



FEASIBILITY STUDY OF TANK CAR INVESTMENT FOR FUEL DISTRIBUTION AT FUEL TERMINAL IN GARUT AREA

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Abstract

This study examines the effectiveness and economic feasibility of purchasing and leasing a fleet of tankers for fuel distribution to gas stations. The fleet used consists of 10 units with various capacities. The results show that the initial investment for purchasing reached Rp19,377,842,022.10, while the rental cost was only Rp17,925,390,000. The annual operating cost for purchasing was recorded at Rp53,193,591,706.93, higher than the rental cost of Rp51,585,649,513.20. Despite the higher operating costs, the annual depreciation for purchasing was recorded at Rp1,695,561,201.60 with a BEP value of Rp150,600,071,968.05. From a financial perspective, the IRR for leasing reached 18%, slightly lower than the purchase which reached 19%. However, the PV value of income from leasing is greater, namely Rp199,184,815,732.30, compared to purchasing which is only Rp199,509,891,668.76. Based on the analysis of the profitability index and the investment payback period, the leasing scheme is proven to be more effective and feasible than purchasing, both in terms of initial costs, operational costs, and long-term profit potential, and is more feasible to implement.

Keywords: Feasibility Study, Distribution, Investment, Lease



INTRODUCTION

Indonesia, as the world's largest archipelagic nation, faces significant challenges in the distribution of goods and services, particularly fuel oil (BBM). Indonesia's fuel distribution system is one of the most complex in the world, with three main stages: upstream, midstream, and downstream. According to Kushariyadi and Sugito (2022), fuel demand continues to increase in line with economic and population growth, making it a vital primary need to support transportation. Fuel terminals, which function to receive, store, and distribute fuel, play a crucial role in this supply chain, with a focus on downstream processes. Fuel distribution strategies must also be continuously adapted to infrastructure developments and road conditions (Supardi, 2020).

The high demand for fuel affects distribution activities at fuel terminals, including the Garut Fuel Terminal. The distribution process in this region utilizes tanker trucks with varying capacities (8KL, 16KL, and 24KL). However, challenges arise with the suboptimal number of tanker trucks. Excessive numbers result in high distribution and rental costs, while a shortage of vehicles can delay distribution times and increase the workload of fuel crews. Therefore, a more in-depth evaluation of the number of tanker trucks required is needed to improve fuel distribution efficiency in the region.

One of the key components in fuel distribution is the tanker truck, which plays a crucial role in the delivery process from terminals to gas stations or end consumers. The operational efficiency of these vehicles directly impacts supply chain performance, including travel time, fuel consumption, and carrying capacity. Operational challenges include long routes, poor road conditions, and fluctuating fuel prices. Some strategies to improve operational efficiency include regular maintenance, the use of lighter yet more robust vehicle designs, and driver training in energy-efficient driving techniques.

In fuel distribution management, managing a fleet of tankers is crucial. One strategic decision a company must make is whether to purchase or lease tankers. A feasibility analysis of these two options should consider factors such as distribution volume, frequency of use, and the company's financial condition. A sound decision can optimize operational efficiency and minimize long-term costs. Investing in a tanker provides complete control over delivery schedules and vehicle maintenance, as well as reducing ongoing rental costs. However, leasing a tanker also offers several advantages, such as operational flexibility and reducing the risk of vehicle damage for which the company is responsible.



This study aims to evaluate the economic feasibility of investing in tanker trucks at the Garut Fuel Terminal, considering various factors that influence investment decisions. This feasibility study will provide a deep understanding of the potential benefits and impacts on fuel distribution control, particularly Pertamina products, in distribution activities to gas stations. It is hoped that the results of this study can provide useful recommendations for oil and gas companies in making strategic decisions regarding fuel transportation fleet investments, in order to improve distribution efficiency and minimize losses in the fuel supply chain (Supardi, 2020; Faiz, n.d.).

RESEARCH METHOD

This study uses a quantitative approach, which focuses on the collection and analysis of numerical data to determine the economic feasibility of investing in tank cars to improve the efficiency of fuel distribution at PT X's Fuel Terminal. The quantitative method was chosen because the decision-making process in this study is based on calculations of operational data on tank cars that are not functioning optimally, which can be detrimental to the company. The data sources used are secondary data, obtained through indirect research, including literature studies and internal publications from related companies. The data used includes information on tank car investments, Pertamina product prices, tank car operational costs, as well as tank car investment and operational data from the company.

Data collection was conducted through a literature study involving the search and analysis of sources such as scientific journals, books, articles, and other documents relevant to the research topic. Secondary data was also obtained through internal company publications. Data processing in this study included technical and economic feasibility analysis. The technical aspect focused on comparing the price of the company's own tanker with the rental system through a vendor. Meanwhile, the economic aspect analyzed the investment feasibility by calculating the company's costs and potential profits over a certain period, using methods such as Total Capital Investment, Total Annual Cost, Present Value (NPV), Internal Rate of Return (IRR), Payout Time (POT), and Profitability Index (PI).

The data analysis techniques used include the NPV method to identify the investment costs of tanker trucks, the Total Capital Investment method to calculate the initial investment costs, and the Total Annual Cost method to calculate annual expenditures, including direct, indirect, and recovery credit



costs. In addition, an economic feasibility analysis was conducted using the payback period, internal rate of return, break-even point (BEP), and profitability index calculations to evaluate the potential profits from implementing tanker truck investments.

RESULTS AND DISCUSSION

Definition, Objectives, Benefits, and Approaches to Achievement

This study compares the feasibility of purchasing and leasing tankers for fuel distribution to gas stations at Company X, to optimize the effectiveness of the company's logistics operations. This comparative study considers not only financial aspects but also sustainable fuel distribution strategies. Decisions regarding investment or leasing have long-term impacts on the cost structure, operational capabilities, and sustainability of fuel distribution to gas stations.

