

# APPLICATION OF THE ORDINARY LEAST SQUARE (OLS) METHOD IN THE ANALYSIS OF ECONOMIC GROWTH FACTORS DURING THE NEW NORMAL OF COVID-19 IN PADANGSIDIMPUAN CITY

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## ABSTRACT

The Government of the Republic of Indonesia has now entered a new normal phase of COVID-19 which has been running for almost two years where the Covid-19 pandemic period is still ongoing even though it has begun to decline starting in 2021 yesterday. However, this new normal is still unable to restore the existing situation as it was before the pandemic, one of which is the economic sector of the Indonesian people. The economic sector has had a very bad impact during the Covid-19 pandemic, because all previous economic activities of the community are still moving with conventional systems. This is deeply felt by business actors in traditional markets. The problem that occurs is that business actors are unable to rise quickly and are unable to compete with other business actors who are better prepared to make sales during the pandemic.

The purpose of this study is to learn about the analysis of economic growth factors during the new normal period of the Covid-19 pandemic in Padangsidempuan City by applying the Ordinary Least Square (OLS) method by utilizing technology as a promotion / marketing of products sold by business actors in the Sangkumpul bonang market in Padangsidempuan city. The analysis method used in this study is a quantitative method using panel data using A Fixed Effect Model, the steps of this study are the collection of secondary data obtained from the Central Statistics Agency of the Agency after data analysis. Based on the results of the analysis obtained from the results of the study: partially using the Fixed Effect Model Analysis tool, it produces negative variables on the Human Development Index in Padangsidempuan City, comparing the Economy related to the Economic Growth Index of the community in Padangsidempuan City.

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## 1. INTRODUCTION

Development is a very fundamental aspect, especially for developing countries. Equitable development is the main key so that the ideals of national development can be achieved. The comparison of income and development in various countries suggests a relatively large degree of difference in measuring the level of prosperity in developed and developing countries. High-quality human resources are needed to support the development that is currently underway [1]. The current emerging development paradigm is economic growth as measured by human development seen by the level of quality of life manuvain. The new theory of growth introduced by Paul Romer states that elements of human capital and technology are the determining factors for economic growth [2]. The Human Building Index is one of the

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indicators in achieving economic development in order to realize a prosperous society and minimize poverty. The Human Development Index has been introduced by the United Nations Development Programme (UNDP) since 1950 and is published regularly in the annual Human Development Report (HDR). Human development is a process of bandaging the choices made by humans. Among these many options, the most important options are to live a long and healthy life, to have a higher education, and to have access to the resources needed to live decently [3]. The success of human development cannot be separated from the performance of the government which plays a role in creating regulations for the achievement of social justice.

The city of Padangsidempuan in the period from 2018 to 2020 experienced a fluctuating phase in terms of economic growth, this was triggered by the Covid-19 pandemic period which is currently experienced starting at the end of 2019. It can be seen in the table below (Source: Central Statistics Agency).

Wilayah	Pertumbuhan Ekonomi Kota Padangsidempuan (Persen)		
	2018	2019	2020
Padangsidempuan	5,45	5,51	-0,73
Sumatera Utara	5,18	5,22	-1,07

Table 1. Economic Growth Data of Padangsidempuan City

An ever-increasing Human Development Index. The HDI achievement of Padangsidempuan City in 2011 of 71.08 continues to increase to 74.38 in 2018. With the achievement of the HDI, Padangsidempuan is in the position of human development status in the "high" category. Not only that, this achievement also brought Padangsidempuan to the seventh position out of 33 regencies/cities in achieving human development in North Sumatra. Looking at the BPS data, the Human Development Index in Padangsidempuan City in 2018 was included in the "high" category. By studying the analysis of economic growth factors during the new normal period of the Covid-19 pandemic in Padangsidempuan City and applying the Ordinary Least Square (OLS) method by utilizing technology as a medium for promoting / marketing products sold by business actors in the Sangkumpul bonang market in Padangsidempuan city is the purpose of this study. Health is well-being and education is mandatory in achieving a decent and valuable life, in this case whether upbringing or health, both are of great importance in shaping broader human capabilities that are at the core of the meaning of development [4]. The urgency in this study is the high impact on economic growth in Padangsidempuan City due to the Covid-19 pandemic. Based on this presentation, researchers encouraged researchers to conduct a study on the analysis of economic growth factors in padangsidempuan city by utilizing the Ordinary Least Square (OLS) method. This research is very relevant rirn 2017-2045 in the field of development economics, then in prn 2020-2045 on the theme of Economy, Human Resources, Entrepreneurship, Cooperatives and MSMEs.

