

Method of Selection of Feasibility Criteria Recipients of Msme Cash Direct Assistance With Topsis Method

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Abstract

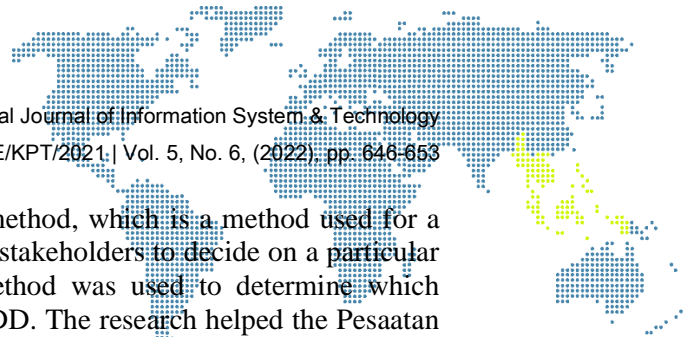
Micro, Small and Medium Enterprises are one of the sectors most affected by the pandemic. This is indicated by a decrease in business and service production, a decrease in labor and a reduced income turnover. The affected Micro, Small and Medium Enterprises are dominated by the fields of trade, services, creative industries and tourism. The government seeks to encourage economic recovery by providing BLT assistance funds for Micro, Small and Medium Enterprises as an economic stimulus so that Micro, Small and Medium Enterprises can revive. In order for the grants to be right on target, special research using the TOPSIS method is needed. TOPSIS is used to find the preference value that is closest to the optimal final result by calculating and testing alternative criteria. The results of research conducted in the Districts of Dramaga, Tamansari Ciomas and Tenjolaya show that the provision of BLT funds for Micro, Small and Medium Enterprises should be prioritized for MSME actors who have never received Micro Business Aid (BPUM) funds.

Keywords: TOPSIS, Decision Support System, MSME BLT, Covid19 Pandemic

1. Introduction

The COVID-19 pandemic that has occurred since 2020 has had a major impact on the people's economy. One of the sectors affected is Micro, Small and Medium Enterprises (MSMEs). Not a few MSMEs have stopped operating due to lack of capital and income turnover has decreased drastically due to the lack of people's purchasing power. Whereas MSMEs are a type of business that has an important role in increasing gross domestic revenue in Indonesia [1]. Research shows that there are 1,785 cooperatives and 163,713 micro, small and medium enterprises affected by the pandemic. The affected MSMEs are mostly engaged in the food, beverage, creative industry and tourism businesses [2]. According to data from the Ministry of Cooperatives and MSMEs, the types of businesses affected by the pandemic include cooperatives, and the service industry as well as the production of goods. As a result, business actors lack capital, distribution is hampered and there is a drastic decline in turnover [3].

One of the efforts made by the government to provide economic stimulus to MSMEs is to provide assistance such as BLT MSME funds, electricity tariff subsidies, tax reductions, worker card programs and others. Regarding the MSME BLT, the government in this case provides a large budget of 22 trillion with a target of 12 million MSME business actors who will be given cash assistance for business capital. However, in its implementation, not all business actors belonging to the MSME category receive assistance. Therefore, in-depth research is needed to assist the government in deciding the criteria for the MSMEs most in need to be given BLT assistance so that the recipients are most entitled to receive the economic stimulus funds. The research was conducted in four sub-districts in Bogor Regency, namely Dramaga, Ciomas, Tamansari and Tenjolaya sub-districts. The study was conducted in these four areas with the highest number of MSMEs in Bogor Regency.



The research was conducted using the TOPSIS method, which is a method used for a multi-criteria decision-making process that can help stakeholders to decide on a particular matter to be right on target [4]. The TOPSIS method was used to determine which community members were eligible to receive BLT-DD. The research helped the Pesaatan Village government to determine prospective BLT-DD recipients. The research criteria used are people who are not in a condition to receive assistance from other schemes such as the family of hope program, pre-employment cards and others [5]. TOPSIS has proven to be useful in determining the distribution of covid aid funds to residents of Bengelen Village, thereby facilitating the process of distributing aid to eligible villagers [6]. TOPSIS was successfully used to determine the acceptance of class 7 scholarships at SMP Negeri 17 Padang proportionally so that the results obtained were precise and accurate and minimized errors in the process of calculating and determining scholarship data [7]. TOPSIS was successfully used to calculate the eligibility criteria for poor rice aid recipients in Bangunrejo District, Central Lampung Regency [8]. Research on recipients of poor student assistance results in ranking 1 by v4 followed by v1 and v2 who have low parental income. The TOPSIS method is proven valid to determine scholarship recipients from the criteria they have [9]. This study aims to conduct further studies in the selection of MSMEs that are eligible to receive MSME BLT assistance funds which can later be used by the government in the decision-making process.

