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The Impact of Digitalization, Inflation and Investment on Economic Growth

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ABSTRACT

Purpose —*Not only in terms of inflation and investment which influence economic growth, but in the current 5.0 era, the digitalization of mobile phone use is a new breakthrough that needs to be seen how it affects economic growth. This research aims to analyze the influence of digitalization, inflation and investment on economic growth in the central region of Indonesia.*

Method — *The data used is panel data, 13 provinces in the central region of Indonesia, namely West Nusa Tenggara, East Nusa Tenggara, West Kalimantan, Central Kalimantan, South Kalimantan, East Kalimantan, North Kalimantan, North Sulawesi, Central Sulawesi, South Sulawesi, Southeast Sulawesi, Gorontalo and West Sulawesi in 2019-2021 using the Multiple Linear Regression Analysis method.*

Result — *The results obtained through Fixed Effect Model estimation show that digitalization as measured by the proportion of mobile phone users has a significant positive influence on economic growth, inflation has a significant negative influence on economic growth, and investment has an insignificant positive influence on economic growth. As we know, provinces in the central region of Indonesia require updates in terms of digitalization to keep up with developments towards the 5.0 era. Based on the results obtained, it is hoped that the digitization of mobile phone use can be increased so that economic growth experiences a positive increase and the government needs to pay attention to the inflation rate to maintain stable economic growth in the central region of Indonesia.*

Keywords: *digitalization, inflation, investment, economic growth*

INTRODUCTION

Economic growth is a process of increasing a country's per capita output continuously over a long period of time. Sukirno (2000:43) states that the goal of the government of every country is always to hope for positive economic growth. Economic growth is a measure of whether a country's economy is healthy or not in order to advance and prosper the nation (Amir Salim & Fadilla, 2021). Each country's economic growth varies according to the resources it has. Economic growth is an important component that is always discussed about how to increase it or how to stabilize it. Economic growth is essentially a reflection of the ongoing development of potential output capacity, which can be measured in the form of an increase in Real GDP over a certain period of time, as well as population growth and increased capacity and increased production of commodities in services per capita (El-Seoud, 2014; Kuznets , 2013; Saragih, 2020).

The world economy in 2019 was in a stable/good condition. However, in 2020 the entire world economy experienced uncertainty due to the Covid-19 pandemic, including Indonesia. The Covid-19 pandemic had a more negative impact on global economic processes in 2020 compared to the last hundred years (Gautam et.al, 2022; Mou, 2020; Saragih 2022). Covid-19 which occurred in 2020 had an impact on various aspects of life, starting from health levels dropping drastically, increasing unemployment, reduced consumption which resulted in people's purchasing power decreasing, difficulties in interacting between communities, uncertainty in the world economy, and other downturns. This reduced economic growth very significantly from 5.02% in 2019 to -2.07% in 2020. The government must think about how to restart the economy and increase economic growth.

Figure 1. Indonesia's Economic Growth Rate

Source: Gross Domestic Product Growth Rate at Constant Prices 2010 (Percent), 2019-2021 (bps.go.id)

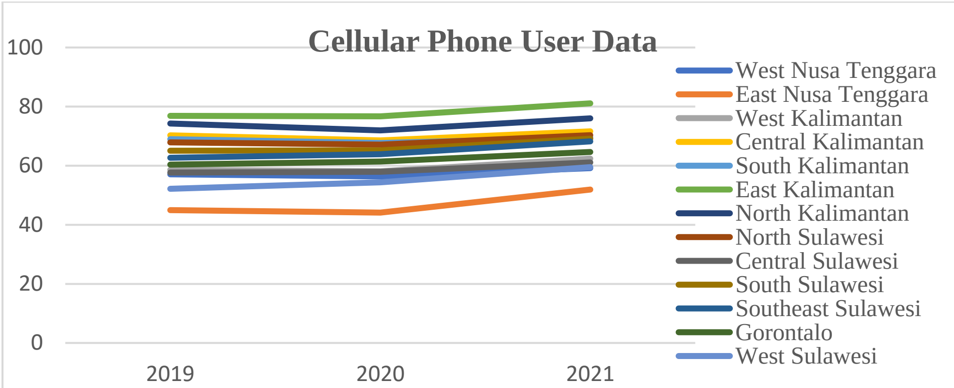
Economic growth as a process of increasing production over time is an important indicator for measuring the success of a country's development (Todaro, 2005; Ma'ruf & Wihastuti, 2008). The central region of Indonesia was also affected by its economy due to the Covid-19 pandemic. Overall, 13 provinces including the central region of Indonesia experienced a drastic economic decline in 2020, reaching minus point. Only Central Sulawesi continues to experience economic growth at plus figures, 8.83% in 2019 and 4.86% in 2020 and then soaring again to 11.7% in 2021.

