

**LOAN FEASIBILITY ANALYSIS IN JABODEBEK LIGHT RAIL TRANSIT (LRT)
PROJECT INVESTMENT PHASE ONE IMPACT OF THE COVID 19 PANDEMIC****Agus Yuliyanto¹, Harry Purwoko², Prasadja Ricardianto³, Honny Akira Sembiring⁴**¹²³⁴**Institut Transportasi dan Logistik Trisakti, Jakarta, Indonesia**agus_simuk@ymail.com, harrypurwoko2014@gmail.com, ricardianto@gmail.com,
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Abstract: Efforts to overcome congestion in Jakarta has been carried out in various ways, ranging from regulations, road construction, and policies made by the Government. The next step is to build transportation that can carry many passengers and efficiently, such as the construction of rail-based transportation. For the time being, the construction being carried out is the Jabodebek Light Rail Transit (LRT) Project. The last investment amounted to Rp32.5 trillion, of which the loan amount was Rp 22.3 trillion and Rp10.2 in the form of PMN. To find out the feasibility of the loan in financing the Jabodebek LRT Project using Payback Period, NPV, PI or BC analysis, and IRR. The results of the analysis show the value of the Payback Period for 35 years, 1 month, 11 days. For the NPV result is negative, the PI result is below one, and the IRR value is below the loan interest rate. This result means that the Jabodebek LRT Project financed from a loan of Rp. 22.3 trillion is not feasible or less profitable. This is because the target number of passengers on average of 116,000 people per day is still too small, thus the target for acceptance is also not too large.

Keywords: *Feasibility of the project, investment, loan, LRT*

Introduction

Traffic density in the city of Jakarta is a daily sight that has not been solved during rush hours. Construction of new roads and traffic management have been carried out, but the results have not been maximized. Jakarta as a metropolitan city which is the center of government, industry, office, administration, trade, business, and urbanization from all over Indonesia, as well as the arrival of foreigners who have activities in Jakarta. As a result, the population is increasing due to the arrival and birth rates. The large number of people living in Jakarta, whether they come and go every day, or stay in Jakarta, creates a population, residence, and traffic density. Traffic density due to road facilities can no longer accommodate road users which causes congestion at peak hours, consequently, it is necessary to increase the number of roads over time. Another impact of Jakarta's buffer cities, namely Bekasi, Bogor, Depok, and Tangerang, is also experiencing urbanization, industrial and housing development due to the increase in population.

Many people who live in Bekasi, Bogor, Depok, and Tangerang, even from Cianjur, Sukabumi, Kerawang, Purwakarta work in Jakarta. They go to their workplaces in Jakarta using private cars, motorbikes, and public transportation, such as buses and trains. The growth of motorized vehicle users is greater than the number of roads and the construction of new roads, so that traffic jams during peak hours are inevitable. The number of existing roads cannot accommodate the number of road users. Therefore, the right step is to build a railroad track.

The most effective way to reduce the number of road users is to build rail-based passenger transport. Rail-based public transportation has its own path, there is no speeding and overtaking, and the carrying capacity is a lot for one train. To build a rail-based network requires a large budget, especially if the rail line is above or elevated. Likewise, the construction of rail-based passenger transportation, for example, the Jabodebek Light Rail Transit (LRT) Project requires large costs. Related to this condition, a study is conducted to find out more about Loan Feasibility Analysis in Jabodebek Light Rail Transit (LRT) Project Investment Phase One Impact of the Covid 19 Pandemic.

Literature Review

The vision of the Department of Transportation as stated in the 2013-2017 Strategic Plan is to realize a New Jakarta through the provision of reliable, modern, and internationally competitive transportation services, with public transportation as the main service. The programs made are Rail-Based Mass Public Transportation Development, namely: 1. Mass Rapid Transit (MRT). The rail-based public transportation development program is a program created by the DKI Jakarta Government for the 2013-2017 period which is mandated to the DKI Jakarta Transportation Agency. This program aims to reduce the level of congestion in DKI Jakarta by building the MRT as rail-based mass public transportation. 2. Light Rail Transit (LRT) or Light Rail is one of the passenger train systems operating in urban areas whose construction is light and can be operated along with other vehicle traffic or on a track specifically designated for light rail.