3D Design Creation for Tank Truck Investment

24 KL Tank Car Design

During the design stage, a 3D design of a 24-kilogram tanker was created using SketchUp. The design process began with determining the tanker's head truck model and required capacity. This design depicts the entire tanker, from the head truck to the accessories, in accordance with Pertamina standards.

Figure 1
24 KL Tank Truck Exterior Visual

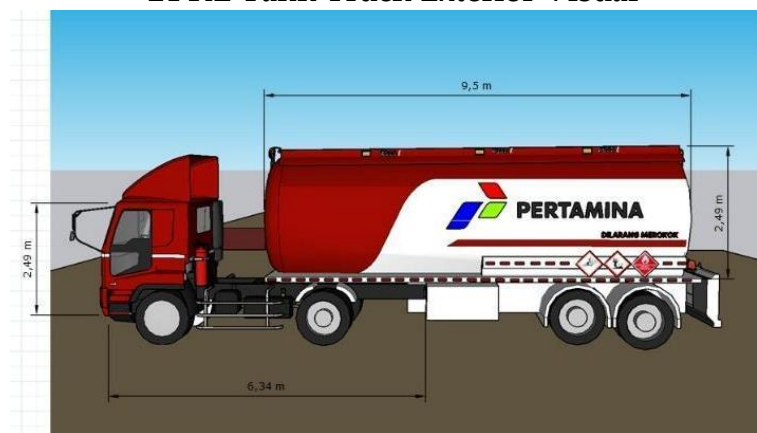


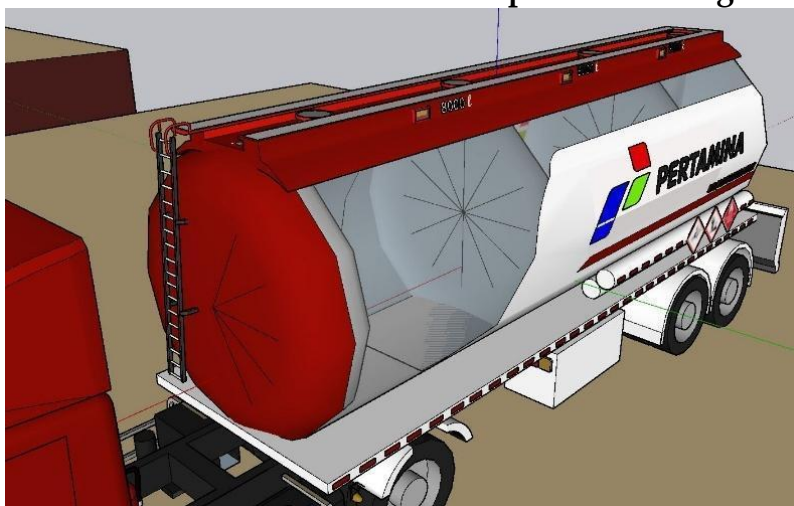
Figure 1 is a visual design of a 24000 Liter tanker highlighted from the outside of the tanker. The car consists of a Hino-branded tractor head unit and is red in color on the front, which functions as the main driver, equipped with a driver's cabin. The rear consists of a large cylindrical tank with a storage capacity of 24,000 Liters, colored red and has a Pertamina logo that is clearly visible on the side of the tank, placed on a trailer frame (chassis).



Tank Car Compartment Design

Figure 2

Tank Car Compartment Design Visual



16 KL Tank Car Design

Figure 3

16 KL Tank Truck Exterior Visual

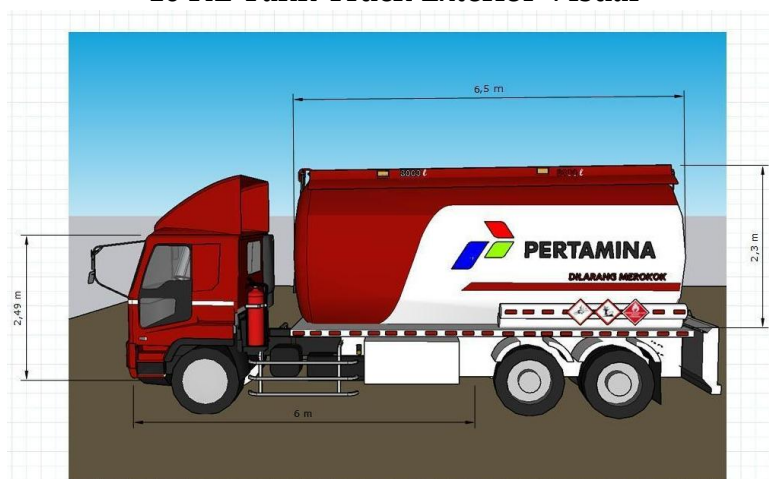
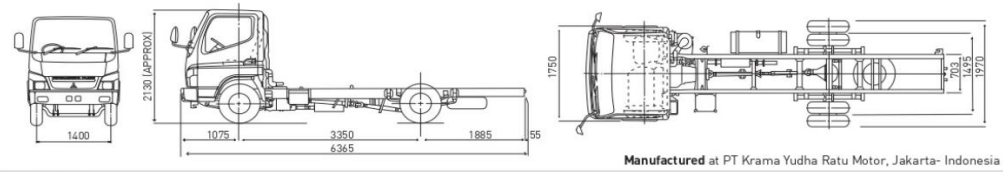


Figure 3 shows the visual design of a 16,000-liter tanker, seen from the outside. The tanker consists of a red cabin at the front as the driver's control room, complete with a windshield and side doors. At the rear, there is a large red cylindrical tank with a capacity of 8,000 liters, which has two compartments for transporting fuel. This tank is mounted on a chassis frame with a dual axle configuration at the rear to distribute the load.

8 KL Tank Car Design

Figure 4

Source Sketch (Mitsubishi Website)



The chassis dimensions of the Mitsubishi Canter double 6 tire FE 74 HD N truck are 5,960 mm long, 1,970 mm wide, and 2,245 mm high. With these dimensions, the recommended body size is 4,300 mm long, 2,100 mm wide, and 2,300 mm high.

