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THE INFLUENCE OF INFRASTRUCTURE DEVELOPMENT ON LOCAL ECONOMIC GROWTH IN MEDAN

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Abstract

Research Objectives The aim of this research is to determine and analyze the extent to which GRDP and investment variables influence local economic growth in Medan City through increasing community income as an intervening variable . Originality The subject of this research is the population/community in Medan City, where the variables in this research are the independent variables, namely GRDP and investment , the dependent variable, namely the local economic growth variable in Medan City and the intervening variable is the community income variable . The results of data analysis used SEM analysis using SMART PLS 4.0 software. as for data collection techniques using questionnaires and interviews, as well as observation . Design/methodology/approach Method research using descriptive quantitative data analysis methods using the structural equation model (SEM) method, where the results of data processing using the SEM method are carried out using the PLS 4.0 application . Findings From the results of this research, the conclusions that exist are that partially the GRDP and investment variables have an influence on the local economic growth of Medan City and have an influence on the income of the people of Medan City. Simultaneously, the GRDP and investment variables influence the local economic growth of Medan City through the variable income of the people of Medan City as an intervening variable . Implementation The greater the factors that influence infrastructure development through investment and increasing GRDP, the more employment opportunities there will be and the people's income will increase, and will significantly increase economic growth in the city of Medan.

Keywords Infrastructure development, GRDP, investment, community income, economic growth.

INTRODUCTION

The Indonesian state is currently promoting infrastructure to increase the development of the country, as well as create equal distribution of income, where equal distribution of income is related to the ability of a region to increase its economic activities through the provision of infrastructure that is inherent and in accordance with the conditions and conditions of the region or area where the infrastructure will be built (Gustiana, Nana, Sadalia, Isfenti and Sinulingga, 2023)

Infrastructure development can be realized to enable a country to increase its economic activity, where the economy often does not develop if the existing infrastructure cannot be developed for the benefit of the community, so that it has an impact on increasing or decreasing the community's economy, where the decline in the community's economy will have an impact on decreasing national income through Gross domestic product is

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increasingly decreasing, on the other hand, if people's income increases, then gross domestic product will also increase and can contribute to increasing economic growth in a country or region (Pradana, Ade Novid and Sumarsono, 2018) .

Infrastructure development has various significant impacts, both positive and negative, on society, the economy and the environment, including good infrastructure, such as roads, ports and telecommunications networks, increasing economic efficiency and productivity, developing infrastructure such as health facilities, education , and clean water increases community access to essential basic services (Matondang, 2022) . Infrastructure projects create many jobs in the construction sector, and once completed, jobs in operations and maintenance, infrastructure development helps reduce regional disparities by developing disadvantaged areas and improving the welfare of local communities (Sofian, Moh, Estetiono & and Sofian Asmirza, 2018) .

Apart from that, there is the development of modern infrastructure, such as environmentally friendly power plants, supporting the use of new technology that is more efficient and environmentally friendly, where all of this infrastructure development will have a significant impact on the sustainability of economic activities, all of which will lead to increasing income not only for people throughout the world. business, as well as for regions, regions and also for the State (Sinaga, Arnaldo M., 2022) .

There are negative impacts from infrastructure development which not only harm society and the business world, but also harm the Government, because the existing damage can also harm an area, region or country, so that the Government will not get big benefits from economic activities, where the community's economy income will decrease, and will have implications for a decrease in national income which will result in a decrease in economic growth (Sebayar & Sebayar, 2020) .

The negative impacts are that large construction projects can cause deforestation, destroy habitats and loss of biodiversity, large infrastructure projects often require the removal of people from the project site, which can cause loss of homes and livelihoods, construction and maintenance of infrastructure requires very large investments which can burden the government budget (Azizah, SIrojusilam and Fachrudin, 2021) . Infrastructure projects are often vulnerable to corruption and fund protection, which can hinder project completion and reduce their benefits, and the infrastructure built may favor certain groups or certain regions, thereby increasing social and economic inequality (Isyandi, 2021) .

Apart from gross domestic product and economic growth, infrastructure development can have an impact on increasing employment opportunities, where infrastructure development requires investment, both from within the country and direct investment from abroad, where this investment can generate large increases in economic benefits and can also increase investor confidence to invest in infrastructure development (Yandi, Delpra, 2023) .

