

Analysis of the Impact of Inflation and Unemployment Rate on the Development of the Logistics Sector in Indonesia for the Period 2015-2024

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Abstract: Analysis of the effect of inflation and unemployment rate on the development of the logistics industry in Indonesia from 2015 to 2024 is the aim of this research. By using secondary data, such as the GDP of the logistics subsector, the inflation, and the unemployment rate, which were gathered from the Central Statistics Agency (BPS), Bank Indonesia, and Indonesian Supply Chain. Using IBM SPSS software, multiple linear regression analysis was performed. The findings indicate that while the unemployment rate has a large and negative effect on the development of the logistics industry, inflation has a positive and considerable impact. Both factors have a stimulating effect on the development of Indonesia's logistics industry. This study demonstrates that inflation and unemployment rate stability are key factors propelling the expansion of national logistics. This study will help stakeholders in the government and logistics industry create flexible policies.

Keywords: *Inflation, Unemployment, Logistics, Gross Domestic Product, Consumer Price Index*

1. Introduction

The logistics sector plays a strategic role in supporting Indonesia's economic development. The effective distribution of goods and services is highly dependent on the performance of logistics, which includes transportation and warehousing. Economic indicators such as inflation and unemployment significantly influence the stability of the logistics sector within a macroeconomic context. Both variables have the potential to depress purchasing power and the structure of logistics operational costs, making it crucial to analyze them in greater depth (Fitrawaty et al., 2024).

According to (Bank Indonesia, 2020), inflation occurs when the cost of goods and services increases consistently within a given period. High inflation rates can lead to economic instability and reduce consumer purchasing power. Therefore, it is crucial to understand the relationship between inflation and the development of the logistics sector (Manurung, 2023). According to (Bank Indonesia) data, Indonesia experienced significant inflation fluctuations between 2015 and 2024. Inflation dropped drastically to 1.68% during the 2020 pandemic, then surged to 5.51% in 2022, before easing back to 1.57% in 2024. This situation triggered changes in national logistics costs, particularly those related to fuel, labor, wages, and distribution infrastructure. On the other hand, the unemployment rate is also a significant factor experiencing significant dynamics. These fluctuations can impact consumer spending, which in turn influences economic growth. As more individuals find jobs, disposable income rises, leading to increased demand for goods and services. Unemployment is considered an obstacle to national development because it impacts low national income, low per capita income, wasted human resources, and low capital formation. According to (BPS, 2020), unemployment soared to more than 7.07% in 2020 due to Covid-19.

Fluctuations in inflation and unemployment can impact the logistics sector in terms of operational efficiency and service demand. High inflation suppresses people's purchasing power, while high unemployment creates a surplus of labor that may not match industry competencies. Compared to overall national economic growth from 2015 to 2024, the main components of logistics (transportation and warehousing) grew faster in 2023 than overall national economic growth. This demonstrates the growing role of logistics in supporting the

Indonesian economy, particularly in the distribution of goods and services (Dian Thenniarti, 2025).

There are currently few studies that particularly analyze the impact and stimulation on Indonesia's logistics sector; most have simply examined the implications of unemployment and inflation on the economy. The goal of this study is to close the gap in the small body of research examining the combined long-term effects of these two factors on the logistics industry. The findings of this study, should help managers and policymakers adopt more flexible approaches and provide a foundation for future macroeconomic and logistics research. To provide a stronger foundation for this study, the following section are relevant literature on the relationship between inflation, unemployment, and development of the logistics sector.

2. Literature Review

Inflation

According to the Big Indonesian Dictionary (KBBI), inflation is the decline in the value of paper money due to its large and rapid circulation, which results in rising prices. Inflation is the tendency for prices of goods and services to rise generally and continuously (Aulia et al., 2020). Inflation is an economic phenomenon that attracts public attention because it directly affects their well-being, and businesspeople consider it important for decision-making. For the government, inflation can be a basis for creating and implementing better economic policies for the people (Nur Aini, 2022). The Covid-19 pandemic caused inflation, disrupting the international transportation industry, and causing container freight rates to reach record highs from late 2020 to 2021 (Pulido, 2022). Moderate inflation rates are often associated with economic dynamism because they reflect healthy demand and investment levels (Yuliawan et al., 2024). Both of these things can increase the need for distribution and logistics to support the movement of goods. High inflation increases transportation and labor costs, reducing logistics efficiency. This effect is particularly pronounced in developing countries with underdeveloped infrastructure (Ohakwe & Wu, 2025). According to research (Sendow & Pandey, 2023), the transportation and logistics sector index can be affected by changes in the national inflation rate. Inflation is measured using the inflation rate, which is the rate of increase in the index price from one period to the next. The Consumer Price Index (CPI) is used as a measure to calculate the prices of certain goods (Katmas & Indarningsih, 2022).