Hino Truck Head Design

Figure 5
Hino Truck Visual Head



The front (head truck) of the Hino brand fuel tanker truck is red. This truck is the main driving unit for fuel tankers that can pull tanks with a capacity of 32 KL or 16 KL, there is a front grill section with the Hino logo and a bumper design with headlights and turn signals at the bottom. The left and right mirrors are clearly visible installed on the side of the cabin, extending to provide a good view range, to provide visibility to the rear and side areas of the vehicle, overcoming blind spots that arise due to the large and long size of the tanker truck, functioning to monitor the condition of the load and the physical condition of the tank during the trip.

Rear View Visual

Figure 6
Back View



This tanker has a multi-axle configuration with multiple wheels at the rear to distribute the tank's heavy load. A hazard warning symbol is displayed on the bottom of the tank, indicating the flammable nature of the cargo. In terms of accessories and equipment, this tanker is equipped with pipes and valves at the bottom of the tank, which are used for loading and unloading fuel. An access ladder is also visible on the side of the tank, allowing operators to climb to the top for inspection or filling.

HAZMAT (Hazardous Materials)

Figure 7
Hazardous Symbols



The tanker is equipped with safety features, including hazard symbols on the tank body, warning lights, and possibly a toolbox. The image shows red "No Smoking" written on the white tank body, as well as three diamond-shaped hazard symbols indicating the cargo hazards: explosives, oxidizing materials, and flammable materials. On the underside, dual wheels are visible to support the load, and a spillage tray with a red and white stripe serves as a visual marker for hazardous areas and the vehicle's dimensions. All safety elements are designed



to minimize the risk of fire, explosion, or environmental contamination during transportation and the fueling and unloading processes.

Determining the Investment Value of Tank Trucks

Determining the investment value for a fuel tanker, whether through purchase or rental, is a strategic decision that has a significant impact on the company's financial performance.

Total Capital Investment

Table 1
Investment Value Data for Buying a Tank Truck

No	Barang	Satuan	ukuran	Harga	Jumlah	Harga Total (PPN 11%)
INVESTASI CHASSIS						
1	Hino 500 Trailer Head SG 280 TH ABS	6	Unit	6,34 x 2,49	Rp 1,142,200,000	Rp 6,853,200,000
2	Mitsubishi Fuso FN 527 MS K 220 PS	3	Unit	6 x 2,49	Rp 985,000,000	Rp 2,955,000,000
3	Mitsubishi Fuso 75 HD N 136 PS	1	Unit	5,96 x 1,97	Rp 487,400,000	Rp 541,014,000
						Rp 11,428,116,000
INVESTASI TANGKI						
4	Karoseri Tangki BBM Kapasitas 24 KL Bahan mild Steel	6	Unit	9,5 x 2,5	Rp 775,000,000	Rp 4,650,000,000
5	Karoseri Tangki BBM Kapasitas 16 KL Bahan mild Steel	3	Unit	6,5 x 2,3	Rp 385,000,000	Rp 1,155,000,000
6	Karoseri Tangki BBM Kapasitas 8 KL Bahan mild Steel	1	Unit	4,3 x 2	Rp 135,000,000	Rp 149,850,000
						Rp 6,593,400,000
AKSESORIS AMT						
7	Epoxy	10	Unit	24 m	Rp 28,000,000	Rp 310,800,000
8	APAR 9kg	10	Unit		Rp 1,473,000	Rp 14,730,000
9	Vapour Adaptor	10	Unit		Rp 2,950,000	Rp 29,500,000
10	Sensor dan soket overfill	10	Unit		Rp 3,300,000	Rp 33,000,000
11	Bottom-loading adaptor	10	Unit		Rp 1,750,000	Rp 17,500,000
12	Kinpin	10	Unit		Rp 410,999	Rp 4,109,990
13	Dip gauge	10	Unit		Rp 123,456	Rp 1,234,560
14	Landing leg	10	Unit		Rp 1,500,120	Rp 15,001,200
15	Driver Fatigue Monitoring System (DFMS)	10	Unit		Rp 3,400,000	Rp 34,000,000
16	Camlock Interlok System	10	Unit		Rp 1,100,000	Rp 11,000,000
17	Konektor Kelistrikan dan ABS tangki semi-trailer	10	Unit		Rp 250,000	Rp 2,500,000
18	Suspension Frame	10	Unit		Rp 533,984	Rp 5,339,840
19	Roda	120	Unit		Rp 6,450,000	Rp 774,000,000
Jumlah						Rp 1,356,326,305
Jumlah Investasi Capex						Rp 19,377,842,305

The investment for the procurement of fuel transportation fleet at Company X totaled Rp 19,377,842,305 (including 11% VAT). This investment is divided into three categories: chassis, tanks, and equipment accessories. For the chassis, the company purchased 6 units of Hino 500 Trailer Head SG 280 TH ABS (Rp 7.61 billion), 3 units of Mitsubishi Fuso FN 527 MS K 220 PS (Rp 4.37 billion), and Mitsubishi Fuso 75 HD N 136 PS (Rp 541 million). Tank investment includes 6 units of 24 KL fuel tanks (Rp 5.16 billion) and 3 units of 16 KL tanks (Rp 1.16 billion). The investment cost per unit of 24 KL tank car is Rp 12.77 billion, for 16 KL Rp 4.56 billion, and for 8 KL Rp 690 million.

The equipment accessories category includes 10 units of epoxy (Rp 310.8 million), a Driver Fatigue Monitoring System (Rp 37.74 million), a Camlock Interlock System (Rp 12.21 million), and technical components such as vapor adapters, sensors, and overfill sockets. The largest investment is in structural components such as wheels, with a total of 120 units (Rp 887.78 million). All of these components are designed to support safe, efficient fuel distribution operations that comply with safety standards. Overall, the total investment of Rp 19.74 billion reflects the company's commitment to building a modern and reliable fuel transportation fleet.