Infrastructure development has broad and complex impacts. It is important for governments and project implementers to consider all these aspects and take steps to maximize positive benefits while minimizing negative impacts. Careful planning, effective implementation, as well as community participation and transparency are the keys to achieving the desired results in infrastructure development (Siahaan, Elisabet, Fachrudin, Khaira Amali and Fachrudin, 2018) .

Infrastructure development in Medan City is one of the Central Government's infrastructure development programs, where the Central Government carries out this infrastructure development program in order to boost the economy. In the last 45 years, infrastructure development has not been able to increase income distribution in Medan City, where Medan City has not been able to increase economic growth significantly, and has not been able to produce gross domestic product according to the targets set by the Medan City Government. This is caused by a lack of analysis regarding the negative impacts of

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this infrastructure development, as well as a lack of investment that has a real impact, complicated bureaucracy, and the lack of will of the Medan City Government to organize good infrastructure development which results in losses experienced by the community, such as The construction of the revitalization of the Merdeka Square in Medan City is actually detrimental to MSMEs around the Merdeka Square, because the impact of the long revitalization actually increases costs and reduces regional income, which results in a decrease in Medan City's gross domestic product. This can be seen from the realization of Medan City's gross domestic product in 2023 of IDR 233.31 trillion compared to 2022 of IDR 280.165 trillion, actually a decrease compared to 2022, where the average economic growth of Medan City in 2022 was 5.04% compared to 2023 which was 4. 71% decreased, where the impact of decreasing GRDP will reduce the economic growth of Medan City

FORMULATION OF THE PROBLEM

The problem formulation that emerges from this research is how the GRDP and investment variables influence local economic growth in Medan City through increasing community income as an intervening variable .

RESEARCH PURPOSES

The aim of this research is to determine and analyze the extent to which GRDP and investment variables influence local economic growth in Medan City through increasing community income as an intervening variable .

RESEARCH ORIGINALITY

The subjects of this research are residents/society in Medan City, where the variables in this research are the independent variables, namely GRDP and investment , the dependent variable, namely the local economic growth variable in Medan City and the intervening variable is the community income variable . The results of data analysis used SEM analysis using SMART PLS 4.0 software. as for data collection techniques using questionnaires and interviews, as well as observation.

LITERATURE REVIEW

Economic growth

Economic growth is an increase in a country's capacity to produce goods and services compared to the previous period. Economic growth is measured through an increase in real Gross Domestic Product (GDP), which is the total value of goods and services produced in a country after adjusting for inflation (Agustini, Fauzia, Amanah & Harahap, 2022) .

Economic growth is the main goal of economic policy which can bring many benefits to society and the country. However, to ensure sustainable and inclusive growth, policies are needed that pay attention to equity, environmental sustainability and social justice. With a holistic approach, economic growth can be a powerful tool for improving people's welfare and quality of life (Cahyo D., Herman and Kurnia O., Leni and Yunitasari, 2021) .

The indicators of economic growth are:

1. Direct investment
2. Technology
3. Economic policy
4. International trade
5. There is an increase in business income (Kurniasari, Indah and Hasmarini, 2023)

GRDP

GRDP (Gross Regional Domestic Product) is an economic indicator that measures the total value of goods and services produced in a certain region in a certain time period, usually one year. GRDP is similar to Gross Domestic Product (GDP) but focuses on the regional or provincial level within a country (IP Sari, 2020) .

GRDP is an important tool for measuring and understanding economic performance at the regional level. By identifying the contribution of various sectors and factors that influence economic growth, the government and stakeholders can take more effective policies and decisions to encourage sustainable and inclusive economic development throughout the region (AB, Ismail, Tanjung, 2023) .

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The indicators of GRDP are:

1. Household consumption

2. Government Expenditures

3. Investment

Investment

Investment is the activity of investing capital or assets with the hope of gaining profits or increasing value in the future. Investment plays an important role in economic growth and financial stability of individuals, companies and countries (Izharsyah, Jehan Ridho and Lubis, 2020) .

Investing is an important tool for achieving financial goals and building long-term wealth. With a good understanding of investment types, benefits, risks, and factors that influence investment decisions, individuals and institutions can make wiser and strategic decisions. Diversification and regular monitoring are also very important to manage risk and maximize investment returns (MDI Sari, 2021) .