Unemployment Rate

Unemployment is a serious problem in Indonesia. Unemployment is the number of workers in the economy who are actively looking for work but have not yet found one (Fahri et al., 2020). According to the journal (Ronchetti & Terriau, 2020), Indonesia's relatively large population and continued population growth have led to an increase in unemployment. Research conducted by (Xia, 2021), states that the lack of jobs is caused by a loss of production, as unemployed workers do not contribute to production. Production capacity decreases when unemployment rates are high. This also impacts the logistics industry, which is highly dependent on the quantity of products manufactured and distributed.

The COVID-19 pandemic has caused a sudden increase in unemployment worldwide, disrupting supply chains by reducing labor availability in the transportation, warehousing, and manufacturing sectors. Unemployment has led to rising prices. Therefore, demand cannot be met by local production, so raw materials are imported. An economy typically needs more imports than exports. The result is a growing trade imbalance (Kalluraya, 2023), researching Indonesia's economic growth, they looked at how inflation, unemployment, and the size of the workforce affect GDP growth.

Development of the Logistics Sector

In recent years, trade and production have required logistics activities. Economic growth is highly dependent on the logistics industry, as logistics serves as the backbone of a

region's economy. According to (DHL, 2022), logistics is burdened by significant increases in energy prices. Transportation companies face the challenge of keeping pace with rapidly rising oil, gasoline, and electricity prices. Post-COVID-19, there was an increase in aggregate demand in late 2021 and 2022, a tight labor market, energy supply disruptions, and supply chain disruptions for other inputs, all of which have the potential to lead to continued rising inflation (Gordon & Clark, 2023). Public purchasing power remains strong, leading to increased demand for consumer goods and improved distribution. This has driven increases in transportation volumes, warehousing, and export-import activity.

Shipping rates rose from the second half of 2020 to early 2022, and demand for container cargo continued to increase, and oil prices rose dramatically (UNCTAD, 2022). Two-thirds of the European Union's oil demand comes from the transport sector, referring to the fuel used by trucks, cars, ships, and planes (Earl, 2022). Around 60% of the world's oil supply is used by the transportation sector (Solaymani & Botero, 2025). A study conducted by (Sendow & Pandey, 2023), shows that price changes in the transportation and logistics sector are influenced by global oil prices. Research (Mokodompit et al., 2025). Logistics costs can be significantly affected by inflation, which reflects changes in prices, thereby increasing fuel prices, labor costs, and operating costs (Ohakwe & Wu, 2025). Recent studies emphasize the important role of macroeconomic indicators in shaping logistics performance: High GDP levels are correlated with increased trade volumes and infrastructure investment, which improves logistics efficiency (Rodrigue, 2019).

Based on a literature review, inflation and unemployment are closely linked to the development of the logistics sector through purchasing power, distribution costs, and demand for freight transportation services. Therefore, analyzing the impact of inflation and unemployment on the logistics sector is crucial for understanding the dynamics of Indonesia's economic growth, particularly in the 2015–2024 period.

2.1 Conceptual Model and Research Hypothesis

Based on all the references above, this research explains the effect of two independent variables, namely inflation (X_1) and unemployment rate (X_2), on the dependent variable, namely the development of the logistics sector (Y), which is measured through the growth of the gross domestic product (GDP) of the transportation and warehousing sub-sector as shown in Figure 1 This study presents a research model.

