



Investment Project Analysis of a Medium Range (MR) Tanker Ships Purchase in an Attempt to Maintain the Economic Productivity of the Company (Case Study: PT XYZ)

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ABSTRACT: PT. XYZ is a spin-off charter out business of its host company that specifically focuses on providing charter out services in the shipping industry. This research was carried out in response to the requirement to rejuvenate the vessels owned by PT XYZ taking into consideration the age of the ships. In total, there will be 7 ships that was used as an object of this research, considering the replacement program options of either acquiring newbuild vessels or secondhand ships. Newbuild Ship investment will use a 9.09% hurdle rate, including the weighted average cost of capital (WACC) of 7.09% and a risk premium of 2% in the analysis. This hurdle rate will be used as comparative data to the required rate of return for the related project (IRR>Hurdle Rate). There is a total of 2 ship in the overall project that will be replaced with a newbuild ship, Project 1 and Project 2. These investment projects will be conducted from 2024-2026 period. The capital structure for newbuild projects consisted of 75% debt and 25% equity. Secondhand ship investment will use an 9.59% hurdle rate, including the weighted average cost of capital (WACC) of 7.09% and a risk premium of 2.5% in the analysis. There is a total of 5 ships in the overall project that will be replaced with secondhand ship, Project 3-7. These investment projects will be conducted from 2024-2026 period. The capital structure for secondhand projects consisted of 75% debt and 25% equity. Based on the financial assessments of the projects, the findings consistently demonstrate positive results. As a result, it can be inferred that the seven projects are both viable and feasible to undertake. The primary objective is to guarantee that these projects make a positive contribution to the company's economic productivity.

KEYWORDS: Investment, Feasible, Newbuild, Project, Secondhand, Ship, Shipping.

INTRODUCTION

The COVID-19 pandemic developed in stages and at various rates, maritime trade has succeeded better than anticipated with diverging routes across areas and markets. Large stimulus packages, increased consumer spending on goods, and a rise in e-commerce, were also factors in the recovery of trade flows. Later, the introduction of vaccines in advanced regions led to a greater sense of optimism [1,2].

The global maritime trade fell less than expected and by the end of the year had rebounded. The first quarter of 2020 caused shockwave throughout the world which caused the maritime trade to decrease by 3.8%. However, there was a tentative, though asymmetrical, recovery in the second half of the year, and by the third quarter, volumes had restored for both containerized trade and dry bulk commodities [3,4].

According to Supply Chain Indonesia (SCI), the logistics industry in 2021—which includes shipping, warehousing, and distribution—contributed 676 trillion rupiah to Indonesia's GDP. The growth of infrastructure across the nation and the rise in national consumption have both been linked to the expansion of the logistics industry. Out of the IDR 676 trillion (USD 44 billion) that the logistics sector contributed to the national GDP in 2021, the transportation sector alone contributed IDR 548.8 trillion (USD 36 billion).

According to BPS (Badan Pusat Statistik), Indonesian exports in January 2022 were worth US\$ 19.16 Billion, an increase of 25.31% compared to the same period from the previous year of January 2021 (year-on-year/yoy). Export growth in manufacturing (31.16% yoy), agricultural (11.54% yoy), and mining/quarrying (3.87% yoy) all contributed to Indonesia's export growth. Meanwhile, Indonesian imports in January 2022 were worth US\$ 18.23 Billion, an increase of 36.77% year on year. The import components, import of raw goods in January 2022 increased by 39.57% year on year, as well as capital goods increased by 41.94%, and consumption goods increased by 10.25% year on year.



PT. XYZ is a spin-off charter out business of its host company that specifically focuses on providing charter out services in the shipping industry [5]. From the data mentioned above, PT XYZ could forecast the importance of ship purchase in the future to support the company’s further economic productivity.

