MediaTrend 19 (1) 2024 p. 17-32
Media Trend
Berkala Kajian Ekonomi dan Studi Pembangunan
http://journal.trunojoyo.ac.id/mediatrend

Analysis of Potential Sector Investment Needs to Increase Economic Growth in East Java

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Article Information

History of article:
Received January 2023
Approved February 2023
Published March 2024

A B S T R A C T

Investment is the main means of encouraging economic growth. Investment realization in 2019 and 2020 experienced a positive trend. However, despite experiencing a positive trend, investments made in 2019 and 2020 will most likely not have a positive impact on economic growth in East Java Province. So that investment can be more efficient in its allocation, it is important for a region to know the investment needs in economic sectors, especially in potential economic sectors. The analysis used is Class Typology, Semi Average, and ICOR analysis. The results of this research conclude that there are four potential sectors in East Java Province, namely (1) the mining and quarrying sector, (2) the information and communication sector, (3) the real estate sector, and (4) the educational services sector. The investment required by the potential sectors of East Java Province is (1) Mining and Quarrying amounting to IDR 27,650.79 billion, (2) Information and Communication amounting to IDR 29,427.33 billion, (3) Real Estate amounting to IDR 5,834.45 billion, and (4) Education Services Rp. 8,269.42 billion. The limitation of this research is to realize the welfare of the people of East Java Province, analyzing potential/ excellent economic sectors, not only economic sectors that produce economic growth rates (GRDP). However, it would be better if it was prepared by analyzing economic sectors that produce high employment opportunities so that it can be used as comprehensive input for the East Java Provincial Government to analyze and give priority to potential/ excellent economic sectors to realize regional development. The policy recommendation, namely supporting the existing economic subsector functions of East Java Province, can be achieved by developing potential subsectors that can be utilized in the East Java Province region, so that it will further increase East Java's economic growth. The province and the determination of the functions of the East Java Province to be developed must be based on the potential of the economic subsectors of the East Java Province.

Keywords: *Potential Sectors, Investment, Economic Growth*
JEL Classification Code: *O47, O17, P33*

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DOI: http://dx.doi.org/10.21107/mediatrend.v19i1.18795

INTRODUCTION

Economic growth can be measured from the economic development of a country. Increasing output production in an economic activity is called growth (Nuraini, 2017). Economic development in potential sectors plays a major role in providing a positive influence on other sectors (Mili, Lapian, & Siwu, 2021). Development in the economic sector requires capital as support through the natural wealth owned by each region (Muljaningsih, Hendrati, & Wahed, 2019). The large role of investment in the economy of a country or region makes investment and economic growth inseparable, investment can influence the level of economic development and growth of a country or region (Purwadi & Jamaluddin, 2020).

Investment is the key to economic growth because investment can create income and can expand production capacity by increasing capital stock. Investment is an important factor in supporting economic development and development of a region (Manampiring et al., 2023). Investment is useful for measuring the performance of an economic activity, which is one of the important indicators in the economy, so careful calculations are needed about the amount of investment needed to achieve economic growth goals (Ngahu, Lapian, & Siwu, 2021).

Investment allocation can be more efficient when a region knows the investment needs in the economic sector, especially in potential economic sectors. Investing in these sectors can increase economic growth through increasing output. So, the right strategy for local governments to allocate investment more efficiently and according to objectives is that an analysis of the amount of investment needed is very necessary.

The phenomenon that occurs is the economic condition of East Java Provincerecorded growth of 5% between 2017-2019, but in 2020, the East Java Province economy's growth rate fell by -2.33%, a significant decrease compared to the previous year. Most business sectors experienced negative growth or reduction due to the Covid-19 pandemic. A total of 3.57% positive growth in 2021, illustrates that in East Java there has been economic improvement thanks to the easing of activities (BPS East Java, 2022).

Investment is the main means of encouraging economic growth. From 2017 to 2021, investment in East Java Province fluctuated and decreased in 2017 and 2018. However, investment realization in East Java Province in 2019 grew positively by 14.16%. Investment realization in 2019 and 2020 has a positive trend. However, even though the trend is positive, investments made in 2019 and 2020 are unlikely to have a positive impact on East Java's economic progress. It is proven that the economic growth rate in 2020 has a negative trend of -2.33%.

This may be caused by inaccuracies in a region in the allocation of investment funds. The allocation of investment funds must be reviewed so that investment funds can increase productivity effectively and efficiently (Mujib, 2019). The economic situation in East Java still needs to be improved. Improving the investment climate to encourage economic growth in East Java is very important to improve community welfare. Thus, developing an appropriate strategy is very necessary by analyzing potential sectors in East Java as well as investment needs in potential sectors in East Java. In planning investment in a region, ICOR analysis is needed as a determinant of future investment projections (r Jumiyanti & Hasan, 2021).

Based on research conducted (Wulandari & Nasikh, 2022) analysis Incremental Capital Output Ratio (ICOR) is used as an indicator of the effectiveness of investment use and allocation in a period. In research (Setiyanto, 2016). It was also explained that ICOR can be used to

calculate the target amount of investment required based on the economic growth target to be achieved. In this case, what needs to be done is to calculate investment needs according to each subsector after the economic growth target has been set. So that achieving economic growth targets and meeting investment needs can be done together. ICOR can also be used by the government to create various policies and estimate investment needs in the next period. With this background, it is certain that investment is an important part that can support the accelerated economic growth of a region.