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Table 2

Tanker Truck Rental Investment Value Data

	Item		Satuan	ukuran	Harga	Jumlah	Harga Total (PPN 11%)
AMT							
	Sewa MT 24 kl	6	Unit	/ thn	Rp 180,000,000.00	Rp 11,340,000,000.00	Rp 12,587,400,000.00
	Sewa MT 16 kl	3	Unit	/ thn	Rp 150,000,000.00	Rp 4,725,000,000.00	Rp 5,244,750,000.00
	Swa MT 8 kl	1	Unit	/ thn	Rp 84,000,000.00	Rp 882,000,000.00	Rp 93,240,000.00
							Rp 17,925,390,000.00

The total investment for renting Mobile Terminals (MT) with a capacity of 24 KL, 16 KL, and 8 KL reached Rp 17,925,390,000 (including 11% VAT). For MT 24 KL, the company rented 6 units at a cost of Rp 11,340,000,000 per unit for 10 years, which, after VAT, became Rp 12,587,400,000. For MT 16 KL, the company rented 3 units at a cost of Rp 4,725,000,000 per unit for 10 years, which, after VAT, became Rp 5,244,750,000. The rent for 1 unit of MT 8 KL was Rp 882,000,000, which, after VAT, became Rp 93,240,000. The price difference is due to additional features such as the Driver Fatigue Monitoring System (DFMS), which increases the rental value.

Operational Value Data

The operational value of a tanker refers to the total cost and efficiency associated with using a tanker vehicle for the distribution of fuel or other liquids. The more efficient the distribution route and the condition of the vehicle, the lower the operational value.

Total Annual Cost

Table 3

Operational Value Data for Purchasing Tank Trucks



No	Item		Satuan	ukuran	Harga	Jumlah	Harga Total (PPN 11%)
AMT							
Biaya Pengiriman Produk							
1	BBM (Dexlite)	494.4	liter	/bln	Rp 13,350.00	Rp 79,202,880.00	Rp 87,915,196.80
2	Gaji Pengemudi	20	org	/bln	Rp 2,328,000	Rp 46,560,000	Rp 620,179,200
3	Tenaga maintenance	5	unit	/bln	Rp 5,000,000	Rp 25,000,000	Rp 333,000,000
4	Maintenance mobil tangki	10	Unit	/bln	Rp 2,000,000	Rp 20,000,000	Rp 266,400,000
Biaya Kegiatan di FT							
5	Biaya Transportasi kilang-Terminal (Pipa)	10	km	/day	Rp 8,700,000	Rp 87,000,000	Rp 1,158,840,000
6	Biaya Loading Handling	1	kali	/day	Rp 2,000,000	Rp 2,000,000	Rp 26,640,000
7	Supervisor loading	1	kali	/bln	Rp 12,500,000	Rp 12,500,000	Rp 166,500,000
8	Operator senior	5	orang	/bln	Rp 12,500,000	Rp 62,500,000	Rp 832,500,000
9	Operator junior	5	orang	/bln	Rp 7,000,000	Rp 35,000,000	Rp 466,200,000
10	Helper/loborer	12	orang	/bln	Rp 4,500,000	Rp 54,000,000	Rp 719,280,000
11	Biaya Quality Control	5	unit	/bln	Rp 6,500,000	Rp 32,500,000	Rp 432,900,000
12	QC Supervisor	3	orang	/bln	Rp 12,500,000	Rp 37,500,000	Rp 499,500,000
13	QC Analysis	4	orang	/bln	Rp 7,200,000	Rp 28,800,000	Rp 383,616,000
14	Lab Technician	3	orang	/bln	Rp 6,300,000	Rp 18,900,000	Rp 251,748,000
15	Biaya Storage (penyimpanan)	10	unit	/thn	Rp 300,000,000	Rp 3,000,000,000	Rp 39,960,000,000
16	Listrik untuk pompa	10	kwh	/bln	Rp 16,445,000	Rp 157,872,000	Rp 2,102,855,040
17	Sistem keamanan & Fire Protection	5	unit	/bln	Rp 5,000,000	Rp 25,000,000	Rp 333,000,000
18	Maintenance Supervisor	2	orang	/bln	Rp 12,500,000	Rp 25,000,000	Rp 333,000,000
19	Mechanical technician	3	orang	/bln	Rp 7,500,000	Rp 22,500,000	Rp 299,700,000
20	Instrument technician	8	orang	/bln	Rp 7,500,000	Rp 60,000,000	Rp 799,200,000
21	Electrical technician	3	orang	/bln	Rp 7,000,000	Rp 21,000,000	Rp 279,720,000
Biaya Handling di SPBU							
22	Biaya unloading	2	unit	/day	Rp 6,500,000	Rp 13,000,000	Rp 173,160,000
23	Biaya dispensing equipment	2	unit	/day	Rp 8,600,000	Rp 17,200,000	Rp 229,104,000
24	Biaya kalibrasi & Testing	2	unit	/bln	Rp 2,500,000	Rp 5,000,000	Rp 66,600,000
25	Operator	1	orang	/bln	Rp 3,500,000	Rp 3,500,000	Rp 46,620,000
26	Biaya lainnya	10	Unit	/bln	Rp 4,728,627	Rp 47,286,266	Rp 629,853,068

The total project budget reached Rp 17,726,056,988, with the largest distribution in the categories of Product Delivery Costs (53.2%), IT Activity Costs (43.2%), and Handling Costs at Gas Stations (3.6%). The first category, "Product Delivery Costs," totaled Rp 9,429,804,880, with the largest item being Fuel (Dexlite) worth Rp 7,915,196,800 for 4,944 liters, followed by driver salaries of Rp 620,179,200. The second category, "IT Activity Costs," totaled Rp 7,666,418,040, with refinery-terminal (pipeline) transportation costs being the most expensive item, at Rp 1,158,840,000, as well as labor costs for senior Operators, Helpers, and QC Supervisors. The third category, "Handling Costs at Gas Stations," totals Rp 629,833,068, with the largest expense being other costs at Rp 629,833,068. The pricing structure shows a variety of rates, with the highest storage cost at Rp 300,000,000 per unit per month and the lowest for fuel (Dexlite) at Rp 1,600 per liter.

