
THE INFLUENCE OF INFRASTRUCTURE ON THE NON-BASE ECONOMIC SECTOR IN BATU CITY

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Abstract

The non-base sector, which can be considered a non-leading sector, may address issues in the non-base sector with proper management. In the future, development should not only rely on the existing base sector but also optimize the potential of the non-base sector in Batu City. The existence of infrastructure is crucial in supporting economic and social development, as good infrastructure can enhance effectiveness and efficiency for both businesses and society. Therefore, this study is expected to serve as a reference for government programs aimed at improving the non-base sector in Batu City. Data collection was conducted using observation techniques, questionnaires, and documentation, followed by analysis through Economic Sector Analysis, Priority Non-Base Sector Analysis, and Multiple Regression Analysis. Based on the analysis of the non-base economic sector, five sectors were further analyzed using the Analytical Hierarchy Process (AHP) to determine the priority non-base sector. From the four selected respondents, the priority non-base economic sector identified in Batu City is the transportation and warehousing sector. The analysis results indicate that infrastructure, including roads, electricity, and telecommunications, does not significantly impact the transportation and warehousing sector. Therefore, these infrastructures need to be improved in the future to enhance the economy through the non-base sector in Batu City.

Keywords: Influence, Infrastructure, Non-Base

INTRODUCTION

Economic growth is a pivotal indicator of welfare in any region, particularly in developing countries, where economic development is often a protracted process influenced by various sectors. In Batu City, the Agriculture, Forestry, and Fisheries sectors are recognized as the economic backbone, significantly contributing to regional income and agricultural exports. However, the non-base sectors—such as trade, services, the creative industry, and tourism—have not been adequately developed, despite their potential to enhance economic resilience and diversify business opportunities for the local community (Redu, 2023; Novita & Gultom, 2017). The non-base sector plays a crucial role in supporting overall economic development by providing essential goods and services to the local populace.

Strengthening this sector can lead to a more balanced economy, ultimately improving the welfare of Batu City's residents. Economic diversification through the non-base sector can mitigate risks associated with fluctuations in the base sector, such as commodity price volatility and adverse weather conditions affecting agricultural productivity (Nagler & Naudé, 2014; Ardiansyah et al., 2020). For instance, the tourism sector in Batu City, which has substantial growth potential, can be further developed through increased investments in infrastructure, digital marketing, and partnerships with local businesses to enhance its economic contributions (Jasina, 2020; Sutikno, 2024). Moreover, relying solely on the base sector can result in economic disparities and limited diversification. A strategic approach that synergizes the development of both base and non-base sectors is essential for fostering regional economic resilience. By optimizing the non-base sector, new employment opportunities can be created, purchasing power can be enhanced, and the economic structure of Batu City can become more sustainable (Ballo & Tiwu, 2021; Nahumury & Manuhutu, 2022). For example, the creative economy and tourism sectors can be integrated to create new economic sources and job opportunities, thereby supporting national development goals (Ballo & Tiwu, 2021).

In conclusion, the development of Batu City's economy must focus on both the base and non-base sectors. By doing so, the region can achieve sustainable economic growth, reduce dependency on a single sector, and improve the overall welfare of its residents. This balanced approach will not only enhance economic stability but also foster a more inclusive and resilient community (Simas et al., 2014; Siregar et al., 2020).

Adequate infrastructure is a fundamental component in supporting economic development across both base and non-base sectors. The presence of robust infrastructure enhances production efficiency, distribution capabilities, and market access, thereby increasing the competitiveness of a region. Specifically, infrastructure development—including roads, transportation systems, communication networks, and supporting facilities—can significantly accelerate economic growth by reducing operational costs and enhancing business productivity (Tripathi et al. (2019) Chi, 2015). For instance, effective transport infrastructure is particularly crucial in developing economies, where it can lead to substantial improvements in economic performance (Chi, 2015; Farza & Zainal, 2018). Investment in infrastructure not only facilitates smoother operations but also attracts investors to underutilized economic sectors, thereby expediting the economic advancement of regions like Batu City (Zhang et al., 2021).

Furthermore, local government policies play a pivotal role in fostering a conducive economic environment for the growth of both base and non-base sectors. The government must implement strategies that provide incentives for small and medium enterprises (SMEs) operating within the non-base sector, improve access to financing, and offer training and assistance to help these businesses thrive (Soleh & Suwarni, 2021; Ghani & Din, 2022). Innovative programs, such as the development of tourist villages, the establishment of creative economic ecosystems, and the digitalization of SMEs, can serve as effective solutions to enhance the competitiveness of the non-base sector (Besime et al., 2021; Shen, 2023). By focusing on these areas, the local government can stimulate economic activity and promote inclusive growth.

In summary, Batu City must adopt a balanced development approach that emphasizes both its existing key sectors and the growth potential of non-base sectors. This approach, supported by adequate infrastructure and favorable government policies, will foster a more inclusive and sustainable economy for the city and its residents. Through a synergistic relationship among the government, businesses, and the community, Batu City can evolve into a region characterized by a strong, diverse, and resilient economy capable of withstanding future economic challenges (Shi, 2024; Fagbohunka, 2018).

RESEARCH METHOD

The method used in the research on "The Influence of the Improvement of the Non-Basis Economic Sector in Batu City" is a quantitative approach. The data for this research is collected, processed, and analyzed. (According to Sugiyono, 2015), quantitative data refers to data in the form of numbers, or quantified data (scoring). Thus, quantitative data is data that can be analyzed using statistical techniques. This data can be in the form of numbers or scores and is typically obtained using data collection tools where the responses are provided in a range of scores or weighted questions.

Primary data collection methods are those used to gather data directly from the original source or research object using several techniques, including:

1. Observation: This method involves directly observing the research object and systematically recording all obtained data.
2. Questionnaires: A set of questions used to gather information from respondents regarding their personal details or other aspects related to the research topic.
3. Documentation: This involves gathering physical evidence such as images from the object being studied.