BUSINESS ISSUE

PT XYZ have several business lines involved to the logistical transportation of oil and similar commodities. This means that the company relies heavily on the utilization of tanker ships. *Peraturan Menteri Perhubungan (PM) No. 29 Tahun 2014* defines the prevention of pollution in maritime environment, including the ship’s specified age limit in accordance with Annex I MARPOL 73/78. As mentioned in Chapter 2 Article 7.7 of the regulations, a newbuild tanker ships could be operated with a maximum age specification of 20 years, while a secondhand tanker ships could be operated with a maximum age specification of 25 years [6].

PERATURAN MENTERI PERHUBUNGAN
REPUBLIK INDONESIA

NOMOR : PM 29 TAHUN 2014

TENTANG

PENCEGAHAN PENCEMARAN LINGKUNGAN MARITIM

(7) Kapal tangki minyak yang beroperasi dengan konstruksi dasar tunggal (*single bottom*) dan/atau konstruksi lambung tunggal (*single hull*) yang mengangkut muatan minyak dengan bobot mati DWT 600 (enam ratus) ton atau lebih yang berumur 20 (dua puluh) tahun atau lebih sejak tahun penyerahan kapal (*delivery*) atau kapal tangki minyak dasar tunggal dan atau lambung tunggal berbendera asing yang akan diganti bendera dengan umur tidak lebih 25 tahun wajib melaksanakan penilaian kondisi kapal (*Condition Assessment Scheme/CAS*) pada saat dok besar dan beroperasi tidak lebih dari tanggal 1 Juli 2026.

Figure 1 – *PM No.29 Tahun 2024* Chapter 2 Article 7.7

According to the data collected from *marinetraffic.com*, PT XYZ would own a total of 7 Medium Range (MR) type ships that have exceeded the specified age limit during the 2023-2025 period. The details of these Medium Range ships will be explained in table below.

Table I – Projected Medium Range (MR) Tanker Ship Investment Project (Author Processed Data, 2023)

<i>Project No.</i>	<i>Ship’s Name</i>	<i>Age</i>	<i>Program</i>
Project 1	MT A	41 Years	Newbuild
Project 2	MT B	41 Years	
Project 3	MT C	46 Years	
Project 4	MT D	40 Years	Secondhand
Project 5	MT E	31 Years	
Project 6	MT F	40 Years	
Project 7	MT G	41 Years	

All tanker ships under Indonesian flag are the subject to the aforementioned regulations, which necessitating PT XYZ to rejuvenated its ships that has passed the specified age limit. This research is intended to explore the possibility of future ship investments decision based on the requirement of rejuvenation for the company in order to maintain the economic productivity of the company. This research is guided by the following research question:



1. What is the financial feasibility and potential profitability of investing in a newbuild ship project for the company?
2. What is the financial feasibility and potential profitability of investing in a secondhand ship project for the company?

The key objectives of this research are to identify the financial possibilities of future ships investment for this company by providing recommendation regarding the financial feasibility and potential profitability results of a newbuild and secondhand ship investment project for the company.

METHODOLOGY

The main objective of this research is to develop a tanker ship investment recommendation for PT XYZ. The method used is to conduct a financial modelling from available market data and PESTLE Analysis. PESTLE analysis is used in order to help organizations gain insights into the broader business environment and understand the opportunities and challenges presented by the macro-environment [7]. The global market data used for this research consists of 5 components, which are tanker seaborne trade, charter rate, dry-docking cost, CAPEX and OPEX [8,9,10,11]. These components are expected to help describe the current market data needed for the projects financial modelling. Furthermore, the financial modelling is using 10 different calculations, which are WACC, hurdle rate, free cash flow, NPV, IRR, PI, discounted payback period, sensitivity analysis, scenario analysis and risk analysis [12,13,14,19]. After those mentioned calculations is completed, the author could present a comprehensive tanker ship investment recommendation for PT XYZ.

