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Analysis of The Influence of The Agricultural Sector, Manufacturing Sector, Transportation Sector, and Trade Sector on The Gross Regional Domestic Product (GRDP) of North Sumatra Province

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Abstract

North Sumatra Province has a significant Gross Regional Domestic Product (GRDP) and contributes considerably to national income; however, it still lags behind other provinces. The GRDP from the agricultural sector, manufacturing sector, transportation sector, and trade sector are some of the leading sectors that support the economy of North Sumatra Province. Although these three sectors play a strategic role, their development and contributions show different dynamics. The contributions from each sector exhibit significant variations across various districts/cities in North Sumatra. This study aims to determine and analyze the influence of the agricultural sector, manufacturing industry sector, transportation sector, and trade sector on the Gross Regional Domestic Product (GRDP) of North Sumatra Province. The research utilizes panel data consisting of 33 districts/cities in North Sumatra with 165 observations. The results of the panel data testing using the Fixed Effect Model (FEM) indicate that, partially, the agricultural sector has a positive influence on GRDP, the manufacturing sector influences GRDP, the transportation sector influences GRDP, and the trade sector influences GRDP. Simultaneously, the agricultural sector, manufacturing sector, transportation sector, and trade sector have an influence on GRDP.

Keywords: Agricultural; Manufacturing; Transportation; Trade; GRDP

1. Introduction

Economic growth is one of the important indicators to measure the economic performance of a region or country. Economic growth is defined as an increase in the capacity of an economy to produce goods and services over a certain period. According to [1] economic growth shows changes that occur in the total output of the economy, which is seen in an increase in national income or Gross Domestic Product (GDP).

North Sumatra Province has a significant Gross Regional Domestic Product (GRDP) and has a considerable contribution to national income, but still lags behind other provinces such as DKI Jakarta, West Java and East Java. According to [2] DKI Jakarta has a much higher GRDP than North Sumatra at 2,050,465.97 billion rupiah followed by East Java with GRDP of 1,844,808.67 billion rupiah while North Sumatra contributes 602,235.95 billion rupiah in 2023. This striking difference reflects that the economic structure is different between the two provinces

To encourage GRDP, a strategy is needed in developing leading sectors that are the main contributors to the regional economy. Sectors such as agriculture, manufacturing, transportation and trade have enormous potential to increase GRDP if managed and developed properly. Development in this sector not only has a direct impact on the added value of a region's economy, but can also create a longer value chain by maximizing existing local resources.

The agricultural sector has long been a mainstay sector in North Sumatra, especially in rural areas, because it can absorb a large number of workers and provide food and industrial raw materials. This sector contributed 23.58% to the provincial GRDP. Although its added value has not increased significantly from year to year, this sector still plays an important role in maintaining economic and social stability.

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In contrast to the agricultural sector, the manufacturing sector experienced a decline from the previous year to 18.44% of the provincial GRDP. The manufacturing not only increases the added value of primary products, such as agricultural and plantation products, but also plays a role in creating jobs and increasing regional competitiveness. However, the growth of the manufacturing is highly dependent on the smooth distribution of raw materials.

In this situation, the transportation sector plays an important role in supporting economic effectiveness. However, this sector contributes only 5.05% to the province's GRDP in 2023. Although its contribution is not as large as other sectors, the transportation sector is necessary to ensure that goods and services can move efficiently.

In addition to the transportation sector that has a role in economic effectiveness, the trade sector also has a strategic role in supporting economic sustainability in North Sumatra. This sector is a chain of links between producers and consumers, both at the local, national and international levels. The contribution of the trade sector to the provincial GRDP of 19.08% reflects that the amount of buying and selling activities of goods and services that occur. However, challenges in this sector such as inequality in market access between regions in cities and rural areas and dependence on adequate transportation infrastructure are among the factors that can affect the effectiveness of this sector. Therefore, strengthening the trade sector, including combining with the transportation sector, is very important to encourage GRDP growth and economic equality in the North Sumatra region.

