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Multidimensional Poverty Index in Kedungkandang District

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Abstract:- Poverty is one problem that often occurs in countries in the world, especially in developing countries. The calculation of poverty values has changed or modified in accordance with the current conditions. The condition of poverty is not only seen as a person's limitations in terms of financial (income) but several other dimensions. Poverty measurement using the Multidimensional Poverty Index method is one method of measuring poverty which pays attention to 3 (three) dimensions such as education, health and living standards. This research is located in Kedungkandang District. Kedungkandang sub-district is one of the districts in Malang that has the highest number of poor rice recipients, amounting to 5260 poor households. Kedungkandang Subdistrict has a population of 1,888,175 people, divided into 12 villages. Poverty measurement using the Multidimensional Poverty Index in Kedungkandang District is divided into a very low category. The villages that have the lowest MPI values are Kotalama Village (0.01) and Sawojajar Village (0.01) while the villages that have the highest MPI values are Lesanpura Village (0.07) and Wonokoyo Village (0.07). The higher MPI value indicates the poorer the area.

Keywords:- *Poverty, Multidimensional Poverty Index.*

I. INTRODUCTION

The Sustainable Development Goals (SDGs) are the main foundation for poverty alleviation activities in Indonesia. The targets of sustainable development goals and national development priorities agreed to in the SDGs. This study are related to several programs, namely poverty alleviation programs, healthy Indonesia programs, smart Indonesia programs, protection of children, women and marginal groups, air protection, development of disadvantaged areas and equity programs interregional development.

Poverty is a condition where individuals have limit of basic needs such as clothing, food and shelter. Poverty is a multidimensional problem and each region has its own way to overcome, so important to overcome problems such as corruption, education, politics and natural geographical conditions. The main problem of poverty needs to be suspended to cut the continuous poverty cycle [1]. The human development paradigm must be the foundation upon which it is built [2]. Poverty reduction must be accompanied by introduction of policies to reduce inequalities in terms of income, assets and access to basec need [3]. During this time, the calculation of the value of poverty is carried out by monetary enhancements such as the poverty line or through the basic consumption budget, it can be referred to only by photographing the fiscal value of a large portion of asking for climate change funds that occur. UNDP issued a climate change or multidimensional policy which is an initial strategy in overcoming global poverty reduction [4].

BPS recorded that in 2019 poverty in Indonesia would be 9.41% of the total population. The poverty line in Indonesia is Rp. 425,250 / capita / month with the composition of the Food Poverty Line of Rp.313,232 (73.66 percent) and the Non-Food Poverty Line of Rp112,018 (26.34%). In March 2019, the average total number of poor households in Indonesia had 4.68 household members. Thus, the magnitude of the Poverty Line per poor household is an average of Rp1,990,170 / poor households / month.

Various poverty reduction strategies in the territory of Indonesia have been carried out since the beginning of Indonesia's independence, such as the existence of development programs oriented to poverty alleviation with the ultimate goal of improving people's welfare. Poverty alleviation efforts can have a positive impact on reducing poverty, issued by the Central Statistics Agency.

One of the urban areas in Indonesia, that have poverty ploblems is Malang City. From Badan Pusat Statistik (BPS) show that 2016 there are 35,49 thousand people were poor in Malang.

II. METHOD

A. Research Type

The type of this research is quantitative research. Quantitative research is a study that uses reserarch design or statistical prosedures by quantifying measurements of a variable [5]. Aim of this research is to know level of poverty by Multidimensional Poverty Index (MPI).

B. Data Collection and Sampling

This research to collect the data needs of primary data and secondary data. The respondents who will be targeted are Raskin receivers. The population used in this study is the household in Kedungkandang District, Malang City. Kedungkandang District has 12 Subdistrict namely Arjowinangun, Tlogowaru, Wonokoyo, Bumiayu, Buring, Mergosono, Kotalama, Kedungkandang, Sawojajar,

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Madyopuro, Lesanpuro, Cemorokandang. The sample of this research is taken by a proportional stratified random sampling formula that has characteristics focused on the target and the number of samples will be categories by strata. proportional stratified random sampling is a technique that uses not in the homogeneous area [6]. To calculate the number of respondents, this study was used Slovin Formula. the result of Slovin Formula for Kedungkandang District is 276 respondents.