RESULTS AND DISCUSSION

The first analysis used in this research is PESTLE analysis. As mentioned before, PESTLE analysis is a strategic management tool used to analyze and assess the external macro-environmental factors that can impact an organization, industry, or business environment. The results of PESTLE analysis this research will be explained below [7].

1. Political Factor

Indonesia currently owns 18 main domestic trade routes encompassing a network of 120 port facilities. Out of these trade routes, only 23% were interconnected in 2019. Furthermore, it is projected by 2024, the proportion of interconnected shipping routes will increase to 27% [15].

In 2019, Indonesia has a total oil refinery capacity of 1.15 million barrel per calendar day (BPCD). Indonesia has specifically assigned Pertamina (Persero) as to increase the total oil refinery capacity to 1.9 million BPCD in 2026 [15].

The future target of an increased interconnected shipping routes and total oil refinery capacity provides a good opportunity for PT XYZ in the future.

2. Economical Factor

According to the data from minister of finance, Indonesia currently experienced a 5.2% overall economic growth throughout 2022. This resulted in the steady investment environment and will be further promoted through the improvement of investment climate and bolstering the downstream sector [16].



Figure 2 – Indonesia Economic Growth (Ministry of Finance, 2023)



3. Social Factor

The development of land infrastructure produces a more superiority compared to the development of sea infrastructure, with the government offering a wider range of programs from 2015-2019 period [15]. The government's conflicting interest could potentially produce a problem regarding the development necessity for the overall Indonesian maritime industry.

4. Technological Factor

Technological advancements have significantly impacted the shipping industry, leading to various developments and improvements. Here are some key areas of technological development in the shipping industry:

- a. Automation and Robotics: Automation has revolutionized many aspects of the shipping industry. Automated container terminals, robotic port equipment, and unmanned aerial vehicles (drones) have increased operational efficiency, reduced costs, and improved safety.
- b. Internet of Things (IoT): The IoT has enabled the integration of sensors, devices, and systems, facilitating real-time tracking and monitoring of vessels, cargo, and equipment. This technology improves supply chain visibility, enhances operational efficiency, and enables proactive maintenance.
- c. Big Data and Analytics: The availability of vast amounts of data has opened up opportunities for advanced analytics in the shipping industry. Big data analytics help optimize routes, predict maintenance needs, manage fuel consumption, and improve overall decision-making processes.
- d. Artificial Intelligence (AI): AI-powered technologies are being utilized in various areas, such as vessel routing and scheduling, predictive maintenance, and risk management. AI algorithms analyze data to provide insights, optimize operations, and improve decision-making processes.
- e. Green Technologies: The shipping industry is also focusing on sustainable practices. Technologies like alternative fuels (such as LNG or hydrogen), electric propulsion, and energy-efficient vessel designs are being developed to reduce emissions and promote environmental sustainability.
- f. Remote Monitoring and Control: Remote monitoring and control systems allow operators to manage vessels, cargo, and equipment from onshore locations. This technology improves efficiency, reduces costs, and enhances safety by minimizing the need for physical presence onboard.

These technological developments in the shipping industry aim to improve efficiency, reduce costs, enhance safety, and promote sustainability. Embracing and integrating these advancements can provide a competitive edge and drive positive transformations within the industry [17].

5. Legal Factor

Instruksi Menteri Dalam Negeri (INMENDAGRI) No.53 Tahun 2022 defines the COVID-19 preventions in the transition period towards endemic. On December 30th, 2022, the Indonesian government officially lifted the public restrictions. This decision could potentially have a positive effect on the shipping industry in Indonesia as it may result in increased trading activities and subsequently lead to more profitable investment opportunities during this period [18].