2. Research Methodology

2.1. TOPSIS

TOPSIS is based on the concept that the best chosen alternative not only has the shortest distance from the positive ideal solution, but also has the longest distance from the negative ideal solution [9]. TOPSIS has a calculation concept that is easy, simple and understandable and has efficient computing. TOPSIS can be used to measure the performance of alternative solutions that help the decision-making process [10].

TOPSIS is the most realistic method in measuring the performance of a criterion so that it can produce a valid and accurate preference value [11]. TOPSIS is the most realistic method in measuring the performance of a criterion so that it can produce a valid and accurate preference value [11]. TOPSIS is a classical method used to solve problems in the decision-making process with multiple criteria. The decision-making process is used by determining alternative criteria in accordance with the provisions to be obtained [12].

2.2. Research Stages

a. Research Data Source

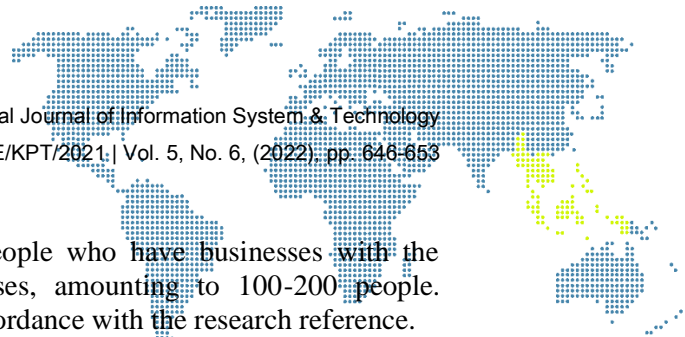
The source of the data for this study came from respondents in the Districts of Dramaga, Tamansari Ciomas and Tenjolaya in Bogor Regency.

b. Research Population

The population in this study are people who have businesses with the category of Micro, Small and Medium Enterprises. The following is the research population based on the business criteria, namely:

Table 1. Table Label

No	Business Criteria	Amount
1	Food	48
2	Drink	52
3	Creative Industry	27
4	Tourist	15
Amount		142



c. Sample and Research Data Collection Method

Samples were taken from the population of people who have businesses with the category of Micro, Small and Medium Enterprises, amounting to 100-200 people. Samples were taken based on a feasibility test in accordance with the research reference.

d. Research Instrument

This research instrument uses a questionnaire with closed questions. The instrument was chosen so that respondents could answer questions in a straightforward and precise manner in accordance with the research directions. The following are research standards using five Likert scales, namely

Table 2. Likert Scale

Answer	Score
Very Good	5
Good	4
Enough	3
Bad	2
Very Bad	2

e. Research Roadmap

The following is a roadmap of the research carried out, namely:

