# The Development of Investment Growth According to Production Factors In North Central Timor Regency

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*Abstract:* **This study has a purpose to analyze the development of investment growth in North Central Timor Regency during 2020-2024 period based on four production factors: land, capital, labor and technology. This study uses a research approach of qualitative with descriptive analysis method that able to process secondary data from Investment Activity Report (LKPM) and Regional Spatial Planning (RTRW) documents. The results show the investment has increased both in spatial and sectoral aspects, with Kefamenanu administrative district becomes the dominant location that earned the highest investment realization value (IDR. 416.95 billion) followed by Biboki Moenleu and Central Bikomi districts. The capital growth shows a fluctuating trend with a peak in 2023 (IDR. 394.73 billion) before declining in 2024. Highest labor absorption occurred in 2023 with 411 workers were dominated by workers demand for medium size industry and healthcare sector. Meanwhile, the use of technology is evolving from traditional to modern, especially in the construction, trade and healthcare sectors. This study emphasizes the importance of equitable distribution of investment, infrastructure improvement, and technology adoption to drive sustainable regional economic growth.**

*Keywords:* **Investment, Production Factor, Land, Capital, Worker/Labors, Technology.**

## I. INTRODUCTION

Development of regional territory is implemented through complementary sectoral and regional approaches. The sectoral approach put an emphasize to the analysis of economic potential owned by each sector meanwhile the regional approach considers spatial aspect and its relationship to regional spatial planning. Both approaches are essential for creating integrated development planning as the product of integration of sectors, spaces, and development doers that necessary to give optimum realization to the interconnected regional functions (Tarigan, 2016; Nofitasari, 2016; Zai & Pangi, 2017).

A leading sector is a sector with faster growth potential than other sectors since it supported by capital, labor and technology (Rachbini, 2001). This sector will act as a motor in driving the regional economic growth and spurring development of other sectors (Widodo, 2006). Key characteristic of a leading sector includes high employment and competitiveness, technology utilization, and a large or substantial investment opportunities (Firmansyah, 2013).

Leading sector is the driving force behind regional economic growth since its presence will bring significant impact to increase the economic activities. Economic growth is the primary indicator of regional development, reflecting the results of many utilizations from production factors such as land, capital, labor and technology (Tarigan, 2005). The size of

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economic growth can be seen through the result measurement of Gross Regional Domestic Product (*Produk Domestik Regional Bruto/PRDB)* that showed added value of each business sector (Kesuma & Utama, 2015; Hasibuan, 2015). Furthermore, increased investment plays a crucial role in driving the economic growth by supporting production processes, expanding job opportunities and improving income equality (Nurfifah *et al.*, 2022).

Investment in North Central Timor Regency still dominated by government and private sector sources (PMDN). Government investment has a focus on infrastructure development and infrastructure improvement, while the private investment tends to be directed towards housing, gas stations, and other businesses. Further, this research is attempting to examine the investment development based on the production factors as driving factor for economic growth, as part of regional development effort in these regions.

## II.   LITERATURE REVIEW

So many factors must be put into consideration in the use of regional space, such as the natural and human resources that act as primary elements in the regional development process, and the artificial resources that serve as supporting infrastructure. In relation to this matter, regional development must be aligned with established public policies. Therefore, regional development encompasses four essential components: natural resources, human resources, artificial infrastructure, and regional policies (Hanifurrahman *et al.*, 2019).

According to Friedmann & Alonso (2008), there are seven primary factors that able to influence the growth and development of a region. The first factor is local resources as the key component since it originates from unique local natural resources (such as Mining and fertile soil) and able to increase its regional competitiveness. The second factor is market, which serves as a channel for regional products distribution. The third factor is labor, which plays a crucial role in processing local resources to increase the added value of a product. The fourth factor is investment, which necessary for every development activity and regional stability as the determining factors for attracting investors. The fifth factor is government ability/capacity that viewed as high influential factor because it acts as a guide and a catalyst for any development. The sixth factor is transportation and communication, which serve as interregional linkages to enable distribution process of goods, services, and information for strengthening the regional integration. Meanwhile, the last factor is technological support for promoting production processes and increases efficiency that influences the overall regional output and productivity.

As the specific topic in this discussion, investment is playing a major role in driving the economic growth of a region. Investment dynamics of a region is influenced by applicable policies and various factors from the supply and demand scope. This concept is known as OLI (ownership, location and internalization) which first proposed by Dunning in 1981 (Firdaus, 2013).

According to Tambunan (2006), investment climate is influenced by many factors such as interest rate, inflation, political and social stability, and the readiness or availability of infrastructure such as roads, electricity and ports. While other contributing factors are including labor availability, regulatory and tax policies, efficiency work of licensing bureaucracy, labor regulations such as minimum wage and termination of employment, as well as exchange rate fluctuation and the national income level.