Based on research (Yollit Permata, 2022) that economic growth can cause the environment to be degraded, and that government policies play a role in transferring resource-saving and clean production technologies from developed countries to developing countries. Next is research (Evanthi et al., 2023) that investors prefer options that provide favorable results and are consistent with their expectations. Research result (Assidikiyah et al., 2021) states that the basic sectors include the processing industry sector, water supply, waste management, waste and recycling, wholesale and retail trade, provision of accommodation and food and drink, information and communication. Before the Covid-19 pandemic there were more sectors that drove National GDP growth and locational profits compared to during the Covid-19 pandemic. Furthermore, research conducted by (Purwadi & Jamaluddin, 2020) that the ICOR ratio from 2010 to 2019 has a positive trend value, however there is a minimum ICOR value of -1.75 which is the ICOR coefficient in 2019. The increase in GRDP in Papua Province has experienced a fluctuating increase and has an effect on ICOR (Jamaluddin et al., 2020) those with positive values are not significant. The higher the GRDP, the investment provided by investors will increase, but the increase will not be too significant in the economy.

Research conducted (Rohmah, 2021) states that a potential economic sector is a sector that has a greater production value compared to other sectors. The results of this research show that there are four basic sectors in Bangkalan Regency, namely the agricultural sector, mining sector, construction sector and transportation sector. This research is supported by the results of research conducted by (Manampiring et al., 2023) that there are 9 leading sectors in Minahasa Regency, namely the agriculture, forestry and fisheries sectors, which are the sectors with the greatest investment needs. Next is research (Mujib, 2019) also stated that there are eight leading sectors in Lamongan Regency, namely (1) the agriculture, forestry, fisheries sector, (2) the water supply sector, waste management, waste and recycling, (3) the construction sector, (4) the information sector and communications, (5) real estate sector, (6) government administration, defense and mandatory social security sectors, (7) health services and social activities sectors, (8) other services sectors.

Meanwhile, research conducted by (Rajab & Rusli, 2019) that at constant prices in 2010, the sectors with the dominant contribution were the Agriculture, Forestry and Fisheries sectors with a value of 46.81%. Likewise, based on current sector prices, Agriculture, Forestry and Fisheries have a high contribution with a value of 49.25%. Research conducted by (Wahidin et al., 2023) that the Klassen typology shows that there are two potential sectors, namely the Agriculture, Forestry and Fisheries sectors; and the Transportation and Warehousing sector. Furthermore, research conducted by (Ernawati et al., 2022) that the base sectors are the Agriculture, Forestry and Fisheries Sectors; Electricity and Gas Procurement Sector; Water Supply, Waste Management, Waste and Recycling Sector; Construction Sector; Wholesale and Retail Trade Sector;

Car and Motorcycle Repair; Real Estate Sector, Government Administration Sector, Defense and Mandatory Social Security, Education Services Sector and Other Service Sectors. The Construction and Real Estate sectors are basic sectors, sectors that are advanced and growing rapidly and are competitive compared to the same sectors at the East Kalimantan Province level.

Apart from the agricultural sector, based on the Klassen Typology analysis with research conducted by (Napitulu et al., 2021) shows that there is one sector that is advanced and growing rapidly, namely the industrial sector. Next are the research results (Baransano et al., 2020) that there are superior sectors, namely the construction sector, government administration sector, defense and mandatory social security, wholesale and retail trade sectors; car and motorbike repairs and there are also potential sectors, namely the agriculture, forestry and fisheries sectors. This research is in line with research conducted by (Veransiska & Imaningsih, 2022) with the results of the LQ analysis, it is concluded that there are 10 basic sectors in the city of Semarang. The one that got the highest LQ score was in the construction sector with an F score of 2.503. Other research was also conducted by (Mulyanto & Rachmawati, 2021) which analyzed industrial potential based on the Location Quotient (LQ) method in the East Java region, concluded that the economic structure of the agricultural, forestry and fisheries sectors had shifted or changed to manufacturing. For the information and communication sector, it is hoped that all related aspects, especially the government, will pay more attention to this area.

Next are the research results (Masbiran, 2019) that typology analysis based on economic indicators shows that there are 7 (seven) districts in the Disadvantaged Regions quadrant, 5 (five) districts in the Developed Regions quadrant, 4 (four) districts in the Developed But Depressed Regions quadrant, and 3 (three) districts in the Developing Regions quadrant Fast. Based on welfare indicators, regions with high per capita income and HDI are City administrative regions, while regions with low per capita income and HDI are dominated by district regions. Research conducted by (Purwadi, 2020) also shows that the ICOR value in a district/city can be calculated based on the efficiency classification which is divided into high, medium and low according to the ICOR value.

Research conducted by (Wikantioso, 2020) stated that investment productivity and efficiency are still low, development of quality infrastructure, workforce, good institutions, and intensification of investment marketing need to be given top priority in the development agenda to attract and improve investment productivity and efficiency. Furthermore, research conducted by (Yamani, 2022) that investment activities are relatively less efficient or that developing economic activities tend to be capital intensive. This is influenced by, among other things, unsupportive human resources as well as suboptimal logistics routes and complicated licensing processes which also cause high ICOR values. ICOR improvements need to be carried out, among other things, through investment reconfiguration, namely encouraging investment in export-oriented sectors, supporting human resource development, and supporting digitalization. Based on research conducted (Murjoko et al., 2020) regarding the efficiency and investment needs of the agricultural sector in Central Java Province, the policies implemented by the Regional Government to support the entry of investment in the agricultural sector in general are providing ease of licensing through One Stop Integrated Services (PTSP), Acceleration of Business Implementation (Ease of Doing Business), and improving the increasingly conducive investment climate. This is in line with re-

search (Setiyanto, 2016) states that both the central government and regional governments can coordinate regarding the policies needed to focus investment on sub-sectors or low-level sectors in order to increase investment both from private government and community investment.

Research conducted by (Rejeki, 2019) that high income potential can be seen from the average sectoral GDP growth rate which is higher compared to the average GDP growth rate per sector. High income potential exists in almost all business sectors, except for two sectors, namely the Mining and Quarrying Sectors. Other research was also conducted by (Devi, 2014) in Buleleng Regency which shows the results that the sub-sector that requires the greatest investment is the private sub-sector which includes social, community and individual sub-sectors and household sub-sectors.