Tanker Truck Rental Operational Value Data

Table 4

Tanker Truck Rental Operational Value Data



	Item		ukuran	Harga	Jumlah	Harga Total (PPN 11%)
AMT						
Opex	Sewa MT 24 kd	6	/ thn	Rp 180,000,000	Rp 11,340,000,000.00	Rp 12,587,400,000.00
	Sewa MT 16 kd	3	/ thn	Rp 150,000,000	Rp 4,725,000,000.00	Rp 5,244,750,000.00
	Sewa MT 8 kd	1	/ thn	Rp 84,000,000	Rp 882,000,000.00	Rp 93,240,000.00
	BBM (Dexlite)	494.4	/b.ln	Rp 13,350	Rp 6,600,240.00	Rp 87,915,196.80
	Gaji Pengemudi	20	/b.ln	Rp 2,328,000	Rp 46,560,000.00	Rp 620,179,200.00
	Tenaga maintenance	5	/b.ln	Rp 5,000,000	Rp 25,000,000.00	Rp 333,000,000.00
	Maintenance mobil tangki	10	/b.ln	Rp 2,000,000	Rp 20,000,000.00	Rp 266,400,000.00
	Biaya kegiatan di FT					
	Biaya Transportasi kilang-Terminal	10	/day	Rp 8,700,000	Rp 87,000,000.00	Rp 1,158,840,000.00
	Biaya Loading Handling	1		Rp 2,000,000	Rp 2,000,000.00	Rp 26,640,000.00
	Supervisor loading	1		Rp 12,500,000	Rp 12,500,000.00	Rp 166,500,000.00
	Operator senior	5		Rp 12,500,000	Rp 62,500,000.00	Rp 832,500,000.00
	Operator junior	5		Rp 7,000,000	Rp 35,000,000.00	Rp 466,200,000.00
	Helper/loborer	12		Rp 4,500,000	Rp 54,000,000.00	Rp 719,280,000.00
	Biaya Quality Control	5		Rp 6,500,000	Rp 32,500,000.00	Rp 432,900,000.00
	QC Supervisor	3		Rp 12,500,000	Rp 37,500,000.00	Rp 499,500,000.00
	QC Analysis	4		Rp 7,200,000	Rp 28,800,000.00	Rp 383,616,000.00
	Lab Technician	3		Rp 6,300,000	Rp 18,900,000.00	Rp 251,748,000.00
	Biaya Storage (penyimpanan)	10		Rp 300,000,000	Rp 3,000,000,000.00	Rp 39,960,000,000.00
	Listrik untuk pompa	10		Rp 16,445,000	Rp 164,450,000.00	Rp 2,190,474,000.00
	Sistem keamanan & Fire Protection	5		Rp 5,000,000	Rp 25,000,000.00	Rp 333,000,000.00
	Maintenance Supervisor	2		Rp 12,500,000	Rp 25,000,000.00	Rp 333,000,000.00
	Mechanical technician	3		Rp 7,500,000	Rp 22,500,000.00	Rp 299,700,000.00
	Instrument technician	8		Rp 7,500,000	Rp 60,000,000.00	Rp 799,200,000.00
	Electrical technician	3		Rp 7,000,000	Rp 21,000,000.00	Rp 279,720,000.00
	Biaya Handling di SPBU					
	Biaya unloading	2	/day	Rp 6,500,000	Rp 13,000,000.00	Rp 173,160,000.00
	Biaya dispensing equipment	2	/day	Rp 8,600,000	Rp 17,200,000	Rp 229,104,000
	Biaya kalibrasi & Testing	2	/b.ln	Rp 2,500,000	Rp 5,000,000	Rp 66,600,000
	Operator	1	/b.ln	Rp 3,500,000	Rp 3,500,000	Rp 46,620,000
	Biaya lainnya	10	/b.ln	Rp 4,728,627	Rp 47,286,270.00	Rp 629,833,116.40

The total project budget reached Rp 38,500,947,696, with the AMT (Tools, Materials, and Labor) category being the largest component, covering Rp 27,540,886,580 or 71.5% of the total budget. Within this category, the largest item is MT 24 H Rental, at a cost of Rp 12,587,400,000 for 6 units for 1 month, followed by Fuel (Dexlite) at Rp 87,915,196,800 for 4,944 liters for 1 month, as well as driver salaries and tanker maintenance costs. Other components include significant labor and maintenance costs.

The Operational category, with a total budget of Rp 10,331,028,000, accounts for 26.8% of the total budget. The largest component is Storage Costs at Rp 300,000,000 per unit per month for 10 units, followed by refinery-terminal transportation costs and labor costs for senior operators, helpers, and QC supervisors. Technical aspects such as electricity for pumps and security systems also require significant investment, along with the costs of specialist technical personnel such as lab technicians and maintenance supervisors.

The Handling Cost category at gas stations, which is the smallest component with a total budget of Rp 629,833,116 (1.6% of the total budget), includes the costs of unloading, dispensing equipment, calibration, testing, and gas station operator salaries. The tariff structure shows significant variation, with the price of fuel (Dexlite) at Rp 13,350 per liter and Storage Costs reaching Rp 300,000,000 per unit per month.

Table 5
Depreciation on Purchasing a Tank Truck

Feasibility Study of Tank Car Investment ...