Secondary data collection methods refer to the efforts made by the researcher to gather supplementary data that supports and complements the primary data obtained from institutions, literature, or journals related to the research topic.

Regarding the data analysis methods used, they are as follows:

1. Location Quotient (LQ), Shift-Share (SS), and Klassen Typology: LQ is used to determine the basis and non-basis sectors in a region. SS is used to measure the growth rate and competitiveness of a commodity compared to other regions, while Klassen Typology is used to determine the contribution of sectors to the economy.

2. Analytic Hierarchy Process (AHP): A method for determining the level of a sector and defining problems by creating weighting to prioritize sectors, while also allowing for sensitivity testing of the results.
3. Multiple Regression Method: This involves dependent variables, which are explained in a linear equation, and independent variables, which are explanatory variables. For the dependent variable, Y is the Gross Regional Domestic Product (GRDP) data of Batu City.

RESULTS AND DISCUSSION

This section describes the steps and results of the analysis that have been determined beforehand to achieve each of the established objectives. As previously explained, this research was conducted in Batu City. Batu City is one of the cities that was formed in 2001 as a result of a division from Malang Regency. Batu City has an area of 19,629.83 hectares. Administratively, Batu City is divided into three districts: Batu, Bumiaji, and Junrejo. Batu City is located in a mountainous area, which not only offers attractive natural resources but is also rich in agricultural products, including fruits and vegetables. However, based on the problems mentioned earlier, various analyses are needed to advance the horticultural vegetable sector in Batu City.

The Gross Regional Domestic Product (GRDP) is an indicator that can reflect economic growth over a certain period, illustrating the structure of the economy and the results of the analysis that reflect the performance of the economic sectors. Generally, GRDP based on the production approach represents the total value of goods and services produced by various production units within a certain region at a specific time, typically over the course of a year.

The first analysis is the Location Quotient (LQ) Analysis to assess the economic conditions over a specific period. This analysis allows for identifying the basis and non-basis sectors by comparing the economic sectors in a regional area with those in a larger regional area. In this research, LQ is used to determine the basis and non-basis sectors of Batu City compared to the broader East Java Province, covering the period from 2017 to 2021.

Table 1.

Location Quotient

| No | PDRB Sector | Average | Classification |
|----|----------------------------------------------------------------------|---------|----------------|
| A | Agriculture, Forestry & Fisheries | 1.31 | Basis |
| B | Mining and Quarrying | 0.03 | Non-Basis |
| C | Manufacturing | 0.16 | Non-Basis |
| D | Electricity and Gas Supply | 0.18 | Non-Basis |
| E | Water Supply, Waste Management, Waste Disposal, and Recycling | 1.93 | Basis |
| F | Construction | 1.25 | Basis |
| G | Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles | 1.06 | Basis |
| H | Transportation and Warehousing | 0.50 | Non-Basis |
| I | Accommodation and Food Services | 1.88 | Basis |
| J | Information and Communication | 1.29 | Basis |

| | | | |
|---------|----------------------------------------------------------------|------|-----------|
| K | Financial and Insurance Services | 1.38 | Basis |
| L | Real Estate | 1.73 | Basis |
| M,N | Professional Services | 0.59 | Non-Basis |
| O | Public Administration, Defense, and Compulsory Social Security | 1.09 | Basis |
| P | Education Services | 1.45 | Basis |
| Q | Health Services and Social Activities | 1.17 | Basis |
| R,S,T,U | Other Services | 1.21 | Basis |

From the analysis results above, there are 12 economic sectors that are categorized as basis sectors, as these sectors have an LQ value greater than 1. Meanwhile, there are 5 economic sectors that are categorized as non-basis sectors, as these sectors have an LQ value less than 1.

The Shift Share analysis is a method used to analyze the economic structure of a region. It can also be used to observe the growth of economic sectors in a region over two periods. The main advantage of Shift Share analysis is that it focuses on changes in various economic indicators, such as production and employment opportunities, over two points in time within a region. The purpose of this Shift Share analysis is to observe the development of a region's economic sectors in comparison to the economic development of a larger region and to evaluate the relative growth of different economic sectors compared to others.

Table 2.
Shift Share

| PDRB Sector | Mij | Cij | Proportional Shift | Differential Shift | Classification |
|-----------------------------------------------------------------|----------|-----------|--------------------|--------------------|----------------|
| Agriculture, Forestry & Fisheries | 3539.24 | 78364.91 | + | + | Rapid Growth |
| B Mining and Quarrying | -88.86 | 424.10 | - | - | Backward |
| C Manufacturing | 9518.98 | 33920.80 | + | + | Rapid Growth |
| D Electricity and Gas Supply | 16.33 | 685.46 | + | + | Rapid Growth |
| E Water Supply, Waste Management, Waste Disposal, and Recycling | 520.38 | -308.99 | + | + | Rapid Growth |
| F Construction | 17392.07 | 33906.83 | + | + | Rapid Growth |
| G Wholesale and Retail Trade; Repair of Motor Vehicles | 36593.95 | -47458.22 | + | - | Developing |

| | | | | | |
|------------------------------------------------------------------|-----------|------------|---|---|--------------|
| and Motorcycles | | | | | |
| H Transportation and Warehousing | 293.20 | 25276.60 | + | + | Rapid Growth |
| I Accommodation and Food Services | 12204.63 | -169586.52 | + | - | Developing |
| J Information and Communication | 33933.65 | -39897.10 | + | - | Developing |
| K Financial and Insurance Services | 5076.86 | -18909.25 | + | - | Developing |
| L Real Estate | 7614.41 | -3449.46 | + | - | Developing |
| M,N Professional Services | 532.56 | -3135.58 | + | - | Developing |
| O Public Administration, Defense, and Compulsory Social Security | 2518.75 | -10541.02 | + | - | Developing |
| P Education Services | 9539.91 | -8918.26 | + | - | Developing |
| Q Health Services and Social Activities | 3319.02 | -6799.70 | + | - | Developing |
| R,S,T,U Other Services | 376.01 | 5631.55 | + | + | Rapid Growth |
| PRODUK DOMESTIK REGIONAL BRUTO | 165049.07 | -228988.76 | + | - | Developing |

The results of the shift-share analysis show that the sectors with positive values for sectoral growth (proportional shift) and regional competitiveness growth (differential shift) are experiencing rapid growth. These sectors include Agriculture, Forestry & Fisheries, Processing Industry, Electricity and Gas Supply, Water Supply, Waste Management, Waste and Recycling, Wholesale and Retail Trade, Repair of Motor Vehicles and Motorcycles, Transportation and Warehousing, R,S,T,U. Other Services.

