ELASTISITAS PERTUMBUHAN INDUSTRI PENGOLAHAN TERHADAP KONTRIBUSI PENYERAPAN TENAGA KERJA INDUSTRI PENGOLAHAN DI KOTA PALU

LAPORAN AKHIR

Diajukan untuk memenuhi persyaratan memperoleh gelar sarjana strata satu
(s1) pada jurusan ilmu ekonomi dan studi penmbangunan
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GROWTH ELASTICITY OF THE PROCESSING INDUSTRY TO THE CONTRIBUTION OF LABOR ABSORPTION PROCESSING INDUSTRY IN PALU CITY

FINAL REPORT

Submitted as partial fulfillment of the requirements for Bachelor Degree
at Department of Economics and Development Studies
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2025

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Dalam peyusunan laporan tugas akhhir ini, penulis menyadari bahwa laporan ini masih belum sempurna dan masih mempunyai kekurangan. Hal ini di sebabkan oleh keterbatasan yang melekat pada kemampuan, pengetahuan, dan pengalaman penulis. Oleh karena itu, penulis mengharapkan kritik dan ide yang membangun untuk menyempurnakan penyusunan karya tulis selanjutnya.

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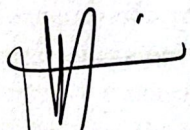
Palu, 29 Agustus 2025



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Original Article

Elasticity of Growth in the Processing Industry Towards the Contribution of Labour Absorption in the Processing Industry in the City of Palu

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Abstract

The manufacturing sector is a strategic pillar of regional economic development due to its significant role in generating added value and creating employment opportunities. However, in Palu City, the growth of this sector has not consistently translated into proportional increases in employment absorption. This study aims to analyze the elasticity of manufacturing sector growth with respect to its contribution to employment absorption in Palu City over the period 2019–2023. A descriptive quantitative approach was employed, utilizing secondary data obtained from the Central Bureau of Statistics (BPS) of Palu City and relevant agencies. The data set comprises the manufacturing sector's Gross Regional Domestic Product (GRDP), the number of workers in the manufacturing sector, and the total workforce in Palu City. The analysis involved calculating both output and employment growth rates, followed by the computation of labor absorption elasticity using the elasticity ratio formula. The results reveal that the relationship between manufacturing output growth and employment absorption in Palu City is volatile and not always proportional, as indicated by the elasticity measurements of manufacturing GRDP growth relative to employment growth in the sector. Certain years recorded negative elasticity values, reflecting inverse relationships driven by internal sectoral dynamics such as efficiency gains, technological adoption, and external shocks including the COVID-19 pandemic. The study concludes that although the manufacturing sector makes a substantial contribution to economic growth, its impact on job creation remains suboptimal. As such, integrated policies are needed to align industrial growth with sustainable employment and improve regional welfare.

Keywords: Economic Growth, GRDP, Labor Elasticity, Manufacturing Industry, Palu City.

1. Introduction

Economic growth is the process of increasing the production capacity of a country or region to produce goods and services within a certain period of time, which can be seen from the increase in Gross Domestic Product (GDP) or Gross Regional Domestic Product (GRDP) in real terms (constant prices). GRDP plays a significant role in accelerating the economic growth of a region. The higher the GRDP value, the higher the rate of economic growth (Widiatmika, 2015; Yogo Subekti & Muhammad Yasin, 2023). One indicator of successful regional development is year-on-year economic growth, which can be seen in the value of the gross regional domestic product (GRDP) (Dewandaru et al., 2022). The main driver of GRDP is the industrial sector, which is also a major contributor to employment (Hasibuan, 2013; Singh & Singh, 2022). A country's economic growth can be aided by encouraging the industrial sector to develop (Widiatmika, 2015). Developing countries generally believe that the industrial sector is capable of solving economic problems (Bergllf & Cable, 2018; Chang,

2023). Similar to Indonesia, the industrial sector is prepared to encourage the growth of related industries and become a driving force and guide (leading sector) for the development of other economic sectors (Samosir et al., 2023).

The manufacturing sector is the most important sector in the national economy and is highly dynamic (Ishchuk et al., 2020). The manufacturing industry is closely and extensively linked to other sectors. Its growth can drive and attract growth in other sectors because the manufacturing industry requires inputs from and its outputs are widely used by other sectors (Harahap & Setiawan, 2011; Zheng et al., 2022). Therefore, the manufacturing industry is often believed to be the engine of national growth. The development of the manufacturing industry is the fastest compared to other sectors and has been able to provide significant employment opportunities (mirdad & Akhbar, 2018)

In recent years, various countries have struggled with economic growth. In short, the global economic situation in 2020 has declined due to the spread of Covid-19. Covid-19 is an infectious disease that originated in China and attacks the respiratory system. The outbreak spreads very easily and quickly. Therefore, the government has implemented policies on all community activities, namely large-scale social restrictions (PSBB). PSBB resulted in the halting of economic activity. As a result of the halt in economic activity, economic problems such as layoffs, inflation, and lower imports arose.