Different from previous studies by (Gurning & Wake, 2020) which states that the efficiency of investment in improving the economy for districts/cities in North Sumatra has decreased (the ICOR value was high in 2018. This is due to the ability of district/city areas to receive technology and the ability to innovate is inadequate. The same thing also happens In the Mojokerto area, the Mojokerto ICOR coefficient value in the last 5 years shows a figure above 6% so it can be said that investment in this city is still not effective (Wulandari & Nasikh, 2022). However, this is different from the Jambi region where investment efficiency has a greater influence on ICOR (low value) (Marissa et al., 2019). These results are in accordance with research (Yulianita et al., 2019) which states that Riau Province, Jambi Province, Bengkulu Province and Lampung Province have grown better than other provinces on the island of Sumatra at the same stage of development without any increase in the proportion of investment to gross income.

Research conducted by (Pattilouw, 2023) shows that the lowest or most efficient ICOR value in making investments at the district/city level is Ambon City, Central Maluku Regency and Aru Regency, while the highest ICOR value (inefficient investment) is East Seram Regency (SBT), followed by Southwest Maluku Regency , and Tanimbar Islands Regency (KKT). Different from the study results (Purwadi & Jamaluddin, 2020) in Papua which states that the ICOR ratio from 2010 to 2019 has a positive trend value, however there is a minimum ICOR value of -1.75 which is the ICOR coefficient in 2019 and the increase in GRDP in Papua Province has experienced a fluctuating increase, this also has an influence the ICOR which has a positive value is not significant.

Study conducted by (Koyongian et al., 2019) in Manado on different variables states that in the last ten years (2006-2015) government spending, investment and labor have had a small and insignificant influence on economic growth in Manado City. In line with research (Munifah & Daryono, 2019), based on ICOR results in Indonesia for the 2000-2017 period, it shows efficient results in the use of output (investment) in Indonesia. The results of the correlation analysis show that there is a negative relationship between ICOR and economic growth. Meanwhile, different research conducted by (Ramadin, 2022) said that the development of Pekanbaru City's ICOR experienced fluctuations in value from 2016 to 2020. Based on fluctuations in ICOR values that occurred on investment efficiency in Indonesia, dynamic ICOR values to increase efficiency can be done through improving performance and increasing development efficiency, as well as improving investment climate conditions. accompanied by conducive policies and their implementation (Shinta & Solikin, 2022).

The gap in this research is that the results of previous research on the leading sectors are different and there are even dif-

ferences with the results of preliminary surveys in the field in the research carried out, this can be caused by the potential that a region has which is different according to geographical conditions and even economic growth. The most recent research carried out is analyzing investment needs to increase economic growth, so each sector is analyzed to find out whether it has potential or not with the encouragement of investment needs for that sector to become potential.

There are several theories related to increasing investment efficiency on the ICOR value, including planning, calculation, investment and potential sector theories. Planning isa process of determining organizational goals and also presenting them more clearly with various strategies, tactics, and operations needed to achieve the main goals of the organization as a whole (Suandy, 2021). The function of planning is a systematic preparation of various activities that need to be carried out in order to achieve goals (Handoko, 2019). The three main things in planning theory are: a) the meaning of planning, b) substantive planning, namely what and for whom to plan, and c) normative planning, namely how and for what reasons the plan will be implemented. Some basic concepts related to planning include (Mahi & Trigunarso, 2017):

1. From the perspective of basic human activities which are manifested in human actions at all levels of society, planning is "a system of human thought and behavior that is oriented towards the future".
2. From a rational choice perspective, planning is "a system of determining behavior for the future appropriately using selection steps".
3. From a problem solving perspective, planning is "a problem solving process that targets a specific problem."

Economic growth is a continuous increase in average product over a long period of time. In order to sustain economic development and improve people's welfare, a condition is required, namely high economic growth (Machmud, 2016). According to his theory, Harrod Domar has stated that the conditions that need to be met so that growth can be strong and stable over a long period of time can be achieved is through investment (Pure, 2016).

Harrod-Domar's growth theory is an extension of Keynes' analysis of national economic activity and labor problems. The Harrod-Domar theory analyzes the conditions necessary for the economy to grow and develop in the long term. In other words, this theory tries to show the conditions needed for the economy to grow and develop steadily (Lincolin, 2018).

The Harrod-Domar theory has several assumptions, namely:

a) The economy is in a state of full employment and the capital goods that comprise society are used in full.
b) An economy consisting of two sectors, namely the household and the corporate sector, means that government and foreign trade do not exist.
c) The amount of public savings is proportional to the amount of national income, meaning that the savings function starts from zero.
d) The propensity to save (marginal propensity to save = MPS) is constant, as is the ratio between capital-output (capital-output ratio = COR) and the capital-output increase ratio (incremental capital-output ratio = ICOR)

According to Todaro in (Hapsari & Zakiah M, 2018) Harrod Domar's model deals with the effect of additional capital on a product, referred to as ICOR. In order to achieve improvement goalsincome or economic growth of a region, so it is necessary to know the amount of investment required using the Incremental Capital Output Ratio (ICOR) which is an economic indicator. Because ICOR is an economic indicator that links a region's income with investment, by using ICOR you can estimate the amount

of investment needed so that a predetermined economic level can be achieved.

According to Fitzgeral, investment is an activity that involves withdrawing resources (funds) used to procure current production equipment and to produce new product lines that will be created in the future. According to this definition, investment is constructed as an activity aimed at: (1) withdrawing from capital sources used to purchase means of production; (2) Production equipment will create new products (Sudirman & Alhudhori, 2018). Investment activities carried out by the community continuously will increase economic activity and employment opportunities, increase national income and increase the level of prosperity of the community (Sukirno, 2018). This role originates from three important functions of investment activities, namely (1) investment is a component of aggregate expenditure, so that an increase in investment will increase aggregate demand, national income and employment opportunities; (2) the increase in capital goods as a result of investment will increase production capacity; (3) investment is always followed by technological developments.