The objectives of the LRT development are: 1. Increasing the service coverage of the mass public transportation system in Jakarta, 2. Increasing the capacity of the public transportation system in Jakarta, 3. Improving the quality of service of the public transportation system, 4. Improving coordination in the provision of the public transportation system, and 5.

Integrating with other modes of transportation. To build this Rail-Based Mass Public Transportation requires extensive funds, therefore investors or funds from bank loans are needed. Loans or investments are obtained, if the project being financed is profitable. Investors or banks that provide investment funds or loans always expect to get a return plus profit as the excess of the money invested. As a consequent, the project must be feasible, with careful planning hoping the project will be successful and generate large profits. For the success of a project, a Project Feasibility Study must be carried out, by conducting research and calculating data where the research results show that the project is feasible and profitable if it is carried out. If the result is not feasible, it means the project is cancelled. As the opinion of A. Hamdan Dimiyati and Kadar Nurjaman (2016) stated that a Project Feasibility Study is a research activity on whether or not a project (usually an investment project) is carried out successfully.

To analyze the feasibility of a project with funding from an investment or loan, several methods are used as follows: 1. Payback Period. In this method, the factor that determines the acceptance or rejection of an investment proposal is the period of time required to recoup the investment. Therefore, with this method, each investment proposal is assessed based on whether within a certain period of time desired by management, the amount of cash inflows or cash savings obtained from investments can cover the planned investment. To calculate the payback period is to compare the investment and net cash inflows, the result is the investment payback period. 2. Net Present Value Method. The Net Present Value (NPV) technique is a technique based on discounted cash flows. A measure of the profit in rupiah obtained from an investment that is currently valued. The NPV of a project is determined by calculating the present value of the cash flows obtained from operations using the desired profit rate and then subtracting it from the initial net cash outlay.

NPV = present value of operating cash flows – initial net cash disbursements; I_0 = investment value or outlays; A_t = net cash flow in period t ; r = discount rate; t = project life.

$$NPV = -I_0 + \sum \frac{A_t}{(1+r)^t}$$

If the NPV of a project is positive, it means that the project is expected to increase the value of the company by the positive amount of the calculated NPV of the investment and also that the investment is expected to generate a higher rate of return than the desired rate of return.

3. Profitability Index (PI)/Benefit Cost Ratio (BC) PI is the cash value of all cash inflows received after the initial investment divided by the initial investment. If there are several alternative projects, then management should choose the project that has a larger PI, the one with the highest value. 4. Discounted Cash Flows Method/Internal Rate of Return (IRR) Basically this method is the same as the present value method, the difference is that the present value of the return rate has been determined in advance, while in discounted cash flow it is the return rate that is calculated as the basis for accepting or rejecting an investment proposal. Determination of the rate of return is done by trial and error method, in the following way: a. Find the cash value of net cash inflows at an arbitrarily chosen rate of return above or below the expected rate of return on investment. b. Interpolate the two change rates to get the actual change rate.

$$IRR = P1 - C1 \frac{P2 - P1}{C2 - C1}$$

The information is for r = internal rate of return sought, $P1$ = 1st interest rate, $P2$ = 2nd interest rate, $C1$ = 1st NPV, $C2$ = 2nd NPV.

Discussion and Analysis

I. Legal basis

The construction of the Jabodebek LRT project is based on Presidential Decree No. 98 of 2015 concerning the Acceleration of Integrated Light Rail Transit in the Jakarta, Bogor, Depok, and Bekasi areas. This Presidential Regulation stipulates that the construction of the Jabodebek LRT will be carried out by PT Adhi Karya. The development includes elevated construction tracks, stations, and operating facilities. Furthermore, PT Adhi Karya prepares technical documents and budget documents for the development plan which will be approved by the Minister of Transportation. This Presidential Regulation also stipulates the existence of a supervisory committee that will oversee the LRT project carried out by PT Adhi Karya, and asks the relevant Regional Heads to adjust their respective Regional Spatial Plans (RTRW) with the existence of the LRT project.