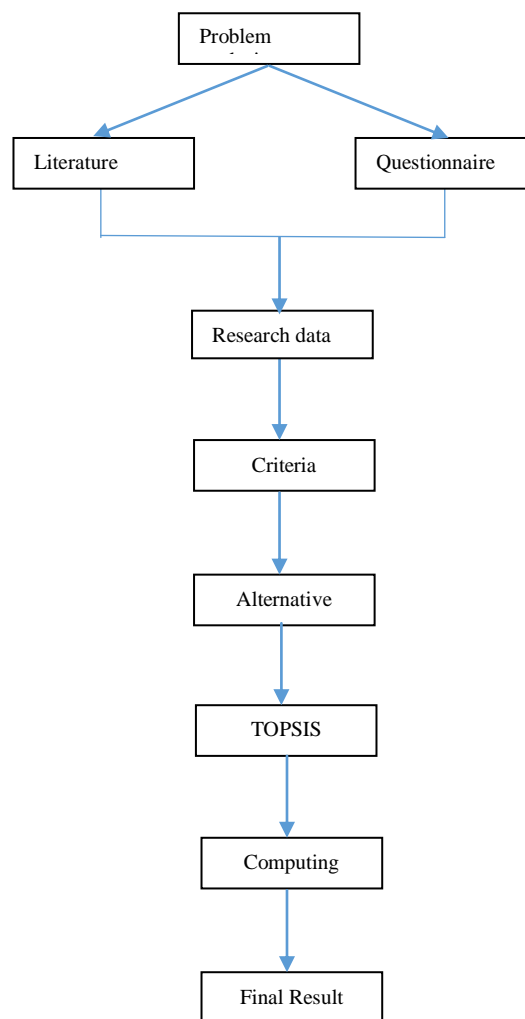
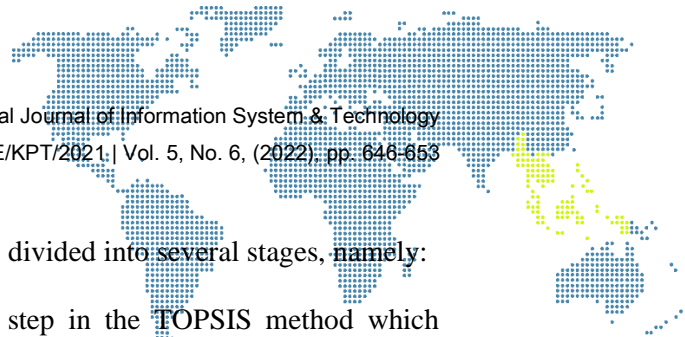


Figure 1. Roadmap Research



f. TOPSIS Computing Stages

The research method uses TOPSIS, the research is divided into several stages, namely:

- a) Normalized Decision Matrix Analysis

Creating a normalized decision matrix is a step in the TOPSIS method which requires a performance rating of each alternative A_i on each normalized C_i criteria.

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

- b) Normalized Matrix (R)

Calculate the normalized matrix (R) with the following formula:

$$R_{ij} = \frac{x_{ij}}{\sqrt{\sum_{i=1}^m x_{ij}^2}} \text{ where } : i = 1, 2, \dots, m; \text{ and } j = 1, 2, \dots, n \quad (2)$$

- c) Weighted Normalized Matrix (Y)

Calculate the weighted normalized matrix (Y) with the following formula:

$$y_{ij} = w_i r_{ij}; \text{ with } i = 1, 2, \dots, m; \text{ and } j = 1, 2, \dots, n$$

- d) Matrix of positive and negative ideal solutions

Calculating the weighted normalized matrix (Y) with the following formula:
Calculating positive (A+) and negative (A-) ideal solutions with the following formula:

$$A^+ = \max(y_1^+, y_2^+, \dots, y_n^+) \quad (3)$$

$$A^- = \max(y_1^-, y_2^-, \dots, y_n^-) \quad (4)$$

- e) Distance of the Ideal Solution Negative and positive

the distance of the ideal negative solution (D-) and the positive ideal solution (+) with the formula, namely:

$$D_i^+ = \sqrt{\sum_{j=1}^n (y_i^+ - y_{ij})^2}; i = 1, 2, \dots, m. \quad (5)$$

- f) Final Alternative Preference Value

The next step is to find out what the preference value is based on the results of the previous ideal solution. The preference value is searched by the formula, namely:

$$V_i = \frac{D_i^-}{D_i^- + D_i^+}, \text{ where } i = 1, 2, 3, \dots, m \quad (6)$$

3. Results and Discussion

The following are the calculated research criteria, namely:

- Never received BPUM funds in C1.
- Micro Business Actors are not currently receiving KUR in C2.
- Having a Micro Business as evidenced by a letter of proposal from the BPUM recipient candidate from the BPUM proposer along with its attachments which are an integral part of C3.
- Not a State Civil Apparatus, a member of the Indonesian National Armed Forces, a member of the Indonesian National Police, a BUMN employee, or a BUM employee in C4.

Here are the alternatives that will be counted are:

- District Dramaga in A1.
- District Ciomas in A2.
- Tamansari District in A3.
- Tenjolaya District in A4.