C. Multidimensional Poverty Index

The Multidimensional Poverty Index (MPI) is method to measure poverty, consisting of the severity of poverty in various dimensions that affect human capabilities [7]. Multidimensional Poverty Index (MPI) are calculated by weights of dimensions and indicators. Weights from dimensions are weighed equal to 1/3 of each dimension. And each indicator in each dimensions is also weighed equally. Based on the weight of existing indicators: health dimensions consisting of two indicators obtained by 1/6, education dimensions consisting of two indicators collected 1/6 and quality of life dimensions consisting of six indicators obtained by 1/18. The Multidimensional Poverty Index (MPI) is published by the UNDP's Human Development Report Office divided MPI) into 3 dimensions, namely the health dimension, the educational dimension and the standard of living. give dimensions and steps in MPI calculation.

Dimension	Indicator
Education	years of schooling enrollment
health	child mortality nutrition
living standards	Water sanitation electricity cooking fuel floor assets

Table 1:- MPI Indicators

Base on modul of MPI Research Team in Indonesia [2], MPI or poverty level values can be classified as:

Very High : >0,36
High : 0,27-0,36
Medium : 0,18-0,27
Low : 0,09-0,18
Very Low :<0,09

Steps to calculated MPI:

- Each person will provide deprivation in the household for each of the 10 indicator components.

Indicator	Weight
• years of schooling	• 16,7%
• enrollment	• 16,7%
• child mortality	• 16,7%
• nutrition	• 16,7%
• Water	• 5,6%
• sanitation	• 5,6%
• electricity	• 5,6%
• cooking fuel	• 5,6%
• floor	• 5,6%
• assets	• 5,6%

Table 2:- MPI weight Indicators
Source: *Technical Notes HDR 2016:9*

- The deprivation score of each indicator is added up and results in a household deprivation score (ci).

$$ci = W_iI_1 + W_iI_2 + ... + WnIn \quad (1)$$

* I1 is equal to 1 if someone in the household is deprived in indicator i, and I1 is equal to 0 if not.
Wi is the weight of the indicator i

- Headcount ratio (H) or multidimensional poverty rate is the proportion of multidimensional poor people in the population.

$$H = \frac{q}{n} \quad (2)$$

*q is the number of people who are categorized as poor multidimensional (deprivation score ≥33%)
n is the total population.

- Intensity of Poverty (A) is the average percentage of deprivation / household shortages at the same time which reflects the proportion of the weighted indicator component where the average poor is deprived.

$$A = \frac{\sum_i^q c_i}{q} \quad (3)$$

* q is the number of individuals categorized as poor in a multidimensional manner
ci is the deprivation score of poor households

- Calculation of MPI values

MPI = H x A (4)
H is the Headcount Ratio
A is the Intensity of Poverty

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III. RESULT

A. *Kedungkandang District*

Geographically, Kedungkandang District, Malang City is located between 112036 '14 "- 112040 '42" East Longitude and 077036 '38 "- 008001'57" South Latitude. Kedungkandang District is located at an altitude of 440-460 meters above sea level (asl). The population of Kedungkandang Subdistrict is 1,888,175 people. Kedungkandang District was located in Malang Regency, East Java Province with an area of 3.989 Ha, consist of 12 Sub-District and has a population of 188.175 peoples or 42.017 households. The administrative boundary of the Kedung Kandang district is :

North: Tutur District, Kab. Pasuruan
East: Tumpang District, Kab. Malang
South: Pakis District, Kab. Malang
West: Singosari District, Kab. Malang

