

Analysis of The Feasibility of Revitalization of The Type a Amplacing Terminal and The Performance of The Sisingamangaraja Road Section, Medan

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Abstract

The main objective of this research is to analyze and find out if the investment plan is profitable in the future so that it is feasible or not to be implemented. Apart from that, this research also aims to analyze the Operational Performance of the Sisingamngaraja Road Section which includes: Side Obstacles, Free Flow Speed, Travel Speed and Time, and Service Level. The data used in this research are primary data and secondary data. Primary data was obtained through interviews and observations. Meanwhile, secondary data was obtained from related agencies or services such as the Medan City Transportation Department. The analytical method used in this research uses two analytical tools, namely investment feasibility analysis and road segment performance analysis. The research results obtained from the Net Present Value for the next 10 years are IDR. 60,400,000. shows that it is feasible to revitalize the Amplas Type A Terminal. This can be proven from the investment acceptance criteria and the NPV method, namely if the calculation results show that the value is positive then the investment is worth implementing. From the calculation results, the IRR of 30.5% shows that the interest rate will equal the present value of the investment. With present value, the value of net cash receipts in the future. As a criterion for acceptance of this method, if the calculated interest rate is greater than the desired interest rate, the investment is accepted. In this case the interest rate is 20%, so the IRR of 30.5% is said to be feasible for the revitalization of the Amplas Type A Terminal. The Profitability Index (PI) is 1.10 (accepted) because $PI > 1$. From the results of the Payback Period calculation, the Payback period for the revitalization of the Amplas Type A Terminal is 22.2 years. This means it is shorter than the economic investment period, namely 35 years, so the Payback Period criteria for the revitalization of the Amplas Type A Terminal can be accepted because it is lower than the useful life period. The performance of the section on Jalan Sisingamngaraja by determining the size of the road capacity and traffic volume is known to still have problems with congestion during peak activity hours.

Keywords:

Feasibility, Revitalization and Performance Study of Road Sections

Introduction

The increase in population in the city of Medan, especially on the Sisingamangaraja road, has an impact on increasing the need for various activities, including trade, education and other activities. The developments occurring in Medan City must of course be balanced with a good traffic system and supporting infrastructure. Community activities will certainly affect the smoothness of traffic, especially during rush hours. This disruption to the smooth flow of traffic is caused by vehicle entry and exit activities to schools, markets, street vendors, workshops to places where passengers are picked up and dropped off and side obstacles which reduce the effective width of the road body, lower road sections and increased obstacles (Harahap et al, 2018). Therefore, the revitalization of the Amplas Type A Terminal must continue to prioritize smooth transportation, which of course can be done by implementing an appropriate transportation system and traffic management.

The decision to revitalize the Amplas Type A Terminal is an investment, namely the decision to use funds or allocate funds originating from the National Strategic Project (PSN) in the context of increasing economic growth through infrastructure development in Indonesia. The government is making efforts to accelerate projects that are considered strategic and have high urgency so that they can be realized within a short period of time. In this effort, the Government, through the Coordinating Ministry for Economic Affairs, initiated the creation of a mechanism to accelerate the provision of infrastructure and the issuance of related regulations as a legal umbrella to regulate it. Through this mechanism, the Committee for the Acceleration of Priority Infrastructure Provision (KPPIP) selects a list of projects that are considered strategic and have high urgency and provides facilities to facilitate project implementation. By providing these facilities, it is hoped that strategic projects can be realized more quickly (Ervianto, 2017).

There are two investment decisions for this revitalization, namely short term and long term. Short-term investment decisions are the use of funds for terminal operations, while long-term investment decisions are investments in fixed assets. Long-term investment is an expenditure that is expected to produce benefits for more than one year in the future. This investment or capital expenditure is related to the use of funds (cash) to obtain operational assets that will help obtain income or reduce costs in the future (Sururi & Agustapraja, 2020).