The investment indicators are:

1. Increase in community income

2. Infrastructure development

3. Economic growth

Community Income

Community income is the amount of money or income earned by individuals or households from various sources during a certain period, usually one year. People's income plays an important role in determining living standards, consumption and overall economic welfare (Adi Syahputra, Muhammad Yusrizal and Sintara, 2019) .

Community income is an important indicator of economic and social welfare. Efforts to increase people's incomes through education, job creation, fair wage policies, and support for MSMEs can bring great benefits to the economy and the welfare of society as a whole. A deep understanding of income sources, influencing factors, and their impact on the economy is very important for policy makers and other stakeholders (Ardian, Muhammad and Purba, 2020) .

The indicators of community income are:

1. Level of education

2. Work experience

3. Investment

4. Economic growth (Taufiq, Muhammad and Kombaitan, 2019) .

Infrastructure development

Infrastructure development is the process of planning, developing and maintaining basic facilities and systems needed to support the economic and social activities of a country or region. Infrastructure covers various sectors, such as transportation, energy, air, telecommunications and other public facilities (Evi Purba, Naomi, Sari, Raina Linda and Tanjung, 2022) .

Infrastructure development is a long-term investment that is crucial for the growth and development of a country. With good planning and effective implementation, infrastructure development can bring many benefits to society and the economy as a whole (Hardiningsih, Pancawati, Meita Oktaviani, Rachmawati and Srimindarti, 2018) .

Infrastructure development indicators are:

1. Infrastructure quality

2. Economic growth

3. Investment (Zubaydah, Rafika, Afifuddin, Sya'ad and Albar Tanjung, 2022) .

CONCEPTUAL FRAMEWORK

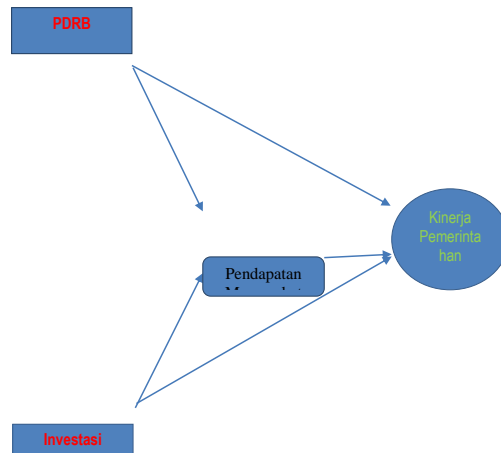The description of the research conceptual framework is:

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Figure 1 Conceptual Framework

Hypothesis

1. GRDP influences the economic growth of Medan City

2. Investment influences the economic growth of Medan City

3. GRDP influences the income performance of the people in Medan City

4. Investment influences people's income in Medan City

5. People's income in Medan City influences the economic growth of Medan City

6. GRDP influences the economic growth of Medan City, Medan City through community income as an intervening variable

7. Investment influences the economic growth of the Medan City Government through community income as an intervening variable.

RESEARCH METHODS

Method This research was carried out using a quantitative descriptive method using structural equation model (SEM) analysis method, where according to (Rashid, Yasir, 2019) SEM analysis is a data analysis technique which aims to determine the factors that influence the constructive variable which originates from the influence of the independent variable on the dependent variable. . The population in this study was 2,494,512 residents of Medan City in 2023, where the sampling method was carried out using the accidental sampling method , where according to the sampling method using accidental sampling is a sampling method where samples are taken where the object is on the spot.
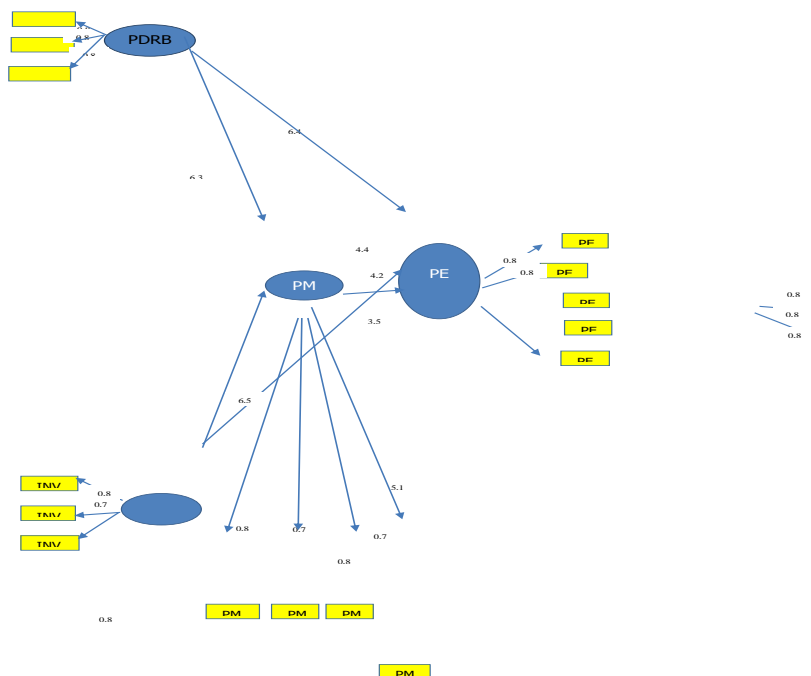
The number of samples taken can be done using the Slovin formula as follows:

$n = N / (1 + Ne^2) = 2,494,512 / (1 + 2,494,512 \times 0.1^2) = 99.99 = 100$ inhabitants of Medan City .

RESEARCH RESULT AND DISCUSSION

RESEARCH RESULT

The output from the SEM test can be described through the following Bootstrapping diagram :

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Convergent Validity Analysis

(Rashid, Yasir, 2019) states that convergent validity analysis is a type of validity in measurements or research instruments that shows data from existing construct variables is suitable for use for further testing . The results of the convergent validity test in this research are as follows:

Table 1 Test Convergent Validity

Variable	Indicator	Outer Loading
GRDP (X$_1$)	GRDP 1	0.867
	GRDP 2	0.877
	GRDP 3	0.868
Investment (X$_2$)	INV 1	0.849
	INV 2	0.759
	INV 3	0.869
Economic Growth (Y)	PE 1	0.834
	PE 2	0.844
	PE 3	0.884
	PE 4	0.845
	PE 5	0.824
Community Income (Z)	PM 1	0.886
	PM 2	0.766

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	PM 3	0.816
	PM 4	0.746

Source: Data Processing Results with PLS 3.0, 2024

The table above states that the data from each variable is suitable for use, so it can be used properly to analyze the various influences of each existing variable .

Average Variant Extracted (AVE) Analysis

(Rashid, Yasir, 2019) states that the AVE test is one of the techniques used to assess how much data from a construct variable is valid or not. The Average Variant Extracted (AVE) test results are in the following table:

Table 2 AVE Test

Variable	AVE
GRDP (X_1)	0.83 1
Investment (X_2)	0.871
Economic Growth (Y)	0.841
Community Income (Z)	0.851

Source: Data Processing Results with PLS 4.0, 2024

The table above describes the Average Variant Extracted (AVE) value of greater than 0.5, which means that the equation model of the data distribution is appropriate and valid to be used for further analysis .

Composite Reliability Analysis

According to (Rashid, Yasir, 2019) Composite Reliability testing is a technique for understanding the construct model that has been analyzed. This can be seen in the following table:

Table 3 Composite Reliability Test

Variable	Composite Reliability
GRDP (X_1)	0.882
Investment (X_2)	0.822
Economic Growth (Y)	0.772
Community Income (Z)	0.850

Source: Data Processing Results with PLS 4.0, 2024

The table above states that value composite reliability is greater than 0.6, where the existing data is reliable and appropriate, and suitable for further analysis.

Discriminant Validity Analysis

In confirmatory factor analysis (CFA) or structural equation modeling (SEM), discriminant validity analysis is a technique used to assess how different a construct is from other constructs in the model. The results of the Discriminant Validity analysis can be seen in Table 5 below:

Table 5 Discriminant Validity Analysis

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	Economic growth Moderating Effect 1	Economic growth Moderating Effect 2	Economic growth Moderating Effect 3	Economic growth Moderating Effect 4
GRDP	,757	1,000	,756	,624
Investment	,664	,737	1,000	,724
Community Income (Z)	,756	,784	,837	1,000
Economic growth	1,000	,746	,668	,636

Source: PLS Data Processing Results, 2023

Based on the table above, it can be seen that the AVE value from one equation to another construct equation means that this value meets the assumption of Discriminant Validity .