The economy growth of a region is influenced by internal and external factor groups. The internal factor is consisting of availability of natural resources, quality of human resources, technological capability, access to capital, and an entrepreneurial spirit. Meanwhile, external factor includes national and global economic situation as well as government policies related to the real sector and the monetary sector (Tarigan, 2005).

A leading economic sector has highly competitive ability and capability to accelerate the regional development and economic growth without bring significant harm to other sectors or resulting in damage of its surrounding environment. Some unfavorable examples are building a mall near a traditional market since it able to weaken the traditional market, or mining activities, which able to damage the surrounding environment if these activities are done without wise management. Therefore, the development of leading sector must consider the environmental and social sustainability aspect. Given limited

resources, the local government need to focus the investment on sectors that possessing genuine potentials to work on. The leading sectors are considered capable to bring faster economic growth because they are supported by capital, labor absorption and technological advance, thus creating greater investment opportunity (Widodo, 2006; Rachbini, 2001).

According to Usya (2006), a leading sector has several key criteria's of: (1) characterized by rapid economic growth, (2) capable of absorbing a significant number of workforces, (3) has a close relationship with other sectors that positioning to the forward or backward of supply chains, (4) this sector also capable of generating significant added value for the regional economy.

Production is a human activity for creating goods or services, which can be used by consumers (Sukirno, 2002). The production process cannot occur without supporting elements known as factors of production. These factors include human labor, natural resources, capital in various forms, and the ability to manage all of these elements, where each of them play a vital role in creating or increasing the value of a product (Rosyidi, 2014).

Production factor consists of four main elements: (a) element of land which encompasses all natural resources that available in natural environment without human intervention such as water and land, (b) element of labor which encompasses all human abilities and skills that can be used in production activities and not limited to physical activity alone, (c) element of capital, which encompasses all types of goods or equipment used to support the production process of goods and services (Abimanyu, 2012).

Meanwhile, production factors consisted from four main elements. First, land, which encompasses all natural resources available naturally without human intervention, such as water and land. Second, labor, which encompasses all human abilities and skills that can be used in production activities, not limited to physical activity alone. Third, capital, which encompasses all types of goods or equipment used to support the production process of goods and services (Abimanyu, 2012). Lastly, entrepreneurship, which encompasses the ability to effectively manage and organize the other three production factors. Unlike other factors, which are physical and measurable, entrepreneurship is more non-physical but vital in producing products (Rosyidi, 2014).

The Solow Growth model explains interaction between capital accumulation, labor force growth, and technological progress in influencing economy's output level. This model assumes the production function exhibits constant returns to scale, meaning each additional unit of input produces only one additional unit of output. In this approach, three primary resources are considered as factors of production: capital, labor and technology. Differences in income over time and between regions are explained by variations in ownership and utilization of these three factors of production in each region (Pramono, 2019).

## III. RESEARCH METHOD

This study uses a research approach of qualitative method with descriptive analysis technique. Descriptive analysis is a statistical method used to process and present data as it is, without the intention of generalizing or drawing a broad applicable conclusion (Sugiyono, 2012). Through the analysis, the research examines the dynamics of investment development with reference to factors of production.

