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FINANCIAL FEASIBILITY ANALYSIS OF TRANSJATIM CORRIDOR I LUXURY SIDOARJO-SURABAYA-GRESIK ROUTE

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Abstract

Transjatim Corridor I, which runs the Sidoarjo-Surabaya-Gresik route, serves as a crucial road-based mass transportation system in East Java Province, particularly within the Gerbangkertasusila Agglomeration Area. In 2023, the average load factor for Transjatim Corridor I was 120%, with an average of 5-6 thousand passengers per day. This high demand necessitated the addition of a fleet with luxury services. This study aims to analyze the financial feasibility of investing in Transjatim Luxury Corridor I buses. The investment feasibility is assessed by comparing income and expenditure variables. The analysis employs the NPV, Benefit-Cost Ratio (BCR), IRR, and Payback Period (PP) methods. The initial investment expenditure is Rp. 8,207,989,625. Assuming a load factor of 70%, the revenue for different fare alternatives is as follows: Alternative 1 (Rp. 17,500 fare) generates Rp. 5,723,200,000; Alternative 2 (Rp. 16,000 fare) generates Rp. 5,232,640,000; and Alternative 3 (Rp. 15,000 fare) generates Rp. 4,905,600,000. Based on a 6% discount rate, the NPV for all alternatives is greater than 0: Alternative 1 yields Rp. 5,204,972,631; Alternative 2 yields Rp. 2,466,479,592; and Alternative 3 yields Rp. 640,817,566. The IRR values exceed the discount rate, with Alternative 1 at 19.42%, Alternative 2 at 12.54%, and Alternative 3 at 7.74%. The BCR values are all greater than 1: Alternative 1 is 1.30, Alternative 2 is 1.19, and Alternative 3 is 1.11. The PP values are 4 years for Alternative 1, 5 years for Alternative 2, and 6 years for Alternative 3. Thus, all three alternatives are deemed financially feasible.

Keywords: *Investment, Feasibility Study, Transjatim Luxury*

1. INTRODUCTION

The transportation sector is vital in meeting the needs of the activities carried out by the community. all aspects of the nation's life depend on the transportation sector. transportation functions as a driver, supporter, and driver of economic growth. currently, proper and effective transportation has become a very important part of everyday life. One aspect of transportation that concerns the lives of many people is public transportation. Until now, land transportation is still the most widely used mode of society in traveling, buses are still a favorite mode of society in activities, because buses can provide flexible transportation services that are not owned by other modes.

Transjatim is the beginning of the operation of the Road-Based Mass Transportation Program in East Java Province on Corridor I route Sidoarjo - Surabaya - Gresik which is included in the Gerbangkertasusila Agglomeration Area. It is expected that with Transjatim Corridor I route Sidoarjo - Surabaya - Gresik as a Pioneer program that supports all aspects in East Java, Providing services that are safe, fast, comfortable, and affordable to people whose mobility is increasing, Reducing Exhaust Emissions or Global warming in East Java, Reducing Road Traffic Accident Rates in East Java, Unraveling

Urban Area Congestion in East Java, and able to boost the movement of people and mobility of people so that Economic growth in East Java grows quickly.

In the growth of a city is inseparable from the role of the government, the Government is one of the owners of power which will ultimately form a regime that is able to influence various political decisions and policy directions that will be taken by the Government to encourage economic growth by turning on industrial machines in the region so that new centers of economic growth can be created, which in turn can trigger a faster economic turnover and make the income of the community increase. One of the indicators that can be seen related to the growth of a city is how they are able to mobilize industrial machines in their area so that they can open up land for capital owners to invest and encourage faster growth in their area. Transportation is one of the new commodities that can be managed in obtaining sources of power and economic benefits so as to bring in revenue and open up new opportunities for capital owners to invest.

An important determining factor in any financial investment is profitability (Abimanyu, 2018). The methods used to ensure this are the Net Present Value (NPV) method and the Internal Rate of Return (IRR) method (Abdurrabby et al., 2020). The NPV method is basically a mathematical model used to calculate the present value of the expected cash flows of an investment, discounted at a certain rate, minus the initial investment. Unlike other measures of investment profitability, the NPV rule takes into account the time value of money. In addition, the NPV Method is very versatile. Its calculation takes into account the level of risk of an investment and the investor's return expectations. Therefore, the NPV Method is particularly useful for assessing long-term investments with high capital expenditure such as construction or infrastructure projects.