Potential sectors are certain to have greater potential to grow faster than other sectors in a region, especially the supporting factors for these potential sectors, namely capital accumulation, growth in the workforce absorbed, and technological progress. Creation of investment opportunities can also be done by empowering the potential of superior sectors owned by the region concerned. Potential sectors in an area (region) are closely related to GDP data from the area concerned (Arifin, 2019). Economic sectors will be considered potential sectors if they fulfill the following conditions, namely 1) potential sectors can produce products with high demand; 2) can creatively adopt existing technological advances; 3) the occurrence of additional investment in potential sectors of the products produced; and 4) potential sectors must continue to develop(Pratiwi & Warnaningtyas, 2017). The Klassen Typology analysis technique is useful for analyzing potential sectors in an area.

METHODOLOGY

Analysis Method

A quantitative research approach was used in this research, namely using statistical formulas to help the process of analyzing the data obtained. The definition of a quantitative method is a method that is based on positivist philosophy, statistically aims to investigate a population or sample, collect data using research tools, and answer existing hypotheses, or analyze quantitative data (Sugiyono, 2018). This research was conducted to analyze the amount of investment needed by potential sectors to encourage economic growth in East Java. This research was conducted in East Java becauseEast Java Province has regional characteristics that have the potential to be developed because of its strategic location, various tourist attractions on offer ranging from mountains, cliffs, caves to waterfalls which can be found in almost every district/city in East Java. East Java is also known as the industrial and financial center of Eastern Indonesia. This research uses secondary data, namely data from related institutions, or data that has been published by related agencies/institutions so that it can be taken for reprocessing. The agencies in question are BPS Indonesia and East Java Province.

The analysis techniques of Klassen Typology, Semi Average, and ICOR were used in this research. East Java's potential sectors were analyzed using the Klassen Typology analysis technique, to project growth targets for potential sectors using the Semi Average analysis technique and to analyze investment needs using the ICOR analysis technique. Klassen typology analysis is used in this research because it suits the research topic being stud-

ied. Klassen typology analysis is used to determine the characteristics of the pattern and structure of economic growth in each region by dividing regions based on indicators of economic growth rate and GDP per capita. The ICOR analysis technique is used by researchers because ICOR analysis makes it easier for development planners to determine the amount of investment needed to achieve the expected level of economic growth. The time period used in ICOR analysis in this research is 2012-2021.

Variable Definition

This research uses three types of variables, namely:

1. Investment needs

Investment is an activity that involves withdrawing resources (funds) used to procure current production equipment and to produce new product lines that will be created in the future. Investment needs are analyzed using the ICOR technique, namely:

The ICOR technique for calculating the investment coefficient can use the ICOR (Incremental Capital Output Ratio) formula, which is a comparison of additional capital/investment with increased production(Masri, 2022). To calculate the ICOR value, use the formula below, namely:

$$\text{ICOR} = \frac{I}{\Delta Y} = \frac{I_t}{PDRB_t - PDRB_{t-1}}$$

where I is Investment Value, ΔY is Increase in Output

In the future, economic activities will require investment, which is an important factor for economic development. So, in order to achieve the expected economic growth for the future, the amount of investment needed must be planned. The formula used to determine investment needs if the ICOR value is known is as follows (Kornita & Taryono, 2016):

$$\Delta Kt = \text{ICOR} \times \text{gt} \times Y_{t-1}$$

where ΔKt is investment requirements for year t, $ICOR$ is ICOR coefficient, gt is economic growth rate year t, Y_{t-1} is output in year t-1

2. Potential Economic Sectors

A potential economic sector is a sector that has comparative advantages and is highly competitive compared to other sectors in a region. The potential economic sector is able to provide high added value so as to encourage regional economic growth. Analyze potential economic sectors using semi average analysis techniques. The half-average technique is data that is divided into two members, namely member one and member two. Then, the basis for calculating the projection uses these two parts. The Semi-Average Method has the following formula:

$$\mathbf{Y' = a + b\,(x)}$$

where Y' is results projection, a is base year (middle years) b is semi average II - semi average I/n, n is the amount of data in a part, x is time

3. Economic growth

Economic growth is an increase in the amount of output (goods and services) produced by a region within a certain period of time. Economic growth is a measuring tool to determine the level of prosperity of a region. A region that has a high level of economic growth is considered to have a high level of welfare. The economic growth of a region reflects an increase in people's income in that region. Analyzing economic growth in this research uses the Klassen typology analysis technique. Using Klassen's typology, the potential of economic sectors on the basis of GRDP can be found. Klassen's typology divides sectors through the growth rate (r) and contribution (y) of one or more particular sectors to the total GRDP of a region (Masri, 2022).

RESULTS AND DISCUSSION

Klassen Typology

To find out East Java's potential economic sectors using the Klassen Typology analysis technique. The Klassen typology is seen through a comparison of the growth of the East Java economic sector (gi) with the growth of the national economic sector (g) and a comparison of the contribution of the East Java economic sector (si) with the contribution of the national economic sector (s). The results of the analysis are below, namely:

It is known in Table 1 that there are four sectors classified as potential sectors in East Java. The four potential sectors are (1) the mining and quarrying sector, (2) the information and communications sector, (3) the real estate sector, and (4) the educational services sector. Of the four potential sectors, the sector is one that continues to develop or is not saturated.

Of the four potential sectors, the information and communication sector is the main contributor to the formation of East Java Province's GRDP in 2012-2021. The information and communication sector increased by 6.89% during the Covid-19 pandemic. The rise of work-from-home learning activities has caused demand for credit and data packages to increase significantly, thereby accelerating the development of the information and communications sector.