Agriculture is a strategic sector that not only contributes to economic growth, but also as a source of food supply and employment. The agricultural sector in North Sumatra has advantages in several commodities, such as rice, rubber, coffee and oil palm. However, to increase the added value of these agricultural products, it is necessary to develop a more advanced manufacturing. Despite having abundant natural resources, but not accompanied by a manufacturing, the economy cannot grow significantly. This is supported by the results of research conducted by [3] in Central Lampung district, which shows that the manufacturing sector has a unidirectional relationship with economic growth.

Without an adequate manufacturing, agricultural products are generally only marketed as raw materials that still have a lower economic value. Processing agricultural products into semi-finished or finished goods not only increases the value of the product but also expands the market. According to [4] the results of their study show that the growth of the manufacturing economic sector always supports increased economic growth.

Another supporting factor in economic growth is the transportation sector, which supports the smooth distribution of agricultural products and industrial products. The availability of an adequate transportation sector will support logistics efficiency. The development of transportation infrastructure is a way to improve connectivity between regions and accelerate economic growth. Connectivity creates smoothness and ease of national transportation and trade [5].

Trade acts as the main driver in the distribution of goods and services, both agricultural products and products from the manufacturing, from producers to consumers. This sector allows the creation of a wider market, both at the domestic and national levels. Thus, it can increase the economic competitiveness of a region. According to [6] strengthening the trade sector, especially in the regions, can be done by increasing access to distribution networks, and empowering business actors. With the support of the agricultural sector, manufacturing and adequate transportation, the trade sector can create efficiency in the supply chain, reduce logistics costs and ultimately increase people's purchasing power.

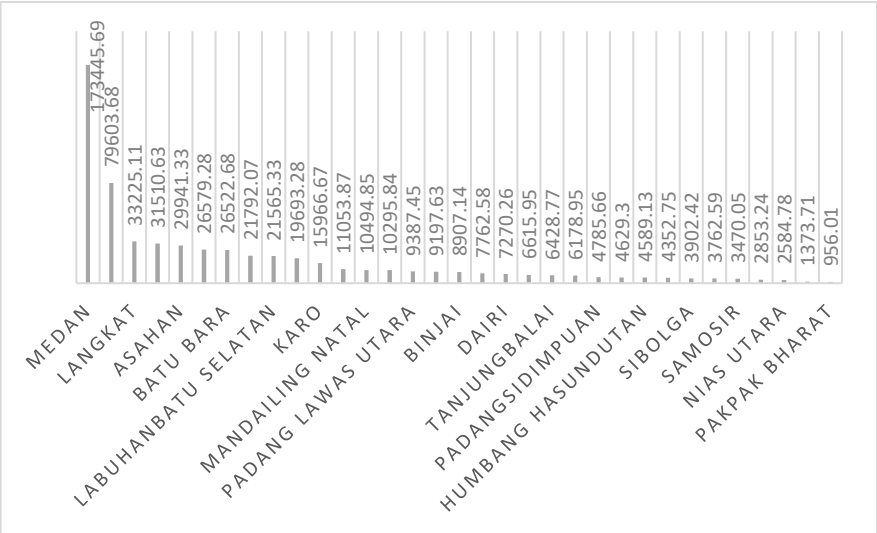

Figure 1.1 GRDP of North Sumatra Province at Constant Prices by District/City (Billion Rupiah) 2023

In the North Sumatra region, it can be seen that there is a significant imbalance between districts/cities. Medan City recorded the highest GRDP value of 173,445.69 billion rupiah, followed by Deli Serdang at 79,603.68 billion rupiah, reflecting that urban areas dominate in their contribution to the provincial economy. Medan City, which is the center of economic activity, utilizes

various resources and infrastructure to support high productive activities. In contrast, districts such as Pakpak Bharat, West Nias and North Nias showed much lower GRDP values, contributing only IDR 956.01 billion, IDR 1,373.71 billion and IDR 2,854.78 billion, respectively. This shows that there are limitations in maximizing the potential of the local economy, which can be related to the low productivity of strategic sectors and limited access to facilities supporting economic activities.

This phenomenon demands a policy that focuses on developing priority sectors and potentials more evenly throughout North Sumatra. Improving infrastructure to support distribution efficiency, developing production centers, and optimizing the potential of the region can be a strategic step to create economic growth. And with proper management, each region in North Sumatra has a great opportunity and a large contribution to the GRDP of North Sumatra province. This suggests that while North Sumatra has great economic potential, there are challenges in creating equitable economic growth across all its regions. Therefore, there is a need for policies that focus on the development of key sectors throughout the region to improve economic efficiency, encourage equitable development and increase economic competitiveness in the North Sumatra region.