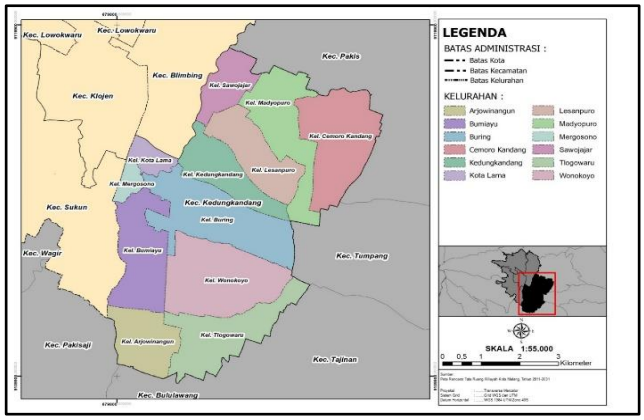

Fig 1:- Kedungkandang District Map

B. *Economic Condition of Kedungkandang District*

➢ *Poor Rice Recipients*

The data of poverty in Kedungkang Subdistrict is known to be the highest number of recipients, namely in Kota Lama Subdistrict which has 816 poor households and the village that has the lowest number of poor households is 167 households in Arjowinangun Subdistrict. The distribution the number of poor families in Kedungkandang District can be seen in the following table.

Subdistrict	Number of household
Arjowinangun	167
Tlogowaru	179
Wonokoyo	281
Bumiayu	466
Buring	741
Mergosono	620
Kotalama	816
Kedungkandang	287
Sawojajar	333
Madyopuro	394
Lesanpuro	621
Cemorokandang	355

Table 3:- Poor Household Each Subdistrict

➢ *Income distribution or Gini Index*

Good income distribution occurs if an area has same income distribution for each area so there are no community feels an income inequality. Income distribution can be calculated using the Gini index. The gini index has a range of 0 to 1, where values close to 1 indicate the region has high income inequality. The following is a calculation of the distribution of opinions in each village in Kedungkandan District

Subdistrict	Gini Index
Arjowinangun	0.26
Tlogowaru	0.15
Wonokoyo	0.24
Bumiayu	0.27
Buring	0.23
Mergosono	0.30
Kotalama	0.24
Kedungkandang	0.31
Sawojajar	0.22
Madyopuro	0.32
Lesanpuro	0.21
Cemorokandang	0.3

Table 4:- Gini Index

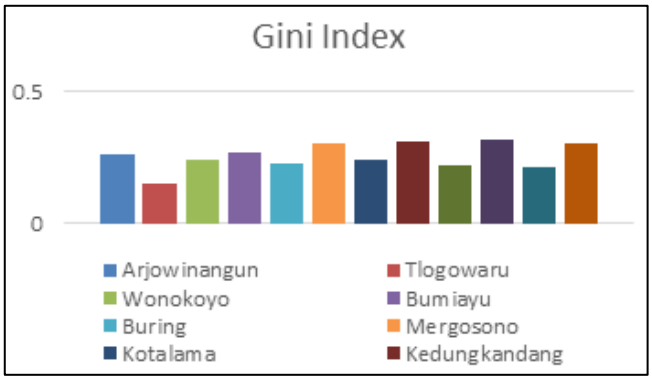

Fig 2:- Gini Indec Graph

C. *Multidimensional Poverty Index*

Measurement of poverty levels in the Kedungkandang District can be know by poverty indicators of Multidimensional Poverty Index. The results of the Multidimensional Poverty Index value.

➢ *Education Dimension*

The education dimension in this study is to use the latest education level data and community participation in education which is assessed based on the presence of school-age children (6-23 years) who attend / participate in education according to their age or have completed at least 12 years of education. This is illustration of the education dimensions in Kedungkandang District based on survey results.

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Subdistrict	Number of respondents	People who have not graduated from High School Education	Level of Educational Participation
Arjowinangu	15	40%	0%
Tlogowaru	9	44%	0%
Wonokoyo	9	22%	0%
Bumiayu	25	32%	0%
Buring	18	28%	0%
Mergosono	26	19%	0%
Kotalama	45	29%	0%
Kedungkandang	15	27%	0%
Sawojajar	38	29%	0%
Madyopuro	29	28%	0%
Lesanpuro	28	11%	0%
Cemorokandang	19	26%	0%

Table 5:- Education Dimension

Based on table 4, known that the highest number of people who did not graduate from high school was in the Tlogowaruu Subdistrict (44%) and the lowest was in Lesanpura Subdistrict (11%). Whereas the parameter of participation rate for all villages has a value of 0% participation rate which means there are no school-age children who are not in school.

➢ *Health Dimension*

The health dimension in this study includes 2 indicators, namely child mortality and malnutrition. The following are the dimensions of health in Kedungkandang District.