Jenis Aktiva	Harga Beli	%Penyusutan (Kel 2)	Nilai sisa	Masa manfaat	Nilai depresiasi
Head Truck Hino 500 Trailer Head SG 280 TH ABS	Rp 7,607,052,000.00	12,5%	Rp 950,881,500.00	10	Rp 665,617,050.00
Head Truck Mitsubishi Fuso FN 527 MS K 220 PS	Rp 3,280,050,000.00	12,50%	Rp 410,006,250.00	10	Rp 287,004,375.00
Head Truck Mitsubishi Fuso 75 HD N 136 PS	Rp 541,014,000.00	12,50%	Rp 67,626,750.00	10	Rp 47,338,725.00
Karoseri Tangki BBM Kapasitas 24 KL Bahan muls Steel	Rp 5,161,500,000.00	12,50%	Rp 645,187,500.00	10	Rp 451,631,250.00
Karoseri Tangki BBM Kapasitas 16 KL Bahan muls Steel	Rp 1,282,050,000.00	12,50%	Rp 160,256,250.00	10	Rp 112,179,375.00
Karoseri Tangki BBM Kapasitas 8 KL Bahan muls Steel	Rp 149,850,000.00	12,50%	Rp 18,731,250.00	10	Rp 13,111,875.00
Aksesoris	Rp 1,356,326,304.90	12,50%	Rp 169,540,788.11	10	Rp 118,678,551.68
Jumlah					Rp 1,695,561,201.68

The largest residual value is owned by the Hino 500 Trailer Head SG 280 TH ABS Truck Head, amounting to Rp 665,617,050.00, followed by the Mitsubishi Fuso FN 527 MS K 220 PS Truck Head, amounting to Rp 287,004,357.00. This figure represents the portion of the asset value that has been expensed over its useful life, reflecting its higher initial purchase value. The current residual value of these assets amounts to Rp 1,695,561,201.68. indicating that most of the original value has been depreciated. This residual value represents what is still recorded as an asset in the books.

The Hino 500 truck retains only about 12.5% of its original value, while the Mitsubishi Fuso retains about 12.5% of its original cost. This indicates that the equipment may need to be replaced in the relatively near future if it follows its planned 10-year useful life. The addition of accessories worth Rp 118,678,561,201.68 indicates additional equipment or modifications that complement the main asset. These accessories are depreciated at the same rate of 12.5% as most other assets. This comprehensive accounting approach ensures that all components of the transportation fleet are appropriately valued and depreciated according to their expected useful lives.

Shipping Turnover

Table 6
Pertamax Product Delivery Turnover

Tahun	Realisasi Pengiriman Bulanan	Keuntungan	Penjualan	Penjualan/tahun	Cumulative
1	896000	Rp 1,000	Rp 896,000,000.00	Rp 10,752,000,000.00	Rp 10,752,000,000.00
2	1299200	Rp 1,000	Rp 1,364,160,000.00	Rp 16,369,920,000.00	Rp 27,121,920,000.00
3	1883840	Rp 1,000	Rp 1,978,032,000.00	Rp 23,736,384,000.00	Rp 50,858,304,000.00
4	2731568	Rp 1,000	Rp 2,868,146,400.00	Rp 34,417,756,800.00	Rp 85,276,060,800.00
5	3960774	Rp 1,000	Rp 4,158,812,280.00	Rp 49,905,747,360.00	Rp 135,181,808,160.00
6	5743122	Rp 1,000	Rp 6,030,277,806.00	Rp 72,363,333,672.00	Rp 207,545,141,832.00
7	8327526	Rp 1,000	Rp 8,743,902,818.70	Rp 104,926,833,824.40	Rp 312,471,975,656.40
8	12074913	Rp 1,000	Rp 12,678,659,087.12	Rp 152,143,909,045.38	Rp 464,615,884,701.78
9	17508624	Rp 1,000	Rp 18,384,055,676.32	Rp 220,608,668,115.80	Rp 685,224,552,817.58
10	25387505	Rp 1,000	Rp 26,656,880,730.66	Rp 319,882,568,767.91	Rp 1,005,107,121,585.49
				Rp 1,005,107,121,585.49	Rp 2,984,154,769,553.25

Data shows that the realization of product shipments in the first year showed a figure of 896,000. With an increase of 4.58% annually, for the second year 1299200. Until the tenth year shows a shipment turnover of 1883840 The profit generated per shipment also remains stable at Rp 1,000 throughout the projection period. This indicates that there is no change in production volume or profit margin per unit during that period.



Analysis of the cumulative sales value shows a significant increase, up to the tenth year of Rp. 1,005,107,121,585.49

The total accumulated sales over 10 years amounted to Rp 1,005,107,121,585.49 which is a substantial amount and indicates a fairly large scale of operations in the long term, which is reflected in this data seems to adopt a very conservative and stable approach.

The lack of growth in shipment volume or increase in unit selling price suggests that the company may be operating in a mature market with relatively stable demand, or that these projections are intentionally conservative for long-term financial planning purposes. This offers advantages from a financial planning and risk management perspective, as the company can accurately predict future revenues.

Economic Feasibility Analysis

A tanker investment feasibility analysis is performed to determine whether the unit's implementation is financially viable and whether it will operate satisfactorily throughout its operational life. The feasibility analysis also aims to identify investment components that could change the investment's condition from feasible to infeasible, or vice versa. (Mussatti, 2002)

Economic Feasibility of Purchasing a Tank Truck

Table 7

Feasibility Analysis of Investment in Purchasing a Tank Truck

MARR	10%	
SUKU BUNGA	5.5%	
NPV	Rp 180,132,049,363.86	
IRR (Internal Rate Return)	18%	
PP	9.199805006	0.199805006
BEP Harga	Rp 150,600,071,968.05	
PV PENERIMAAN	Rp199,509,891,668.76	
PI	Rp 10.30	

Based on the presented financial feasibility analysis, this project shows good prospects. The MARR is set at 10%, with the project's NPV reaching Rp 180,132,049,363.86, which indicates a significant positive value and a net cash flow greater than the initial investment. The project's IRR of 18%, higher than the MARR, provides a considerable margin of safety against potential risks. The Payback Period (PP) of this investment is approximately 9 years and 1 month, and the BEP is recorded at Rp 150,600,071,968.05, indicating that the project will reach breakeven with the expected revenue.