The Internal Rate of Return (IRR) method is another investment valuation tool that is often compared to NPV. IRR is the discount rate that results in a net present value of zero. The IRR method is that an investment is considered profitable if the IRR is higher than the discount rate or the stated cost of capital. If the IRR is lower than the discount rate, it is a sign that the investment may not generate sufficient returns. IRR is relatively good in scenarios where the stream of cash inflows is highly variable over time or the size of the investment itself is unclear.

Although the NPV and IRR rules serve the same purpose in making investment decisions, the two methods can lead to differences in the recommended course of action. This is especially noticeable when considering mutually exclusive projects - projects where the receipts of one project do not include the receipts of the other. It is important to note that while NPV measures absolute value added or the net increase in shareholder wealth, it does not take into account the capital expenditure required to achieve those gains. So, for businesses looking to make the biggest profit and are more interested in comparing the rate of return on their investment, the IRR rule comes first.

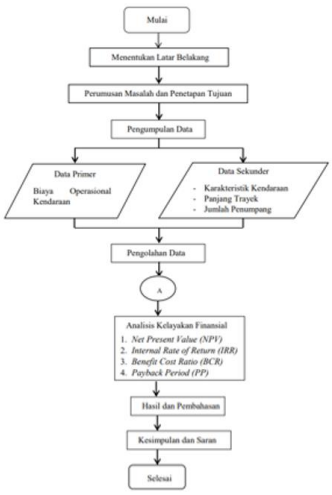
On the other hand, businesses with abundant funds and aiming to maximize shareholder wealth will most likely find their answer in the NPV rule. In addition, there are certain scenarios regarding unconventional cash flows (such as intermediate cash outflows following cash inflows or various sign changes in cash flows) where these rules may give conflicting results. In such cases, the use of a combination of IRR and NPV as well as other reliable financial rules, such as Profitability Index and Discounted Repayment Period, can result in a robust decision-making process.

Despite their differences, both rules are integral to the structure of financial investment analysis, and their strategic use can make a big difference to the projected profitability of your investment (Meilasari et al., 2023). It is important to know these tools, understand their strengths and limitations, and learn when to apply them appropriately. Investment in the transportation sector is one way to support industries that provide services or products related to the movement of people or goods.

Based on the recapitulation of passengers and revenue Transjatim corridor I in 2023 obtained an average load factor of 120% with an average passenger of 5-6 thousand passengers per day, this is the reason for the addition of a fleet with Luxury service, it is necessary to conduct an in-depth study of financial feasibility (Oktavia, 2021). Therefore, researchers conducted a study with the title "Financial Feasibility Analysis of Transjatim Corridor I Luxury route Sidoarjo-Surabaya-Gresik" (Azim et al., 2020). This study aims to analyze the level of financial feasibility of investment in Transjatim Luxury corridor I buses (Priyandono et al., 2021).

The feasibility of investment can be obtained by comparing the varibale income and expenditure of Transjatim bus corridor I Luxury route Sidoarjo-Surabaya-Gresik every year (Suweda & Putra, 2019). The feasibility level analysis was carried out using the Net Present Value (NPV), Internal Rate Return (IRR), Benefit Cost Ratio (BCR), and Payback Period (PP) methods, in this study a Sensitivity analysis was also carried out (Sarimi et al., 2021; Suthanaya & Lestari, 2016). With sensitivity analysis, it will provide an overview of the extent to which the consequences of changes in these parameters can affect as a prevention so that there are no losses in the project to be planned (Tenawaheng, Utomo, and Wiguna 2021). From this research, it is expected that the development of Transjatim services can be carried out (Tapa et al., 2022).

2. RESEARCH METHODS



Source: Processed by Researcher, 2024

Figure 1. Research Flow Chart

The flowchart presents a step-by-step process to evaluate a project's feasibility. It begins by gathering primary and secondary data related to operational and vehicle costs,

characteristics, road conditions, and user numbers. This data is then analyzed to conduct a financial feasibility assessment using metrics like NPV, IRR, BCR, and payback period. The results of this analysis are used to draw conclusions about the project's viability and provide recommendations for proceeding.