On the other hand, sectors with a positive sectoral growth (proportional shift) and negative regional competitiveness growth (differential shift) indicate developing sectors, including Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles, Accommodation and Food Services, Information and Communication, Financial and Insurance Services, Real Estate, Business Services, Public Administration, Defense and Social Security, Education Services, Health and Social Activities.

The Typology Klassen analysis is used to see the pattern and structure of growth in each economic sector and to determine the leading sectors by identifying those that fall into quadrant one. This analysis classifies sectors based on their growth and contribution to the total Regional Gross Domestic Product (PDRB) of a region. The sectors with the largest growth and contribution in Kota Batu can be identified. Using the Typology Klassen analysis, a sector can be classified into four categories: primary sector, potential sector, developing sector, and underdeveloped sector. The classification of a sector into one of these four categories is based on the growth rate of its contribution and the average size of its contribution to the PDRB.

| PDRB Sector | Average Growth | Distribution (%) | Classification |
|----------------------------------------------------------------------|-----------------------|-------------------------|--------------------------------------------------------|
| Agriculture, Forestry & Fisheries | 0.02 | 14% | Advanced sector and growing rapidly |
| Mining and Quarrying | 0.00 | 0% | Relatively lagging sector |
| Manufacturing | 0.06 | 5% | Potential sector or still capable of rapid development |
| Electricity and Gas Supply | 0.04 | 0% | Advanced but under pressure |
| Water Supply, Waste Management, Waste Disposal, and Recycling | 0.05 | 0% | Potential sector or still capable of rapid development |
| Construction | 0.04 | 11% | Advanced sector and growing rapidly |
| Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles | 0.03 | 20% | Advanced but under pressure |
| Transportation and Warehousing | 0.05 | 1% | Potential sector or still capable of rapid development |
| Accommodation and Food Services | -0.01 | 10% | Advanced but under pressure |
| Information and Communication | 0.07 | 8% | Advanced but under pressure |
| Financial and Insurance Services | 0.01 | 4% | Advanced but under pressure |
| Real Estate | 0.04 | 3% | Advanced but under pressure |

| | | | |
|----------------------------------------------------------------|------|------|--------------------------------------------------------|
| Professional Services | 0.01 | 0% | Relatively lagging sector |
| Public Administration, Defense, and Compulsory Social Security | 0.01 | 2% | Advanced but under pressure |
| Education Services | 0.04 | 4% | Potential sector or still capable of rapid development |
| Health Services and Social Activities | 0.05 | 1% | Advanced but under pressure |
| Other Services | 0.02 | 2% | Advanced sector and growing rapidly |
| Gross Regional Domestic Product | 0.03 | 100% | Overall growing sector |

The results of the Typology Klassen analysis show that the sector with the highest growth is the Information and Communication sector, with a growth rate of 0.07. It is followed by the Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles sector, which has the highest economic contribution of 20%. The sector with the smallest growth rate is Mining and Excavation, with a growth rate of 0.00, while the smallest economic contribution comes from the same sector, with a contribution of 0% in Kota Batu.

The second analytical method used to determine the priority of non-basis economic sectors is AHP (Analytic Hierarchy Process). AHP is a model used to assess the level of a sector and define problems by creating weightings to identify priority sectors, as well as test the sensitivity of the results. The AHP process incorporates considerations, values, experience, and knowledge from experts in their respective fields. In this case, four experts were consulted to determine the five non-basis sectors and the infrastructure sectors to prioritize, using the Expert Choice application.

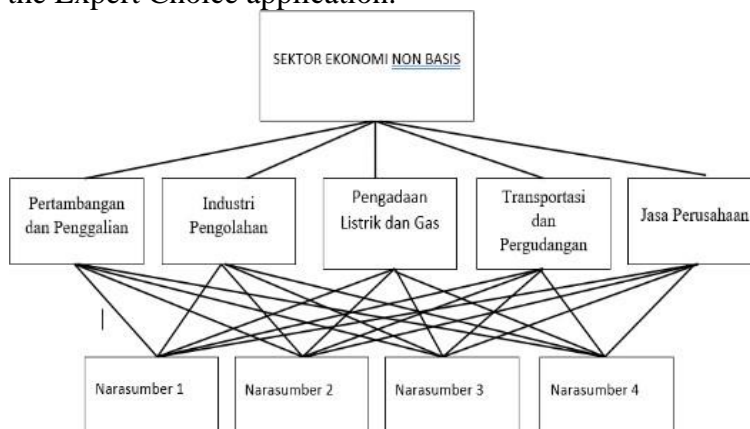
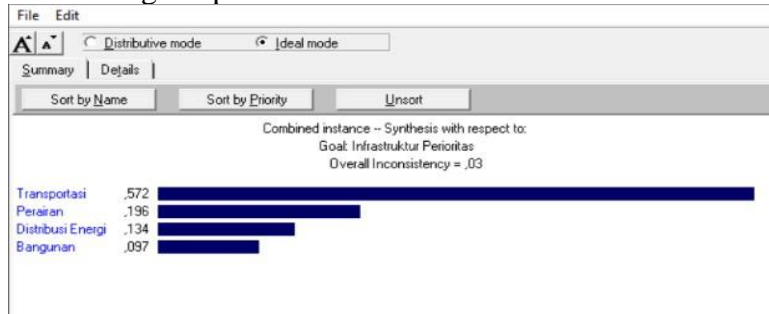