## IV. RESULT AND DISCUSSION

The North Central Timor Regency (Timur Tengah Utara or TTU) is situated on Timor Island, East Nusa Tenggara Province. From the astronomical perspective, TTU lies between 9°02'48" to 9°37'36" South Latitude and 124°04'02" to 124°46'00" East Longitude. Whereas from administrative perspective, TTU Regency borders the South-Central Timor Regency to the south, Ambenu (Timor Leste territory), and the Sawu Sea to the north, Kupang Regency and South-Central Timor to the west, and Belu and Malaka Regencies to the east. The land area of TTU regency extends to 2,615.90 km² and divided into 24 administrative districts, 182 villages and 11 subdistricts. The largest administrative district is Biboki Anleu (289.68 km² or around 11.07 % of the district area) while the smallest is Musi Sub-district with an area of 40.44 km² (1.55 % of the total area).
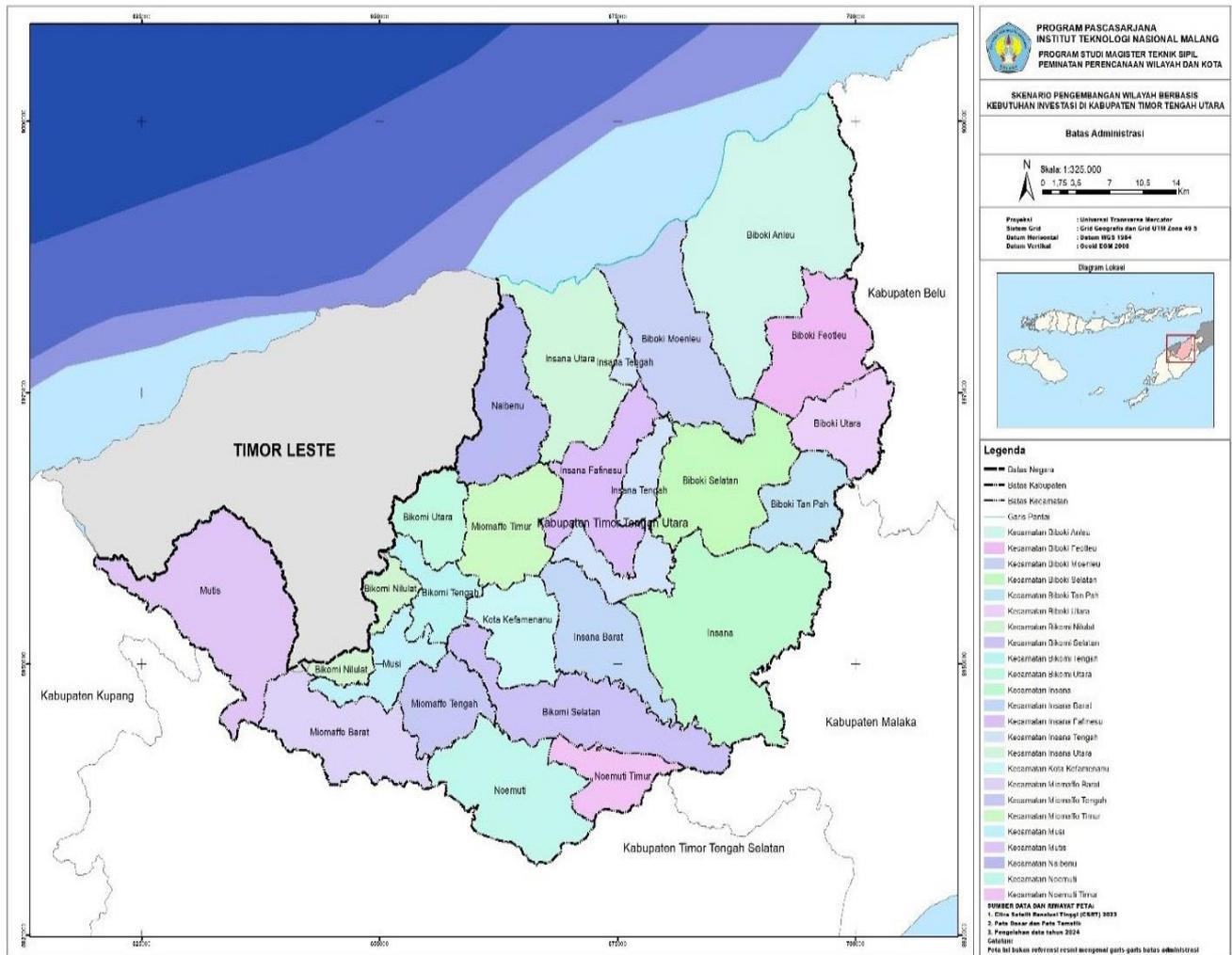
**Figure 1: Administrative Boundaries Map of North Central Timor Regency**

There was a total of 47 types of business fields created investment activities in North Central Timor Regency during period of 2020-2024. Based on KBLI (Indonesian Standard of Classification of Business Fields), these investments spreaded across various sectors of agriculture, mining, manufacturing, construction, wholesale and retail trade, transportation, accommodation, real estate, and healthcare. The number of business doers who made investments in five years period reached 31 entities, with investment locations covering 120 points across 10 administrative districts including cities of Kefamenanu, Insana Utara, Biboki, Moenleu, Central Bikomi and others.

North Central Timor Regency has several leading sectors focused on food crop agriculture and livestock subsector as stated in its 2024 – 2043 Regional Spatial Plan or *Rencana Tata Ruang Wilayah* (RTRW). The Growth Share analysis obtained a result of several food crop commodities classified as leading sector in this region such as rice, corn, peanuts, cassava, and sweet potatoes. While the leading sectors of livestock commodities are beef cattle, porks, and free-range chickens. Beef cattle are designated to be a leading commodity in 20 administrative districts including West Miomaffo, Mutis, Central Bikomi and Biboki Anleu. Porks commodity also showing similar performance as the leading commodity in 18 administrative districts such as Central Miomaffo, Noemuti and Biboki Feotleu. Meanwhile, free-range chicken is the most evenly distributed leading commodity, spread across all administrative districts in North Central Timor Regency.