6. Environmental Factor

Climate change represents a major hurdle for humanity in the current era. The 2021 United Nations Conference of Parties (COP26) has emphasized the shipping industry's role in global climate change, identifying it as a crucial sector to address in the upcoming years. According to Global Maritime Forum, the Indonesian shipping industry is responsible for 920,2214 kt CO₂e of greenhouse gas emissions (CHG) in 2019 period making it 7th largest CHG emitter in the world. In order to prevent environmental harm and address the risks associated with climate change, it is crucial to adopt innovative approaches that facilitate the decarbonization of the entire maritime industry [1,19].

From January 2013, Energy Efficiency Index (EEDI) is mandatory requirement for all newbuild ship in order to specifically reduce the emission rate. This regulation signifies that newbuild ship constructed post 2013 can contribute to lowering the overall emissions of the global maritime industry [1,19].

The convergence of environmental considerations and international regulations, which aim to decrease greenhouse gas emissions, presents an opportunity for players in the Indonesian shipping industry to increasingly pursue investments in younger ships [1,19].



The second analysis used in this research is Hurdle Rate analysis. Hurdle Rate is the minimum rate of return that a project or investment must achieve to be considered worthwhile or profitable [17]. The distinction between newbuild and secondhand ship hurdle rate is important because it recognizes the inherent differences in risk between both segments. According to the company, they used a range of 2-3% risk premium between each segment. The calculations of WACC and Hurdle Rate will be explained below.

Table II – Company’s Hurdle Rate Detailed Calculations (Author Processed Data, 2023)

<i>Assumption</i>		
Risk Free Rate	Market Risk Premia	6.54%
Risk Market	Market Risk Premia	3.58%
Unlevered Beta	Damodaran	0.65
Project D/E Ratio	Calculated	300%
Tax Rate	Damodaran	22%
Interest Rate	Company’s Assumption	6%
Cost of Equity	Calculated	14.31%
<i>WACC</i>		
Cost of Debt	Calculated	4.68%
Debt Portion	Calculated	75.0%
Weighted Cost of Debt	Calculated	3.51%
Cost of Equity	Calculated	14.31%
Equity Portion	Calculated	25.0%
Weighted Cost of Equity	Calculated	3.57%
WACC	Calculated	7.09%
<i>Hurdle Rate</i>		
Newbuild Risk Premium	Risk Appetite	2.00%
WACC	Calculated	7.09%
Newbuild Hurdle Rate	Calculated	9.09%
Secondhand Risk Premium	Company’s Preference	2.50%
WACC	Calculated	7.09%
Secondhand Hurdle Rate	Calculated	9.59%

Project 1

Project 1 is a newbuild ship investment. Newbuild ship will use a 9.09% hurdle rate, including the weighted average cost of capital (WACC) of 7.09% and a risk premium of 2% in the analysis. This hurdle rate will be used as comparative data to the required rate of return for the related project (IRR>Hurdle Rate). The capital structure for newbuild projects consisted of 75% debt and 25% equity. The details will be explained below.



Table III – Project 1 Financial Results

Project No.	CAPEX	Delivery	NPV	Remarks	IRR	Remarks	Decision
Project 1	\$ 47,960,000	Jan. 2026	\$ 2,269,037	>0	10.40%	> 9.09%	Feasible

There are also several additional financial calculations to support the investment project for the purchase of tankers, namely sensitivity, scenario and risk analysis. The results of these calculations will be explained in more detail below.

1. Sensitivity Analysis – Project 1

Sensitivity analysis will be calculated using 6 component variables, namely CAPEX, time charter rate, OPEX, interest rate, tenor year and tax rate. The result of this calculations can be seen below.