Figure 1. AHP Hierarchy Structure for Non-Basis Sector

The AHP analysis results from four sources using the Expert Choice application indicate the following priority percentages for non-basis sectors: Transportation and Warehousing (44.7%), Manufacturing Industry (19.7%), Electricity and Gas Supply (16%), Business Services (14.2%), and Mining and Excavation (5.4%). According to these AHP results, Source 3 selected Transportation and Warehousing as the priority non-basis sector in

Kota Batu. The overall consistency rate is 0.3, meaning that all four sources were consistent in choosing the prioritized sector.



AHP Analysis Results for Non-Basis Sector

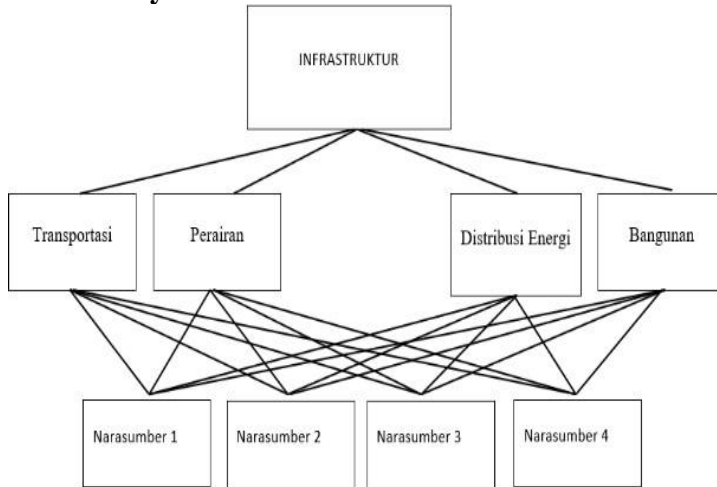
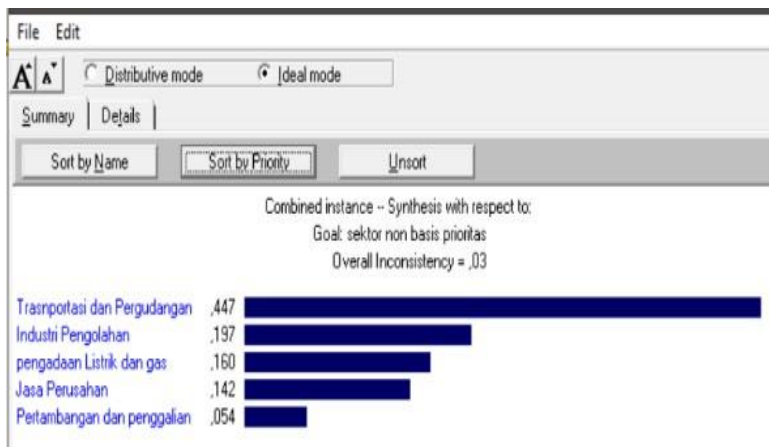


Figure 2. AHP Hierarchy Structure for Infrastructure

The AHP analysis results from four sources using the Expert Choice application for infrastructure indicate the following priority percentages: Transportation (57.2%), Water (19.6%), Energy Distribution (13.4%), and Buildings (9.7%). Based on these results, all four sources selected Transportation as the priority infrastructure in Kota Batu. The overall consistency rate is 0.3, meaning that the sources were highly consistent in selecting the prioritized infrastructure.



AHP Analysis Results for Infrastructure

The third objective of the analysis aims to examine the influence of infrastructure on the priority non-basis sector, namely the Transportation and Warehousing sector in Kota Batu. To understand which infrastructures affect the priority non-basis sector, a Multiple Regression method will be used. The dependent variable (Y) represents the data of Kota Batu's Gross Regional Domestic Product (PDRB) as a binding variable, while the independent variables (X1, X2, X3, etc.) represent explanatory variables. These independent variables include road infrastructure, electricity, clean water supply, and telecommunications, which support the priority non-basis sector of Transportation and Warehousing. The analysis will help identify which infrastructures contribute to the development of the non-basis priority sector, Transportation and Warehousing, which is the most influential sector in Kota Batu. Therefore, a Multiple Regression analysis using SPSS will be conducted.

Normality Test

The purpose of the normality test is to examine whether the regression model, the disturbance variables, or residuals follow a normal distribution. In other words, it tests whether the dependent variable, independent variable, or both have a normal distribution. A

| | | Transportasi dan Pergudangan | Jalan | Listrik | Telekomunikasi |
|----------------------------------|----------------|------------------------------|-------------------|-------------------|---------------------|
| N | | 5 | 5 | 5 | 5 |
| Normal Parameters ^{a,b} | Mean | 159272.60 | 45188.80 | 98185.80 | 11484.80 |
| | Std. Deviation | 10646.944 | 53.129 | 14311.055 | 3594.702 |
| Most Extreme Differences | Absolute | .176 | .367 | .317 | .266 |
| | Positive | .139 | .367 | .317 | .266 |
| | Negative | -.176 | -.263 | -.204 | -.173 |
| Test Statistic | | .176 | .367 | .317 | .266 |
| Asymp. Sig. (2-tailed) | | .200 ^{c,d} | .026 ^e | .111 ^e | .200 ^{c,d} |

good regression model is one where the data distribution is normal or close to normal. The method for the normality test is the Kolmogorov-Smirnov (K-S) statistical test with Exact Test P Values. However, it is possible that the exact test p values work well with larger data sets and fail with smaller ones, due to the type and characteristics of the data. Therefore, in this study, the researcher uses exact test p values to perform the Kolmogorov-Smirnov test, with the decision rule for normality being that the data is considered normally distributed if the significance is > 0.05 and not normally distributed if the significance is ≤ 0.05 .