So, based on the description above how the agricultural sector, manufacturing industry, transportation and trade in supporting the growth of GRDP of North Sumatra province, in-depth research is needed to understand how each sector contributes to the GRDP of the region. Therefore, the researcher chose the title "Analysis of the Influence of the Agricultural Sector, Manufacturing Industry Sector, Transportation Sector and Trade Sector on Gross Regional Domestic Product (GRDP) of North Sumatra Province".

2. Literature Review

2.1 Gross Regional Domestic Product

One important indicator to determine the economic conditions in a region in a certain period is to use Gross Regional Domestic Product (GRDP) data, both on a current basis and on a constant basis. BPS defines Gross Regional Domestic Product (GRDP) as the sum of value added generated by all business units in a particular region, or the sum of final (net) goods and services produced by all economic units based on current and constant prices. GRDP at current prices reflects the value added of goods and services calculated using prices prevailing each year, while GRDP at constant prices reflects the value added of these goods and services calculated using prices prevailing in a particular year as a basis. GRDP at current prices or known as nominal GRDP aims to see the structure of the economy. Meanwhile, GRDP at constant prices aims to measure economic growth [7].

According to [8] positive GRDP growth indicates that the regional economy is growing, which can have implications for improving people's welfare. In addition, GRDP is also used as a benchmark for economic performance between regions or countries.

2.1.1 Gross Regional Domestic Product (GRDP) Calculation Method

According to [9], to calculate GRDP, there are 3 approaches that can be used :

1. Production Approach

   In this approach, GRDP is calculated by adding up the value added of goods and services produced by various sector or production units in a region in a certain period.

$$PDRB = \sum_{i=1}^{n} ((Qi.Pi) - BAi)$$

With:
Q = Quality of Production
P = Producer Price
BA = Intermediate Cost

2. Income Approach

   The income approach is the amount of compensation received by the factors of production in the form of salaries/wages, indirect taxes, business surplus, and depreciation/amortization in a certain period of time.

GRDP= Wages + Profits + Amortization + (Indirect Taxes-Subsidies)

3. Expenditure Approach

   This approach is the sum of the expenditure components, namely household consumption, consumption expenditure of nonprofit institutions serving households (LNPRT), government consumption, gross domestic fixed capital formation, import-export differences and inventory changes.

GRDP= C + G + Investment + (x - I)
With:
C = Household and Non-Profit Consumption
G = Government Consumption
X = Exports

I = Imports

2.2 Agricultural Sector

According to [10] A.T. Mosher emphasized that effective agricultural development requires five main conditions that must be met simultaneously. These five conditions are interrelated and are the key to success in efforts to improve farmers' welfare and the productivity of the agricultural sector. Firstly, adequate market access is essential so that farmers can sell their produce at favorable prices. Second, technology is ever-changing and plays an important role in improving the efficiency and productivity of farming. Third, local availability of production inputs and equipment such as pesticides, fertilizers, and farm tools. Fourth, production stimulation for farmers in the form of fair pricing policies, farm input subsidies, or agricultural assistance programs. Fifth, transportation where good transportation infrastructure allows farm produce to be transported and distributed efficiently and quickly.

2.3 Manufacturing Sector

The manufacturing sector not only functions as a provider of goods and services, but also plays a role in the development of innovation and technology. In the current era of globalization, competition between industries is fierce. There is a need for innovation in the production process and the development of new products to increase industrial competitiveness. Where in research conducted by [11] that globalization can have a negative impact on this sector, namely global competition which makes it difficult for local industries to compete with foreign industries that have technology in production.

The innovation theory proposed by Schumpeter states that innovation is the core of economic development, where industry players or entrepreneurs play an important role in creating new products, adopting new technologies and opening new markets. In North Sumatra, the success of the manufacturing industry depends on innovation support that involves collaboration between the government, local entrepreneurs and educational institutions. As stated by Schumpeter, the role of government policy to create an ecosystem that supports innovation, including infrastructure and investment, is the key to success in this sector. In addition, the availability of a skilled workforce and an understanding of technology are necessary to support innovation.