The next stage is to determine the assessment criteria based on the weights they have. The following assessment criteria are used, namely:

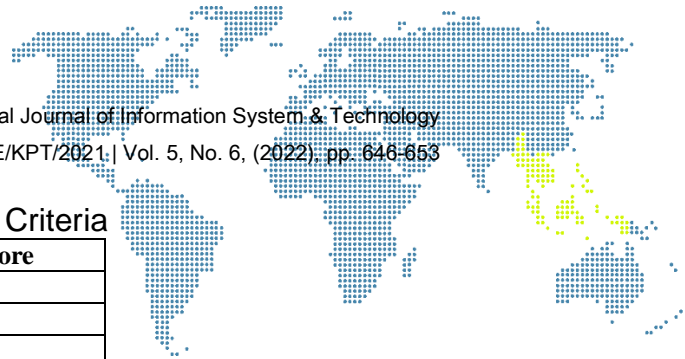


Table 3. Assessment Criteria

Answer	Score
Very Good	5
Good	4
Enough	3
Bad	2
Very Bad	2

Table 4. Normalized Decision Matrix

Criteria	C1	C2	C3	C4
A1	5	5	4	5
A2	4	4	5	3
A3	4	3	4	3
A4	5	4	4	4

Table 5. Criteria Weight

A1	A2	A3	A4
5	3	4	5

Table 6. Normalized Value

Criteria	C1	C2	C3	C4
A1	5	5	4	5
A2	4	4	5	3
A3	4	3	4	3
A4	5	4	4	4
Result	82	66	75	59
Score	9.0	8.1	8.6	7.6

Table 7. Normalized Matrix C1

Criteria	C1	Result	Score
A1	5	9.0	0.55
A2	4	9.0	0.44
A3	4	9.0	0.44
A4	5	9.0	0.55

Table 9. Normalized Matrix C3

Criteria	C3	Result	Score
A1	4	8.6	0.46
A2	5	8.6	0.58
A3	4	8.6	0.46
A4	4	8.6	0.46

Table 8. Normalized Matrix C2

Criteria	C2	Result	Score
A1	5	8.1	0.61
A2	4	8.1	0.49
A3	3	8.1	0.37
A4	4	8.1	0.49

Table 10. Normalized Matrix C4

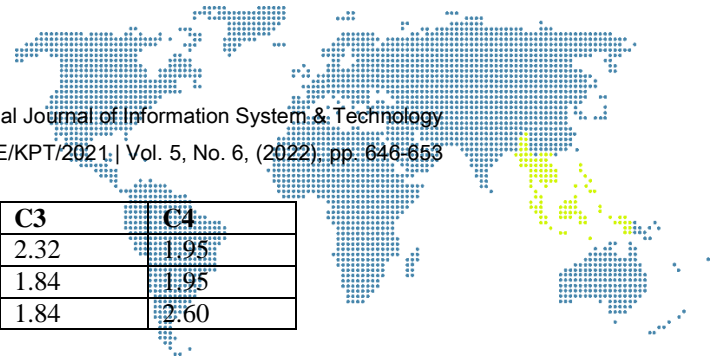
Criteria	C4	Result	Score
A1	5	7.6	0.65
A2	3	7.6	0.39
A3	3	7.6	0.39
A4	4	7.6	0.52

Table 11. Data Normalization

Criteria	C1	C2	C3	C4
A1	0.55	0.61	0.46	0.65
A2	0.44	0.49	0.58	0.39
A3	0.44	0.37	0.46	0.39
A4	0.55	0.49	0.46	0.52

Table 12. Weighted Normalization Matrix

Criteria	C1	C2	C3	C4
A1	2.75	1.83	1.84	3.25



Criteria	C1	C2	C3	C4
A2	2.20	1.47	2.32	1.95
A3	2.20	1.11	1.84	1.95
A4	2.75	1.47	1.84	2.60

Table 13. Value of Positive and negative Ideal Solution

Criteria	C1	C2	C3	C4
A1	2.75	1.83	1.84	3.25
A2	2.20	1.47	2.32	1.95
A3	2.20	1.11	1.84	1.95
A4	2.75	1.47	1.84	2.60
Min	2.20	1.11	1.84	1.95
Maks	2.75	1.11	2.32	3.25