Table 1.
Results of Klassen Typology Analysis

Criteria	Sectoral Growth (gi≥g)	Sectoral Growth (gi≤g)
Sectoral Contribution (si≥s)	Quadrant I Advanced Economic Sector • Processing Industry Sector • Wholesale and retail trade sector; car and motorbike repair • Accommodation and food and drink provider sector	Quadrant II Advanced But Depressed Economic Sector • Water supply, waste management, waste and recycling sectors
Sectoral Contribution (si≤s)	Quadrant III Potential Economic Sectors or Still Developing • Mining and quarrying sector • Information and communication sector • Real estate sector • Educational Services Sector	Quadrant IV Relatively Underdeveloped Economic Sector • Agriculture, forestry and fisheries sectors • Electricity and gas procurement sector • Construction Sector • Transportation and warehousing sector • Financial services and insurance sector • Corporate Services Sector • The government administration, defense and social security sectors are mandatory • Health services and social activities sector • Other Service Sectors

Source: Klassen Typology Calculation Results, 2022

Furthermore, there are potential sectors which are sectors that have greater production value compared to other sectors (Rohmah, 2021) which includes the mining and quarrying sectors. The mining and quarrying sector includes oil, gas and geothermal extraction; mining metal ore; and other mines and quarries. In 2021 the mining and quarrying sector will contribute 3.94% to the East Java economy. The role of this sector increased by 0.42 percentage points from 3.52% in 2020. The increasing contribution of this sector was due to higher world crude oil prices in 2021. According to (Murti & Sahara, 2019) the mining and quarrying sector contributes 29% per year to the largest contributor to East Java's PDRN.

Furthermore, in East Java there is a potential sector, namely real estate. The contribution of the real estate sector in the last 5 years has not changed much. The amount of contribution is 1.59% in 2017; increased 1.63% in 2018; increased 1.66% in 2019; in 2020 as much as 1.79%; and decreased by 1.72% in 2021. Meanwhile, in 2021 the growth rate was 2.29%, slower than the increase in 2020 of 3.95%.

The last potential economic sector in East Java is the education services sector. The education services sector in 2021 grew by 1.26%, slower than 3.96% in 2020. Compared to 2020, the role of this active sector also fell from 2.83% to 2.70%.

Based on the results, it shows that the information and communication sector is the main contributor to the GRDP of East Java Province in 2012-2021 because currently many people use internet data for social media, online transactions and so on. The use of information and communication technology is one of the drivers of economic transformation, technological advances have changed the way of production. Increasingly developing technology makes the information and communication sector superior because many things can be done easily, for example many people can work online at home, children go to school online, even shopping online has become a habit for people. The results of this study are in accordance with the research results (Fitriansyah, 2021) that the information and communication sector is a potential sector that can absorb labor.

Incremental Capital Output Ratio(ICOR)

Making a comparison between the increase in the total amount of investment and the increase in the total number of products is the ICOR calculation in an area. Calculating the ICOR value is very important and useful for obtaining information that can be used as a basis for calculating how much investment is needed to achieve the desired economic growth (Shinta & Solikin, 2022). Analysis Incremental Capital Output Ratio (ICOR) is used as an indicator of the effectiveness of investment use and allocation in a period (Wulandari & Nasikh, 2022). In research (Setiyanto, 2016)It was also explained that ICOR can be used to calculate the target amount of investment required based on the economic growth target to be achieved. The efficient level of investment in economic sectors is known through the results obtained, if a high ICOR result means the less efficient investment in the economic sector, while a sector with a low ICOR result indicates that investment in that sector is more productive. Below are the results of the ICOR calculation, namely:

Table 2 shows the four potential sectors of East Java Province in 2012-2021 whose ICOR values are calculated. These sectors show the ICOR values that have been calculated, namely (1) the mining and quarrying sector at 16.88, (2) the information and communication sector at 3.82, (3) the real estate sector at 5.90, and (4) educational services sector of 6.61. Sectors with a low ICOR value indicate that they are producing goods and services efficiently. One of the potential sectors, namely the information and communication

Table 2.
ICOR Value of Potential Sectors of East Java Province

No	Sector	Average ICOR Value
1	Mining and excavation	16.88
2	Information and communication	3.82
3	Real estate	5.90
4	Educational services	6.61

Source: Processed Data

sector, is a potential sector with the lowest ICOR value, namely 3.82. The meaning of the ICOR value is that the information and communication sector requires an investment of 3.82 in producing a product. Compared to the other four potential sectors, this sector is the most efficient sector.

However, the sector with the highest ICOR results is the mining and quarrying sector with an average ICOR of 16.88. The high ICOR results indicate that investment in this sector is inefficient because larger investments are required to produce a product. Additionally, according to (Shinta & Solikin, 2022) The high ICOR value or low level of investment efficiency that occurs in Indonesia is caused by waste.

Sectors that have low ICOR values indicate that these sectors are efficient in producing goods and services. These sectors only require relatively lower investment to produce one unit of goods and services, while sectors that have high ICOR values can be said to mean that the investment invested in this sector is less efficient in its use, because it requires relatively more investment to produce one unit. units of goods and services in that sector. Not all potential sectors in East Java Province have low ICOR values, which means that not all potential sectors have a good level of efficiency. This indicates that developing potential sectors also requires large investments until the sector experiences growth. The role of leading sectors is very necessary in encouraging economic growth in East Java Province. Increasing the total investment value can be one of the strategic plans to boost economic growth in East Java Province in the future. The results of this study are in accordance with the research results (Ngahu, Lapian, & Siwu, 2021) that the information and communication sector is an efficient sector.