The Revenue PV of Rp 199,509,891,668.76 indicates significant revenue potential, while the project's PI of 10.30 indicates that for every rupiah invested, there will be a profitable return. A PI value greater than 1 confirms that the project is financially viable, with a substantial return above the initial investment. All of



these financial indicators support each other to paint a positive picture of project feasibility.

Overall, the financial data indicates that the project is financially viable, with a positive NPV, an IRR exceeding the MARR, a relatively short payback period, and a favorable PI. While the financial analysis indicates a positive outlook, non-financial factors such as operational risk, market conditions, and long-term sustainability also need to be considered to fully assess the project's viability.

Economic Feasibility of Tank Truck Rental

Table 8
Feasibility Analysis of Tank Truck Rental Investment

MARR	10%	
SUKU BUNGA	5.5%	
NPV	Rp 153,884,492,210.71	
IRR (Internal Rate Return)	19%	
PP	9.192858093	0.192858093
BEP Harga	Rp 150,486,351,555.14	
PV PENERIMAAN	Rp199,184,815,732.30	
PI	Rp 11.11	

This investment project has a MARR (Minimum Attractive Rate of Return) and a fixed interest rate of 10%, indicating the minimum rate of return expected by investors. The project's NPV (Net Present Value) is Rp 153,884,492,210.71, which is positive, indicating that the project is projected to generate net cash flows greater than the initial investment. The IRR (Internal Rate of Return) of 11.11%, which far exceeds the MARR, provides a large margin of safety against operational risks and market fluctuations.

The payback period (PP) for this investment is approximately 9 years and 1 month, which is relatively short compared to other types of commercial investments. However, the long payback period can increase the risk associated with returning the initial investment. The Break-Even Point (BEP) is recorded at IDR 150,486,351,555.14, indicating the revenue required to reach the break-even point. The lower the BEP compared to revenue, the lower the project's risk of loss.

The project's PV of Rp 199,184,815,732.30 indicates significant cash inflow during its operation. The project's Profitability Index (PI) of 11.11, which is well above 1, confirms the project's financial feasibility. With a high NPV, an IRR exceeding the MARR, a fast payback period, and a favorable PI, this tanker rental project is feasible.

Tank Truck Investment Profitability



The investment profitability method serves as an indicator of a company's success in managing and optimizing the use of its capital.

Net Present Value Purchase

From table 4.6, we can see the net cash flow, or what is known as net cash flow, as follows:

Table 9
Net Cash Flow

No	Net Cash Flow	H	NCF*h
0	-Rp 19,377,842,304.90	1	-Rp 19,377,842,304.90
1	-Rp 40,746,030,505.25	0.947867	-Rp 38,621,829,862.79
2	-Rp 37,207,189,105.91	0.898452	-Rp 33,428,888,934.13
3	-Rp 32,004,421,957.11	0.851614	-Rp 27,255,403,052.98
4	-Rp 23,574,849,565.78	0.807217	-Rp 19,030,013,290.33
5	-Rp 10,430,394,390.88	0.765134	-Rp 7,980,653,072.58
6	Rp 9,588,137,744.83	0.725246	Rp 6,953,756,945.90
7	Rp 39,613,122,155.44	0.687437	Rp 27,231,518,271.40
8	Rp 84,188,111,478.47	0.651599	Rp 54,856,878,362.99
9	Rp 149,902,932,924.31	0.617629	Rp 92,584,437,728.16
10	Rp 246,314,582,190.27	0.585431	Rp 144,200,088,573.12
		NPV Beli	Rp 180,132,049,363.86
		PV Beli	Rp 199,509,891,668.76

It is known that the initial investment in the tanker truck is Rp 19,377,842,350 with a useful life of 10 years, and an assumed interest rate of 10%. From the net cash flow.

Based on the equation, it is known that:

$$NPV = + + \dots - I \frac{CF_1}{(1+k)} \frac{CF_2}{(1+k)} \frac{CF_n}{(1+k)^{10}}$$

$$NPV = + + \dots \frac{38,621,829,862.79}{(1+10\%)} \frac{33,428,888,934.13}{(1+10\%)} \frac{144,200,088,573.12}{(1+10\%)^{10}}$$

$$NPV = \text{Rp. } 180,132,049,363.86$$

Net Present Value of Lease

Table 10
Net Cash Flow

No	Net Cash Flow	H	NCF*h
0	-Rp 17,925,390,000.00	1	-Rp 17,925,390,000.00
1	-Rp 40,833,649,513.20	0.947867299	-Rp 38,704,881,055.17
2	-Rp 37,286,657,873.70	0.898452416	-Rp 33,500,287,840.53
3	-Rp 32,074,773,450.12	0.851613664	-Rp 27,315,315,345.72
4	-Rp 23,635,039,897.88	0.807216743	-Rp 19,078,599,934.18
5	-Rp 10,479,297,374.20	0.765134354	-Rp 8,018,070,425.12
6	Rp 9,551,736,419.42	0.725245833	Rp 6,927,357,036.34
7	Rp 39,590,531,131.71	0.687436809	Rp 27,215,988,370.15
8	Rp 84,180,740,368.14	0.651598871	Rp 54,852,075,355.83
9	Rp 149,912,299,388.11	0.617629261	Rp 92,590,222,730.28
10	Rp 246,342,319,496.57	0.585430579	Rp 144,216,326,840.42
		NPV Sewa	Rp 181,259,425,732.30
		PV Sewa	Rp 199,184,815,732.30

$$NPV = + + \dots - I \frac{CF_1}{(1+k)} \frac{CF_2}{(1+k)} \frac{CF_n}{(1+k)^{10}}$$



$$NPV = + + \dots \frac{38.704.881.055.17}{(1+10\%)} \frac{33.500.287.840.53}{(1+10\%)} \frac{144.216.326.840.42}{(1+10\%)^{10}}$$

$$NPV = \text{Rp. } 181,259,425,732.30$$

Internal Rate of Return

Table 11
Determination of IRR

No	Net Cash Flow
0	-Rp 19,377,842,304.90
1	-Rp 40,746,030,505.25
2	-Rp 37,207,189,105.91
3	-Rp 32,004,421,957.11
4	-Rp 23,574,849,565.78
5	-Rp 10,430,394,390.88
6	Rp 9,588,137,744.83
7	Rp 39,613,122,155.44
8	Rp 84,188,111,478.47
9	Rp 149,902,932,924.31
10	Rp 246,314,582,190.27