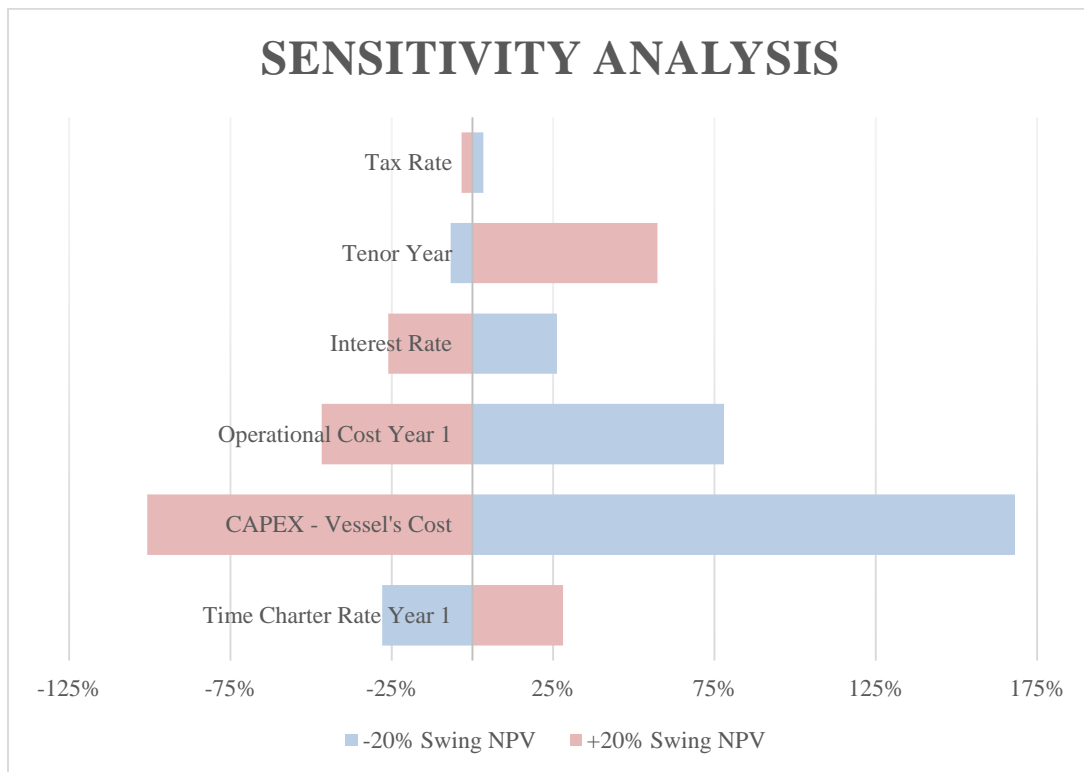


Figure 3 – Project 1 Sensitivity Analysis (Author’s Processed Data)

The calculations and figures above reveal that the components with the greatest impact on the overall project economy are CAPEX (capital expenditure) and OPEX (operating expenditure). These two factors emerge as the most sensitive elements influencing the project's financial feasibility.

2. Scenario Analysis – Project 1

Scenario analysis is a method utilized in financial modelling and decision-making to evaluate the potential results of various future situations. It entails generating and examining multiple realistic scenarios that could affect a project, investment, or business. The results of Project 1 scenario analysis will be explained further below.

Table IV – Project 1 Scenario Analysis

Scenario	Components	Value	NPV	IRR
Worst Scenario	Vessel’s Cost	\$ 66,500,000		
	OPEX Year 1	\$ 6,580	\$ -19,520,517	1.23%
	Time Charter Year 1	\$ 20,600		



Base Scenario	Vessel's Cost	\$ 46,000,000			
	OPEX Year 1	\$ 5,313	\$ 2,269,037	10.40%	
	Time Charter Year 1	\$ 22,100			
Best Scenario	Vessel's Cost	\$ 34,000,000			
	OPEX Year 1	\$ 5,009	\$ 15,367,587	22.73%	
	Time Charter Year 1	\$ 28,800			

3. Risk Analysis – Project 1

The risk register preparation yielded the identification of 7 risk events which can be seen below.