Potential Sector Investment Needs

The allocation of investment funds is also something that needs to be studied by the East Java Provincial government. The aim of allocating investment funds is to avoid inefficiencies in investment activities. Inappropriate allocation of investment funds will reduce the rate of return (profit) obtained by investors and can slow down the rate of economic growth in East Java Province. Therefore, it is necessary to know the sectors that have the potential to provide greater returns or income. East Java Province has four potential sectors. The output from these sectors has cooperative advantages so that it is able to compete with output from other regions. These sectors are sectors that can provide higher added value than other sectors. Therefore, allocating investment funds in potential sectors can provide higher profits and returns so that these sectors must be made a top priority in investment activities.

In accelerating the economic growth of East Java Province, it is necessary to know the amount of investment required. The investment required must be known in order to facilitate the achievement of the economic growth targets de-

sired by East Java Province. The results of the ICOR value show the minimum investment a region has in order to achieve its growth goals. Regarding efficiency and investment needs, the policies implemented by the Regional Government are expected to be able to prioritize the economic sector to be managed and developed and to be more focused in handling it so as to produce sectors that can become priorities and provide added value to improve the welfare and economy of the community. This is in line with research (Setiyanto, 2016) states that both the central government and regional governments can coordinate regarding the policies needed to focus investment on sub-sectors or low-level sectors in order to increase investment both from private government and community investment.

Before calculating how muchThe amount of potential sector investment needs, it is necessary to know the projected growth targets for potential sectors in East Java Province in 2022. The semi average method is useful for projecting potential sector growth targets in 2022. Below are the results of the semi average calculation in table 3.

Table 3 shows the estimated potential sector growth targets, namely the mining and quarrying sector at 2.12%, the information and communications sector at 6.76%, the real estate sector at 3.27%, and the education services sector at 2.70%.

East Java Province has four potential sectors. This sector can add more value than others. As a result, investment planning in potential sectors can produce large returns and profits, so prioritizing these

Table 3.
East Java Potential Sector Growth Projection Results in 2022 (percent)

No	Sector	Growth Projections
1	Mining and excavation	2.12
2	Information and Communication	6.76
3	Real Estate	3.27
4	Education Services	2.70

Source: Processed Data

Table 4.
Investment Needs in Potential Sectors of East Java Province in 2022

	Potential Sectors	ICOR value	Pertum Sector supplies (%)	GRDP 2021	2022 Investment Needs
1	Mining and Excavation	16.88	2.12	77,267.91	27,650.79
2	Information and Communication	3.82	6.76	113,956.93	29,427.33
3	Real estate	5.90	3.27	30,241.30	5,834.45
4	Educational Services	6.61	2.70	46,335.09	8,269.42

Source: Processed Data

sectors must be considered in investment activities. Below are the results of calculating investment needs for potential sectors, in table 4.

Table 4 shows the investment needs for the mining and quarrying sector amounting to IDR 27,650.79 billion, the information and communications sector amounting to IDR 29,427.33 billion, the real estate sector amounting to IDR 5,834.45 billion, and the education services sector amounting to IDR 8,269.42 billion.

Based on the 2019-2024 East Java RPJMD, East Java Province targets economic growth of 3.42%-5.12% in 2022. So the role of potential sectors is needed to increase economic growth by 5.12%. Analyzing investment needs is one of the plans to increase economic growth in 2022 in East Java.

East Java's economic growth in 2022 is targeted at 5.12%, so the total investment required is IDR 317,052.09 billion. So, knowing the amount of investment required by potential sectors must be known so that these sectors can increase East Java's economic growth.

Table 4 shows that the East Java economic growth target for the mining and quarrying sector in 2022 is 2.12%, so an investment of IDR 27,650.79 billion is needed to increase growth. The information and communications sector's growth target of 6.76% requires an investment of IDR 29,427.33 billion. The real estate sector with a growth target of 3.27% requires an investment of IDR 5,834.45 billion. And the educational services sector's growth target of 2.70% requires an investment of IDR 8,269.42 billion. So the total investment need for potential sectors to increase economic growth is IDR 71,181.99 billion in East Java.

The policy recommendations presented are to support the existing functions of the East Java Province economic sub-sector which can be pursued by developing potential sub-sectors that can be operated in the East Java Province region, thereby further increasing the economic growth of the East Java Province and determining the future functions of the East Java Province. developed must be based on the potential economic sub-sectors of East Java Province.

CONCLUSIONS

There are several sectors, namely (1) the excavation and mining sector, (1) the information and communications sector, (3) the real estate sector, and (4) the educational services sector, which are potential sectors to support economic growth in East Java. The information and communication sector is the main contributor to East Java Province's GRDP in 2012-2021 because currently many people use internet data for social media, online transactions and so on. The use of information and communication technology is one of the drivers of economic transformation, technological advances have changed the way of production. Increasingly developing technology makes the information and communication sector superior because many things can be done easily, for example many people can work online at home, children go to school online, even shopping online has become a habit of society.

The potential sector that is already efficient is the information and communication sector. Not all potential sectors in East Java Province have low ICOR values, which means that not all potential sectors have a good level of efficiency. This indicates that developing potential sectors also requires large investments until the sector experiences growth. The role of leading sectors is very necessary in encouraging economic growth in East Java Province. Increasing the total investment value can be one of the strategic plans to boost economic growth in East Java Province in the future.

There is a large amount of investment needed in potential sectors to en-

courage economic growth in East Java. The investment need for the mining and quarrying sector is IDR 27,650.79 billion, the information and communications sector is IDR 29,427.33 billion, the real estate sector is IDR 5,834.45 billion, and the education services sector is IDR 8,269.42 billion. So, the total investment need for potential sectors to improve the economy of East Java Province is IDR 71,181.99 billion.

REFERENCE

Arifin, B. (2019). *Ekonomi Politik dan Kebijakan Publik*. Gramedia Widiasarana Indonesia.