The spatial structure plan for North Central Timor Regency as outlined in 2024-2043 Regional Spatial Plan (RTRW) mentioning development of a system of interconnected settlement centers and infrastructure networks to support the region's socio-economic function. The Regional Activity Center (PKW) is established in Kefamenanu City as the main center with

strategic functions regarding government, trade and services, education, health, and regional-scale transportation. Kefamenanu city also functions as National Strategy Activity Center (*Pusat Kegiatan Strategis Nasional* abbreviated as PKSN) primarily due to its vital role in supporting national security in border areas. For the scope of local territory, Wini in North Insana district is designated as a local activity center (*Pusat Kegiatan Lokal/PKL)* that accommodates any government and service, education, agriculture, tourism and mining activities. In addition, there are several regional service centers (*Pusat Pelayanan Kawasan/PPK)* such as Eban, Noemuti, and Oelolok serve the necessities of the local community for the administrative district level. To reach a more specific destination and widespread level of service, the environmental service centers (*Pusat Pelayanan Lingkungan/PPL)* have been established at 19 locations across many administrative districts, which function to support local economic activities, such as agriculture, fisheries, small trade, and tourism. This entire structure is designed to create integrated development between regions in a balanced and sustainable manner.

The spatial plan for North Central Timor Regency was developed to regulate the optimal and sustainable use of space by dividing the region into two main categories: (a) protected area and (b) cultivated area. Protected area includes areas that function to maintain environmental sustainability such as protected forest, river banks, disaster-prone areas and other nature conservation areas. Meanwhile, the cultivated areas are designated to support any development activities of agriculture, settlements, trade, industry, tourism, and other public services. Cultivated area development will be conducted by giving ample of consideration to environment supportive capacity and the synergy of interregional relations.

In this study, the authors will describe the dynamics of investment development as viewed from four primary variables of production factors (land, capital, labor and technology variables).

### 4.1 The Variable of Land

In 2020, investment activity engaged in North Central Timor Regency was limited to four administrative districts of Biboki Anleu, Biboki Moenleu, North Insana, and Kefamenanu City and the primary focus on investment in this regency was fuel retail trade (gas station) sector in Kefamenanu city and salt cultivation in other three administrative districts.

Entering the year of 2021, number of administrative districts that received investment rose to five locations, with addition of location in Biboki Feotleu administrative district, where sectors such as salt cultivation in Biboki Anleu and a gas station in Kefamenanu City continued in operational. Unfortunately, there were some activities were halted due to low production volumes and the lack of supporting infrastructure. The investment also began to expand in manangese mining and infrastructure construction.

However, in 2022, number of administrative districts as the investment recepients were reduced into four districts. Biboki Anleu, Biboki Feotleu and North Insana were no longer received investment due to production and accessibility constraints. Fortunately, there were new administrative districts emerged such as Central Bikomi (Manganese Mining) and Insana (Water Infrastructure Construction) as well as significant growth in the business sector in Kefamenanu City.

In 2023, the North Central Timor Regency recorded a dominance of investment booming in Manganese Mining and Residential Project in construction sector. Biboki Moenleu and Central Bikomi districts have an active status in mining investment, while Kefamenu City saw a surge in business sector from 24 to 40 businesses. North Insana returned to activity in the modern retail sector meanwhile Insana dropped out from the investment recipient list since its project has been completed.