2.4 Transportation Sector

The transportation sector is an important component in the economy where this sector plays a role in facilitating the flow of goods, services and also human mobility from one place to another. Transportation has an important role in supporting connectivity and mobility, both for economic, social and government purposes.

The Big Push theory introduced by Paul Rosenstein in 1943 in [12] says that to overcome problems and obstacles in economic development or accelerate progress, a strong push is needed to prioritize development in the economic field by building infrastructure first. Other developments will follow, known as the trickle down effect, so that economic growth will increase significantly in the end. In other words, any increase in capital or capital in infrastructure development will be followed by an increase in output and also this sector has a great role in improving the efficiency of distribution of goods and services so that it can support regional economic growth.

2.5 Trade Sector

According to [1] state that the trade sector has a major influence on the economic balance in a region because it can harmonize the supply and demand for goods. This is very important in supporting the smooth flow of goods in domestic and international markets. Current technological advances such as the digitization of trade through e-commerce have further strengthened this sector, allowing cross-regional transactions to take place more quickly and easily. With these innovations and support from government policies, the trade sector can encourage better market integration, expand product access to remote areas, and of course improve the competitiveness of businesses. All these factors make the trade sector a factor in supporting sustainable and thriving economic growth.

3. Research Method

The data used in this study covers the last five-year period (2019-2023). The selection of this period aims to capture the latest economic developments and is relevant to current economic conditions. The data analyzed is secondary data which includes GRDP based on constant prices and the contribution of economic sectors so that by using this data, the research will provide more accurate results. This research uses panel data which is a combination of time series data (based on time) and cross section data (based on district and city areas). This panel data method allows for more in-depth analysis as it considers differences between regions and changes over time simultaneously.

In this study, the data analysis technique used is panel data regression because it is able to analysis the relationship between the independent variables (agriculture, manufacturing, transportation and trade) and the dependent variable (GRDP) simultaneously by considering differences between districts/cities and changes over time.

The equation of the panel data in this study is expressed as follows:

$$PDRBit = \beta 0 + \beta 1GRDPAGit + \beta 2GRDPMAit + \beta 3GRDPTRit + \beta 4GRDPTAit + \varepsilon it$$

Description:
GRDP = Gross Regional Domestic Product
β0 = Constant
GRDPAG = GRDP Agriculture Sector
GRDPMA = GRDP Manufacturing Sector
GRDPTR = GRDP Transportation Sector
GRDPTA = GRDP Trade Sector
ε = Error term
t = Time series
i = Cross section
β1-β4 = Regression coefficients

4. Results and Discussion

To determine which regression model is chosen between fixed effect or common effect in this study, the Chow Test is required. Chow Test. The following are the results of the Chow Test:

Table 1. Result of Chow Test

Redundant Fixed Effects Tests
Equation: Untitled
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	454.575249	(32,128)	0.0000
Cross-section Chi-square	782.401956	32	0.0000

Source: Data Processing Result, 2025

Based on the table, both Prob. Cross-Section F and Chi-Square value of 0.0000 < 0.05, it can be concluded that the best model to use is to use the Fixed Effect Model (FEM). Based on the results of the Chow Test conducted, data testing continues to the Hausman Test.

Table 2. Result of Hausman Test

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	71.542209	4	0.0000

Source: Data Processing Result, 2025

In the results obtained, the Prob. Cross-Section Random value of 0.0000 < 0.05, it can be concluded that the best model to use is to use the Fixed Effect Model (FEM).

Based on the results of the model specification test, the results show that the Fixed Effect model is more suitable than the Random Effect Model (REM). Since the Hausman Test has decided to use the FEM, no further testing is required using the LM test.