Indonesia felt the impact of these economic problems. The impact on Indonesia's economic condition was a decline in GDP, an increase in unemployment, and two consecutive quarters of negative economic growth. The growth rate of Indonesia's economy, as measured by the Regional Domestic Product (RDP), was negative during the COVID-19 pandemic, with a decline of -2.07% in 2020. However, by 2022, the economy had shown significant improvement and dynamism, reaching a growth rate of 5.31% in 2022 (Pratiwi et al., 2023). One of the contributors to Indonesia's economic growth is the industrial sector. The contribution of the manufacturing sector in boosting Indonesia's economic growth is enormous and plays a significant role. Hence, it is not impossible that high employment opportunities and remuneration will be greatly obtained from this sector (mirdad & Akhbar, 2018).

In this modern era, it is undeniable that many industries have sprung up in various regions, ranging from small to large industries. The presence of many industries in a region will also influence economic growth in that region. The industrial sector functions as the main sector in the economy, meaning that development in the industrial sector can spur development in other sectors (Dewandaru et al., 2022).

The welfare of the people of Central Sulawesi Province can truly be achieved through an economy based on natural resources that can be developed independently. This is supported by indicators of progress for the region, where the presence of small-scale industries serves as a benchmark for a healthy economy (Isabel & Lucas, 2019; Li et al., 2022). Central Sulawesi's export commodities have been grouped into existing categories, such as timber exports used as the main material for rail production, as well as concentrates and nickel, vegetable/animal oils, pig iron, plywood, and other commodities.

Palu is one of the cities in Central Sulawesi Province with a fairly rapid development rate, with its supporting economic growth becoming the orientation of the city's development (RTRW Kota Palu, Tahun 2010-2020). The city of Palu has several advantages as an economic and administrative center, including: it is located on national and provincial roads, has a port, and is equipped with an airport. The strategic location of Palu City, coupled with facilities that support economic activities, further strengthens the vision of Palu City as a city based on trade, services, and industry (Muamar et al., 2017).

The economic growth of a city depends on the economic sectors present in that city. Improving economic sectors is not only a means of accelerating positive economic growth, but also an important indicator of the creation of new jobs in the long term for labor absorption in the region (Widya A. E Kariawu et al., 2025).

The city of Palu has diverse urban economic activities that are developing sustainably. Currently, the economic activities that are developing rapidly in Palu are trade, hotels, restaurants, services, and small industries. The existence of industrial activities in Ulujadi District, North Palu District, and Tawaeli District is influenced by their proximity to other districts in the province of Central Sulawesi, which have industrial areas with rapid growth. Additionally, the current industrial activities are supported by the presence of a port that facilitates the distribution of raw materials and finished goods (Muamar et al., 2017).

According to Ratnaningsih's research (2013) that industrial sector growth has a significant positive or direct impact on employment. This means that the higher the industrial sector growth, the higher the employment rate. Meanwhile, according to research (Rochmadi & Rohmah, 2019) states that partially, industrial sector wages and the number of business units have a positive effect on employment in the manufacturing sector, while the growth rate of the industrial sector has no effect on employment in the manufacturing sector. Meanwhile, according to W. Arthur Lewis' theory, the manufacturing sector is viewed as part of the modern sector, which has great potential for employment.

Based on the above research findings, we can conclude that although the manufacturing sector has experienced growth over time, this growth has not always been accompanied by a proportional increase in employment. This phenomenon indicates the possibility of changes in production structure, technological shifts, or labour efficiency that affect labour elasticity. Therefore, an analysis of the elasticity of manufacturing industry growth in relation to its contribution to employment is important for understanding the effectiveness of this sector's economic growth in creating jobs.

2. Literature Review

2.1. Industry

According to Law No. 5 of 1984 concerning industry, industry is an economic activity that processes raw materials, raw materials, semi-finished goods, and/or finished goods into goods with higher value for use, including industrial design and engineering activities. The definition of industry also includes all companies engaged in specific activities that mechanically or chemically transform organic materials into new products.