No.	Risk Event	Impact	Mitigation	Inherent			Residual			Level Risk	
				P	I	R	P	I	R	Inherent	Residual
1	Increase newbuild vessel cost	Investment scenario realization does not align with its expected profitability	Requesting a velocity quotation for the shipyard for more than 180 days from the shipbuilding schedule	3	3	39	1	1	11	High Risk	Low Risk
2	Delays in ship delivery process	Decrease in revenue stream	1. Choosing shipyards with prior expertise in constructing vessels of similar dimensions 2. The imposition of a late fine clause on the shipyard 3. Establishing a designated point of contact (POC) responsible for conducting regular monitoring throughout the construction process	3	5	35	1	3	13	High Risk	Low Risk
3	Increased OPEX cost	Decrease in project profitability	Monitoring the realization of monthly operational costs	2	5	25	2	1	21	Moderate to High Risk	Low Risk
4	Potential risks of process safety, fire, work accidents, environmental pollution and other hazards at the location	1. Financial Losses 2. Declining corporate image 3. Fatality 4. Damage to assets	1. Training/upskilling for employees regarding the implementation of a safe work environment 2. Scheduled docking of ships	2	4	24	1	3	13	Moderate Risk	Low Risk
5	Decrease in the technical performance of the ship	Increased maintenance activity which impacted the decrease in revenue stream	Monitor the ship's monthly performance across all aspects	2	4	24	1	1	11	Moderate Risk	Low Risk
6	Plague outbreak aboard the vessel	1. Serious health issues that have the potential to be life-threatening 2. Interruption of operational activities	1. Verify that the vaccination program for the crew members of the ship has been implemented. 2. Ensuring the availability of emergency protocols to effectively manage the spread of outbreaks on ships	2	4	24	1	3	13	Moderate Risk	Low Risk
7	Potential of ships facing restrictions due to operational permits	Delayed ship's operational period	Ensure licensing, regulatory and taxation schemes with law firms	3	1	31	1	1	11	Low Risk	Low Risk

Figure 4 – Project 1 Risk Analysis (Author's Processed Data)

4. Implementation Plan – Project 1

The ships construction will begin in February of 2024 and it is expected to be delivered in January of 2026. The project requirement and timeline will be explained below.

Kegiatan	2023				2024				2025				2026			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Investment Analysis																
Feasibility Study		█	█													
Gate Review				█	★ FID											
Shipbuilding																
SBC					█	█	█									
Steel Cutting								█	█	█						
Keel Laying										█	█	█				
Launching																
Delivery															★ Jan. 2026	

Figure 5 – Project 1 Expected Timeline (Author's Processed Data)

Furthermore, the proposed ship's specifications take into account the ship's cargo, volume, special requirement and proposed shipyard which is expected to be ready to meet the demands of modern shipping operations. The ship's preference specification will be explained further below.



Table V – Project 1 Proposed Specification

<i>Proposed Specification</i>	
Cargo	Crude Oil Tanker
DWT	30,000 – 45,000 DWT
Special Requirement	Heater @60°C/140°F
Proposed Shipyard	Hyundai Heavy Industry

Project 2

Project 2 involves investing in the construction of a newbuild ship. The ship's construction will be financed using a combination of debt and equity, with a capital structure consisting of 75% debt and 25% equity. In the analysis, a hurdle rate of 9.09% will be applied, which includes the weighted average cost of capital (WACC) at 7.09% and an additional risk premium of 2%. This hurdle rate will serve as a benchmark for comparing the required rate of return for the project, where the project's internal rate of return (IRR) needs to exceed the hurdle rate. Further details regarding the capital structure and other aspects will be provided below.

Table VI – Project 2 Financial Results

<i>Project No.</i>	<i>CAPEX</i>	<i>Delivery</i>	<i>NPV</i>	<i>Remarks</i>	<i>IRR</i>	<i>Remarks</i>	<i>Decision</i>
Project 2	\$ 47,960,000	Feb. 2026	\$ 1,729,839	>0	10.07%	> 9.09%	Feasible

There are also several additional financial calculations to support the investment project for the purchase of tankers, namely sensitivity, scenario and risk analysis. The results of these calculations will be explained in more detail below.