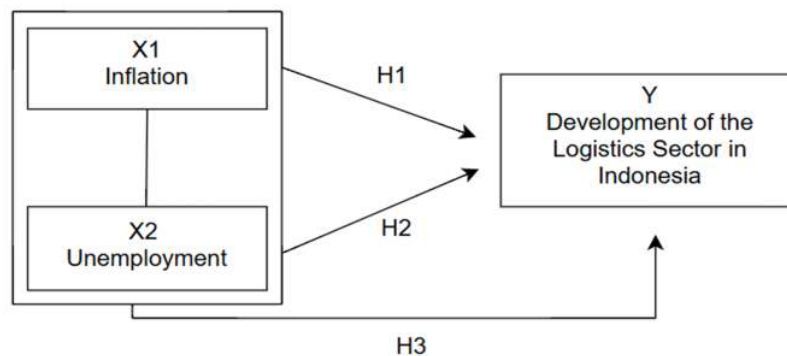


Figure 1 Research Model

Based on previous research on the development of the logistics sector, three hypotheses were formulated:

Table 1 Research Hypothesis

NO	RESEARCH HYPOTHESIS	
H1	H ₀	There is no significant impact of Inflation on Development of the Logistics Sector
	H ₁	There is a significant impact of Inflation on Development of the Logistics Sector
H2	H ₀	There is no significant impact of Unemployment Rate on Development of the Logistics
	H ₁	Sector There is a significant impact of Unemployment Rate on Development of the Logistics Sector
H3	H ₀	There is no significant impact of Inflation and Unemployment Rate simultaneously on Development of the Logistics Sector
	H ₁	There is a significant impact of Inflation and Unemployment Rate simultaneously on Development of the Logistics Sector

Validation of the Theoretical Framework

This research is based on logistics management and macroeconomic theory. Logistics sector activity is influenced by key economic indicators, namely inflation and unemployment, which affect operational costs and service demand. Increases in fuel prices, wages, and infrastructure costs can increase logistics costs. The unemployment rate and economic growth influence the volume of goods distribution. When combined, these two variables provide a strong theoretical framework for examining their simultaneous influence on logistics development.

Practical Implications for Industry

The results of the hypothesis testing directly provide recommendations to the government and logistics companies. For example, companies could collaborate with the government to promote fuel subsidy policies or tax incentives for the logistics industry during times of high inflation or provide training to improve the skills of logistics workers, thereby absorbing more labor and reducing unemployment.

3. Research Method

Building on the theoretical insights and empirical findings from the literature review, the next section outlines the research method applied in this study. This research employs a quantitative approach, as it enables a systematic measurement of economic phenomena and analysis using statistical tools (Sugiyono, 2020). The purpose of this study is to examine how unemployment and inflation have affected Indonesia's logistics industry's growth between 2015 and 2024. Data were obtained from reputable secondary sources, including the Central Statistics Agency (BPS), Bank Indonesia, Trading Economics and the Supply Chain Indonesia. The variables analyzed consist of the GDP of the transportation and warehousing subsector, The inflation variable was taken from the Consumer Price Index (CPI), and open unemployment rates. The use of official institutional data ensures the legitimacy and reliability of the findings.

The data were analyzed using multiple linear regression with IBM SPSS version 30. The dependent variable is the development of the logistics sector, while the independent variables are inflation and the unemployment rate. Statistical tests employed include the coefficient of determination (R^2), the F-test for overall model significance, and the T-test for individual variable significance.

Because the data for a 10-year period (2015–2024) was used in the analysis, this study employed a saturation sampling strategy. Using every member of a population as a sample is known as saturated sampling. This is frequently carried out when the population is small—less

than 30 people—or when the goal of the study is to draw broad conclusions with negligible error. A census, in which every member of the population is sampled, is another word for a saturated sample (Sugiyono, 2020).

The use of annual data is a methodological choice to emphasize long-term macroeconomic trends rather than short-term fluctuations. The focus of this study is to observe structural changes in the logistics sector across a decade, making annual data more suitable for the purpose of long-term analysis. The findings are thus expected to reflect broad macroeconomic patterns while remaining statistically valid despite the limited number of observations.

Based on this methodological, the following section presents the result of the regression analysis and their interpretation.