In economic terms, industry has two meanings. First, industry refers to a group of similar companies; for example, the paper industry means a group of companies that produce paper. Second, industry is an economic sector that includes productive activities that process raw materials into semi-finished or finished goods (Rochmadi & Rohmah, 2019).

2.2. Manufacturing Industry

According to BPS (Central Statistics Agency), the manufacturing industry is an economic activity that involves mechanically, chemically or manually transforming raw materials into finished or semi-finished goods that are closer to the end user. The industrial sector is one of the pillars of the national economy, with the manufacturing sector being the largest in terms of employment and structural transformation occurring in various countries in line with Indonesia's economic expansion. The manufacturing sector has transformed how the agricultural sector aligns with Indonesia's current economic system. Compared to other

industries, the manufacturing sector provides the greatest value added, increasing domestic and international demand for finished and semi-finished goods (Samosir et al., 2023)

2.3. Labour

Based on Law No. 13 of 2003 concerning labour, labour refers to every person who is capable of performing work, either within or outside of an employment relationship, to produce goods and services to meet the needs of society.

2.4. Employment Absorption

Labour absorption is the process whereby the working-age population, both those already employed and those seeking employment, are absorbed into various economic sectors to produce goods and services. Labour absorption essentially depends on the level of labour demand. Labour absorption generally indicates a company's ability to absorb a certain number of workers to produce a product. The ability to absorb labour varies between sectors (Rochmadi & Rohmah, 2019).

3. Methods

3.1. Types and Sources of Data

This research is a descriptive study using a quantitative approach. The aim is to analyse the relationship and level of elasticity of growth in the manufacturing sector in relation to its contribution to employment in Palu City. Descriptive research aims to describe the state of a variable, phenomenon, or condition without changing it (Hasibuan, 2013).

The data in this study is secondary data obtained from documentation and literature studies. The documentation data comes from official data published by the Central Statistics Agency (BPS) of Palu City, the Manpower Office, and other related agencies. The data collected includes: (1) Gross Regional Domestic Product (GRDP) of the manufacturing sector, (2) Number of workers in the manufacturing sector, (3) Total number of workers in Palu City, and (4) Data over the past five years (2018-2023).

3.2. Data Collection Techniques

The technique used in data collection is documentation, namely by accessing annual reports, statistical publications, and relevant local government official documents. By using integrated data, researchers can collect economic and socio-cultural data from various local government sources to enhance the depth of analysis (Babbar & Paliwal, 2013; Demirbaş & Eroğlu, 2016).

3.3. Data Analysis Methods

1. Calculating the contribution of the manufacturing sector workforce

$$\text{Contribution} = \frac{T_{industry}}{T_{total}} \times 100\%$$

$T_{industry}$ = Number of workers in the manufacturing sector
T_{total} = Total number of workers in Palu City

This formula is used to determine the extent of the manufacturing sector's role in employment compared to all economic sectors in Palu City.

Table 1. Classification of Contribution Criteria

Percentage	Criteria
0,00 – 10%	Very poor
10,00 – 20%	Poor
20,00 – 30%	Fair
30,00 – 40%	Good
40,00 – 50%	Very good
Above 50%	Excellent

Calculating labour absorption elasticity: (Kurniawan & Sri Budhi, 2018)

$$E = \frac{\% \Delta T}{\% \Delta Y}$$

Description:
% ΔT= Percentage growth in the number of workers in the manufacturing industry
% ΔY= Percentage growth in output (GRDP) of the manufacturing sector

This formula is used to measure how responsive labour absorption is to changes in the output of the industrial sector.

Table 2. Operational Definitions of Variables

No.	Research Variables	Operational Definition	Indicator	Scale
1.	Elasticity of growth in the manufacturing industry	Describing the level of responsiveness of changes in the number of workers in the manufacturing sector to changes in output (GRDP) in the manufacturing sector	a) Percentage growth of the manufacturing industry workforce b) Percentage growth of the manufacturing industry's gross regional domestic product	Ratio
2.	Contribution to employment in the manufacturing industry	Proportion of workers in the manufacturing sector to the total workforce in Palu City	c) Number of workers in the manufacturing industry d) Total number of workers in Palu City	Percentage

Table 3. Interpretation of Elasticity Values

Elasticity Value	Category	Economic Meaning
>1	Elastic	The labour force is highly responsive to output growth.
=1	Unitary Elastic	Labour force growth is proportional to output.
<1 and >0	Inelastic	The labour force grows but is less responsive to output.
=0	Non-elastic	Output changes, but the labour force remains constant.
<0	Negative/Non-directional	Output rises but the labour force declines, or vice versa.