Decisions regarding investment are very important decisions because they have a significant influence on economic development or growth. This decision is not only about the level of risk that must be borne but also determines the level of government profits in the future. So in carrying out revitalization it is not enough to just rely on experience and intuition. More than that, there is now an increasing demand to carry out investment feasibility studies on the business you want to run or develop. Not just for the purpose of assessing the feasibility of the business to be built, this feasibility study has become a necessity for the common good (Wilujeng dkk, 2018).



In revitalizing investment in order to realize the implementation of comprehensive development in various sectors, including the business sub-sector in the private sector, which is one of the sectors that plays an important role in development, and an inseparable part of economic development. Another thing that shows the progress of development in our country is that more and more companies are switching to other businesses (Nurhayati & Amalia, 2019).

The context of revitalizing investment at the Medan Amplas Terminal which is sustainable for businesses is still an urgent political will to motivate the success of activities. In line with this concept, in its management, especially local business managers, experience various kinds of challenges. One of the most influential is the lack of capital to make Terminal activities run well. This lack of capital greatly limits the scope for business activities and moreover makes it difficult for businesses to develop operational activities. There is a risk that always lies in revitalization, namely the problem of lack of capital (funds) for further development.

The phenomenon illustrated by the revitalization of the Amplas Type A Terminal is that the roads around the terminal have conditions on the ground that are very different from the strategic plans that existed during the planning stage. On sections, especially on the Sisingamangaraja road, traffic problems often occur, such as increased delays at certain times due to high community activity followed by economic activities and educational activities, plus side obstacles that arise due to vehicles dropping off or picking up students and buying and selling transaction activities at the market.

The problem of revitalizing the Amplas terminal must of course be the subject of an in-depth study in order to improve the performance of increasingly congested roads, so a research was conducted which aimed to determine the traffic conditions in Sisingamangaraja. This research is needed to identify the problems that occur on Jalan Sisingamangaraja so that later we can find the right solution to prevent bigger traffic problems and it is necessary to divide and divert some of the traffic load to other roads with the aim of reducing the volume of incoming traffic. to Sisingamangaraja.

Literatur Review

Investment Theory and Investment Feasibility

The key to a company's success is determined by the management function running in accordance with the company's development and adjustments to economic conditions. The management function is very decisive in achieving company goals in accordance with their respective functions by paying attention to the obstacles that must be overcome. We already know that when investing in companies that can be categorized as investing in the future over a fairly long period of time, the author can express the understanding of investment by economists (Witjaksono, 2020). Proposals for investing in the form of funds, which are usually called capital, then the percentage



time is analyzed at the turnover rate, then the money that has been invested will be expected in the future (Sudrajat & Rudianto, 2019).

Regional Development Through Revitalization Prospects and Feasibility

This revitalization design object has good prospects in meeting the current increasing needs of society, especially in the field of transportation facilities/infrastructure. The increasing need for transportation facilities/infrastructure makes the existence of terminals capable of facilitating the community increasingly necessary. Especially with the existence of the Amplas terminal as a type A terminal in the city of Medan, by carrying out revitalization it is hoped that it can make the Amplas terminal a better terminal in meeting the needs of the community (Dimas dkk, 2023).

This object is in accordance with Medan City Regional Regulation Number 1 of 2014 concerning Medan City Regional Spatial Planning for 2014-2034 and is suitable for revitalization. Amplas Terminal is one of the inter-provincial terminals that is still actively used today. However, the existence of this terminal is sometimes not used according to its function. Judging from how public transportation in the city often causes traffic jams outside the terminal due to not using the facilities inside the terminal. This is caused by the lack of good circulation arrangements within the terminal, and also the facilities for passengers to find public transport are still unclear (Martaningtyas, 2023).

Road Segment Performance Evaluation

Evaluation of road performance is carried out by analyzing side obstacles, slow vehicle factors, free flow speed and service level. Based on MKJI (2009), side obstacles are interactions between traffic and various activities next to the road that can result in a reduction in the number of saturated traffic on the road and can also affect the capacity and performance of the traffic.

Based on MKJI (2009), the slow vehicles referred to are bicycles, carts, pedicabs and wagons. Where vehicles with fairly slow speeds on a road section result in disruption of the speed of other vehicles which will later use the road section. Therefore, a vehicle that is slowing down is a part that can also influence the value of the side resistance.