Maksimum value: **2.75, 1.83, 2.32, 3.25**

$$\begin{aligned} & \text{SQRT}((2.75 - 2.75)^2) + ((1.83 - 1.83)^2) + ((1.84 - 2.32)^2) + ((3.25 - 3.25)^2) \\ & \text{SQRT}((2.20 - 2.75)^2) + ((2.32 - 1.83)^2) + ((2.32 - 2.32)^2) + ((1.95 - 3.25)^2) \\ & \text{SQRT}((2.20 - 2.75)^2) + ((1.84 - 1.83)^2) + ((1.84 - 2.32)^2) + ((1.95 - 3.25)^2) \\ & \text{SQRT}((2.75 - 2.75)^2) + ((1.84 - 1.83)^2) + ((1.84 - 2.32)^2) + ((2.60 - 3.25)^2) \end{aligned}$$

Minimum Value: **2.20, 1.11, 1.84, 1.95**

$$\begin{aligned} & \text{SQRT}((2.75 - 2.20)^2) + ((1.83 - 1.11)^2) + ((1.84 - 1.84)^2) + ((3.25 - 1.95)^2) \\ & \text{SQRT}((2.20 - 2.20)^2) + ((2.32 - 1.11)^2) + ((2.32 - 1.84)^2) + ((1.95 - 1.95)^2) \\ & \text{SQRT}((2.20 - 2.20)^2) + ((1.84 - 1.11)^2) + ((1.84 - 1.84)^2) + ((1.95 - 1.95)^2) \\ & \text{SQRT}((2.75 - 2.20)^2) + ((1.84 - 1.11)^2) + ((1.84 - 1.84)^2) + ((2.60 - 1.95)^2) \end{aligned}$$

Then the result is as follows:

Table 14. Weighted Normalized Matrix Value

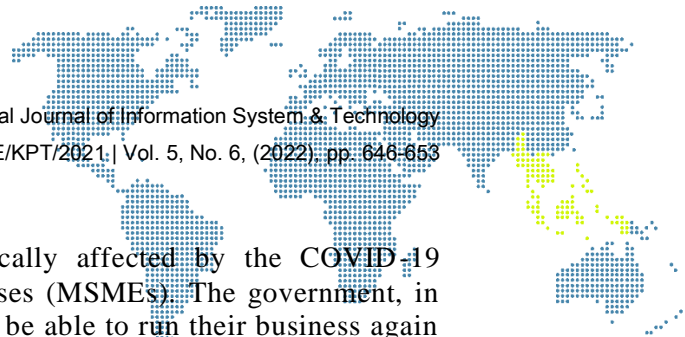
Criteria	D+	D-
C1	0.23	2.75
C2	2.48	1.69
C3	2.47	0.53
C4	0.65	1.50

After getting the value of the weighted normalization matrix, then calculate the final preference value to get the expected ideal solution. The formula calculates as follows:

Table 15. Final Preference Score Results

Criteria	Formula	Result	Final Score
C1	$(2.75)/(2.75+0.23)$	2.75/2.98	0.92
C2	$(1.69)/(1.69+2.48)$	1.69/4.17	0.40
C3	$(0.53)/(0.53+2.47)$	0.53/3.00	0.17
C4	$(1.50)/(1.50+0.65)$	1.50/2.15	0.69

The results showed that the final preference value was 0.92 from the C1 criteria, namely that they had never received Micro Business Aid (BPUM) funds. The results of the study using the TOPSIS method show that from various alternative criteria, the provision of MSME BLT funds should be prioritized for MSME actors who have never received Micro Business Aid (BPUM) funds so that the provision of aid funds can be right on target so that it can be a good economic stimulus for recovery. economic stability affected by the COVID-19 pandemic.



4. Conclusion

One of the sectors that has been economically affected by the COVID-19 pandemic is Micro, Small and Medium Enterprises (MSMEs). The government, in this case, seeks to help MSME business actors to be able to run their business again by providing BLT assistance funds in the form of cash that can be used as capital for MSME business continuity. However, in reality, the process of providing aid funds encountered many obstacles, including inaccurate data, inappropriate data and unfair and equitable distribution of funds. Therefore, this research was conducted to assist the government, in this case the Bogor Regency government, to determine the priority scale for receiving BLT funds for MSMEs. The results of research conducted in the Districts of Dramaga, Tamansari Ciomas and Tenjolaya showed that the provision of MSME BLT funds should be prioritized for MSME actors who have never received Micro Business Aid (BPUM) funds. Research can be carried out to carry out other assessments by adding alternative criteria that you want to test with a larger number of samples and populations

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