Based on the normality test results, it was found that all the data used—both the variables for Transportation and Warehousing as well as the variables for Road, Electricity, and Telecommunications—had a significance of $0.200 > 0.05$, meaning that all the data follow a normal distribution. From this normality test, it can be concluded that all the data used are normally distributed and no assumption violations have occurred. Therefore, the statistical test for the small sample size is valid, and the use of exact test p-values is appropriate in this case.

Heteroscedasticity Test

The next assumption in the regression model is the heteroscedasticity test, which aims to examine whether there is unequal variance of residuals between observations. If the

variance of residuals between observations is constant, it is called homoscedasticity, and if it differs, it is called heteroscedasticity. A good regression model exhibits homoscedasticity, meaning there is no heteroscedasticity. In this case, heteroscedasticity detection can be done using the Glejser test, which is performed by regressing the independent variables against the residuals. If the significance of the Glejser test is > 0.05 , there is no heteroscedasticity, and if the significance is < 0.05 , heteroscedasticity exists. The results of the heteroscedasticity test are as follows:

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | t | Sig. |
|-------|----------------|-----------------------------|-------------|---------------------------|--|--------|------|
| | | B | Std. Error | Beta | | | |
| 1 | (Constant) | 6201187.060 | 4606784.725 | | | 1.346 | .407 |
| | Jalan | -.134.270 | 101.414 | -.670 | | -1.324 | .412 |
| | Listrik | .324 | .366 | .435 | | .885 | .539 |
| | Telekomunikasi | -.539 | 1.275 | -.182 | | -.423 | .745 |

a. Dependent Variable: Transportasi dan Pergudangan

It can be seen that the significance of the Transportation and Warehousing variable is > 0.05 , so it can be concluded that no heteroscedasticity occurs between the variables of Roads, Electricity, and Telecommunications used. The regression model can be considered good.

Multicollinearity Test

In multiple regression assumption testing, the multicollinearity test aims to examine whether there is a correlation among independent variables. If there is multicollinearity between independent variables, the regression model can be considered poor, as a good regression model should not have correlations among the independent variables. To detect the presence of multicollinearity, the Variance Inflation Factor (VIF) value can be observed. If the VIF value ≥ 10 , multicollinearity is present.

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | t | Sig. | Collinearity Statistics | |
|-------|----------------|-----------------------------|-------------|---------------------------|--|--------|------|-------------------------|-------|
| | | B | Std. Error | Beta | | | | Tolerance | VIF |
| 1 | (Constant) | 6201187.060 | 4606784.725 | | | 1.346 | .407 | | |
| | Jalan | -.134.270 | 101.414 | -.670 | | -1.324 | .412 | .546 | 1.831 |
| | Listrik | .324 | .366 | .435 | | .885 | .539 | .579 | 1.727 |
| | Telekomunikasi | -.539 | 1.275 | -.182 | | -.423 | .745 | .755 | 1.324 |

a. Dependent Variable: Transportasi dan Pergudangan

Based on the results of the multicollinearity test, the VIF value is 1.000, which is < 10 , meaning there is no multicollinearity between the variables of Roads, Electricity, and Telecommunications. Therefore, this regression model is considered good because there is no correlation between the variables of Transportation and Warehousing.

R-Square Test

The coefficient of determination (R-Square) test is used to examine the percentage of influence that independent variables have on the dependent variable, with a range of values from 0 to 1. The larger the R-Square value, the stronger the relationship between the independent and dependent variables, and conversely, the smaller the R-Square value, the weaker the relationship between the two variables.

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------------------|----------|-------------------|----------------------------|
| 1 | .927 ^a | .860 | .441 | 7963.024 |

a. Predictors: (Constant), Telekomunikasi, Listrik, Jalan
b. Dependent Variable: Transportasi dan Pergudangan

The R-Square value above shows a high value of 0.860, meaning that the relationship between the independent variables (Roads, Electricity, and Telecommunications) and the dependent variable (Transportation and Warehousing) is strong. This R value indicates that if the relationship between the variables of Roads, Electricity, and Telecommunications and the variable of Transportation and Warehousing is strong, the analysis can proceed to the next stage.

F Test

The F-statistic test is conducted to examine the simultaneous effect of independent variables on the dependent variable. To interpret the results of the F-test, the hypothesis is based on the significance value: if the significance is > 0.05 , the independent variables do not affect the dependent variable. Conversely, if the significance is < 0.05 , the independent variables affect the dependent variable.

From the results of the F-test above, the significance value of the model is > 0.05 .

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|-------|------------|----------------|----|-------------|-------|-------------------|
| 1 | Regression | 390019869.4 | 3 | 130006623.1 | 2.050 | .465 ^b |
| | Residual | 63409755.81 | 1 | 63409755.81 | | |
| | Total | 453429625.2 | 4 | | | |

a. Dependent Variable: Transportasi dan Pergudangan
b. Predictors: (Constant), Telekomunikasi, Listrik, Jalan

This means that the three independent variables do not significantly affect the dependent variable. However, as explained previously, this does not mean that the variables do not affect at all; rather, it indicates that the variables of Roads, Electricity, and Telecommunications have a low influence on the Transportation and Warehousing variable, and thus, do not cause significant changes to the dependent variable.

T Test

The t-statistic test is used to show how much influence each independent variable has individually on the dependent variable. The hypothesis testing criteria using the t-statistic are: if the significance value of $t < 0.05$, there is a relationship between the independent and dependent variables, while if the significance value > 0.05 , there is no relationship between the independent and dependent variables.