Source: Kurniawan and Budhi (2018)

4. Results and Discussion

4.1. Contribution of the Manufacturing Labor Force to Palu City's Total Workforce

Contribution in this context is defined as the percentage of industrial sector workers relative to the total workforce in Palu City. This calculation illustrates the extent to which the manufacturing sector absorbs labour compared to the total available workforce. Based on the table below, according to the population aged 15 years and above who were employed in 2019-2021, the contribution of the manufacturing sector workforce to the total workforce in Palu City, according to the population aged 15 years and above who were employed, decreased from 19.75 percent in 2019 to 16.98 percent in 2021. This reflects the impact of the 2018 earthquake and the pandemic, which have put pressure on the manufacturing sector, leading to a decline in production and increased unemployment. In 2022 and 2023, the contribution increased again or recovered to 19.48% and 20.03%, respectively, indicating the recovery of the industrial sector in line with increasing economic growth and investment, as well as the recovery of demand for local industrial products. This is in line with the Industrial Cluster Theory (1990) in the context of the manufacturing industry, where the growth of this sector will contribute more significantly to labour absorption if supported by a competitive and integrated industrial structure. This means that innovation, creativity, and infrastructure greatly influence labour contribution in the manufacturing sector. However, based on the contribution criteria, the contribution conditions in this study still provide a very limited picture.

Table 4. Labour Contribution of the Palu City Industry Population Aged 15 Years and Above Who Are Employed (2019-2023)

Year	Industrial processing workforce	Palu City Workforce	Contribution (Percentage)
2019	35.857	181.523	19,75
2020	34.394	185.507	18,54
2021	31.541	185.777	16,98
2022	37.076	190.331	19,48
2023	37.297	186.221	20,03

Source: Central Statistics Agency: Data processed

The contribution of the manufacturing industry to the workforce in Palu has experienced a decline and recovery over the past five years. This trend shows a close relationship between industrial sector growth and labour absorption capacity. Policies to increase productivity and industrial investment are urgently needed to strengthen the long-term contribution of this sector (Aulia, 2025; Fauzi Nurhidayat & Suluh, 2024).

4.2. Elasticity of Growth in the Manufacturing Industry Towards Labour Absorption in the Manufacturing Industry in Palu City (2019-2023)

Based on the data in the table below, it can be seen that the growth of the Base Constant Price Figure (or ADHK) manufacturing industry sector in Palu City fluctuated during the 2019-2023 period. In 2019, it was -0.09 per cent, and in 2020, it was -1.62 per cent, indicating a contraction caused by the impact of the 2018 earthquake and the COVID-19 pandemic, which reduced productivity and disrupted the industrial supply chain. Thereafter, it experienced recovery and stable growth in 2021-2022, with growth rates of 3.31 percent each year. This reflects post-pandemic recovery, supported by the industry's adaptation to new protocols and

improved investment. In 2023, growth in the manufacturing industry slowed to 1.81 percent. This could be attributed to limitations in investment, infrastructure, and global fluctuations. This phenomenon aligns with Romer's (1990) theory that investment, technological infrastructure, and policies supporting innovative activities and knowledge dissemination contribute to economic growth. The growth of the manufacturing industry in Palu City over the past five years shows a pattern of recovery from the crisis, but accompanied by a slowdown in the last year. Policy interventions and improved competitiveness are needed to drive more sustainable growth in the manufacturing industry.

Elasticity in this context can measure how responsive the growth of the manufacturing industry workforce, based on the population aged 15 years and above, is to output growth in the manufacturing sector. As seen in the data in the table below, in 2019, the elasticity was -16.58, which falls into the category of negative elasticity because output growth was negative or declining, yet the workforce grew significantly, and vice versa (González & Bolívar, 2014; Hariyanto et al., 2018). This can be caused by overstaffing or inefficiency on the part of a company or government when expanding operations but failing to achieve the expected results. In 2020, elasticity of 2.52 can be called elastic because it indicates a large response to output in line with the impact of the pandemic on employment, with both output and employment declining. Then in 2021, the elasticity of -2.51 is said to be negative because output increases but the workforce decreases. In 2022, the elasticity of 5.30 can be called elastic because output growth is accompanied by a large surge in the workforce. Then, in 2023, the elasticity of 0.33 can be called inelastic because output increases but the workforce only increases slightly or efficiency increases.