Based on MKJI (2009), free flow speed is defined as speed at zero flow level, namely the speed that the driver would choose if driving a motorized vehicle without being influenced by other motorized vehicles on the road.

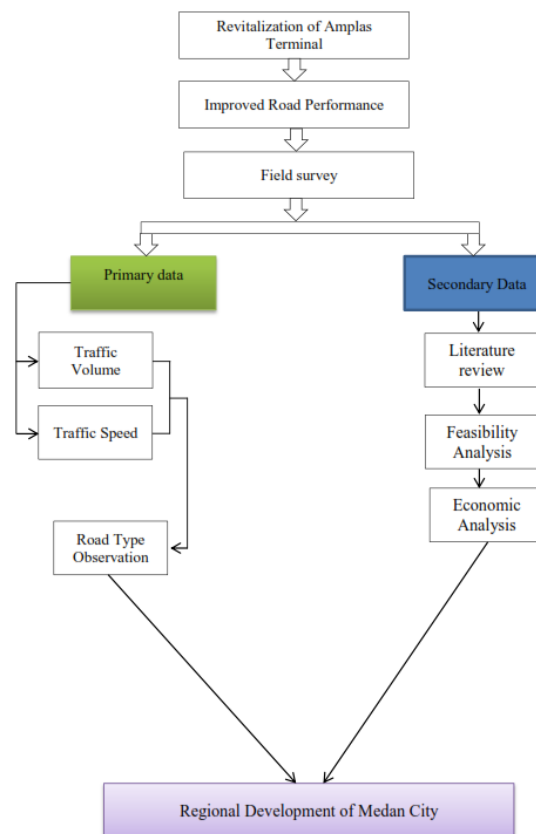


Figure 1. Framework

Methodology

The type of research in this research is quantitative descriptive research which includes the activity of assessing attitudes or opinions towards individuals, organizations, situations or procedures, the aim is to describe a situation or phenomena as they are where the results of these observations will be tabulated in quantitative form and analyzed using formulas. quantitative.

The data used in this research are primary data and secondary data. Primary data was obtained through interviews and observations. Interviews were conducted through in-depth direct interaction and communication with respondents. Meanwhile, secondary data was obtained from related agencies or services such as the Medan city transportation service.

Analysis of the feasibility of revitalizing Amplas Terminal A using the following analysis:

1. Profitability Index
2. Internal Rate of Return
3. Net Present Value

4. Payback Period

Road segment performance assessment is carried out by carrying out the analysis stages of Traffic Survey, Vehicle Speed Survey, Side Obstacle Survey.

Result And Discussion

Result

Terminal revitalization is where the function of a terminal which has begun to lose its function as the terminal itself is revived, so that the terminal that will be revitalized can follow trends and meet user needs now and in the future.



Figure 2. Design Layout

Investment Feasibility Assessment

The investment required for the Amplas Type A Terminal revitalization project will be explained in the table below:

Table 1. List of Type A Sandpaper Terminal Revitalization Tables

Initial Investment	Amount (Unit)	The useful life (Years)	Investment Amount
Preparatory work	1	35	170.444.706
Terminal Building Work	1	35	15.350.620285
Amount			15.521.064.991

List of Investments for Terminal Type A Phase II

Preparatory work	1	35	50.784.511
Terminal Building Work			1.286.933.342



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Initial Investment	Amount (Unit)	The useful life (Years)	Investment Amount
Canopy Work in Front of Terminal Building	1	35	134.549.037
Canopy Work Behind Terminal Building	1	35	708.788.999
Mabel Work/Building Interiors	1	10	1.727.900.000
Terminal Road Works	1	35	7.887.965.130
Fence and Sign Board Work	1	35	1.275.796.598
Greening Jobs		35	3.014.800.792
Pekerjaan Drai Drainage Works nase	1	35	3.963.106.062
Landscape Mechanical and Electrical Work	1	10	1.706.371.112
Driver's Accommodation	1	35	515.443.116
Guard Post 5 Units	1	35	297.281.773
Guard Post 5 Units	1	35	1.168.236.615
Guard Post 5 Units	1	35	136.843.714
Employee Mess	1	35	515.443.133
Amount			24.390.243.938
Total			39.911.308.930