The t-test is conducted to test the hypothesis of the research regarding the influence of each independent variable on the dependent variable. The t-test is one of the statistical

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|-------|----------------|-----------------------------|-------------|---------------------------|--------|------|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 6201187.060 | 4606784.725 | | 1.346 | .407 |
| | Jalan | -.134.270 | 101.414 | -.670 | -1.324 | .412 |
| | Listrik | .324 | .366 | .435 | .885 | .539 |
| | Telekomunikasi | -.539 | 1.275 | -.182 | -.423 | .745 |

a. Dependent Variable: Transportasi dan Pergudangan

tests used to examine the truth or falsity of a hypothesis stating that there is no significant difference between the means of two samples taken randomly from the same population. To determine the effect of each independent variable on the dependent variable using the t-statistic test, a partial test is carried out. This test determines whether the independent variable has a significant effect on the dependent variable. The partial testing criterion is that when the probability value is less than (α) 5% or 0.05, the variable has a significant effect.

Hypothesis Test

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|-------|----------------|-----------------------------|-------------|---------------------------|--------|------|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 6201187.060 | 4606784.725 | | 1.346 | .407 |
| | Jalan | -.134.270 | 101.414 | -.670 | -1.324 | .412 |
| | Listrik | .324 | .366 | .435 | .885 | .539 |
| | Telekomunikasi | -.539 | 1.275 | -.182 | -.423 | .745 |

a. Dependent Variable: Transportasi dan Pergudangan

As explained earlier, multiple regression is intended to examine the influence of two or more independent variables on a single dependent variable.

Based on the analysis above between the transportation and warehousing sector and the infrastructure of roads, electricity, and telecommunications, the development of road infrastructure shows a negative value, meaning that it does not have a significant effect. The higher the value of the road variable, the more the economic growth rate increases. Conversely, the lower the value of the electricity variable, the lower the economic growth rate. The electricity infrastructure has a positive value, meaning that the higher the value of the electricity variable, the more it contributes to increasing economic growth. The telecommunications infrastructure shows a negative value, meaning it does not have a significant effect. The higher the value of the telecommunications variable, the more the

economic growth rate increases. Therefore, the transportation and warehousing sector, in conjunction with the road, electricity, and telecommunications infrastructure, do not have a significant influence. Hence, it is necessary to add infrastructure in the future to enhance the transportation and warehousing sector in the city of Batu.

Discussion

The non-base economy in Batu City encompasses five primary sectors: Mining and Excavation, Manufacturing Industry, Electricity and Gas Procurement, Transportation and Warehousing, and Business Services. Among these, the Manufacturing Industry, Electricity and Gas Procurement, and Transportation and Warehousing have exhibited rapid growth, indicating their potential to significantly contribute to the regional economy. Notably, the Transportation and Warehousing sector has been identified as a priority for future development due to its critical role in supporting the distribution of agricultural products and other flagship goods from Batu City Wahyuni (2022) Siregar, 2019).

The development of the Transportation and Warehousing sector is essential for enhancing supply chain efficiency, which can yield economic benefits for the entire community. However, challenges remain, particularly concerning the inadequacy of road, electricity, and telecommunications infrastructure, which currently hampers the sector's growth potential (Badrudin & Siregar, 2015; Chu, 2012). Addressing these infrastructural deficiencies is crucial for optimizing the Transportation and Warehousing sector's performance and, by extension, the overall economic growth of Batu City (Miller & Neanidis, 2012; Vrachimis & Zachariadis, 2013).

To facilitate the development of this sector, the Batu City Government must devise infrastructure strategies that prioritize the specific needs of Transportation and Warehousing. Key initiatives should include improving road quality, enhancing public transportation accessibility, and ensuring the availability of reliable energy and telecommunications networks (Kamberidou, 2020; Neanidis, 2010). Furthermore, investments in modern transportation technologies and digital logistics systems can significantly improve operational efficiency and attract additional investors to the region (Dang, 2024; Agénor, 2010).

With substantial infrastructure improvements, the Transportation and Warehousing sector can operate more efficiently, leading to reduced logistics and distribution costs. This, in turn, will enhance the competitiveness of Batu City's local products in broader markets, fostering a more inclusive and sustainable economic environment (Ibragimova et al., 2021; Kholifah, 2023). Therefore, a strategic collaboration among the government, businesses, and the community is essential to create a conducive economic atmosphere that supports the growth of the non-base sector (Elpisah et al., 2021; Irwansyah et al., 2023).

In conclusion, while Batu City's economy is primarily driven by its base sectors, the non-base sectors, particularly Transportation and Warehousing, hold significant potential for further development. By addressing infrastructural challenges and fostering collaboration among stakeholders, Batu City can enhance its economic resilience and ensure sustainable growth for its residents (Sari, 2020; "Infrastructural Development and Economic Growth in Nigeria", 2019).

CONCLUSION

Based on the analysis conducted in this study, the conclusions regarding the non-base economy in Batu City are as follows: There are five sectors in the non-base economy, namely Mining and Excavation, Manufacturing Industry, Electricity and Gas Procurement, Transportation and Warehousing, and Business Services. The sectors experiencing rapid growth in Batu City are the Manufacturing Industry, Electricity and Gas Procurement, and Transportation and Warehousing. The sectors with potential or still able to be developed are the Manufacturing Industry and Transportation and Warehousing.

According to the Hierarchical Process Analysis, the non-base sector that should be prioritized for development in Batu City is the Transportation and Warehousing sector. This sector plays an important role in supporting the base sectors, and it is considered a potential non-base sector that can still be developed.

The analysis of road, electricity, and telecommunications infrastructure shows low influence on the priority non-base sector of Transportation and Warehousing. Therefore, Batu City needs to improve its infrastructure to better support the non-base sectors in the future.