Figure 2. Economic Growth Ratee of The Central Region of Indonesia

Source: [2010 Series] Growth Rate of Gross Regional Domestic Product at Constant Prices 2010 by Province (Percent)

Covid-19 has caused an increase in digitalization where all activities, whether in terms of work, teaching and learning activities, shopping, service management and even payment systems, have been created online, which ultimately requires people to have cell phones to be able to carry out online activities. This change has an impact on economic activities from the production, distribution and consumption processes. The current shift in people's behavior is changing from the traditional era to the digital era, where economic transaction activities do not have to be carried out by bringing together sellers and buyers, people can buy goods via applications on their cell phones and the goods they buy will arrive at their homes safely. Likewise with the service sector, for example people can go to a place by ordering tickets via an application on their cell phone without having to queue to buy tickets at a ticket sales point. Likewise, payment instrument transactions have also shifted from cash to non-cash. This digitalization is changing economic behavior globally. Digitalization can encourage efficiency, effectiveness and reduce production costs, thereby encouraging economic growth in the future (Sugiarto, 2019).

Figure 3. Cellular Phone User Data



Source: Proportion of Individuals Who Own a Mobile Phone According to Province (bps.go.id)

As time goes by, cell phone users continue to increase, this increase has a positive impact on the economy. This increase in the use of cell phones helps people make economic activities more efficient and effective. Therefore, the development of digitalization is an important aspect to support input for economic development. Where cell phones are not only used as a communication tool but help economic actors in the world of business and entrepreneurship. With the overall average of cell phone users in the central part of Indonesia at 63%, an increase is needed, because it is considered that cell phone users have a positive influence on economic growth. (Ward & Zheng, 2016) added that cellular telephone services play a major role in economic growth in China. (Raeskiesa & Lukas, 2019) stated that the country needs to invest more in human resources to utilize information and communication technology.

Economic growth will also be maintained if inflation is stable. Inflation is an important monetary instrument, where Bank Indonesia maintains its stability so as not to cause economic instability. In simple terms, inflation is defined as a general and continuous increase in prices. An increase in the price of just one or two goods cannot be called inflation unless the increase extends (or results in an increase in prices) for other goods (Bank Indonesia). High and unstable inflation shows that the economy is not doing well. The higher the inflation rate causes a decrease in people's purchasing power which ultimately causes the economy to become sluggish. To maintain the sustainability of increasing economic growth, price balance is important. Price stability in conducting monetary policy to maintain sustainable economic growth and strengthen domestic currency trade (Umaru and Zubairu, 2012)). Inflation is seen as one of the most important factors influencing a country's economic growth. There are various views regarding the impact of inflation on economic growth, including in 1958, Philips stated that growing inflation would positively influence economic growth by reducing the unemployment rate. The Keynesian model consists of Aggregate Demand (AD) and Aggregate Supply (AS) curves describing the relationship between inflation and economic growth. The short-term curves AD and AS show a positive relationship between inflation and economic growth in the short term. However, it turns out that in the long term it shows a negative relationship (Erika Feronika, 2020).