Path Coefficient Testing

As for the path coefficient test , it can be seen from the following table:

Table 6 R Square Test

Variable	R Square
GRDP (X_1)	0.884
Investment (X_2)	0.844
Economic Growth (Y)	0.876
Community Income (Z)	0.867

Source: Data Processing Results with PLS 3.0, 2023

From the existing table, the R Square of the economic growth variable can be explained by the GDP, investment and community income variables of 87.6%, while the remaining 12.4% can be explained by other variables that are not in the discussion.

Hypothesis testing

The results of hypothesis testing can be seen in the following table:

Table 7 Hypothesis Testing

Hypothesis	Influence	T-Statistics	P-Value	Results
H1	GRDP on local economic growth in Medan City	6,413	0,000	Accepted
H2	Investment in the local economic growth of Medan City	5,123	0.001	Accepted
H3	GRDP on people's income in Medan City	6,330	0.001	Accepted

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H4	Investment in the income of the people of Medan City	6,531	0,000	Accepted
H5	The income of the people of Medan City on the growth of the local economy of Medan City	4,215	0,000	Accepted
H9	GRDP on local economic growth in Medan City through the income of the people of Medan City as an intervening variable	4,420	0,000	Accepted
H10	Investment in the local economic growth of Medan City through the income of the people of Medan City as an intervening variable	3,501	0,000	Accepted

Source: Data Processing Results with PLS 3.0, 2023

According to the table above, it can be concluded that partially the GRDP and investment variables have an effect on the local economic growth of Medan City and have an effect on the income of the people of Medan City. Simultaneously, the GRDP and investment variables influence the local economic growth of Medan City through the income variable of the people of Medan City as an intervening variable.

DISCUSSION

GRDP Influences the Economic Growth of Medan City

The research results state that GRDP has an influence on the economic growth of Medan City . This is in accordance with research from (Sembiring, Rahmat and Faried, 2019) which states that increasing GRDP will tend to increase government income, the economy will grow and will contribute to increasing regional income.

Investment Influences the Economic Growth of Medan City

The research results explain that investment influences the economic growth of Medan City . This is in line with research (Afandi, Ratno, Lubis, Suwandi and Maas, 2022) which states that the greater the investment, the more likely it is to increase employment and people's income, so that it will contribute to the economic growth of a country or region.

GRDP Influences the Income of the People of Medan City

According to research results, the GRDP variable influences the income of the people of Medan City . This is in accordance with research (Raynaldo, 2021) which states that the greater the GRDP, the greater the contribution to increasing employment opportunities and reducing unemployment, where the increase in GRDP which is aimed at the process of distributing development funds is aimed at increasing people's income.

Investment Affects the Income of the People of Medan City

According to research results, investment variables influence the income of the people of Medan City . This is in accordance with research (Hapsari, 2022) which states that the greater the investment, the more it will contribute to increasing employment opportunities and will make people in the workforce have income that can make the economy grow.

The Income of the People of Medan City Influences the Economic Growth of Medan City

The results of the research state that the income of the people of Medan City influences the economic growth of Medan City. This is in accordance with research (Sebayar, Saimara AM, Nasution, 2019) which explains that as people's income increases, their purchasing power tends to increase and they are able to buy goods in large quantities and contribute to economic growth.

GRDP has an influence on the economic growth of Medan City through community income as an intervening variable

The research results show that the GRDP variable influences the local economic growth of Medan City through community income as an intervening variable . This is in accordance with research (Sutono, 2023) which explains that a large PDARAB will tend to increase people's income, which indicates an increase in economic growth which contributes to improving the community's economy.

Investment Influences the Economic Growth of Medan City through Community Income as an Intervening Variable

The research results show that investment variables influence the local economic growth of Medan City through community income as an intervening variable . This is in accordance with research (Iskandar, 2023) which states that if there is a lot of investment, it will tend to reduce income and increase wages. Rising wages will contribute to increased economic activity and tend to make economic growth increase significantly.

IMPLEMENTATION

The greater the factors that influence infrastructure development through investment and increasing GRDP, the more employment opportunities there will be and the people's income will increase, and will significantly increase economic growth in the city of Medan.

CONCLUSION

From the results of this research, the conclusion that exists is that the GDP and investment variables partially influence the local economic growth of Medan City and influence the income of the people of Medan City. Simultaneously, the GRDP and investment variables influence the local economic growth of Medan City through the income variable of the people of Medan City as an intervening variable.

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