REFERENCES

- Agénor, P. (2010). A theory of infrastructure-led development. *Journal of Economic Dynamics and Control*, 34(5), 932-950. <https://doi.org/10.1016/j.jedc.2010.01.009>
- Analytical Hierarchy Process Dalam Sistem Pendukung Keputusan Penentuan Mahasiswa Berprestasi . *Jurnal Siliwangi Vol.3. No.2, 2017* .
- Ardiansyah, F., Diartho, H., & Lestari, E. (2020). Structural transformation of agriculture and poverty in indonesia. *Wiga Jurnal Penelitian Ilmu Ekonomi*, 10(1), 1-12. <https://doi.org/10.30741/wiga.v10i1.513>
- Ardianta, J. G. (2019). Departemen Arsitektur, Fakultas Arsitektur, Desain Dan Perencanaan,. *Peningkatan Kualitas Ruang Dan Infrastruktur Pada Perbatasan Surabaya Barat*.
- Asyurrahman. (2018). Pembangunan Infrastruktur Dan Pertumbuhan Ekonomi Di Provinsi Kalimantan Barat. *Prosiding Satiesp 2018*.
- Ayuna Hutapea, R. A. (2020). Analisis Sektor Basis Dan Non Basis Serta Daya Saing Ekonomi Dalam Peningkatan Pertumbuhan Ekonomi Kota Medan. *Jurnal Berkala Ilmiah Efisiensi, Volume 20*.
- Badrudin, R. and Siregar, B. (2015). The evaluation of the implementation of regional autonomy in indonesia. *Economic Journal of Emerging Markets*, 7(1), 1-11. <https://doi.org/10.20885/ejem.vol7.iss1.art1>
- Ballo, F. and Tiwu, M. (2021). Analysis of the synergy development of the creative economy and tourism sector of east sumba regency. *Eduvest - Journal of Universal Studies*, 1(12). <https://doi.org/10.36418/edv.v1i12.299>
- Besime, Z., Miftari, F., & OMAJ, L. (2021). The econometric approach of the impact of public investment in the road-infrastructure in the economic growth of kosovo. *Management Dynamics in the Knowledge Economy*, 9(1), 5-16. <https://doi.org/10.2478/mdke-2021-0001>

- Chi, J. (2015). Transport infrastructure and macroeconomic performance in european countries. *Transportation Research Record Journal of the Transportation Research Board*, 2530(1), 84-92. <https://doi.org/10.3141/2530-10>
- Chu, H. (2012). Optimal thin capitalisation rule in a simple endogenous growth model with tax havens. *Australian Economic Papers*, 51(3), 123-133. <https://doi.org/10.1111/j.1467-8454.2012.00427.x>
- Dang, X. (2024). An empirical study on the relationship between economic growth and public welfare. *Highlights in Business Economics and Management*, 24, 166-171. <https://doi.org/10.54097/0q7esv66>
- Dewi Karina Yuda, P. N. (2014). Arahan Pengembangan Ekonomi Kabupaten Lamongan Berdasarkan Sektor Unggulan (Studi Kasus: Sektor Pertanian). *Jurnal Teknik Pomits*, Vol.3.
- Elpisah, E., Suarlin, S., & Yahya, M. (2021). Klassen typology and williamson index to measure macroeconomics in south sulawesi province. *Golden Ratio of Social Science and Education*, 1(1), 37-49. <https://doi.org/10.52970/grsse.v1i1.109>
- Fagbohunka, A. (2018). Economic recession and infrastructural development in ikare, akoko, ondo state, nigeria; what implications?. *Economic and Environmental Studies*, 18(45), 115-125. <https://doi.org/10.25167/ees.2018.45.8>
- Farza, T. and Zainal, A. (2018). How the government quality can help boosting infrastructure investment and economic growth? a closer look at indonesia's practice. *International Journal of Academic Research in Business and Social Sciences*, 8(7). <https://doi.org/10.6007/ijarbss/v8-i7/4396>
- Firmansyah, R. (2018). Analisis Penentuan Sektor Unggulan Perekonomian Dengan Metode Analytical Hierarchy Process (Ahp) Dan Shift Share Terhadap Pertumbuhan Ekonomi (Studi Di Kota Malang) . Vol.3. No.2, 2018
- Ghani, E. and Din, M. (2022). The impact of public investment on economic growth in pakistan. *The Pakistan Development Review*, 87-98. <https://doi.org/10.30541/v45i1pp.87-98>
- Harry Kurniadi Atmaja Kasyful Mahalli, S. M. (2014). Pengaruh Peningkatan Infrastruktur Terhadap Pertumbuhan Ekonomi Di Kota Sibolga . *Jurnal Ilmiah*.
- Hasan, M. D. (2018). *Pengantar Ekonomi: Teori Dan Aplikasi* . Banten: Pustaka Taman Ilmu.
- Ibragimova, A., Wang, Y., & ИВАНОВ, М. (2021). Infrastructure development in africa's regions: investment trends and challenges. *E3s Web of Conferences*, 295, 01029. <https://doi.org/10.1051/e3sconf/202129501029>
- Ifyal Zuhdi Gultom¹, A. Q. (2020). Pembangunan Infrastruktur Dalam Islam: Tinjauan Ekonomi Dan Sosial. *Jurnal Ilmiah Ekonomi Islam*, .
- Irwansyah, M., Supriyono, B., Sujarwoto, S., & Mardiyono, M. (2023). Economic development and welfare after regional proliferation in indonesia., 205-213. https://doi.org/10.2991/978-2-38476-082-4_20
- Ismail, P. D. (2014). *Teori Ekonomi*. Surabaya: Dharma Ilmu.
- Jasina, J. (2020). Econometric method for estimating the impact of tourism spending on county employment in south carolina. *International Journal of Business and Applied Social Science*, 38-42. <https://doi.org/10.33642/ijbass.v6n8p5>