Apart from that, investment is a very important variable in driving a country's economy. Therefore, the government of every country, both developing and developed countries, continues to strive to increase investment in their country, both investment originating from within the country and investment from abroad. Investment can be divided into two types, namely real investment and financial investment. What is meant by real investment is investment in long-lasting goods (capital goods) that will be used in the production process. Meanwhile, financial investment is investment in securities, for example purchasing shares, bonds and other proof of debt. Investment is a tool to accelerate growth in a developing country. Many economists include Keynes (Jhingan, 2003, 134), Mankiw (2006: 93), Harrod Domar (Arsyad, 2010: 86), Solow-Swan (Arsyad, 2010: 89), Kuznet (Arsyad, 2010: 277), Todaro (2000:136), and Schumpeter (Sukirno, 2008:122) have stated theoretically that investment is positively correlated with the level of economic growth in research (Bonaraja Purba, 2020).

Based on the description above, it can be explained that economic growth can be increased through improving the quality of digitalization, maintaining stable inflation rates and increasing investment. Digitalization in the central region of Indonesia needs to be further increased because digitalization makes economic activities more efficient and effective. Maintaining inflation also needs to be done so that the economy remains in a stable condition, and investment must be increased because investment is a driver of the economy that comes from within and outside the country.

RESEARCH METHODS

This research uses explanatory and descriptive methods. The data used is panel data, consisting of 13 provinces in the central region of Indonesia, namely West Nusa Tenggara, East Nusa Tenggara, West Kalimantan, Central Kalimantan, South Kalimantan, East Kalimantan, North Kalimantan, North Sulawesi, Central Sulawesi, South Sulawesi, Southeast Sulawesi, Gorontalo and West Sulawesi in 2019-2021. This research uses Panel Data Test, Random Effect Model (REM), Fixed Effect Model (FEM), Common Effect Model (CEM), and Hypothesis Test.

Regression analysis can be used to determine the relationship between the dependent variable and one or more independent variables. Panel data regression is a regression technique that combines cross-section data and time-series data. Using panel data regression has several advantages, namely obtaining better estimates because increasing the number of observations automatically has the effect of increasing degrees of freedom and avoiding errors when deleting variables. In the panel data regression model, there are three types of estimation, Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM) (Salsabila et.al, 2022).

Table 1. Operational Definition

Variabel	Symbol	Units	Source
Dependent			
Economic Growth	Gross Domestic Regional Product Constant Price	Million	BPS
Independent			
Digitalization	Proportion of Cell Phone Users Inflation	Percentage	BPS
Inflation	Investment	Percentage	BPS
Investment		Million	BPS

This research analyzes the influence of digitalization, Inflation, and investment on economic growth. Therefore, this research uses the following models.

$$GRDP_{it} = \beta_0 + \beta_1 PHp_{it} + \beta_2 Inf_{it} + \beta_3 Inv_{it} + \mu_{it}$$

Notes:

$GRDP_{it}$	: Economic Growth
PHp_{it}	: Proportion of Cell Phone Users
Inf_{it}	: Inflation
Inv_{it}	: Investment

RESULTS AND DISCUSSION

Results

Based on the results of data tests that have been carried out for the models, it is found that the Fixed Effect Model is the best model to see the relationship between the variables. This model has been selected twice, namely in the Chow test and Hausman test, so that it can be concluded that of two models the fixed effect model is more appropriate in interpreting panel data in this research. As presented in table 1 below. The use of FEM, in testing the hypothesis using the F test, showed that all of the variables studied jointly affect the economic growth rates significantly with ÿ = 5%. Furthermore, the coefficient of determination of independent variables on economic growth is 99.9%. indicating that this model is considered valid from the results of the testing process. The following table shows the estimation results of independent variables on economic growth in the 13 provinces in the central region of Indonesia.

Table 2. Panel Data Regression Model Test

Test	Splitting	Unsplitting
Chow Test	*	*
Hausman Test	*	*

Source: Data Processed By The Author, 2023

Notes:

Chow Test: Chi-Square prob < 5%, H0 accepted. This indicates the best model is FEM

Hausman Test: Cross-Section prob < 5%, H0 accepted. This indicates the best model is FEM.