In 2024, it has significant growth with a total of nine administrative districts as investment recepients, including three new subdistricts (South Bikomi for Sand Quarrying, West Insana and Insana Fafinesu for Telecommunication Center Construction). Several previously inactive districts such as Biboki Anleu and Insana were re-funding, and several business sectors in Kefamenanu City decreased in number due to many projects have been finished into completion or failure in reporting their recent activities.
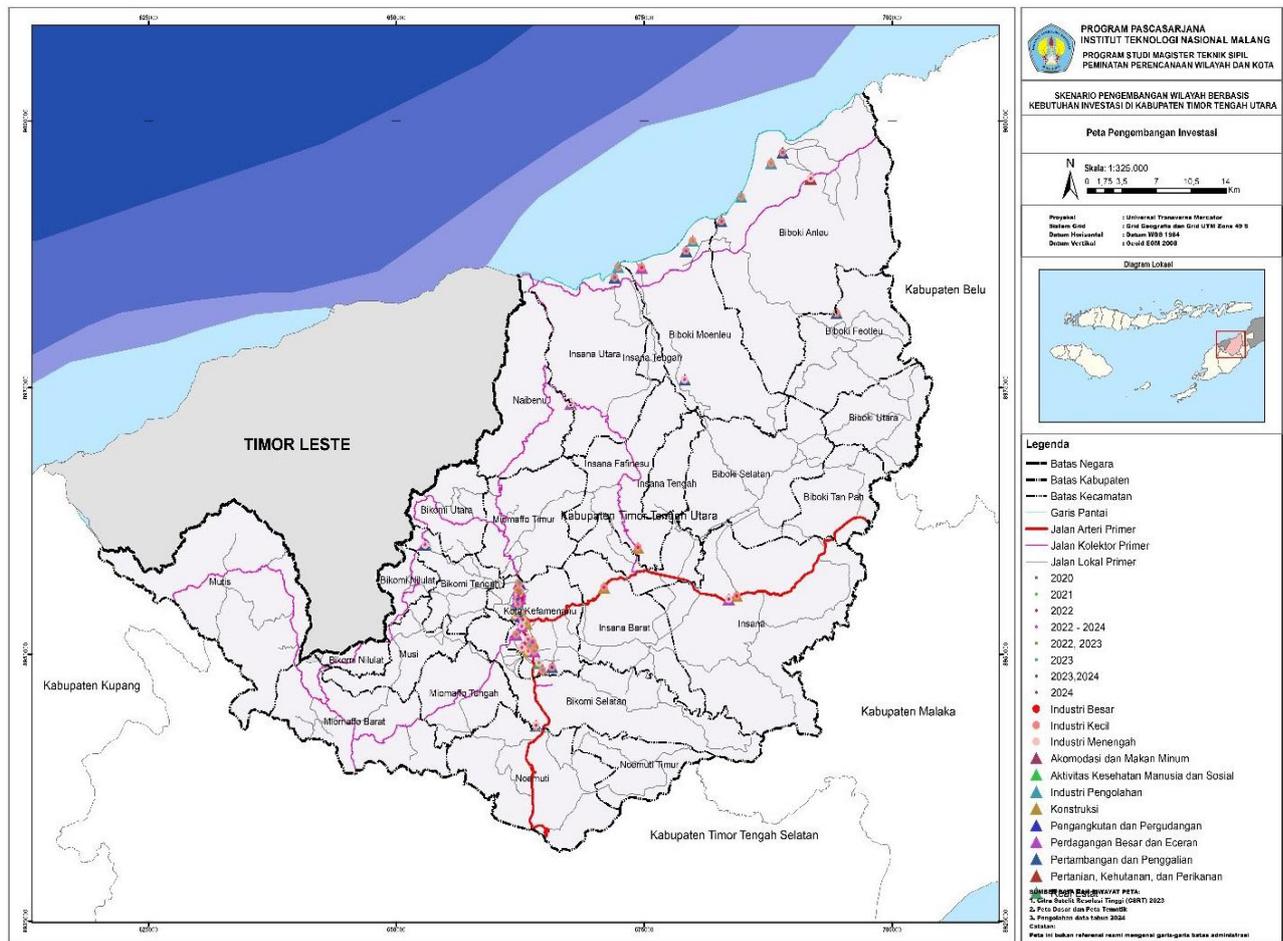
**Figure 2: Map of Investment Growth According to Land (Location) for 2020 – 2024**

Investment growth in North Central Timor Regency from 2020 to 2040 showed significant differences regarding the value of the realized investment between administrative districts. Three districts with highest realized investment values over the past five years were Kefamenanu district, Biboki Meoneleu district, and Central Bikomi district. Kefemenanu city dominated the investment with a total realized value of IDR. 416.95 billion. The amount of fund received by this city is influenced by its status as a Regional Activity Center (PKW) and a National Strategic Activity Center (PKSN) making this city acts as a hub for regional economic activity, including government, trade, education, health and transportation.

In second place, Biboki Moenleu district has a realized investment of IDR 266.87 billion. This district is able to receive high investment value because it is supported by natural resource potential, including Manganese ore and salt cultivation. Meanwhile, Central Bikomi district ranks as the third place with realized investment of IDR 47.47 billion which also driven by its manganese ore mining potential. Other factors that also influencing the investment size in these areas are availability of adequate basic infrastructure and the suitability of space for business development.

In contrast, the other administrative districts such as Biboki Anleu, West Insana, Insana Fafinesu and Biboki Feotleu only recorded small investment realizations ranging from IDR 200 million to 4.3 billion. This value indicates an imbalance of investment distribution between locations, with potential causes are limited access, inadequate infrastructure and the sub-optimal utilization of local potential within each administrative district.

### 4.2 The Variable of Capital

The investment growth based on capital in North Central Timor Regency has shown a fluctuating dynamics phase over the past five years. In 2020, the value of realized investment was quite low at IDR.2.36 billion, but the following year was showing a significant surge of increase (416.10%) to IDR 12.18 billion. Post-pandemic recovery time, the resumption of