- Kamberidou, I. (2020). “distinguished” women entrepreneurs in the digital economy and the multitasking whirlpool. *Journal of Innovation and Entrepreneurship*, 9(1). <https://doi.org/10.1186/s13731-020-0114-y>
- Kholifah, D. (2023). Examining the determinants of poverty in east java. *Jurnal Ekonomi Dan Bisnis Airlangga*, 33(1), 121-131. <https://doi.org/10.20473/jeba.v33i12023.121-131>
- Lurusati, Y. (2017). *Ekonomi Perkotaan Dan Transportasi*. Tangerang .
- Miller, S. and Neanidis, K. (2012). Demographic transition and economic welfare: the role of humanitarian aid. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.2010796>
- Nagler, P. and Naudé, W. (2014). Non-farm entrepreneurship in rural africa: patterns and determinants. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.2406330>
- Nahumury, M. and Manuhutu, F. (2022). Analysis of leading sectors against economic growth in merauke regency 2016-2020. *International Journal of Science and Society*, 4(3), 348-359. <https://doi.org/10.54783/ijssoc.v4i3.526>
- Neanidis, K. (2010). Humanitarian aid, fertility and economic growth. *Economica*, 79(313), 27-61. <https://doi.org/10.1111/j.1468-0335.2010.00869.x>
- Novita, D. and Gultom, H. (2017). Penentuan sektor unggulan dalam perekonomian wilayah kabupaten langkat pendekatan sektor pembentuk pdrb. *Agrium Jurnal Ilmu Pertanian*, 21(1), 49-54. <https://doi.org/10.30596/agrium.v21i1.1486>
- Priyastama, R. (2017). *Spss Pengolahan Data Dan Analisis Data*. Bantul: Pt Anak Hebat Indonesia.
- Redu, S. (2023). Analysis of base and non-base sectors in the economic development of jayawijaya regency. *Soca Jurnal Sosial Ekonomi Pertanian*, 17(2), 63. <https://doi.org/10.24843/soca.2023.v17.i02.p01>
- Ridwan, A. (2020). Pengaruh Pembangunan Infrastruktur Jalan Terhadap Pertumbuhan Umkm Di Kecamatan Sabbang Kabupaten Luwu Utara . *Jurnal Ilmiah* .
- Safri, H. (2019). *Pengantar Ilmu Ekonomi*. Palopo: Iain Palopo .
- Sari, I. (2020). The effects of physical infrastructure development in supporting economic growth in north sumatra province. *Journal of International Conference Proceedings*, 3(2), 177-183. <https://doi.org/10.32535/jicp.v0i0.918>
- Shen, S. (2023). Transportation infrastructure and digital economy—evidence from chinese cities. *Sustainability*, 15(22), 16024. <https://doi.org/10.3390/su152216024>
- Shi, J. (2024). Unveiling transportation socio-economic adaptability using a node–place model: a case from zhejiang province, china. *Sustainability*, 16(10), 4009. <https://doi.org/10.3390/su16104009>
- Simas, M., Golsteijn, L., Huijbregts, M., Wood, R., & Hertwich, E. (2014). The “bad labor” footprint: quantifying the social impacts of globalization. *Sustainability*, 6(11), 7514-7540. <https://doi.org/10.3390/su6117514>
- Siregar, B. (2019). Direct and indirect effects of investment on community welfare. *Investment Management and Financial Innovations*, 16(3), 206-216. [https://doi.org/10.21511/imfi.16\(3\).2019.19](https://doi.org/10.21511/imfi.16(3).2019.19)
- Siregar, H., Rizal, A., Hamdani, H., & Gumilar, I. (2020). The contribution of fisheries sector in regional development of batam city of riau islands province, indonesia. *Asian Journal of Fisheries and Aquatic Research*, 13-23. <https://doi.org/10.9734/ajfar/2020/v7i330118>

- Soleh, A. and Suwarni, S. (2021). Economic growth, employment and inclusive growth diagnostics.. <https://doi.org/10.4108/eai.3-10-2020.2306603>
- Sukwika1, T. (2018). Peran Pembangunan Infrastruktur Terhadap Ketimpangan Ekonomi Antarwilayah Di Indonesia. *Volume 6 Nomor 2, Agustus 2018*.
- Suminar, R. E. (2019). *Ekonomi Wilayah*. Sleman: Deepublish
- Sutikno, S. (2024). Reinventing government approach as an effort to develop madura halal tourism.. <https://doi.org/10.15405/epsbs.2024.05.80>
- Tripathi, S., Rangarajan, K., & Das, S. (2019). Quantitative and qualitative constructs of trade infrastructure in hilly regions ' a case study of himachal pradesh, india. *International Journal of Critical Infrastructures*, 15(1), 46. <https://doi.org/10.1504/ijcis.2019.10016809>
- Tutupoho, A. (2019). Analisis Sektor Basis Dan Sektor Non Basis Terhadap Pertumbuhan Ekonomi Di Provinsi Maluku (Studi Kasus Kabupaten Kota) . *Vol. Xiii, No. 1, Mei 2019*, 1-18.
- Umiyati, E. (2014, Oktober). Analisa Pertumbuhan Ekonomi Dan Ketimpangan Pembangunan Antar Wilayah Di Pulau Sumatera. *Jurnal Paradigma Ekonomika, Vol 9*.
- Vrachimis, K. and Zachariadis, M. (2013). A contribution to the empirics of welfare growth. *The B E Journal of Macroeconomics*, 13(1). <https://doi.org/10.1515/bejm-2012-0042>
- WAHYUNI, N. (2022). The influence of the tourism sector on regional financial performance with economic growth as a mediating variable in improving community welfare. *Journal of Tourism Economics and Policy*, 2(3), 192-202. <https://doi.org/10.38142/jtep.v2i3.405>
- Zhang, J., Zhang, R., Xu, J., Wang, J., & Shi, G. (2021). Infrastructure investment and regional economic growth: evidence from yangtze river economic zone. *Land*, 10(3), 320. <https://doi.org/10.3390/land10030320>