4. Results and Discussion

The annual data from 2015 to 2024 used in this research. Data on inflation were obtained from the Consumer Price Index (CPI), presented by the percentage change in the overall level of prices and is released by (Bank Indonesia) and (Economics Trading, 2025). The unemployment rate data were obtained from total number of open unemployment in Indonesia as reported by (BPS, 2024). Meanwhile, the development of the logistics sector was measured through the Gross Domestic Product (GDP) of the transportation and warehousing subsector, which reflects the logistics contribution to Indonesia's national economy (Supplychainindonesia, 2024). These data form the basis of the regression analysis presented in this section.

This section presents the empirical findings of the study. The results begin with the regression analysis of inflation and unemployment on the development of Indonesia's logistics sector, followed by the statistical tests (t-test and f-test), regression diagnostics, and discussion of the findings in relation to existing theories and literature.

4.1 Results of Classical Assumption Tests

Before conducting the multiple linear regression, classical assumption tests were performed to ensure the validity of the model. These tests include normality, multicollinearity, heteroscedasticity, and autocorrelation. The results of each test are presented below.

Normality Test

Table 2 One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		10
Normal Parameters	Mean	.0000000
	Std. Deviation	.38738569
Most Extreme Differences	Absolute	.224
	Positive	.137
	Negative	-.224
Test Statistic		.224
Asymp. Sig. (2-tailed)		.167

a. Test distribution is Normal.

b. Calculated from data.

As shown in Table 2 One-Sample Kolmogorov-Smirnov Test, produced a significance value of 0.167, which is greater than 0.05. This means that the residuals are normally distributed, so the regression model satisfies the normality assumption.

Multicollinearity Test

Table 3 Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-9.000E-16		.000	1.000		
	Zscore: Inflation	1.422	.378	1.422	.007	.150	6.659
	Zscore: Unemployment Rate	-2.050	.378	-2.050	<.001	.150	6.659

a. Dependent Variable: Zscore: Logistics Sector GDP

As shown in Table 3 Coefficients, the tolerance values for all independent variables are greater than 0.10 and the VIF values are below 10. This indicate that there is no multicollinearity problem in the regression model. In other words, the independent variables of inflation and unemployment do not overlap excessively in explaining the variation of the dependent variable, which in this study is the development of the logistics sector. This condition ensures that each variable contributes unique information to the model, so the regression estimates can be considered reliable and free from bias caused by high intercorrelation among predictors.

Heteroscedasticity

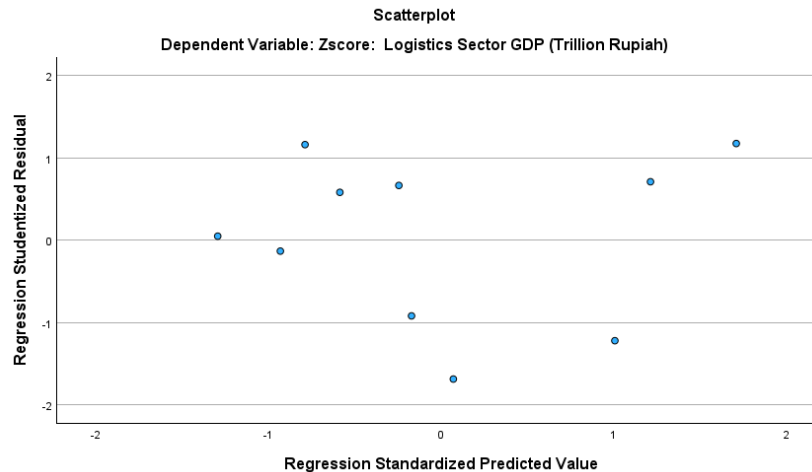


Figure 2 Scatterplot

As shown in Figure 2 Scatterplot, the scatterplot of residuals against predicted values shows that the points are spread randomly above and below the zero line without forming a specific pattern. This indicates that the regression model does not suffer from heteroscedasticity.

Autocorrelation

Table 4 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.922	.850	.807	.43925409	1.731

a. Predictor: (Constant), Zscore: Unemployment Rate, Zscore: Inflation

b. Dependent Variable: Zscore: Logistics Sector GDP

As shown in Table 4 Model Summary, the Durbin-Watson statistic is 1.731. According to the guideline values, a Durbin-Watson statistic around 2 indicates no autocorrelation and values closer to 0 suggest positive autocorrelation. Because, 1.731 is close to 2, it can be concluded that the regression model does not suffer from autocorrelation. This confirms that model is statistically valid for further interpretation.