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previously delayed projects and a conducive regulatory environment influenced increase in investment value for investors. Then, the investment growth peaked in 2022 with an increase of 1,266.42% and an investment value of IDR 166.43 billion, reflecting high investment interest, strengthening force of leading sectors, and encouragement from more aggressive government policies to attract investment. While in 2023, it recorded highest investment value at IDR 394.73 billion with growth rate of 137.17 % driven by an improving investment climate and national programs accelerating project implementation. However, in 2024, the investment experienced a drastic decline of -57.32% to IDR 168.48 billion. The decline was caused by termination of several construction projects, global uncertainties such as geopolitical conflicts and rising interest rates also the impact of the political year which caused investors decided to delay their investment decisions.
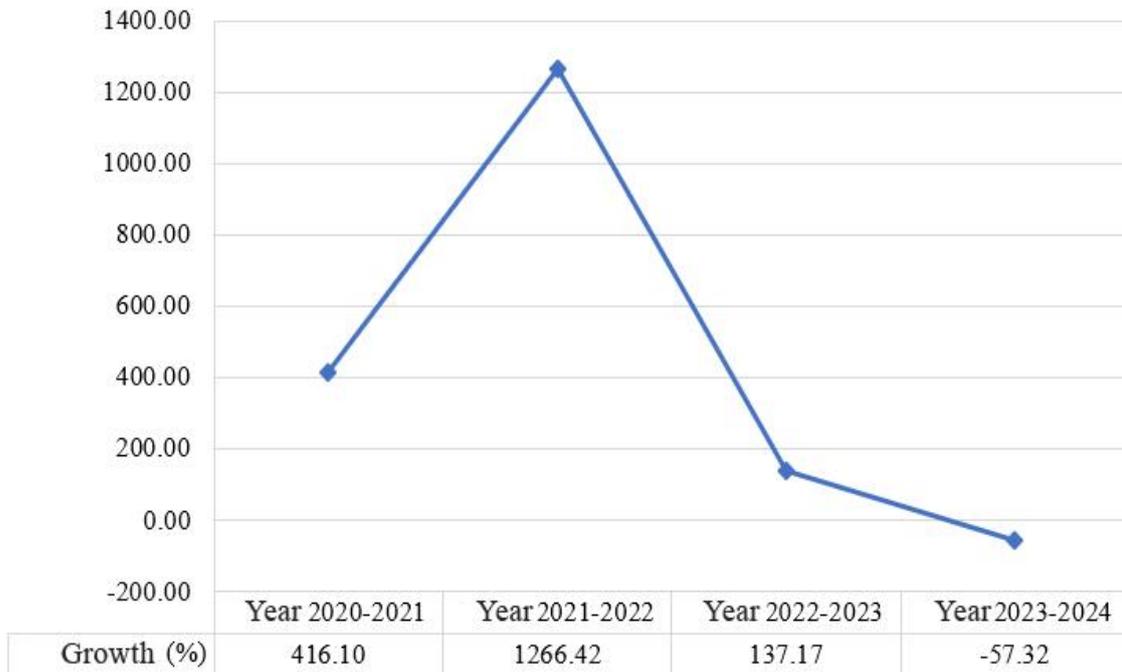


| | Year 2020-2021 | Year 2021-2022 | Year 2022-2023 | Year 2023-2024 |
|---|---|---|---|---|
| Growth (%) | 416.10 | 1266.42 | 137.17 | -57.32 |

**Figure 3: Diagram of Investment Growth of 2020 – 2024 in North Central Timor Regency**

**4.3 The Variable of Workforce or Labor**

The investment growth based on labor absorption in North Central Timor Regency from 2020 to 2024 show dynamics that do not always align with investment values. The labor absorption in general was increased in 2023 and reaching a peak of 411 labors across 40 business sectors when compared to the number of labors in 2022 (174 labors) and in 2024 (187 labors). The largest number of workers was absorbed in private hospital sector (168 labors) in 2023 as well as in business sector such as manganese ore mining and retail trade in building materials, which consistently showed significant contribution to labor absorption.

However, not all large investments are directly proportional to high employment of labors. For example, type of business in mining and wholesale trade sector tends to be capital-intensive with low employment rate (has low absorption of labor) and the employment distribution tends to be concentrated in administrative districts such as Kefamenanu, Biboki Moenleu, and Biboki Anleu, while other districts experience spatial disparities in investment and employment contributions.