2.1. Research Subjects

The subject of this research is Transjatim Corridor I Luxury Sidoarjo-Surabaya-Gresik Route whose office is located at Jl. A. Yani No. 268 Surabaya. ransjatim Corridor I Luxury Sidoarjo-Surabaya-Gresik Route is managed by the East Java Provincial Government through the East Java Provincial Transportation Office and for which Transjatim Corridor I was inaugurated on August 19, 2022 with 20 operational fleet units and 2 spare fleet units (Waruwu, 2023). The selection of this study was based on several aspects, since the launch of Transjatim Corridor I until the end of 2022 the load factor reached 105% (Yusup, 2018). And the load factor in 2023 starting from January to December reached 120% with an average of 5-6 thousand passengers per day, of course this can be a consideration related to policy making in development, especially in terms of investment (Aditrio & Oetomo, 2023).

2.2. Research Objective

The objects of this research are as follows:

a. Various kinds of costs that can affect the feasibility of investment, including investment costs, operational / management costs and income from the operation of Transjatim Corridor I Luxury Sidoarjo-Surabaya-Gresik Route.
b. Sensitivity of factors affecting investment in Transjatim Corridor I Luxury Sidoarjo-Surabaya-Gresik Route, namely service tariffs, operating costs and subsidies from local governments.

2.3. Research Location

The case study in this research is Transjatim Corridor I Luxury Sidoarjo-Surabaya-Gresik Route whose office is located at Jl. A. Yani No. 268 Surabaya. Transjatim Corridor I Sidoarjo-Surabaya-Gresik Route is managed by the East Java Provincial Government through the East Java Provincial Transportation Office with a distance of 72 Km from Sidoarjo-Surabaya-Gresik and has 33 stops spread in the Sidoarjo-Surabaya-Gresik area.

2.4. Research Instruments

The instruments used in this research are interview guidelines and observation sheets or observation guides as data collection instruments.

2.5. Data Collection Procedure

In this study, data collection was obtained from interviews with parties involved in the operation of Transjatim Corridor I on the Sidoarjo-Surabaya-Gresik route, then documented as data used in the process of conducting research later. Based on its type, the data collected in this study can be categorized as follows:

a. Primary Data

The data collection process in supporting this research was obtained by interviewing the Transjatim Corridor I bus operator company regarding component costs and the price of each component used in vehicle operations.

b. Secondary Data

Secondary data collection was obtained from relevant agencies, namely the East Java Provincial Transportation Office, with the following data details:

a) Vehicle characteristics
b) Route length
c) Number of passengers

2.6. Data Analysis Technique

Data analysis is the process of systematically searching and compiling data obtained from interviews, field observations, information documentation and literature studies, then sorting according to what the research will do.

2.7. Investment Cost Analysis

Identify and analyze data related to investment costs for bus procurement and supporting equipment in providing good services to the community.

a. Expenditure Analysis

Identify and analyze data related to expenses, namely Transjatim Luxury bus operating costs which include:

a) Operating costs
b) Maintenance costs
c) Maintenance costs

b. Revenue Analysis

Identify and analyze the data that has been obtained related to income which includes:

a) Route length
b) Vehicle capacity
c) Service fare

2.8. Investment Evaluation Analysis

From the results of primary and secondary data collection related to the investment feasibility factors of the Transjatim Corridor I Luxury bus route Sidoarjo-Surabaya-Gresik, then a sensitivity analysis is carried out so that it can be known changes in factors that are most influential in the success or failure during the implementation of the Transjatim Corridor I Luxury bus investment Sidoarjo-Surabaya-Gresik route (Astuti et al., 2017).

Sensitivity analysis takes into account the effect of changes in each factor reviewed on the performance of investment revenue determined by indicators of Net Present Value (NPV), Internal Rate of Return (IRR), Benefit Cost Ratio (BCR) and Payback Period (PP) (Yan & Zhang, 2022).