4.2 Results of Multiple Linear Regression

A statistical technique called multiple linear regression analysis is used to assess how much two or more independent variables affect a single dependent variable. used to calculate the degree to which the independent variables inflation (X_1) and unemployment rate (X_2) can affect the dependent variable, which is development of the logistics sector (Y), as indicated by the transportation and warehousing subsector's growth in GDP. All variables have been converted into Z-scores to eliminate differences in units and scales, allowing the resulting coefficient values to be compared directly without bias from size differences. Based on the test results obtained using SPSS, the outcomes in Table 3 Coefficients, which presents the regression coefficient along with their significance values. Based on Table 3 Coefficients, the multiple linear regression equation is obtained as follows:

$$Y = 1.422X_1 - 2.050X_2$$

Where Y is the Z-score of Logistics sector development, X_1 is the Z-score of inflation, and X_2 is the Z-score of the unemployment rate. This equation shows that every one-unit increase in the Z-score of inflation (X_1) will increase the GDP of the logistics sector by 1.422 Z-score units, indicating a positive and significant relationship. Conversely, every one-unit increase in the Z-score of the unemployment rate will decrease the GDP of the logistics sector by 2.050 Z-score units, meaning there is a negative and significant relationship.

The coefficient values for each variable represent the magnitude of the change in the dependent variable if the independent variable increases by one unit on the Z-score scale, assuming other variables remain constant. In other words, every increase in inflation tends to boost the growth of the logistics sector, while an increase in unemployment actually suppresses its development.

4.3 T-test results

The regression coefficients and their statistical significance are presented in Table 3 Coefficients, these results provide the basis for the partial significance test (t-test), which further examines the effect of each independent variable on the development on the development of the logistics sector individually. The t-test results show that the inflation variable has a regression coefficient of 1.422, a t-statistic of 3.763, and a significance of 0.007 (< 0.005). This indicates that variable X_1 has a positive and significant influence on variable Y ; in other words, every one-unit increase in the Z-score scale will increase variable Y by 1.422.

In contrast, variable X_2 has a regression coefficient of -2.050 with a t-statistic of -5.425 and significance < 0.001 (< 0.005), indicating that variable X_2 has a negative and significant effect on variable Y . Consequently, every one-unit increase in variable X_2 on the Z-score scale will decrease variable Y by 2.050. The t-test provides insights into the individual effects of inflation and unemployment. It is also important to examine whether these variables have a significant influence on the logistics sector when considered together. To complement these findings, it is necessary to examine whether the independent variables also have a joint effect on the dependent variable, which is assessed through the F-test.

4.3 F-test results

After examining the partial effects of each independent variable through the t-test, the next step is to evaluate the overall validity of the regression model. This is using the F-test,

which assesses whether inflation and unemployment, when considered simultaneously, have a significant joint effect on the development of the logistics sector.

Table 5 ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7.649	2	3.825	19.823	.001
	Residual	1.351	7	.193		
	Total	9.000	9			

a. Dependent Variable: Zscore: Logistics Sector

b. Predictors: (Constant), Zscore: Unemployment Rate, Zscore: Inflation

The F-test results show an F-statistic value of 19.823 with a significance level of 0.001 (< 0.05), indicating that the two independent variables simultaneously have a significant effect on the dependent variable. This proves that the regression model used is suitable for predicting the relationships between the variables studied. The F-test results confirm that inflation and unemployment jointly have a significant effect on the development of the logistics sector. To further evaluate the strength of this relationship, the multiple correlation (R) is examined to determine how closely the independent variables are related to the dependent variable.

4.4 Multiple Correlation

Based on the calculation results in Table 4 Model Summary, the multiple correlation coefficient (R) value obtained is 0.922. This indicates a very strong relationship between the independent variables, namely Inflation and Unemployment Rate, and the dependent variable, which is the Development of the Logistics Sector, falling into the very strong category.