Overall, the medium-sized industries were the largest contributor to employment demand, which in the end were employing 377 workers across seven administrative districts. While the small-scale industries employed 129 workers across eight districts, reflecting the dominance of local and home-based businesses. Meanwhile, the large-scale industries despite having the highest investment value only employed 20 workers over the two-year period. It affirming the conclusion of type of production has significant influence to the labor requirement in each investment sector.
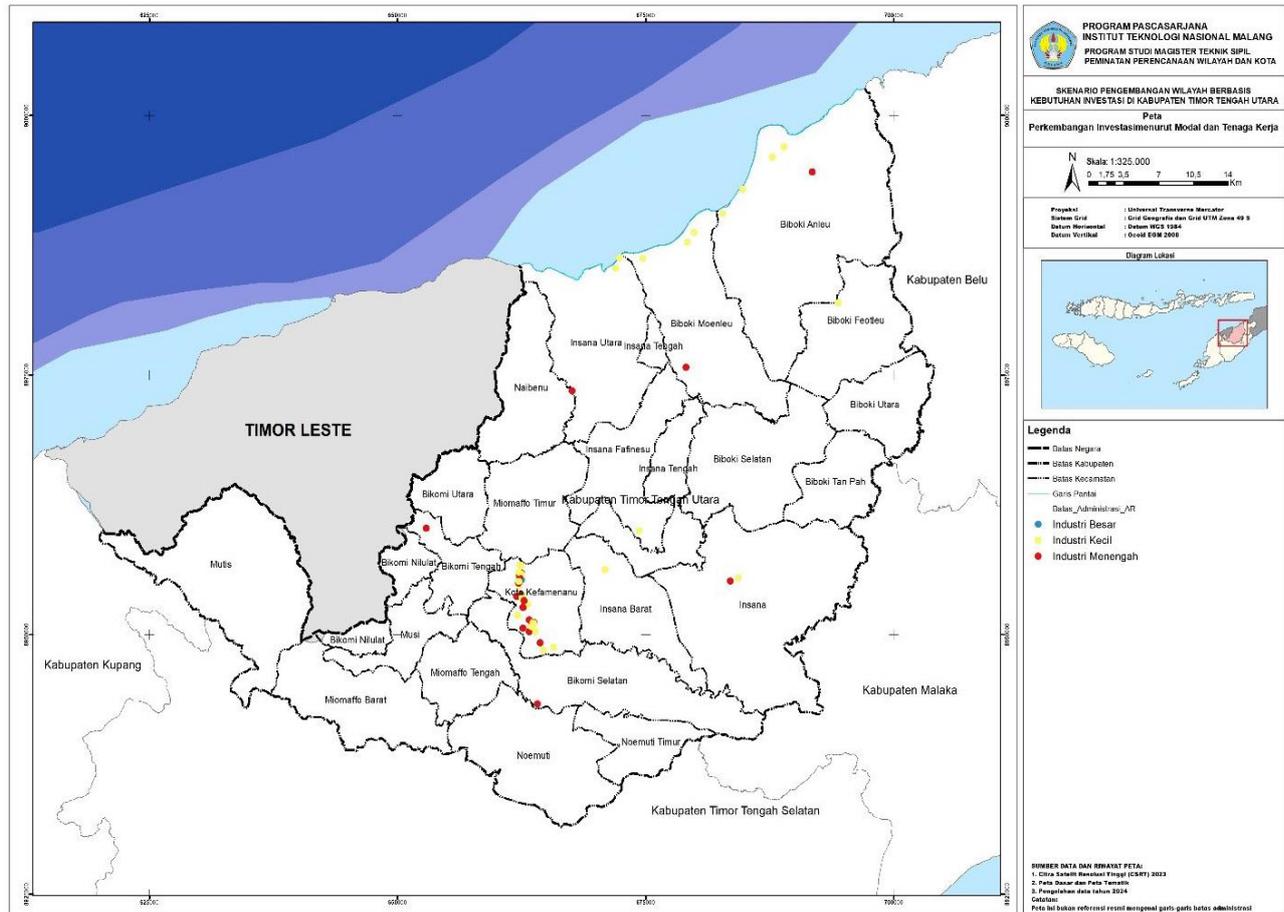
**Figure 4: Map of Investment Growth According to Capital and Workforce (Industry Business Classification)**

### 4.4 The Variable of Technology

The growth of investment based on technology use in North Central Timor Regency during 2020-2024 showed a shifting trend from a traditional technology to the adoption of modern technology across various business sectors. In 2020-2021, a combination of traditional and modern technologies still in use in particular at mining and quarry sector such as in salt cultivation industry by utilizing tidal (high and low tides) technique, geomembranes, and solar-powered seawater evaporation. However, over time, most business sectors in many administrative districts began to adopt wider modern technology application in their industry.

From the 48 identified business sectors, most of them have been adopted modern technology such as digital payment system in the trade sector, raw material processing machinery in the food industry, heavy equipment's for construction projects and use of digital technologies such as drones, GPS, and theodolites equipment's for project accuracy. Furthermore, in public service sector such as in private hospitals, it already implemented Hospital Management Information System (*Sistem Informasi Manajemen Rumah Sakit/SIMRS)* and Electronic Medical Records (EMR)

