0,5 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0,3 & 0,3 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0,4 & 0 \end{bmatrix}$$

Fourth step: Define the FSMmDm matrix.

The initial step must be determined first d_{i1} for all $i \in \{1, 2, 3, 4, 5\}$ for calculate $Mm([x_{ij}] \wedge [y_{ik}]) = [d_{i1}]$.

$I_1 = \{p : c_{ip} \neq 0, 0 < p \leq 4\} = 0$ for $k = 1$ and $n = 4$,

$I_2 = \{p : c_{ip} \neq 0, 4 < p \leq 8\} = \{5, 7, 8\}$ for $k = 2$ and $n = 4$,

$I_3 = \{p : c_{ip} \neq 0, 8 < p \leq 12\} = \{9, 11, 12\}$ for $k = 3$ and $n = 4$,

$I_4 = \{p : c_{ip} \neq 0, 12 < p \leq 16\} = \{13, 15, 16\}$ for $k = 4$ and $n = 4$,

(a) d_{11} for $k = 1, 2, 3, 4$ is

$t_{12} = min\{c_{15}, c_{17}, c_{18}\} = min\{(0{,}1), (0{,}1), (0{,}1)\} = 0{,}1$

$t_{13} = min\{c_{19}, c_{111}, c_{112}\} = min\{(0{,}0), (0{,}0), (0{,}0)\} = 0{,}0$

$t_{14} = min\{c_{113}, c_{115}, c_{116}\} = min\{(0{,}2), (0{,}2), (0{,}2)\} = 0{,}2$

So that it is obtained

$$d_{11} = max_k\{t_{1k}\} = max\{t_{11}, t_{12}, t_{13}, t_{14}\} = max\{(0{,}0), (0{,}1), (0{,}0), (0{,}2)\} = 0{,}2$$

(b) d_{21} for $k = 1, 2, 3, 4$ is

$t_{22} = min\{c_{25}, c_{27}, c_{28}\} = min\{(0{,}1), (0{,}0), (0{,}3)\} = 0{,}0$

$t_{23} = min\{c_{29}, c_{211}, c_{212}\} = min\{(0{,}1), (0{,}0), (0{,}3)\} = 0{,}0$

$t_{24} = min\{c_{213}, c_{215}, c_{216}\} = min\{(0{,}1), (0{,}0), (0{,}2)\} = 0{,}0$

So that it is obtained

$$d_{21} = max_k\{t_{2k}\} = max\{t_{21}, t_{22}, t_{23}, t_{24}\} = max\{(0{,}0), (0{,}0), (0{,}0), (0{,}0)\} = 0{,}0.$$

(c) d_{31} for $k = 1, 2, 3, 4$ is

$t_{32} = min\{c_{35}, c_{37}, c_{38}\} = min\{(0{,}4), (0{,}2), (0{,}4)\} = 0{,}2$

$t_{33} = min\{c_{39}, c_{311}, c_{312}\} = min\{(0{,}5), (0{,}2), (0{,}5)\} = 0{,}2$

$t_{34} = min\{c_{313}, c_{315}, c_{316}\} = min\{(0{,}5), (0{,}2), (0{,}5)\} = 0{,}2$

So that it is obtained

$$d_{31} = max_k\{t_{3k}\} = max\{t_{31}, t_{32}, t_{33}, t_{34}\} = max\{(0{,}0), (0{,}2), (0{,}2), (0{,}2)\} = 0{,}2$$

(d) d_{41} for $k = 1, 2, 3, 4$ is

$t_{42} = min\{c_{45}, c_{47}, c_{48}\} = min\{(0{,}0), (0{,}3), (0{,}3)\} = 0{,}0$

$t_{43} = min\{c_{49}, c_{411}, c_{412}\} = min\{(0{,}0), (0{,}0), (0{,}0)\} = 0{,}0$

$t_{44} = min\{c_{413}, c_{415}, c_{416}\} = min\{(0{,}0), (0{,}0), (0{,}0)\} = 0{,}0$

So that it is obtained

$$d_{41} = max_k\{t_{4k}\} = max\{t_{41}, t_{42}, t_{43}, t_{44}\} = max\{(0{,}0), (0{,}0), (0{,}0), (0{,}0)\} = 0{,}0$$

(e) d_{51} for $k = 1, 2, 3, 4$is

$t_{52} = min\{c_{55}, c_{57}, c_{58}\} = min\{(0{,}0), (0{,}0), (0{,}0)\} = 0{,}0$

$t_{53} = min\{c_{59}, c_{511}, c_{512}\} = min\{(0{,}0), (1{,}0), (0{,}0)\} = 0{,}0$

$$t_{54} = min\{c_{513}, c_{515}, c_{516}\} = min\{(0,0), (0,4), (0,0)\} = 0,0$$

So that it is obtained

$$d_{51} = max_k\{t_{5k}\} = max\{t_{51}, t_{52}, t_{53}, t_{54}\} = max\{(0,0), (0,0), (0,0), (0,0)\} = 0,0$$

So that the FSMmDM matrix is obtained as follows:

$$Mm([x_{ij}] \wedge [y_{ik}]) = [d_{i1}] = \begin{bmatrix} 0.2 \\ 0.0 \\ 0.2 \\ 0.0 \\ 0.0 \end{bmatrix}.$$

Fifth step: Determine the value of$u_i$the max is as follows:

$$opt_{Mm([x_{ij}] \vee [y_{ik}])}(U) = \left\{\frac{0.2}{u_1}, \frac{0.2}{u_3}\right\},$$

Where the value ofu_1 and$u_3$is the maximum value, it can be concluded that the first house and the third house were chosen by Mrs. Memi and Mr. Risman.

CONCLUSION

Max-Min Soft Blur Matrix is a matrix that is represented from Soft Blur Matrix by selecting the max value. In this study, an example of the application of the Max-Min Soft Blurred Matrix is given in decision making. An example of its application is decision making in determining the selection of houses that have the greatest potential based on the consideration of the same selection factors. The application of this Max-Min Soft Blur Matrix in applications in life is useful to make it easier for us to decision making.

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