Table 3. Regression Analysis Testing Results

Variable	Coefficient
C	2541.253
X1	0.921892
X2	0.099834
X3	0.962628
X4	3.042280

Source: Data Processing Result, 2025

Y = 2541.253 + 0.921892*X1 + 0.099834*X2 + 0.962628*X3 + 3.042280*X4

a. The constant value obtained is 2541.253, it can be concluded that if the independent variables, namely the agricultural sector, manufacturing, transportation and trade, are constant, then the dependent variable (GRDP) is worth 2541.253 billion rupiah.
b. The regression coefficient value of variable X1 (agricultural sector) is positive at 0.922, it can be concluded that if the value of other variables is constant and variable X1 (agricultural sector) increases by one billion rupiah, variable Y (GRDP) will also increase by 0.922 billion rupiah. The positive value indicates a positive influence or unidirectional relationship between the agricultural sector variable and GRDP.
c. The regression coefficient value of variable X2 (manufacturing sector) is positive at 0.099 billion rupiah, it can be concluded that if other variables are constant and variable X2 (manufacturing sector) increases by one billion rupiah, variable Y (GRDP) also increases by 0.099 billion rupiah. The positive value indicates a positive influence or unidirectional relationship between the manufacturing sector variable and GRDP.
d. The regression coefficient value of variable X3 (transportation) is positive at 0.963, it can be concluded that if other variables are constant and variable X3 (transportation) increases by one billion rupiah, variable Y (GRDP) will also increase by 0.963 billion rupiah. The positive value indicates a positive influence or unidirectional relationship between the transportation sector variable and GRDP.
e. The regression coefficient value of variable X4 (trade sector) is positive at 3.042, it can be concluded that if other variables are constant and variable X4 (trade sector) increases by one billion rupiah, variable Y (GRDP) also increases by 3.042 billion rupiah. The positive value indicates a positive influence or unidirectional relationship between the trade sector variable and GRDP.

With the selection of the Fixed Effect Model in the model selection test, this model approach assumes that the intercepts of individuals (districts/cities) are different while the slopes between individuals are the same or fixed. The intercept differences can be seen in the following table:

Table 4. Regression Analysis Testing Results

District/City	Effect
Asahan	-1976.732
Batu Bara	2577.480
Binjai	-2987.844
Dairi	-2407.712
Deli Serdang	15820.51
Gunungsitoli	-2874.130
Humbang Hasundutan	-2240.274
Karo	-699.7829
Labuhanbatu	1538.565
Labuhanbatu Selatan	2818.857
Labuhanbatu Utara	-602.0009
Langkat	5814.355
Mandailing Natal	-1113.759
Medan	17349.35
Nias	-1838.413
Nias Barat	-2418.512
Nias Selatan	-1333.056
Nias Utara	-2137.762
Padanglawas	-129.8676
Padanglawas Utara	-522.8870
Padangsidempuan	-1961.664
Pakpak Bharat	-2468.968
Pematang Siantar	-1957.710
Samosir	-2078.948
Serdang Bedagai	-285.7870
Sibolga	-2893.352
Simalungun	-1644.703
Tanjung Balai	-2037.763
Tapanuli Selatan	-391.1330
Tapanuli Tengah	-1428.454
Tapanuli Utara	-1926.272
Tebingtinggi	-1852.790
Toba	-1708.843

Source: Data Processing Result, 2025

In this study, the hypothesis tests carried out were t test (partial test), F test (simultaneous test) and determination coefficient test (R2). This hypothesis test aims to test the significance of the regression coefficient obtained and make decisions based on the data obtained.

4.1 t Test (Partial Test)

The t test is used to test the hypothesis of the study on the effect of each independent variable on the dependent variable. Testing the regression results is seen from the significance value of the test.

Table 5. Partial Test Results

Dependent Variable: Y
Method: Panel Least Squares
Date: 01/21/25 Time: 14:38
Sample: 2019 2023
Periods included: 5
Cross-sections included: 33
Total panel (balanced) observations: 165

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2541.253	269.9668	9.413204	0.0000
X1	0.921892	0.038508	23.94053	0.0000
X2	0.099834	0.128067	0.779539	0.4371
X3	0.962628	0.088020	10.93643	0.0000
X4	3.042280	0.037884	80.30520	0.0000

Source: Data Processing Result, 2025

a. The results of the t-statistic test on variable X1 (agricultural sector) obtained a Prob. (Significance) value of 0.0000 < 0.05, it can be concluded that Variable X1 (agricultural sector) partially has a significant effect on Variable Y (GRDP).
b. The results of the t-statistic test on variable X2 (manufacturing sector) obtained a Prob. (Significance) value 0.4327 > 0.05, it can be concluded that variable X2 (manufacturing sector) partially has no significant effect on variable Y (GRDP).
c. The results of the t-statistic test on variable X3 (transportation sector) obtained a Prob. (Significance) value of 0.0000 < 0.05, it can be concluded that Variable X3 (transportation sector) partially has a significant effect on Variable Y (GRDP).
d. The t-statistic test results on variable X4 (trade sector) obtained a Prob. (Significance) value of 0.0000 < 0.05, it can be concluded that Variable X4 (trade sector) partially has a significant effect on Variable Y (GRDP).