Source: Medan City Transportation Department, 2023

Investment will be carried out in stages with the initial outlay for the first stage requiring an investment of IDR. 15,521,064,991 and entering the second year, the second phase of investment was carried out, namely Rp. 24,390,243,938. So the revitalization of Amplas Terminal A has an investment value of Rp. 39,911,308,930 which will operate from the beginning of the third year. The source of funding for investment is 100% internal capital from the central government through the National Strategic Project budget without external capital loans or banks. The Amplas Terminal A revitalization plan is estimated to have a useful life of 35 years with an estimated residual value of 13,968,958,126. The effective interest rate is estimated at 20% per year. The following is an assessment of feasibility for the next 10 years of operation.

Table 2. Feasibility of Revitalizing Terminal A Amplas



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	Years	Economic Profit Projections	Depreciation	Proceed	DF	PV Proceed
1	2022	4.500.000.000	741.210.023	5.241.210.023	0,83	4.365.927.949
2	2023	6.500.000.000	741.210.023	7.241.210.023	0,69	5.025.399.756
3	2024	7.200.000.000	741.210.023	7.941.210.023	0,58	4.597.960.603
4	2025	9.000.000.000	741.210.023	9.741.210.023	0,48	4.695.263.231
5	2026	11.700.000.000	741.210.023	12.441.210.023	0,40	5.001.366.429
6	2027	13.500.000.000	741.210.023	14.241.210.023	0,34	4.770.805.358
7	2028	14.500.000.000	741.210.023	15.241.210.023	0,28	4.252.297.596
8	2029	16.500.000.000	741.210.023	17.241.210.023	0,23	4.017.201.935
9	2030	18.000.000.000	741.210.023	18.741.210.023	0,19	3.635.794.744
10	2031	20.150.000.000	741.210.023	20.891.210.023	0,16	3.384.376.024
Total		121.550.000.000				43.746.393.626

Source: Data Analysis Results, 2023

Based on the table above, the economic evaluation of the investment project can be calculated as follows:

Profitability Index (PI)

PV proceed 43.746.393.626

PI = ----- = -----

PV Outlays 39.911.308.930

PI = 1.10 (accepted) because PI > 1

Internal Rate Return (IRR)

EAT 121.550.000.000

IRR = ----- = -----

PV Outlays 39.911.308.930

IRR = 305 (accepted) because IRR > effective interest rate 20%

Net Present Value (NPV)

NPV = PV proceed - PV Outlays

= 43.746.393.626 - 39.911.308.930

= 60.400.000 (accepted) because the NPV is positive

Discounted Payback Period (DPP)

Investment payback period = -89.050.791.300:

----- x 10

39.911.308.930

= 22,31 year (accepted)

because the payback period is less than the positive 35 year useful life

Road Segment Performance Analysis



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This time, the Sisingamangaraja Road Performance Analysis discusses the essence of the research. The Sisingamangaraja Road section has a geometric type of four-lane two-way undivided road (without median) (4/2UD) with a width per lane of 6.5 m, a width per lane of 3.25 m and a shoulder width of 2.5 m. Jalan Sisingamangaraja has the function of being a city road with good road conditions. The condition of the traffic volume on Jalan Sisingamangaraja itself is also very high, this time the traffic volume was taken on peak days or hours, because this makes it easier to understand. For a sample of traffic volume at this time, from data in the direction outside the city and within the city, the peak volume on Monday afternoon rush hour was $6,266 \geq 3,700$, while in the opposite direction during the morning rush hour it was $6,178 \geq 3,700$. Traffic volumes at peaks that exceed existing standard limits should be diverted so that traffic jams can be avoided.