3. RESULTS AND DISCUSSION

3.1. Transjatim Overview

Transjatim is a public transportation service system in the form of transit buses on an intercity and/or district network within the scope of an urban agglomeration area in East Java such as Gerbangkertosusila (Mangara, 2023). This service adopts a service purchase scheme (buy the service) as well as the scheme in the Teman Bus service. The service was initiated by the East Java Provincial Transportation Office. Corridor I on the Sidoarjo-Surabaya-Gresik route will be the first corridor to be operated since August 19, 2022. A total of 22 units of medium buses with a high-deck design are used to serve the 72 km route. The corridor will be connected to many other modes of public transportation such as regular city buses, Suroboyo Bus, Trans Semanggi Suroboyo and Wirawiri Suroboyo feeder.

Based on the recapitulation of passengers and revenue Transjatim corridor I in 2023 obtained an average load factor of 120% with an average passenger 5-6 thousand passengers per day, this is the reason for the addition of a fleet with Luxury service. The difference between Transjatim buses operating today and those that will be luxury is the comfort of passengers. At this time the passenger capacity on the Transjatim bus is 20 sitting and 14 standing, but in the luxury service there are no standing passengers, all sitting.

3.2. Research Results

Calculation of investment evaluation of Transjatim Bus corridor I Luxury was carried out with several alternatives, as follows:

a. Alternative 1

Alternative 1 uses a tariff of Rp. 17,500 assuming a Load Factor of 70%, the analysis is presented in the following table.

Table 1. Investment Using the Rp. 17,500 Tarif

Yr	Revenue (Rp.)	Spending (Rp.)	Cash Flow (Rp.)	Net Cash Flow (Rp.)
0		- 8.193.389.625	- 8.193.389.625	- 8.193.389.625
1	5.723.200.000	- 4.280.889.625	1.442.310.375	- 6.751.079.251
2	5.723.200.000	- 3.928.389.625	1.794.810.375	- 4.956.268.876
3	5.723.200.000	- 3.575.889.625	2.147.310.375	- 2.808.958.501
4	5.723.200.000	- 3.223.389.625	2.499.810.375	- 309.148.126
5	5.723.200.000	- 2.872.343.758	2.850.856.242	2.541.708.115
6	5.723.200.000	- 2.519.843.758	3.203.356.242	5.745.064.357
7	5.723.200.000	- 2.167.343.758	3.555.856.242	9.300.920.598

Source: Processed by Researcher, 2024

Based on table 1, it can be seen that alternative 1 using a tariff of Rp. 17,500, Net Cash Flow is positive in year 5 with a value of Rp. 2,541,708,115.

b. Alternative 2

Alternative 2 uses a fare of Rp. 16,000 assuming a Load Factor of 70%, the analysis is presented in the following table.

Table 2. Investment Using the Rp. 16,000 Tarif

Yr	Revenue (Rp.)	Spending (Rp.)	Cash Flow (Rp.)	Net Cash Flow (Rp.)
0		- 8.193.389.625	- 8.193.389.625	- 8.193.389.625
1	5.232.640.000	- 4.280.889.625	951.750.375	- 7.241.639.251
2	5.232.640.000	- 3.928.389.625	1.304.250.375	- 5.937.388.876
3	5.232.640.000	- 3.575.889.625	1.656.750.375	- 4.280.638.501
4	5.232.640.000	- 3.223.389.625	2.009.250.375	- 2.271.388.126
5	5.232.640.000	- 2.872.343.758	2.360.296.242	88.908.115
6	5.232.640.000	- 2.519.843.758	2.712.796.242	2.801.704.357
7	5.232.640.000	- 2.167.343.758	3.065.296.242	5.867.000.598

Source: Processed by Researcher, 2024

Based on table 2, it can be seen that alternative 2 using a tariff of Rp. 16,000, Net Cash Flow is positive in year 5 with a value of Rp. 88,908,115.

c. Alternative 3

Alternative 3 uses a tariff of Rp. 15,000 with an assumed Load Factor of 70%, the analysis is presented in the following table.