Subdistrict	Sample	Malnutrition	child mortality
Arjowinangu	15	0%	0%
Tlogowaru	9	0%	0%
Wonokoyo	9	0%	0%
Bumiayu	25	0%	0%
Buring	18	0%	0%
Mergosono	26	0%	0%
Kotalama	45	0%	0%
Kedungkandang	15	0%	0%
Sawojajar	38	0%	0%
Madyopuro	29	0%	0%
Lesanpuro	28	0%	0%
Cemorokandang	19	0%	0%

Table 6:- Health Dimension

➢ *Living Standart*

The standard of living in this case, uses six indicators for living standards, complements the three standard Millineum Development Goals (MDG) indicators relating to health and living standards such as access to clean water, sanitation, and fuel use. Justification for this indicator is sufficiently presented in the MDG literature. It also includes two non-MDG indicators: electricity and floor materials. The second indicator provides a basic indicator of housing quality for households. The final indicator contains ownership of several items that support access to information such as telephone, radio, TV, support mobility such as cars, motorbikes and support life such as livestock, land ownership. The following are the results of the standard living dimensions.

Kelurahan	Sumber Penerangan	Akses ke air bersih	Kondisi Sanitasi
Arjowinangu	0	2	1
Tlogowaru	0	2	0
Wonokoyo	0	2	2
Bumiayu	0	2	0
Buring	0	2	2
Mergosono	0	2	2
Kotalama	0	2	2
Kedungkandang	0	2	2
Sawojajar	0	2	2
Madyopuro	0	2	2
Lesanpuro	0	1	1
Cemorokandang	0	2	1

Table 7:- Standart of Living Dimension

➢ *Headcount Ratio (H) and Intensity of Poverty (A)*

Headcount Ratio (H) shows the percentage of villagers in Kedungkandang sub-district who live in multidimensional poor households in a population. Poverty Intensity (A) is the percentage of poor people deprived of weighted indicators. The following is a calculation of Headcount Ratio (H) and Poverty Intensity (A) of Kedungkandang District.

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Subdistrict	Headcount Ratio (H)	Poverty Intensity (A)
Arjowinangu	0.2	0.33
Tlogowaru	0.15	0.33
Wonokoyo	0.4	0.33
Bumiayu	0.16	0.33
Buring	0.15	0.33
Mergosono	0.10	0.33
Kotalama	0.03	0.33
Kedungkandang	0.14	0.33
Sawojajar	0.03	0.33
Madyopuro	0.17	0.33
Lesanpuro	0.21	0.33
Cemorokandang	0.08	0.33

Table 8:- Headcount Ratio (H) and Poverty Intensity (A)

In the table above the Headcount Ratio (H) and Poverty Intensity (A) values in Kedungkandang sub-district are known. The highest Headcount value is in Wonokoyo Village which is 0.4 or 4% and the lowest Headcount Ratio (H) value is in Sawojajar Village and Kotalama Village which is 0.03 or 3%.

➢ *Deprivation Contribution*

The results by calculation of deprivation contributions can provide information from percentage of influence each dimension to multidimensional poverty in each village. The following are the results of the calculation of poverty deprivation in each dimension of Kedungkandang District.

Subdistrict	ducation (%)	Health (%)	Living Standart (%)
Arjowinangu	23	0	23
Tlogowaru	50	0	50
Wonokoyo	50	0	50
Bumiayu	15	0	15
Buring	19	0	19
Mergosono	50	0	50
Kotalama	50	0	50
Kedungkandang	50	0	50
Sawojajar	50	0	50
Madyopuro	11	0	11
Lesanpuro	10	0	10
Cemorokandang	17	0	17

Table 9:- Deprivation's Contribution on Each Dimension

Based on the calculation results in the table above, it is known that the value of each dimension is calculated, namely education dimensions, health dimensions and life standard dimensions. The education dimension has a range of 10% to 50%. The health dimension in the study area has a value of 0% in each kelurahan, which means that in each subdistrict in Kedungkandang District there are no infants or malnutrition. Life standard dimensions have a value range of 10% to 50%.