1. Sensitivity Analysis – Project 2

Sensitivity analysis will be calculated using 6 component variables, namely CAPEX, time charter rate, OPEX, interest rate, tenor year and tax rate. The calculations and figures provided above demonstrate that the components exerting the most significant influence on the overall project economy are CAPEX (capital expenditure) and OPEX (operating expenditure). These two factors are identified as the most sensitive elements that play a crucial role in determining the financial viability of the project. The result of this calculations can be seen below

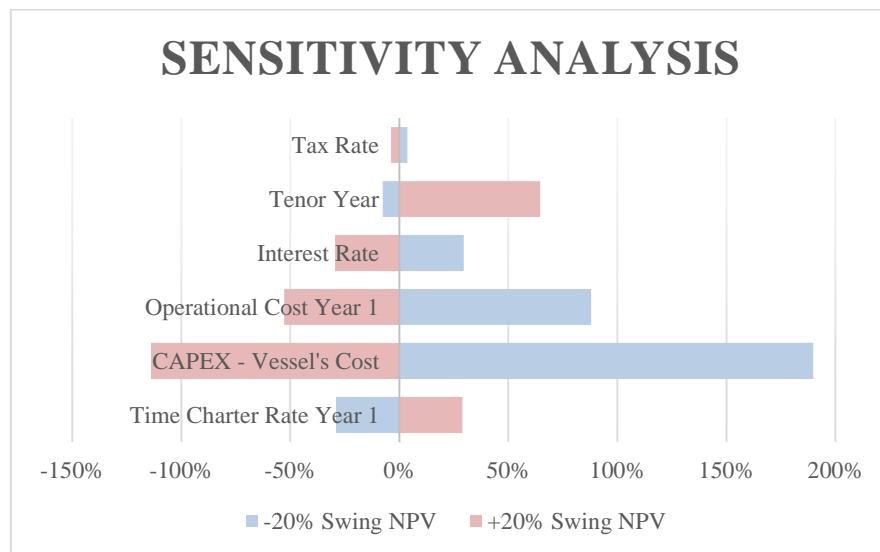


Figure 6 – Project 2 Sensitivity Analysis (Author’s Processed Data)

2. Scenario Analysis – Project 2

Scenario analysis is a method utilized in financial modelling and decision-making to evaluate the potential results of various future situations. The results of Project 2 scenario analysis will be explained further below.



Table VII – Project 2 Scenario Analysis

Scenario	Components	Value	NPV	IRR
Worst Scenario	Vessel's Cost	\$ 66,500,000	\$ -20,022,355	1.12%
	OPEX Year 1	\$ 6,580		
	Time Charter Year 1	\$ 20,600		
Base Scenario	Vessel's Cost	\$ 46,000,000	\$ 1,729,839	10.07%
	OPEX Year 1	\$ 5,313		
	Time Charter Year 1	\$ 22,100		
Best Scenario	Vessel's Cost	\$ 34,000,000	\$ 14,661,510	21.59%
	OPEX Year 1	\$ 5,009		
	Time Charter Year 1	\$ 28,800		

3. Risk Analysis – Project 2

The risk register preparation yielded the identification of 7 risk events which can be seen below.