4.2 F Test (Simultaneous Test)

The f test is used to find whether the independent variable simultaneously affects the dependent variable. If the significant value of F > 0.05 then all independent variables have no simultaneous influence on the dependent variable. Conversely, if the significant value of F < 0.05 then all independent variables have a simultaneous influence on the dependent variable.

Table 6. Simultaneous Test Results

R-squared	0.999981	Mean dependent var	17195.61
Adjusted R-squared	0.999976	S.D. dependent var	29110.59
S.E. of regression	143.9027	Akaike info criterion	12.97072
Sum squared resid	2650622.	Schwarz criterion	13.66721
Log likelihood	-1033.085	Hannan-Quinn criter.	13.25345
F-statistic	186422.1	Durbin-Watson stat	1.164676
Prob(F-statistic)	0.000000		

Source: Data Processing Result, 2025

From the results of the f test (Simultaneous Test), it is known that the prob value. (F-Statistic) of 0.000000 < 0.05, it can be concluded that the Independent Variable (X), namely the agricultural sector, manufacturing, transportation and trade, simultaneously (simultaneously) affects the Dependent variable (Y), namely Gross Regional Domestic Product (GRDP).

4.3 Test the Coefficient of Determination (R^2 Test)

This test is conducted to measure the ability of the model to explain how the independent variables (independent) simultaneously affect the dependent variable which can be indicated by the R-Squared (R^2) value.

Table 7. Coefficient of Determination Test Results

R-squared	0.999981	Mean dependent var	17195.61
Adjusted R-squared	0.999976	S.D. dependent var	29110.59
S.E. of regression	143.9027	Akaike info criterion	12.97072
Sum squared resid	2650622.	Schwarz criterion	13.66721
Log likelihood	-1033.085	Hannan-Quinn criter.	13.25345
F-statistic	186422.1	Durbin-Watson stat	1.164676
Prob(F-statistic)	0.000000		

Source: Data Processing Result, 2025

From the test results of the Coefficient of Determination Test (R2 Test), the R-squared value is 0.9999 or 99.99%. The coefficient of determination shows that the independent variables, namely the agricultural sector, manufacturing sector, transportation sector and trade sector, are able to explain the dependent variable (GRDP) by 99.99%, while the rest is influenced by other variables not examined in this study.

4.4 Discussion

1. The Agricultural Sector Affects the GRDP of North Sumatra Province

The agricultural sector which has a positive and significant influence indicates a relationship that affects GRDP. The positive value of the agricultural sector indicates that any increase in this sector will increase the GRDP of North Sumatra province. This reflects that the agricultural sector is one of the main pillars of the economy in the North Sumatra region. However, the contribution of the agricultural sector in districts and cities is uneven, reflecting the inequality in the distribution of economic potential in various regions.

Some areas that have adequate agricultural land and have potential in the development of this sector, such as North Tapanuli, Samosir and Toba Samosir, still contribute quite low and have not maximized the potential that exists in their regions compared to other districts that have the same characteristics as this area. This is due to several obstacles such as processing patterns that are still traditional and tend to be carried out independently by farmers. Many farmers still use conventional methods without adopting modern technology that can increase efficiency. This results in low productivity from farmers in these areas, so that the results obtained are not optimal and less competitive with the wider market.

In addition, most of the agricultural products obtained are still consumed for their own use and are still marketed on a small scale or at the local level. The lack of access to wider markets, both domestically and for export, is an obstacle in increasing the selling value of agricultural products. This is due to several factors such as the low quality of products that meet export requirements and the lack of promotion and marketing of these agricultural products.