To identify the level of profit that is comparable to the actual value of the total cash flow received and spent on tanker car investment, it is known that the minimum interest rate is 10% and produces an NPV of Rp. 180,132,049,363.86 To find out the Internal Rate of Return from tanker car investment. It is known that the IRR is 18%, because it exceeds the predetermined interest rate of 10%, it shows that tanker car investment is acceptable and feasible, but the payback period is very long.

Table 12
Net Cash Flow for Tank Truck Rental

No	Net Cash Flow
0	-Rp 17,925,390,000.00
1	-Rp 40,833,649,513.20
2	-Rp 37,286,657,873.70
3	-Rp 32,074,773,450.12
4	-Rp 23,635,039,897.88
5	-Rp 10,479,297,374.20
6	Rp 9,551,736,419.42
7	Rp 39,590,531,131.71
8	Rp 84,180,740,368.14
9	Rp 149,912,299,388.11
10	Rp 246,342,319,496.57

To identify the level of profit that is comparable to the actual value of the total cash flow received and spent on tanker car investment, it is known that the minimum interest rate is 10% and produces an NPV of Rp. 181,259,425,732.30 To find out the Internal Rate of Return from tanker car investment. It is known that the IRR is 19%, because it exceeds the predetermined interest rate of 10%, it shows



that the tanker car investment is acceptable and feasible, but the payback period is quite long in the ninth year.

Payback Period

Buy a Tank Truck

To calculate the time required to return the invested capital, it is known that the first income for the tanker truck investment generated by the investment project is 3,431,460,192 in the sense of 3 years and 4 months.

$$PP = 9 + \frac{29.951.356.451.10}{149.902.932.924.31}$$

$$PP = 9 + ABS \left(\frac{-29.951.356.451.10}{149.902.932.924.31} \right)$$

$$PP = 9.199805006$$

Based on these results, the Payback Period for Purchasing a Tank Truck is 9,199805006 or 9 Years 1 Month.

Tank Truck Rental

To calculate the time required to return the invested capital, it is known that the first income for the tanker truck investment generated by the investment project is 9.192858093 in the sense of 9 years and 1 month.

$$PP = 9 + ABS \left(\frac{\text{Cumulative Cash Flow thn } 8}{\text{Net Cash Flow thn ke } 9} \right)$$

$$PP = 9 + ABS \left(\frac{-28.911.800.189.82}{149.912.299.388.11} \right)$$

$$PP = 9.192858093$$

Based on these results, the Payback Period for Purchasing a Tank Truck is 9.192858093 or 9 Years 1 Month.

Break Even Price

Buy a Tank Truck

BEP (Break-Even Point) Price is the minimum selling price per unit that must be set for a company to reach the break-even point, where total revenue equals total costs. BEP Price is calculated by dividing the total fixed and variable costs by the number of units produced or sold. In this project, the BEP Price for renting a tanker truck is recorded at IDR 150,600,071,968.05. This BEP Price also reflects the minimum revenue value that must be achieved to reach the break-even point within a certain period, taking into account the time value of money. If revenue exceeds the BEP Price, the project or company will be profitable.

Tank Truck Rental

For the BEP Price for Tank Truck Rental, the resulting amount is Rp. Rp. 150,486,351,555.14. In the project feasibility analysis, as seen in the previous data, the BEP Price can also refer to the minimum income value that must be achieved for the investment to reach the break-even point within a certain period of time.

**Profitability Index****Buy a tanker truck**

To evaluate how attractive investing in tank trucks is, it is necessary to calculate the Profitability Index. The PI formula is as follows:

$$PI = \frac{PV \text{ Penerimaan}}{Investasi}$$

$$PI = \frac{199.509.891.668.76}{19,377,842,304.90}$$

$$PI = 10.30$$

Given a 10% interest rate of Rp. 10,752,000,000.00 divided by the PV of Rp. 199,509,891,668.76, the Profitability Index for purchasing a tanker is 10.30.

Tanker rental

To evaluate how attractive investing in tank trucks is, it is necessary to calculate the Profitability Index. The PI formula is as follows:

$$PI = \frac{PV \text{ Penerimaan}}{Investasi}$$

$$PI = \frac{199.184.815.732.30}{17.925.390.000.00}$$

$$PI = 11.11$$

Given a 10% interest rate of Rp. 10,752,000,000.00 divided by the PV of Rp. is 11.11 for the Profitability Index to purchase a tanker 199.184.815.732.20

CONCLUSION

Based on the research of the Feasibility Study of Tanker Car Investment for Distribution in the Storage Tank of the Garut Fuel Terminal, it can be concluded that the investment of tanker cars in the Garut Fuel Terminal is proven to be financially feasible. The initial investment cost to purchase a tanker car reaches IDR 19.38 billion, with an annual operational cost of IDR 53.19 billion. The return on investment is estimated to occur in the ninth year with a total of IDR 119.95 billion. Meanwhile, tanker car rental requires an initial investment of IDR 17.93 billion and an annual operational cost of IDR 51.59 billion. The NPV analysis shows that both purchasing and leasing tankers generate positive value, with the NPV of leasing being higher, namely IDR 65.09 billion, compared to purchasing, which reaches IDR 43.43 billion. The IRR for purchasing a tanker car is 18%, while for leasing it is 19%. The Profitability Index (PI) for leasing is 11.11, higher than that of purchasing, which is only 10.30, indicating that leasing tankers is more profitable.

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