Based on the results of data processing that has been done by authors, the regression results can be seen in table 3, namely, Independent variables on economic growth in 13 provinces in the central region of Indonesia.with α = 5%. The variable of digitalization has a significant positive effect on economic growth. While the variable Inflation has a significant negative effect on economic growth. And investment variables have a positive insignificant effect on economic growth.

Table 3. Data Processing Results

Variabel	**FEM**	**REM**	**CEM**
Proportion of Cell Phone Users	**0.007727**** **(0.001746)**	**0.008048**** **(0.001739)**	**0.031031**** **(0.011659)**
Inflation	**-0.008312**** **(0.003709)**	**-0.008480**** **(0.003708)**	-0.066147 (0.088323)
Investment	0.004236 (0.003525)	0.004691 (0.003523	**0.240543**** **(0.060676)**
C	31.74331 (0.120317)	31.71922 (0.196558)	28.33148 (0.823789)
R Square	**0.999521**	**0.357852**	**0.453955**
Adj. R-S	0.999209	0.302811	0.407152
F-statistic	3202.800	6.501524	9.9699109
Prob (F-statistic)	0.000000	0.001298	0.0000084

Source : Data Processed by The Author, 2023
Notes : 1% significance (***), 5% significance (**), 10% significance (*)

Discussion

Based on the results of tests conducted by the authors, two of the three variables studied have a significant effect on growth in 13 provinces in the central region of Indonesia. The first variable is digitalization (PHp) which has a significant positive effect, meaning that every increase in digitalization by 1 million, causes an increase in economic growth by 0.007727% in 13 provinces in the central region of Indonesia. This is supported by the research of (Novianti Ayu Gita & Asmara Alla, 2023), where owning/controlling a cellular phone has a positive and significant influence on Indonesia's economic growth. This result is indirectly different from (Khubbi Abdillah's, 2023) research which argues that internet use does not have a significant effect on economic growth. The positive impact of digitalization on increasing economic growth occurs if the economic environment supports the innovation transformation of information and communication technology (Aleksandrova, Truntsevsky, & Polutova, 2022).

The second variable is Inflation (Inf) which has a significant negative effect, meaning that every increase in inflation by 1%, causes a decrease in economic growth by 0.008312% in 13 provinces in the central region of Indonesia. This is supported by the research of (Erika Feronika Br Simanungkalit, 2020),where inflation has a negative significant effect in economic growth. Same as the research of (Amir Salim Fadilla & Anggun Permatasari, 2021), where inflation has a significant effect on economic growth. Similarly, (Datta & Kumar, 2011) also argue that there is a short-term relationship between inflation on economic growth. Slightly different from research conducted by (Yulia Dwi Kartika & Johni Paul Karolus Pasaribu, 2023), inflation has a significant positive effect on economic growth.

The last variable in Investment (Inv) which has a positive non-significant effect on economic growth, it means partially, investment variables have no effect on economic growth. This is supported by the research of (Rosma Simangunsong, 2021) which argues that investment has no influence on economic growth. It is different from the opinion of (Tiarra *et.al*, 2022) which argues that domestic investment has a significant effect on economic growth.

Table 4. Effect of Independent Variable on Economic Growth

Variable	GDRP	Sig.
PHp	+	**
Inf	-	**
Inv	+	*

Source : Data Processed by The Author, 2023

Notes : 1% significance (***), 5% significance (**), 10% significance (*)

CONCLUSION

Based on FEM model calculations, two of the three research variables influence economic growth in 13 provinces in the central region of Indonesia. Namely, digitalization has a significant positive effect on economic growth and inflation has a significant negative effect on economic growth. Meanwhile, investment has an insignificant influence on economic growth in 13 provinces in the central region of Indonesia.

The limitations of this research are the lack of data regarding digitalization variables which need to be expanded further to internet use, digital economy, etc., as well as the difficulty of finding previous research regarding the relationship between digitalization and economic growth. Suggestions for authors can further expand the reach of digitalization and add other variables.

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