In 2016, Presidential Regulation Number 98 of 2015 was amended by Presidential Regulation Number 65 of 2016 which assigned PT Adhi Karya to build depot infrastructure, from the previous construction of flyovers, stations and operating facilities. The construction method uses a design and built pattern and uses a standard gauge width (1,435 mm). In this presidential regulation, PT Kereta Api Indonesia was appointed as the operator of the Jabodebek

LRT. PT KAI is assigned as the operator of facilities which consists of procurement of facilities, operation of facilities, maintenance of facilities, and exploitation of facilities, operation of automatic ticketing systems and operation and maintenance of infrastructure. PT KAI is also allowed to cooperate with other business entities to integrate the Jabodebek LRT with other modes.

In 2017, the Presidential Regulation was amended again with Presidential Decree No. 49 of 2017. This change is based on changes to the Jabodebek LRT funding scheme. LRT project funding no longer uses APBN. PT KAI as the LRT operator becomes the main investor and seeks funding for the Jabodebek LRT. Even so, the state provided State Equity Participation (PMN) to PT KAI and PT Adhi Karya as funding assistance.

2. Data Study and Analysis

The advantage of Rail-Based Mass Public Transportation is that the capacity of road services is increasingly limited, and the increasing population causes the number of road users to increase. As a result, congestion arises, because the road area cannot accommodate its users. The right solution to overcome the congestion problem is the transition from motorized vehicle transportation to rail-based mass transportation which has shown its competitive side and advantages over other land transportation. This advantage cannot be separated from the increasing development of railway technology so that this transportation becomes faster, safer, more comfortable, energy efficient and environmentally friendly. In addition, the existence of rail-based mass transportation has more carrying capacity than other land transportation modes, fuel energy consumption is more efficient and efficient, and the price of tickets is relatively affordable. Currently, rail-based mass public transportation in DKI Jakarta is still lacking, while people prefer mass public transportation that is fast and on time. Rail-based public transportation such as MRT and LRT are expected to be a solution to overcome congestion in DKI Jakarta. In order to overcome congestion in Jakarta, the Government built the Jabodebek LRT that connects Jakarta, Bogor, Depok and Bekasi. The main objective is to divert private car and motorcycle users from the area to the Jabodebek LRT, so that congestion in Jakarta is minimally reduced. The construction of the Jabodebek LRT Project began with the groundbreaking of the Jabodebek LRT carried out on September 9, 2015 by President Joko Widodo. This groundbreaking was

carried out in an area near the planned TMII Station, and as the Phase I construction of the Jabodebek LRT Project.

The Jabodebek LRT project or light flyover is operated with Grade of Automation (GoA) level three or without a driver, which has been applied for the first time to the railway system in Indonesia. This light flyover, continued Entus, has a 44 kilometer (km) line with three tracks, namely East Bekasi – Cawang, Cibubur – Cawang and Cawang – Dukuh Atas. To accommodate community mobilization needs, KAI provides 18 Jabodebek LRT stops. Each Jabodebek LRT series consists of 6 (six) trains that can be operated without a driver. The Jabodebek LRT is projected to be able to serve 116,000 users per day at the beginning of its operation and is expected to increase to 474 thousand users per day by 2071.

The initial construction of the Jabodebek LRT required a large budget of IDR 29.9 trillion. The completion of the Jabodebek LRT construction and operation has been delayed several times. The impact is the swelling of investment in this project, which according to the President Director of PT Kereta Api Indonesia (Persero) Didiek Hartantyo is the cause of investment in the Jabodebek Integrated Highway Train or LRT project, delays and investment swelling, due to two main reasons. : 1. There is a shift in the COD (commercial operation date) target from 2019 to 2022, especially related to land acquisition at the East Bekasi Depot. 2. The impact of the Covid-19 pandemic has caused pre-operational project costs, interest during construction (IDC) costs, and other costs to soar. As of 2021, the investment value for the national strategic project will be IDR 32.5 trillion. In the initial calculation, the investment value of the Jabodebek LRT was IDR 29.9 trillion.