This situation indicates local investment process has gradually developing, in which at the beginning the businesses in North Central Timor Regency tend to start in small size with simple technology use then transforms towards modernization as access to invite monetary capital and technological knowledge increases. However, since majority businesses still having small to medium-sized capacity, full adoption of automation or digitalization choice still limited in application. The technological adaptation is a key indicator in driving productivity and efficiency in regional investment.
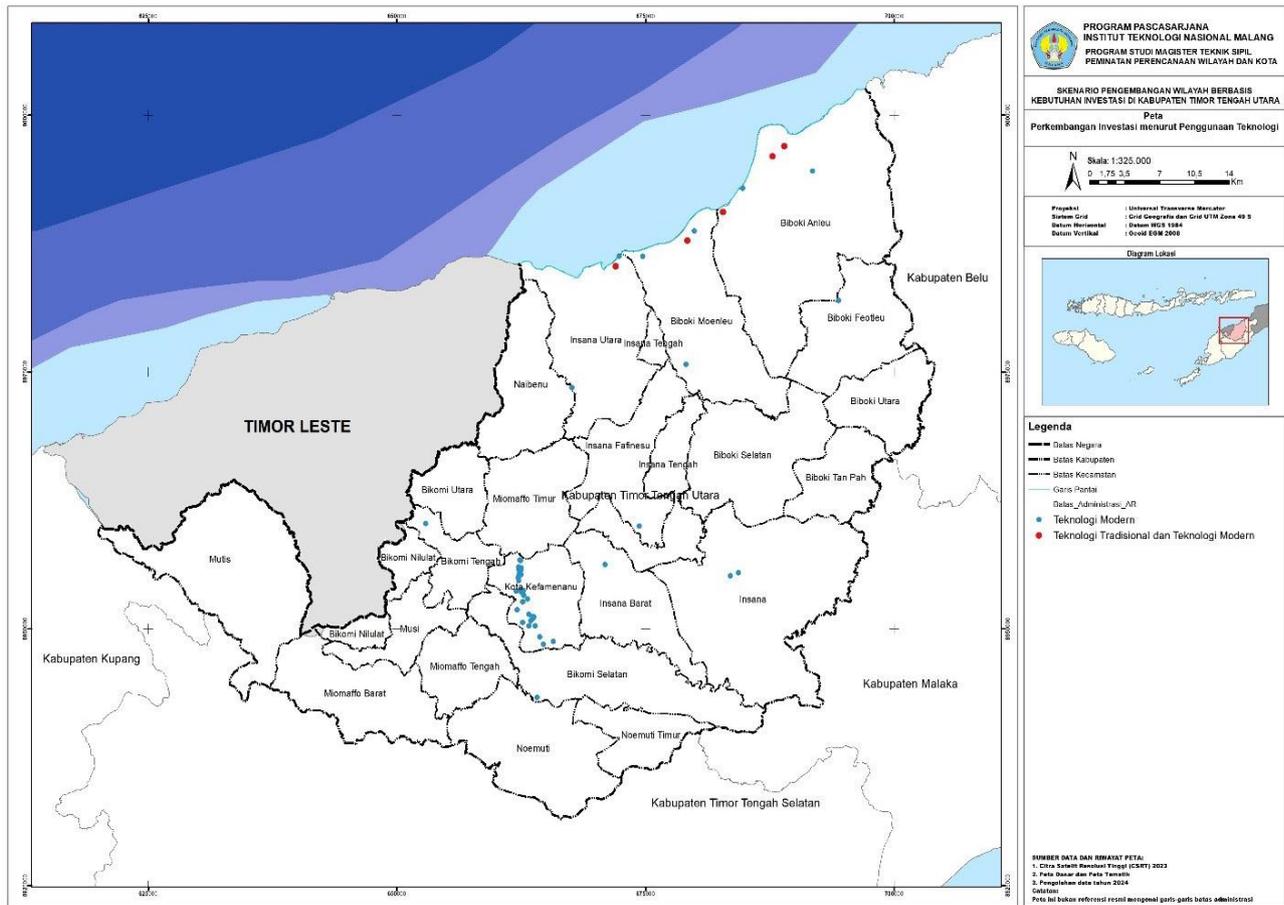
**Figure 5: Map of Investment Growth According to the Use of Technology**

## V. CONCLUSION

The development of investment growth in North Central Timor (Timor Tengah Utara/TTU) Regency during 2020-2024 period experienced quite dynamic phase based on the production factors. Distribution of locations both in sectoral and spatial aspects is wide spreading to larger destination. There are three administrative districts as highest realized investment recipients: the Kefamananu district (IDR. 416.95 billion), Biboki Moenleu district (IDR.266.87 billion), and Central Bikomi district (IDR.47.47 billion). Kefemanu becomes the dominant center since it has a status for Regional Activity Center (PKW) and National Strategic Activity Center (PKSN). In contrast, certain administrative districts such as Biboki Anleu, West Insana, Insana Fafinesu and Biboki Feotleu only recorded investment value between IDR 200 million to IDR 4.3 billion. Meanwhile, from the capital standpoint, the investment surges from IDR. 2.36 billion in 2020 to a peak of IDR.394.73 billion in 2023, although in 2024 it receded to IDR 168.48 billion. Then, from the employment perspective, the highest employment absorption occurred in 2023 where there were 411 workers primarily employed in private hospital and manganese mining sectors. The medium-sized industries absorbed 377 workers, the small-scale industries absorbed 129 workers and the large-scale industry only absorbed 20 workers. In terms of technology, there has been a shift from traditional to modern technology with the adoption of digitalization in sectors such as construction, trade, and healthcare. This transformation shows an increase in production capacity and production efficiency, although the majority of businesses remain in the small to medium size industry.

### ACKNOWLEDGMENT

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