Table 6 Interpretation of the Correlation Coefficient

Interval Coefficient	Relationship Level
0.00 – 0.199	Very Low
0.20 – 0.399	Low
0.40 – 0.599	Middle
0.60 – 0.799	Strong
0.80 – 1.000	Very Strong

Source: (Bank et al., 2020)

The relationship can be classified as very strong with $R = 0.922$, indicating that changes in the independent variables (unemployment rate and inflation) have an impact on the dependent variable (development of the logistics sector) at the same time. The correlation coefficient ranges from 0 to 1, where values closer to 1 indicate a stronger relationship between the variables.

The coefficient of determination (R Square) of 0.850 indicates that the two independent variables can account for 85% of the variation in the dependent variable. The remaining 15% is caused by other factors not mentioned in this study. These factors can include other macroeconomic variables such as exchange rates, oil prices, and benchmark interest rates. An Adjusted R-squared value of 0.807 supports the research finding that the model has considerable strength even after adjusting for the number of variables and sample size. Meanwhile, the Std. Error of the Estimate value indicates a relatively low level of prediction error for the model, only about 0.439 (on a Z-score scale). Each variable has been standardized and has a low numerical value. This means it is well-categorized because it has a relatively small prediction error rate. The Durbin-Watson value is 1.731, indicating no serious issues in this model. This means the regression model used meets the assumptions, so it can be used to

predict the development of the logistics sector based on inflation and unemployment.

Table 7 Interpretation and Conclusion

Conclusion of Result and Interpretation	
H1	Because $p\text{-value} = 0,007 < \alpha = 0,05$ and T statistic $3,763 > 1,960$, the researchers accept the one hypothesis. So, this value means that there is a significant positive impact of Inflation on the Development of the Logistics Sector.
H2	Because $p\text{-value} < 0,001 < \alpha = 0,05$ and T statistic $-5.425 < -1,960$, the researchers accept the one hypothesis. So, this value means that there is a significant negative impact of Unemployment Rate on the Development of the Logistics Sector.
H3	Because $p\text{-value} = 0,001 < \alpha = 0,05$ and F statistic $19,823 > 3,554$, the researchers accept the one hypothesis. So, this value means that there is a significant simultaneous impact of Inflation and Unemployment Rate on the Development of the Logistics Sector.

4.5 Discussion of research findings

The Influence of Inflation on the Development of the Logistics Sector in Indonesia

The research results show that inflation has a positive and significant influence on the development of logistics in Indonesia. This happens because moderate inflation often reflects growing demand in the market, prompting businesses to accelerate distribution processes to anticipate future cost increases. This condition has led to an increase in demand for transportation and warehousing services.

This research is consistent with the macroeconomic theory, which views that inflation within reasonable limits can be an indicator of active economic growth, while also creating opportunities for the logistics sector. However, during the period 2015–2024, inflation in Indonesia remained relatively under control, thus influencing the increase in economic activity and boosting demand for logistics services for goods and services. Consistent with the study (Koyuncu et al., 2023) which states that moderate inflation drives increased trade flows and expands the distribution of goods. Thus, the findings of this research confirm that stable and controlled inflation can be one of the main drivers of growth in the logistics sector in Indonesia.

However, this positive relationship should be interpreted with caution. While moderate inflation can encourage logistics expansion, excessively high inflation can have adverse consequences. Rising logistics cost, particularly for fuel, vehicle maintenance, and labor, can reduce profit margins for logistics firms. At the same time, reduced household purchasing power during periods of high inflation may suppress demand for goods distribution. Internal evidence, especially in the post-COVID era, shows that persistently high inflation disrupts supply chains, increase logistics cost volatility, and lowers operational efficiency. Therefore, need to ensure that inflation remains moderate and table to avoid the detrimental impacts of excessive inflation on the logistics sector.

The Influence of Unemployment on the Development of the Logistics Sector in Indonesia

Research indicates that unemployment has a negative and significant impact. This aligns with economic theory, which states that rising unemployment indicates economic activity that will reduce public purchasing power, suppress production and distribution activities, and lower the contribution of the logistics sector to GDP. This is in accordance with Okun's law, which explains the inverse relationship between economic growth and the unemployment rate. Simply put, this law states that when a country's economic growth increases, the unemployment rate tends to decrease. High unemployment rates can also lead to a decrease in the demand for goods and services due to weakened consumer purchasing power, which in turn reduces distribution volume.