2. The Manufacturing Industry Sector Does Not Significantly Affect the GRDP of North Sumatra Province

Although this sector has a positive influence on GRDP, the effect is not significant, indicating that the role of the manufacturing has not been optimal in encouraging an increase in GRDP. This finding indicates that although the manufacturing industry has contributed to the regional economy, its contribution has not had a significant contribution to economic growth. One of the factors causing this is the lack of government role in creating policies that support the growth of this sector. The regulations provided by the government tend to be complex and the lack of incentives for companies has resulted in many investors being reluctant to set up factories in the North Sumatra region.

The uneven distribution of processing industries in North Sumatra is also one of the factors that cause this sector to not develop. Many districts have abundant agricultural products, such as Dairi and Karo which produce food ingredients such as chili, corn, coffee and cabbage but do not have adequate factories or processing industries. These raw material-producing regions should be strategic locations for the development of processing industries. This is also due to limited infrastructure, lack of technology and lack of access to wider markets.

3. The Transportation Sector Affects the GRDP of North Sumatra Province

The significant contribution of this sector shows its role as a key link in logistics and distribution activities. The North Sumatra region has diverse geographical conditions that require adequate transportation infrastructure to support inter-regional connectivity. The improvement of road networks, ports, airports and other land transportation modes allows the movement of goods and people more quickly and easily so as to facilitate economic activity. The existence of this sector can also help reduce barriers in distributing products, especially in areas producing raw materials to industrial centers and consumers. This is in line with the characteristics of the economy in North Sumatra whose districts still rely on the agricultural sector as the backbone of the economy. With good transportation activities, production from these areas can be distributed better and more efficiently.

The inequality of transportation access among districts and cities in North Sumatra is still a concern, with urban areas such as Medan having much more advanced transportation infrastructure than other districts and cities. This imbalance may also hinder equitable economic growth across all regions in North Sumatra.

4. The Trade Sector Affects the GRDP of North Sumatra Province

Trade, which is a strategic sector, is the main bridge to connect production with consumption. The significant contribution of this sector to the GRDP of North Sumatra province can be seen in its role in driving economic activity in various districts and cities. The trade sector creates economic opportunities through the provision of goods and services needed by every community and business.

Digitalization has brought major changes to trade in North Sumatra with the growing use of digital technology and e-commerce. Economic actors, both large and small scale who use online market places can now reach a wider market without being limited by physical location and make it easier for people to make transactions, increase the efficiency of distribution of goods and accelerate economic turnover in the trade sector.

5. Agriculture, Manufacturing, Transportation and Trade Sectors Affect the GRDP of North Sumatra Province

Simultaneously, the agriculture, manufacturing, transportation and trade sectors reflect that these four sectors support economic growth in the North Sumatra region. The agricultural sector is the provider of industrial raw materials and foodstuffs that form the basis of economic activity in North Sumatra. The manufacturing sector functions as a processor of agricultural products and makes added value into semi-finished and ready-to-use products to meet market needs. The transportation sector is the main supporting sector to ensure the smooth distribution of goods and services from one region to another. Adequate and supportive transportation infrastructure allows production from the agricultural sector and manufacturing to be distributed efficiently. In addition, the trade sector has a role in connecting producers and consumers so as to create economic value and encourage other economic activities.

These four sectors have a relationship that results if growth in one sector will support other sectors that create a multiplier effect that contributes to increasing Gross Regional Domestic Product (GRDP). When the agricultural sector develops and experiences an increase in crop yields, the manufacturing sector gets enough raw materials that can be used in production, which results in the transportation sector experiencing an increase in the volume of distribution of processing results carried out by the industrial and trade sectors to be more effective. Therefore, the proper development of these four sectors is an important factor in driving economic growth in North Sumatra.