Table 3. Investment Using the Rp. 15,000 Tarif

Yr	Revenue (Rp.)	Spending (Rp.)	*Cash Flow* (Rp.)	*Net Cash Flow* (Rp.)
0		- 8.193.389.625	- 8.193.389.625	- 8.193.389.625
1	4.905.600.000	- 4.280.889.625	624.710.375	- 7.568.679.251
2	4.905.600.000	- 3.928.389.625	977.210.375	- 6.591.468.876
3	4.905.600.000	- 3.575.889.625	1.329.710.375	- 5.261.758.501
4	4.905.600.000	- 3.223.389.625	1.682.210.375	- 3.579.548.126
5	4.905.600.000	- 2.872.343.758	2.033.256.242	- 1.546.291.885
6	4.905.600.000	- 2.519.843.758	2.385.756.242	839.464.357
7	4.905.600.000	- 2.167.343.758	2.738.256.242	3.577.720.598

Source: Processed by Researcher, 2024

Based on table 3, it can be seen that alternative 3 using a tariff of Rp. 15,000, Net Cash Flow is positive in the 6th year with a value of Rp. 839,464,357. From the three alternatives above, the results of the evaluation of the Transjatim Bus investment corridor I Luxury against the parameters that have been set are presented in the following table:

Table 4. Transjatim Luxury Investment Evaluation Results

Service Tariff Alternative	NPV (Rp)	IRR	BCR	PP (Year)	Conclusion
Alternative 1	5.204.972.631	19,42%	1,30	4	Worth
Alternative 2	2.466.479.592	12,54%	1,19	5	Worth
Alternative 3	640.817.566	7,74%	1,11	6	Worth

Source: Processed by Researcher, 2024

Based on the investment evaluation results presented in table 4, it can be concluded that:

a. Alternative scheme 1 produces an NPV value of Rp. 5,204,972,631, an IRR value of 19.42%, a BCR value of 1.30 and a PP value of 4 years, meaning that the investment is feasible to implement;
b. Alternative scheme 2 produces an NPV value of Rp. 2,466,479,592, an IRR value of 12.54%, a BCR value of 1.19 and a PP value of 5 years, meaning that the investment is feasible to implement;
c. scheme 3 produces an NPV value of Rp. 640,817,566, an IRR value of 7.74%, a BCR value of 1.11 and a PP value of 6 years, meaning that the investment is feasible to implement.

4. CONCLUSION

From the results of the calculation and analysis of the financial investment feasibility of Transjatim Bus Corridor I Luxury route Sidoarjo-Surabaya-Gresik, it can be concluded as follows. Based on data analysis, an expenditure cost of Rp 8,207,989,625 was obtained at the beginning of the investment, and with the assumption of 70% passenger numbers, the following revenues were obtained: Alternative 1 with a fare of Rp 17,500 generates revenue of Rp 5,723,200,000; Alternative 2 with a fare of Rp 16,000 generates revenue of Rp 5,232,640,000; and Alternative 3 with a fare of Rp 15,000 generates revenue of Rp 4,905,600,000.

Based on the financial analysis using a 6% Discount Rate, the following results were obtained: Alternative 1 has an NPV value of Rp 5,204,972,631 (greater than 0), IRR value of 19.42% (greater than Discount Rate 6%), BCR value of 1.30 (greater than 1), and PP value of 4 years, making it feasible to implement. Alternative 2 has an NPV value of Rp 2,466,479,592 (greater than 0), an IRR value of 12.54% (greater than Discount Rate 6%), a BCR value of 1.19 (greater than 1), and a PP value of 5 years, making it feasible to implement. Alternative 3 has an NPV value of Rp 640,817,566 (greater than 0), an IRR value of 7.74% (greater than Discount Rate 6%), a BCR value of 1.11 (greater than 1), and a PP value of 6 years, making it feasible to implement.

Suggestions that can be given are as follows. First, the East Java Provincial Government in determining tariff setting policies can consider choosing the lowest alternative tariff scheme so that the difference with the "buy the service" service tariff is not too far and can still be reached by people using transportation services with limited purchasing power, so that people do not return to using motorbikes. Second, for operators or managers, it is necessary to hold a promo system and socialization about the advantages

of services provided by Transjatim Luxury buses, which have a fleet of buses and better facilities, while still improving service, comfort, and safety.

Third, for students who want to continue the research, it is necessary to add other revenues generated by Transjatim bus operations, such as transit advertising, with the aim of obtaining all the benefits obtained from Transjatim operations, increasing profits, and shortening the cost recovery period.

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