Investment in the Jabodebek LRT Project was obtained through two sources, namely through PMN to PT KAI in the amount of Rp. 10.2 trillion. The rest of the need was met from syndicated credit loans from 15 banks with a total loan of Rp. 22.3 trillion, bringing the total project value to Rp. 32.5 trillion, and the Government offered an interest rate of 8.25%. 000, which was originally planned for Rp 12,000. The management of Jabodebek LRT facilities and operators by PT KAI, according to the agreement in December 2017, PT KAI officially signed an agreement with the Ministry of Transportation. The agreement appointed PT KAI as the operator of the Jabodebek LRT facilities and operators. The agreement includes an infrastructure concession for 50 years to PT KAI. The investment value for the operation of the infrastructure and facilities by PT KAI amounted to Rp. 32.5 trillion. The funding scheme that originally came

from the APBN was also changed to partly State Capital Participation (PNM) and partly by bank loans. Light Rail Transit (LRT) or the Jabodebek light flyover is planned to start operating in in June 2022. The average number of target passengers is 116,000 people per day.

The results of data analysis to calculate the feasibility of the Jabodebek LRT project with a 50-year payback are: 1. Payback Period Based on the investment from the loan, the Phase I Jabodebek LRT Project will return for 35 years, 1 month, 11 days. 2. Net Present Value Based on the calculation of the NPV value of – Rp. 14,748,033,521,000, the loan for the Jabodebek LRT Project Phase I is not profitable for a period of 50 years, because it is negative. 3. Profitability Index (PI) or Benefit Cost Ratio (B/C) The result of the PI is $0.33564 = 33.564\%$ this value is lower than one, then the investment for the Jabodebek LRT Project Phase I is not profitable for a period of 50 years, 4. Internal Rate of Return (ROR) Based on the calculation results, the IRR is 2.084% below the loan interest rate of 8.25%, meaning that the Jabodebek LRT project is not feasible or profitable.

Based on the results of all the calculations above, it shows that: 1. Payback Period as a result of which the Jabodebek LRT Project Phase I loan will return for 35 years, 1 month, 11 days. 2. The results of the NPV calculation show that the Phase I Jabodebek LRT Project is not profitable for a period of 50 years, because the NPV has a negative value of -- Rp. 14,748,033,521,000. 3. The results of the calculation of the Profitability Index (PI) or Benefit Cost Ratio (B/C) show $0.33564 = 33.564\%$, where this value is lower than one, which means the Jabodebek LRT Phase I Project is not feasible or not profitably financed from loan. 4. The result of the IRR calculation is 2.084%, this condition is below the loan interest rate of 8.25%, meaning that the Jabodebek LRT project is not feasible or profitable.

The main thing about the unfeasibility of this project is that the target number of passengers of 116,000 people per day is still too small. This amount is still insufficient to cover the large investment in the Jabodebek LRT Project Phase I specifically for loans or in its entirety. The target is for the mobility of public transport passengers in Jabodebek to reach more than 116,000 passengers. To increase ticket prices from the average price of Rp. 15,000 per person is a difficult thing for the initial stage. If the Jabodebek LRT has been running for 5 years, then the tariff increase is reasonable. In this case, the calculation uses a tariff of Rp. 15,000 for a period of 50 years.

Conclusion

1. The Jabodebek LRT Phase I project has an investment value of Rp. 32.5 trillion, with a PMN allocation of Rp. 10.2 trillion, and loans of Rp. 22.3 trillion.
2. The results of the calculation of the Payback Period of the Jabodebek LRT Project Phase I loan will return for 35 years, 1 month, 11 days.
3. The results of the calculation of NPV, BC and IRR on loans for the Jabodebek LRT Project Phase I show that the conditions are not feasible or not profitable.
4. The target number of passengers of 116,000 people per day is still too small to achieve the investment feasibility of the Jabodebek LRT Project Phase I which comes from loans.

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