Table 5. Elasticity of Manufacturing Industry GRDP Towards Employment in the Manufacturing Industry in Palu City Population Aged 15 Years and Above Who Are Employed (2019-2023)

Year	Labour Force Growth	Sector Output Growth	Elasticity	Category	Direction Coefficient
2019	9,78	-0,09	-16,58	Elasticity	Negative
2020	-4,08	-1,62	2,52	Elastic	Positive
2021	-8,30	3,31	-2,51	Elasticity	Negative
2022	17,55	3,31	5,30	Elastic	Positive
2023	0,60	1,81	0,33	Inelastic	Positive

Source: Central Statistics Agency (Data processed)

From the discussion of elasticity based on the above data, it can be seen that the elasticity of labour to output in the manufacturing sector in Palu City is highly volatile. External factors such as the pandemic, economic recovery, and technological transformation greatly influence the dynamics of labour absorption.

Labour contribution reflects the proportion of workers absorbed by the manufacturing sector, while elasticity indicates the sensitivity of labour absorption to changes in the sector's output. Years with high contribution do not always correspond to proportional increases in labour absorption. For example, in 2022, there was an increase in contribution of 19.48 per cent and high elasticity of 5.30, indicating that the recovery had a real impact on employment. However, in 2023, there was the highest contribution of 20.03 per cent but low elasticity of 0.33, which means that the industry continued to absorb labour but in small numbers even though output grew.

In general, the growth of the manufacturing sector contributes to employment, but the nature of this relationship is not proportional. Low elasticity indicates that even though the sector's added value has increased, it does not have a significant impact on employment. These findings are in line with research conducted by (Rochmadi & Rohmah, 2019), which states that the growth rate of the industrial sector does not have a significant effect on employment in the manufacturing sector. Similarly, (Fajrin, 2025) and (Walangadi et al., 2024) which supports the view that growth in the manufacturing sector does not have a significant impact on employment.

This reflects a shift in the structure of production towards automation or capital-intensive technology, where productivity increases without a significant increase in labour. This phenomenon is in line with Romer's (1990) endogenous growth theory, which emphasises that the accumulation of knowledge and adoption of technology are the driving forces of economic growth, not just an increase in labour.

It can be said that in developing regions, growth in the industrial sector is not always synonymous with increased employment. W. Arthur Lewis' dualism theory also explains that once the labour reserves from the traditional sector are fully absorbed, the modern sector's ability to absorb labour will significantly decrease. This clarifies why the elasticity of industrial processing sector growth towards industrial processing labour absorption in Palu City tends to decrease despite the increasing contribution of labour. Therefore, there is a need for an industrial development strategy that focuses not only on output value but also on the creation of quality and sustainable jobs. This is important for local governments to consider when formulating industrial and labour policies (Hadia et al., 2024).

5. Conclusion

Based on the analysis conducted, it can be concluded that the growth of the manufacturing sector in Palu City during the 2019-2023 period shows a fairly significant fluctuating pattern. At the beginning of the period, the sector experienced a contraction due to the impact of natural disasters and the COVID-19 pandemic. However, from 2021 to 2022, a recovery began, marked by positive growth in both output and labour absorption. Nevertheless, the elasticity between output growth and labour absorption does not always show a proportional relationship. There were several years where output growth was not accompanied by commensurate employment growth, and even showed a negative relationship. This indicates the presence of efficiency, technological shifts, or changes in production structure that reduce dependence on manual labour. This condition confirms that although the manufacturing sector remains one of the main drivers of economic growth in Palu City, its contribution to job creation is still not optimal and is vulnerable to external pressures. This finding is in line with Lewis' dualism theory, which states that industrialisation requires innovative strategies, adequate infrastructure, and the creation of added value that is capable of absorbing labour inclusively. This study also has limitations, including the use of time series data only for the last five years, most of which covers the Covid-19 pandemic period, potentially causing structural shocks and affecting the results of elasticity estimates. Therefore, further research is recommended to use mixed methods and expand the research period to produce a more comprehensive analysis.

Based on the results of this study, several suggestions can be made. First, the local government of Palu City is expected to design policies that not only focus on industrial output growth but are also specifically aimed at increasing labour absorption. Second, vocational training and education consistent with industrial needs are required so that the workforce has

the relevant competencies and is ready to face industrial technological developments. Third, the government and related agencies need to conduct regular evaluations of the performance of the manufacturing sector in creating jobs, so that the results of these evaluations can be used as a basis for policy improvements in the future. Fourth, support for regulatory stability, business security, and legal certainty is also very important to maintain investment sustainability in the industrial sector, especially in the post-pandemic period and in the face of global economic uncertainty.

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