5. Conclusions

Based on the results of research conducted on the influence of the agriculture, manufacturing, transportation, and trade sectors on the Gross Regional Domestic Product (GRDP) of North Sumatra Province during the 2019-2023 period, it can be concluded that the four sectors simultaneously have a significant effect on GRDP. The analysis results show that the agricultural sector has a positive and significant influence on GRDP. This reflects that the agricultural sector is still the main pillar of the economy in many districts / cities in North Sumatra, although most of the processing is still traditional and self-consumption, and lacks support in terms of infrastructure and government policies. Meanwhile, the manufacturing sector shows a positive but insignificant influence on GRDP. This indicates that the sector has not made a real contribution to regional economic growth, which can be caused by the lack of policy incentives and the uneven distribution of processing industries in areas with potential agricultural products, such as Dairi and Karo. The transportation sector has a positive and significant effect on GRDP, which indicates that transportation infrastructure and connectivity play an important role in supporting economic activity in North Sumatra. The trade sector also has a positive and significant effect and is the sector with the largest contribution to GRDP. Advances in digitization and the development of market infrastructure have accelerated the growth of this sector, although it still poses challenges for traditional markets due to shifting consumer preferences. Thus, the synergy between these four sectors proves important in driving overall and sustainable regional economic growth.

References

[1] Michael Todaro and Stephen Smith. (2015). *Economic Development.* United Kingdom: Pearson Education Limited.

[2] Badan Pusat Statistik. (2024). *Tinjauan Produk Domestik regional Bruto Kabupaten/Kota Se-Sumatera Utara Menurut Lapangan Usaha.* Diakses dari https://sumut.bps.go.id/id/publication/2024/04/04/fbd4a9c7ecd7dee 84a7615e8/tinjauan-produk-domestik-regional-bruto-kabupaten-kota-se-su matera-utara-menurut-lapangan-usaha-2023.html

[3] Deskon, Fediansyah., *et al*. (2023). Analisis Pengaruh Sektor Pertanian dan Sektor Industri Pengolahan Terhadap Pertumbuhan Ekonomi Kabupaten Lampung Tengah Dalam Perspektif Ekonomi Islam. *Jurnal Ekonomi Dan Bisnis Islam*.

[4] Agnes Yunita and Marten Umbu. (2023). Kontribusi Sektor Pertanian dan Sektor Industri Terhadap Pertumbuhan Ekonomi Kabupaten Nagekeo. *Jurnal Agribisnis Universitas Malikussaleh*, 8(2).

[5] Kementerian Perhubungan. (2021, 07 Juni). *Konektivitas Transportasi Jadi Keharusan untuk Menggenjot Perekonomian Daerah*. Diakses tanggal 18 Oktober 2024, dari https://dephub.go.id/post/read/konektivitas-transportasi -jadi-keharusan-untuk-menggenjot-perekonomian-daerah

[6] Kementerian Perdagangan. (2024, 13 September). *Kemendag Ungkap Strategi dan Rekomendasi Kebijakan Perdagangan.* Diakses tanggal 10 Januari 2024, dari https://www.kemendag.go.id/berita/pojok-media/kemendag-ungkap-st rategi-dan-rekomendasi-kebijakan-perdagangan

[7] Badan Pusat Statistik. (2024). *Tinjauan Produk Domestik regional Bruto Kabupaten/Kota Se-Sumatera Utara Menurut Lapangan Usaha.* Diakses dari https://sumut.bps.go.id/id/publication/2024/04/04/fbd4a9c7ecd7dee 84a7615e8/tinjauan-produk-domestik-regional-bruto-kabupaten-kota-se-su matera-utara-menurut-lapangan-usaha-2023.html

[8] Mankiw, Gregory. (2015). *Priciples of Economic.* USA: Cengage Learning.

[9] Badan Pusat Statistik. (2024). *Tinjauan Produk Domestik regional Bruto Kabupaten/Kota Se-Sumatera Utara Menurut Lapangan Usaha.* Diakses dari https://sumut.bps.go.id/id/publication/2024/04/04/fbd4a9c7ecd7dee 84a7615e8/tinjauan-produk-domestik-regional-bruto-kabupaten-kota-se-su matera-utara-menurut-lapangan-usaha-2023.html

[10] Sukirno, Sadono. (2006). *Ekonomi Pembangunan.* Jakarta: Prenademedia Group.

[11] Muhammad, Maulana., *et al*. (2023). Perkembangan Sektor Industri Manufaktur Terhadap Globalisasi. *Jurnal Riset Dan Publikasi Ilmu Ekonomi*, 2(1), 102-112.

[12] Palilu, Aram. (2018). Analisis Pengaruh Pembangunan Infrastruktur Transportasi Terhadap Produk Domestik Regional Bruto Kota Ambon. *Jurnal Buletin Studi Ekonomi.* 23(2), 227-240.