Assidikiyah, N., Marseto, M., & Sishadiyati, S. (2021). Analisis Potensi Pertumbuhan Ekonomi Provinsi Jawa Timur (Sebelum Dan Saat Terjadi Pandemi Covid-19). *Jambura Economic Education Journal*, 3(2), 102–115. https://doi.org/10.37479/jeej.v3i2.11017

Baransano, M. R., Koleangan, R. A. M., & Niode, A. O. (2020). Analisis Potensi Pendapatan Sektoral Ekonomi di Kabupaten Teluk Wondama. *Jurnal Berkala Ilmiah Efisiensi*, 20(02), 47–57.

BPS Jawa Timur. (2022). *Laporan Perekonomian Provinsi Jawa Timur 2022*.

Devi, I. A. W. P. (2014). Analisis Kebutuhan Investasi Sektor Potensial di Kabupaten Buleleng. *E-Jurnal EP Unud*, 3(12), 567–575.

Ernawati, E., Michael, M., & Suharto, R. B. (2022). Analisis potensi ekonomi sektoral terhadap pengembangan wilayah kabupaten Penajam Paser Utara. *Forum Ekonomi*, 3(3), 596–606. https://doi.org/10.29264/jfor.v24i3.11309

Evanthi, A., Wikartika, I., & Suwaidi, R. A. (2023). Investment Decision Making With Investment Satisfaction As An Intervening Variable: Availability Bias And Financial Literacy. *JBMP (Jurnal Bisnis, Manajemen Dan Perbankan)*, 9(1), 12–24. https://doi.org/10.21070/jbmp.v9i1.1661

Fitriansyah, H. (2021). Penentuan Sektor Unggulan Perekonomian Kota Bandung Guna Mendukung Penyerapan Tenaga Kerja Berdasarkan PDRB Tahun 2017-2021. *Jurnal Wilayah Dan Kota*, 09(01), 15–22.

Gurning, M. J., & Bangun, R. H. B. (2020). Incremental Capital Output Ratio : Efisiensi Investasi Perekonomian Kabupaten/Kota di Sumatera Utara. *Jurnal Ekonomi Pembangunan*, 10(1), 420–429.

Handoko, T. H. (2019). *Manajemen Personalia Dan Sumber Daya Manusia*.

Hapsari, I., & Zakiah M, S. (2018). Analisis Efisiensi Investasi Di Provinsi Sulawesi Tenggara Pada Periode 2001 - 2013. *Mega Aktiva: Jurnal Ekonomi Dan Manajemen*, 6(1), 12. https://doi.org/10.32833/majem.v6i1.43

Jamaluddin, F. D., Hafizrianda, Y., Purwadi, M. A., & Kbarek, M. (2020). Pengaruh IPM, Pertumbuhan Ekonomi dan Tenaga Kerja terhadap Incremental Capital Output Ratio (ICOR) di Provinsi Papua. *Jurnal Kajian Ekonomi Dan Studi Pembangunan*, 7(1), 1–16.

Jumiyanti, K., & Hasan, W. (2021). ICOR Analysis of Gorontalo Province. *Media Trend*, 16(2), 290-302. https://doi.org/10.21107/mediatrend.v16i2.10305

Kornita, S. E., & Taryono. (2016). Analisis Kebutuhan Investasi di Wilayah Riau Daratan. *Jurnal Sosial Ekonomi Pembangunan*, 7(19), 72–88.

Koyongian, C. L., Kindangen, P., & Kawung, G. M. V. (2019). Pengaruh Pengeluaran Pemerintah, Investasi, dan Tenaga Kerja Terhadap Pertumbuhan Ekonomi Kota Manado. *Jurnal Pembangunan Ekonomi Dan Keuangan Daerah*,

18(7), 1–15. https://doi.org/10.35794/jpekd.23425.16.4.2014

Lincolin, A. (2018). *Ekonomi Pembangunan* (Empat). STIE YKPN : Yogyakarta.

Machmud, A. (2016). *Perekonomian Indonesia Pasca Reformasi*. Jakarta: Penerbit Erlangga, Jakarta.

Manampiring, G. A., Kumenaung, A. G., & Siwu, H. F. D. (2023). Analisis Kebutuhan Investasi Sektor Unggulan Di Kabupaten Minahasa. *Jurnal Berkala Ilmiah Efisiensi*, 23(6), 61–72.

Mahi, I. A. K., Trigunarso, S. I., & SKM, M. K. (2017). *Perencanaan Pembangunan Daerah Teori dan Aplikasi*. Kencana.

Marissa, F., Yulianita, A., & Fitriyah, A. (2019). The Effect of Investment Efficiency toward Economic Growth in South Sumatera and Jambi Province. *Jurnal Ekonomi Pembangunan*, 17(2), 71–80. https://doi.org/10.29259/jep.v17i2.9399

Masbiran, V. U. K. (2019). Analisis Tipologi Berdasarkan Indikator Fundamental Ekonomi. *Jurnal Kebijakan Pembangunan*, 14(2), 195–211.

Masri, M. (2022). Analisis Investasi Daerah Kabupaten Sikka. *Ekopem: Jurnal Ekonomi Pembangunan*, 4(1), 52-61. https://doi.org/10.32938/jep.v7i1.2465

Mili, M., Lapian, A. L. C. P., & Siwu, H. F. D. (2021). Faktor Penentu Sektor Unggulan dan Sektor Potensial dalam Meningkatkan Pertumbuhan Ekonomi di Kabupaten Sorong Thaun 2014-2019. *Jurnal Berkala Ilmiah Efisiensi*, 21(6).