## 2. METHOD

**2.1 Research Type** This research is included in the type of library research (Library Research), which is research carried out using literature (literature). Library research collects data or information from books, notes, newspapers, documents, and other references related to research topics derived from libraries or institutions related to the required research data [8]. The type of data used in this study is a quantitative type of data. Quantitative data is data whose presentation is in the form of numbers that are extracted indirectly through research results and the results of processing qualitative data into quantitative data [9]. The data sources in this study were obtained from books, research journals and official reports on the Human Development Index in North Sumatra and Padangsidempuan City by the Central Statistics Agency. Data collection techniques in this study with documentation techniques are records of events that

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have passed in the form of writings, images and those published online. Meanwhile, to test the hypothesis in this study using a multiple linear formula, namely the relationship between one bound variable (Y) and two or more free variables (X). To state the strength or not of the linear relationship between X and Y can be measured the coefficient of correlation (coefficient correlation) or r and to find out the magnitude of the contribution (influence) of X to Y can be seen from the coefficient of determination (coefficient of determination) or R<sup>2</sup> [10]. The forms of multiple linear regression equations are as follows:

$$Y = a + b_1X_1 + b_2X_2$$

Where:

Y = Human Development Index a = constant

X<sub>1</sub> = Poverty

X<sub>2</sub> = Economic growth

## 2.2 Conceptual Framework

The conceptual framework of this study is as illustrated in the chart below:



Figure 1. Conceptual Framework

## 2.3 Economic Growth

In general, economic growth is defined as increasing the ability of an economy to produce goods and services. Economic growth is one of the most important indicators in conducting an analysis of the economic development that occurs in a country. Economic growth indicates the extent to which economic activity will generate additional income for people in a given period [6]. The economy is considered to be experiencing growth if all real services against the use of production factors in a given year are greater than in the previous year.

## 2.4 Ordinary Least Square (OLS)

The OLS (Ordinary Least Square) method is a regression method that minimizes the number of squared errors. The parameter estimation method used is the OLS (Ordinary Least Square) method, which is to estimate the regression coefficient ( $\beta$ ) by minimizing errors (errors). The parameter estimator is as follows:

$$\hat{\beta} = (X^T X)^{-1} X^T y$$

Where  $\beta$  is the vector of the parameter estimated to be the size  $(p + 1) \times 1$ ,  $X$  is the predictor variable matrix measuring  $n \times (p + 1)$  and the observation vector of the response variable is sized  $n \times 1$

### 3. RELUST AND DISCUSSION

In this section, the researcher explained the results of data analysis on economic growth and poverty on the level of human development index in the city of Padangsidimpuan, namely:

#### 1. Test results of classical assumptions.

The classical assumption test needs to be done because in the regression model it is necessary to pay attention to the deviations over the classical assumptions. If the classical assumptions can be met then the variables used become efficient. Table. 1

Key Regression Results of the Effect of Poverty, and Economic Growth on the Index Human Development in Padangsidimpuan City Variable Coefficient t-Statistic Prob.

<b>X1</b>	<b>-0.140095</b>	<b>-1.400165</b>	<b>0.1661</b>
<b>X2</b>	-0.637871	-1.178637	0.2427
	75.48587	21.23171	0.0000
R-squared 0.045893			
F-statistic 1.611366 Prob (F- 0.207254 statistic)			
Durbin-0.172718			
Watson stat			

#### a. Multicollinearity test

Multicollinearity is a test performed to ascertain whether in a regression model there is intercorrelation or colinearity between free variables. Table. 2

R2 auxiliary regression Effect of Poverty, and Economic Growth On Index Human Development in Padangsidimpuan City.

No.	Equation	R2*	R2
<b>1</b>	X1 X2	0,029	0,045
<b>2</b>	X2 X1	0,022	0,045

Information

R2 = R2 main regression results

R2 = R2 auxiliary regression results

From the table above, it can be concluded that in this study there was multicollinearity between independent variables, meaning that each independent variable had a relationship with each other. The poverty variable has a relationship with economic growth and vice versa because indeed the factors of poverty and economic growth have a relationship between each other.

#### b. Autocorrelation test

An autocorrelation test was performed to test whether in a linear regression model there is a correlation between the intruder error in the time or space period and the previous time or space disruptor error (t-1).

### 4. CONCLUSION

Based on the results of statistical tests, data analysis and discussion in the research above, it can be concluded that:

1. The influence of the Poverty and Economic Growth variables on the Human Development Index partially or individually through the Fixed Effect Model analysis approach is to produce that the Poverty variable has a negative influence on the Human Development Index in Padangsidimpuan City, as well as the Economic Growth variable negatively affecting the Human Development Index in Padangsidimpuan City. This is evidenced by the results of statistical testing using the e-views 8

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program, namely the t-table result of 1.671 while the t-statistical Poverty variable is (-5.721238), and for the Economic Growth variable is (-1.760387).

2. The influence of the variables Poverty, and Economic Growth simultaneously affects the Human Development Index in Padangsidempuan City (Fhitung > F-table). It is proven in the results of statistical tests that at a confidence level of 95 percent ( $\alpha = 5\%$ ), with a degree of freedom for numertors (dfn) = 1 ( $k-1 = 2-1$ ) and a degree of freedom for denominators (dfd) = 65 ( $n-k = 70 - 5$ ), an F-table of 3.99 and an F-statistical result of 189.1295 while prob. F the statistics are 0.000000..

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