Furthermore, unemployment is also a result of low labor absorption in some productive industries, such as transportation and logistics, which can lead to a decrease in distribution

capacity. This aligns with (Li et al., 2020), who emphasize that downstream logistics activities serve as a strong intermediary for overall economic performance. In other words, high unemployment does not only suppress demand but also weakens the supply side of the logistics chain.

These findings highlight the dual challenges that unemployment poses to the logistics sector: reduced demand due to weakened consumption, and constrained supply capacity due to lower labor absorption. In the long term, persistent unemployment may hinder structural improvements in logistics services, especially if firms are unable to invest in workforce training or technology adoption. Thus, addressing unemployment is critical not only for improving macroeconomic stability but also for ensuring sustainable development of the logistics sector.

The Influence of Inflation and Unemployment on the Development of Logistics in Indonesia

Research indicates that inflation and unemployment significantly influence the development of logistics in Indonesia, and are important components in maintaining and improving it. Inflation tends to affect fuel prices, transportation fares, and labor costs, which increase the cost burden of logistics activities. This condition is especially challenging for small and medium-sized enterprises, whose competitiveness is more sensitive to rising cost. Meanwhile, unemployment impacts the logistics sector from both demand side through reduced purchasing power that lowers good distribution volume and from the supply side, by limiting the availability of labor in transportation and logistics services.

High inflation and unemployment have a dual effect. The cost-push effect arises as higher input prices increase transportation and warehousing costs, while the demand-pull effect occurs when weaker consumption reduces demand for distribution services. These mechanisms can slow down logistics growth and reduce its contribution to the national economy. In contrast, the study also finds that controlled inflation and low unemployment levels contribute to smoother goods distribution and more sustainable logistics sector development.

Based on the research results, the importance of maintaining inflation at a moderate and stable rate while simultaneously addressing unemployment and these two variables influence the development of logistics, as evidenced by controlled inflation and low unemployment, which promote the smooth distribution of goods and services.

5. Conclusion

This study concludes that inflation significant and has a positive impact on the growth of the logistics sector in Indonesia, while unemployment has a negative and significant impact. High unemployment rates have a negative impact by suppressing consumer purchasing power and reducing the volume of goods distribution. Controlled inflation tends to boost distribution activities and increase demand for warehousing and transportation services.

These two variables simultaneously contribute 85% to the variation in the development of the logistics sector, which is measured by the GDP of the warehousing and transportation subsectors. This research shows that the decline in the unemployment rate and inflation stability are the main components driving the growth of the national logistics sector.

6. Implication

The findings of this research confirm that macroeconomic stability plays a crucial role in logistics development, with inflation and unemployment being the most influential factors. From a policy perspective, the government needs to maintain inflation at a moderate and stable level while implementing programs to reduce unemployment. Targeted interventions such as fuel subsidies for logistics operators, tax incentives for fleet modernization, and financial support for warehouse development can help reduce operational costs during inflationary

periods. From an industry perspective, logistics companies can adapt by leveraging moderate inflation to optimize distribution efficiency, investing in energy-saving technologies such as IoT, block chain-based tracking, and warehouse automation. Furthermore, capacity-building through workforce training is essential to reduce unemployment and align logistics skills with industry demand. Collaboration between stakeholders is also critical. Partnerships between the government, logistics associations, and private companies in training programs and technology adoption can enhance sector resilience. International experience after COVID-19 also shows that joint efforts in digitalization and workforce upskilling are key to mitigating inflationary pressures on logistics. Therefore, policy coordination and stakeholder engagement are central to ensuring sustainable logistics sector growth.

7. Research limitations

This study has limitations. Among these, the analysis is conducted at the national level without considering other external variables such as exchange rates or trade policies. The data used is annual data for the period 2015–2024, so it does not capture short-term events. The analysis is conducted nationally without considering the conditions in each region of Indonesia. This research is quantitative and uses secondary data, so it does not explore the qualitative perspectives of logistics industry players.

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