Mujib, M. (2019). Analisis Kebutuhan Investasi Sektor Potensial dalam Mendorong Pertumbuhan Ekonomi di Kabupaten Lamongan Pada Tahun 2020. *Oeconomicus Journal of Economics*, 3(2), 177–193. https://doi.org/10.15642/oje.2019.3.2.177-193

Muljaningsih, S., Hendrati, I. M., & Wahed, M. (2019). Potential, Prospect, and Investment Policy of Surabaya City. *Journal of Economics, Business, and Government Challenges*, 2(2), 152–163. https://doi.org/10.33005/ebgc.v2i2.90

Mulyanto, J. D., & Rachmawati, L. (2021). Analisis Sektor Potensial Dan Perubahan Struktur Ekonomi Provinsi Jawa Timur. *Independent: Journal of Economics*, 1(2), 124–140. https://doi.org/10.26740/independent.v1n2.p124-140

Munifah, S., & Daryono Soebagyo, M. E. (2019). Analisis Icor Terhadap Efisiensi Pertumbuhan Ekonomi Di Indonesia (*Universitas Muhammadiyah Surakarta*). http://eprints.ums.ac.id/id/eprint/70834

Murjoko, Kusnandar, & Ferichani, M. (2020). Analisis Efisiensi dan Kebutuhan Investasi Sektor Pertanian di Provinsi Jawa Tengah. *Agrista*, 8(1), 8–17.

Murni, A. (2016). "*Ekonomi Makro*", Edisi Revisi, PT Refika Aditama, Bandung.

Murti, T. H., & Sahara. (2019). Pengaruh Investasi terhadap Pertumbuhan Ekonomi Regional di Indonesia. *Jurnal Ekonomi Dan Kebijakan Pembangunan*, 8(2), 163–181.

Napitulu, R. Y. F., Kumenaung, A. G., & Niode, A. O. (2021). Analisis Pertumbuhan dan Struktur Ekonomi di Kabupaten Bekasi. *Jurnal Berkala Ilmiah Efisiensi*, 21(05), 106–116.

Ngahu, S, Lapian, A. L. Ch. P, Siwu, H. F. D. (2021). Analisis Incremental Capital Output Ratio Sektor Unggulan Di Kota Tomohon. *Jurnal Berkala Ilmiah Efisiensi*, 21(5), 86–97. https://ejournal.unsrat.ac.id/index.php/jbie/article/view/36681

Nuraini, I. (2017). Kualitas Pertumbuhan Ekonomi Daerah Kabupaten/Kota Di Jawa Timur. *FEB Unikama*, 79–93.

Pattilouw, D. R. (2023). Analysis of Incremental Capital-Output Ratio (Icor) and Projection of Investment Needs in Maluku Province. *Central European Management Journal*, 31(2), 748–757. https://doi.org/10.57030/23364890.cemj.31.2.78

Pratiwi, D., & Warnaningtyas, H. (2017). Analisis Strategi Pembangunan Wilayah Kabupaten Madiun Melalui Sektor Unggulan. *Jurnal Ekomaks*, 4(2).

Purwadi, M. A., & Jamaluddin, F. D. (2020). Analisis ICOR Terhadap Efisiensi Pertumbuhan Ekonomi di Provinsi Papua. *JUMABIS (Jurnal Manajemen & Bisnis)*, 4(1), 35–45.

Rajab, A., & Rusli. (2019). Penentuan Sektor-Sektor Unggulan yang ada pada Kabupaten Takalar melalui Analisis Tipologi Klassen. *GROWTH Jurnal Ilmiah Ekonomi Pembangunan*, 1(1), 16–38.

Ramadin. (2022). Investment Needs Analysis in Pekanbaru City In 2023. *Sinomics Journal*, 1(4), 415–428.

Rejeki, P. W. (2019). Analisis Pemetaan Potensi Daerah Dalam Rangka Menciptakan Keunggulan Daerah Di Provinsi Aceh. *Jurnal Ilmu Administrasi: Media Pengembangan Ilmu Dan Praktek Administrasi*, 15(1), 18–34. https://doi.org/10.31113/jia.v15i1.129

Rohmah, S. N., & Cahyono, H. (2021). Analisis sektor ekonomi potensial dan pengembangan wilayah guna meningkatkan pertumbuhan ekonomi di Kabupaten Bangkalan tahun 2015-2019. *Independent: Journal Of Economics*, 1(2), 141-157. https://doi.org/10.26740/independent.v1n2.p141-157

Setiyanto, A. (2016). ICOR Sektor Pertanian sebagai Basis Arah Investasi dalam Pembangunan Pertanian berbasis Kabupaten/Kota di Indonesia. *Analisis Kebijakan Pertanian*, 13(1), 75–108. https://epublikasi.pertanian.go.id/berkala/akp/article/view/766

Shinta, I. C., & Solikin, A. (2022). The Influence of Capital Efficiency and Education Spending on Indonesia's Economic Growth. *International Journal of Economics, Business and Accounting Research (IJEBAR)*, 6(2), 817–830. https://doi.org/10.29040/ijebar.v6i2.4922

Suandy, E. (2021). *Perencanaan pajak* (5th ed.). Salemba Empat : Jakarta.

Sudirman, S., & Alhudhori, M. (2018). Pengaruh Konsumsi Rumah Tangga, Investasi Terhadap Pertumbuhan Ekonomi Di Provinsi Jambi. *EKONOMIS : Journal of Economics and Business*, 2(1), 81. https://doi.org/10.33087/ekonomis.v2i1.33

Sugiyono. (2017). *Metode Penelitian Kuantitatif Kualitatif dan R&D*. Bandung: Alfabeta

Sukirno, S, (2018). *Pengantar Makro Ekonomi*, Edisi Kedua, Raja Grafindo Persada, Jakarta.

Veransiska, V., & Imaningsih, N. (2022). Analisis Potensi Sektor Ekonomi dengan Metode LQ, Shift Share dan Tipologi Klassen di Kota Semarang. *Ekonomis: Journal of Economics and Business*, 6(1), 126. https://doi.org/10.33087/ekonomis.v6i1.505

Wahidin, Yuniarti, T., & Astuti, E. (2023). *Analisis Sektor Unggulan Dan Potensial Kabupaten Dan Kota Di Pulau Sumbawa Propinsi Nusa*