➢ *Multidimensional Poverty Index (MPI) Results*

MPI has five classifications which are very low, low, medium, high and very high. Based on the MPI Research Team in Indonesia, the 2015 classification is very high if the calculation result is> 0.36; high value if the calculation results are between 0.27-0.36, while if: 0.18-0.27, low if the calculation results show the value 0.09-0.18, and very low if the calculation results show <0, 09. Following are the results of MPI calculations in Kedungkandang District. Table of calculation of Multidimensional Poverty Index (MPI) of Kedungkandang District can be seen in table 10.

Subdistrict	MPI	classification
Arjowinangun	0.06	Very low
Bumiayu	0.05	Very low
Buring	0.05	Very low
Cemorokandang	0.02	Very low
Kedungkandang	0.05	Very low
Kotalama	0.01	Very low
Lesanpuro	0.07	Very low
Madyopuro	0.05	Very low
Mergosono	0.03	Very low
Sawojajar	0.01	Very low
Tlogowaru	0.05	Very low
Wonokoyo	0.07	Very low

Table 10:- MPI Classification

The results of the Multidimensional Poverty Index (MPI) in the Kedungkang Subdistrict have a very low classification in all Subdistrict. The highest Multidimensional Poverty Index (MPI) value is in Wonokoyo Village which is 0.07 and the lowest Multidimensional Poverty Index (MPI) value is in Sawojajar Village and Kotalama Village with a value of 0.01.

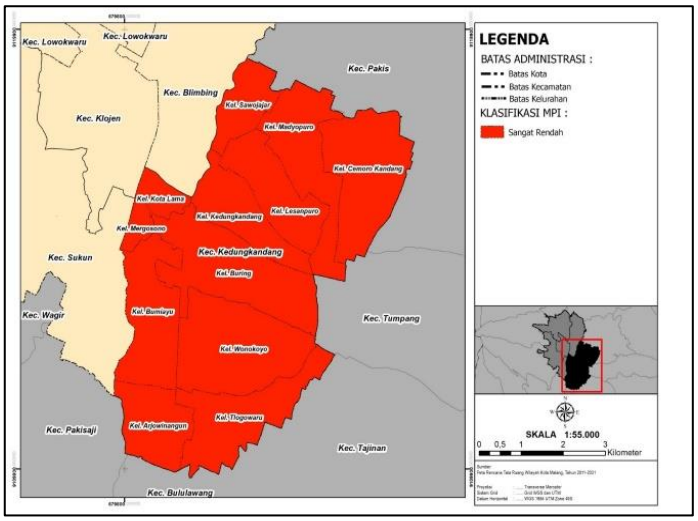

Fig 3:- MPI Map

IV. CONCLUSION

Kedungkandang District is one of the sub-districts in Mallang City which has the largest number of poor people. This research aims to look at poverty in Kedungkandang Equity not only through the perspective of income but from 3 dimensions. The results of poverty measurement using the Multidimensional Poverty Index (MPI) method show that all outbreaks in Kedungkandang District have a very low classification value, indicating that the community is above the poverty line classified by MPI.

REFERENCES

[1]. Alex Hou Hong Ng, Abdul Ghani Farinda. Fock Kui Kan. Ai Ling Lim. Teo Ming Ting. 2013. Poverty:Its Cause and Solutions. International Journal of Humanities and Social Sciences. Vol:7 No 8
[2]. Bidyadhar Dehury and Sanjay K Mohanty. 2015. Regional Estimates of Multidimensional Poverty in India. Economic E-journal
[3]. Guida, Housseiman. Jeleleddine Ben Rejeb. Poverty, Growth and inequality in Devveloping Countries. International Journal of Economics and Financial Issues Vol. 2, No. 4
[4]. Budiantoro, Setyo. Victoria Fanggidae. Wido Saputra. Ah Maftuchan. Dwi Rani Puspa Artha. 2013. Multidimesional Poverty Index (MPI) : Konsep dan Pengukurannya di Indonesia. Prakarsa Economic Policy Working Paper
[5]. Sugiyono.(2011).Metode Penelitin Kuantittaif Kualitatif dan R&D.Bandung.Alfabeta
[6]. *Kumalaningsih,Sri. (2012). Metodologi Penelitian Kupas Tuntas Mencapai Tujuan. Malang. Tim UB Press.*
[7]. *United Nations Development Programme. 2016. Human Development Report 2016: Human Development for Everyone, Technical Notes. New York (USA): UN Plaza*