Traffic capacity for the Sisingamangaraja Road section has a population of 1,753,092 people, with a city size of 1.0 – 3.0. Analysis data for Sisingamangaraja Road with the largest traffic composition for both directions occurs in the inner city direction with a total traffic composition on Monday of 24,245. with LV 18.42%, HV 0.62%, MC 80.00%, and UM 0.96%. From the Total Flow Composition of Traffic, the number of motorbike users traveling on Sisingamangaraja Road is very high. Motorbike users should be encouraged to use public transportation. Provided that mass transportation is made as good and comfortable as possible so that people will be interested in using public transportation, in order to minimize possible traffic jams.

The average speed that occurs on Jalan Sisingamangaraja is dominated by motorbikes. Based on a sample of traffic speed obtained, the total flow from both directions occurred on Sunday from outside the city towards Amplas with an average speed: MC 46.73 km /O'clock; LV 41.47 km/h; HV 37.10 km/hour and UM 9.71 km/hour. Field conditions, especially during peak hours, traffic flow is very high, as are the side obstacles. So there needs to be firm action to reduce side obstacles, so that the driver's speed remains stable while driving his vehicle.

The traffic density that occurs on Jalan Sisingamangaraja is dominated by motorbikes. At this time, the largest traffic density in both directions occurred on Monday in the direction out of town towards Amplas, with an MC of 529.20 vehicles/hour; LV 137.75 vehicle/hour; HV 5.17 motor/hour and UM 28.86 motor/hour. To anticipate if traffic flow and traffic density continues to increase.

Discussion

The research results obtained from the Net Present Value for the next 10 years are IDR. 60,400,000. shows that it is feasible to revitalize the Amplas Type A Terminal. This can be proven from the investment acceptance criteria and the NPV method, namely if the calculation results show that the value is positive then the investment is worth implementing. From the calculation results, the IRR of 30.5% shows that the interest rate will equal the present value of the investment. With present value, the



value of net cash receipts in the future. As a criterion for acceptance of this method, if the calculated interest rate is greater than the desired interest rate, the investment is accepted. In this case the interest rate is 20%, so the IRR of 30.5% is said to be feasible for the revitalization of the Amplas Type A Terminal. The Profitability Index (PI) is 1.10 (accepted) because $PI > 1$. From the results of the Payback Period calculation, the Payback period for the revitalization of the Amplas Type A Terminal is 22.2 years. This means it is shorter than the economic investment period, namely 35 years, so the Payback Period criteria for the revitalization of the Amplas Type A Terminal can be accepted because it is lower than the useful life period.

The results of this research are in line with the theory that investment is the placement of a certain amount of funds in the hope of maintaining, increasing value, or providing a positive return (Sutha, 2000); (Webster, 1999); (Lypsey, 1997). The financial aspect is a key aspect of a feasibility study. If other aspects are classified as feasible but the financial aspects provide unfeasible results, then the company's proposal will be rejected because it does not provide economic benefits.

The performance of the section on Jalan Sisingamngaraja by determining the size of the road capacity and traffic volume is known to still have problems with congestion during peak activity hours. Based on the results of the data above, it can be stated that the value of side obstacles to traffic on Jalan T Sisingamangaraja is found to be side obstacles on Mondays which are dominated by parking and stopped vehicles, on Saturdays dominated by parking and stopped vehicles, and on Sundays dominated by stopped vehicles and vehicles. Parker. Free flow speed is the speed at zero flow level, namely the speed that the driver would choose if driving a motor vehicle without being influenced by other motor vehicles on the road.

The level of service on the Sisingamangaraja Road section itself can be determined using the degree of saturation which is still in class C. The average speed that occurs on the Sisingamangaraja Road section is dominated by motorbikes, based on a sample of the traffic speed obtained by the total flow from both directions. on Sunday out of town towards Amplas with average speed: MC 46.73 km/hour; LV 41.47 km/h; HV 37.10 km/hour and UM 9.71 km/hour. Field conditions, especially during peak hours, traffic flow is very high, as are the side obstacles. So there needs to be firm action to reduce side obstacles, so that the driver's speed remains stable while driving his vehicle.

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