No.	Risk Event	Impact	Mitigation	Inherent			Residual			Level Risk	
				P	I	R	P	I	R	Inherent	Residual
1	Increase rebuild vessel cost	Investment scenario realization does not align with its expected profitability	Requesting a velocity quotation for the shipyard for more than 180 days from the shipbuilding schedule	3	3	35	1	1	11	High Risk	Low Risk
2	Delays in ship delivery process	Decrease in revenue stream	1. Choosing shipyards with prior expertise in constructing vessels of similar dimensions 2. The imposition of a late fine clause on the shipyard 3. Establishing a designated point of contact (POC) responsible for conducting regular monitoring throughout the construction process	3	5	35	1	3	13	High Risk	Low Risk
3	Increased OPEX cost	Decrease in project profitability	Monitoring the realization of monthly operational costs	2	5	25	2	1	21	Moderate to High Risk	Low Risk
4	Potential risks of process safety, fire, work accidents, environmental pollution and other hazards at the location	1. Financial Losses 2. Declining corporate image 3. Fatality 4. Damage to assets	1. Training/upskilling for employees regarding the implementation of a safe work environment 2. Scheduled docking of ships	2	4	24	1	3	13	Moderate Risk	Low Risk
5	Decrease in the technical performance of the ship	Increased maintenance activity which impacted the decrease in revenue stream	Monitor the ship's monthly performance across all aspects	2	4	24	1	1	11	Moderate Risk	Low Risk
6	Plague outbreak aboard the vessel	1. Serious health issues that have the potential to be life-threatening 2. Interruption of operational activities	1. Verify that the vaccination program for the crew members of the ship has been implemented. 2. Ensuring the availability of emergency protocols to effectively manage the spread of outbreaks on ships	2	4	24	1	3	13	Moderate Risk	Low Risk
7	Potential of ships facing restrictions due to operational permits	Delayed ship's operational period	Ensure licensing, regulatory and taxation schemes with law firms	3	1	31	1	1	11	Low Risk	Low Risk

Figure 7 – Project 2 Risk Analysis (Author's Processed Data)

4. Implementation Plan – Project 2

The ships construction will begin in March of 2024 and it is expected to be delivered in February of 2026. The project requirement and timeline will be explained below.

Kegiatan	2023				2024				2025				2026			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Investment Analysis																
Feasibility Study																
Gate Review																
Shipbuilding																
SBC																
Steel Cutting																
Keel Laying																
Launching																
Delivery																

Figure 8 – Project 2 Expected Timeline (Author's Processed Data)



Moreover, the specifications of the proposed ship have been carefully designed to accommodate its cargo capacity, volume, and any special requirements. The selection of the shipyard is also considered, ensuring that it is adequately equipped to fulfill the requirements and expectations of contemporary shipping operations.

Table VIII – Project 2 Proposed Specification

<i>Proposed Specification</i>	
Cargo	Crude Oil Tanker
DWT	30,000 – 45,000 DWT
Special Requirement	Heater @ 60°C/140°F
Proposed Shipyard	Daewoo Shipbuilding

Project 3

Project 3 involves investing in a secondhand ship. The ship's acquisition will be evaluated using an 9.59% hurdle rate, which incorporates a weighted average cost of capital (WACC) of 7.09% and an additional risk premium of 2.5%. This hurdle rate will serve as a benchmark for comparing the required rate of return for the project, with the project's internal rate of return (IRR) expected to exceed the hurdle rate. The capital structure for this investment entails 75% debt and 25% equity. Further details regarding the project's specifics will be provided in the subsequent explanation.

Table IX – Project 3 Financial Results

<i>Project No.</i>	<i>CAPEX</i>	<i>Delivery</i>	<i>NPV</i>	<i>Remarks</i>	<i>IRR</i>	<i>Remarks</i>	<i>Decision</i>
Project 3	\$ 32,847,989	Feb. 2024	\$ 1,053,483	>0	10.07%	> 9.59%	Feasible

There are also several additional financial calculations to support the investment project for the purchase of tankers, namely sensitivity, scenario and risk analysis. The results of these calculations will be explained in more detail below.

1. Sensitivity Analysis – Project 3

Project 3 sensitivity analysis will be calculated using 5 component variables, namely CAPEX, time charter rate, OPEX, interest rate, and tax rate. Sensitivity analysis of project 3 demonstrate that the most influential components on the overall project economy are CAPEX (capital expenditure) and OPEX (operational expenditure). The result of this calculations can be seen below.

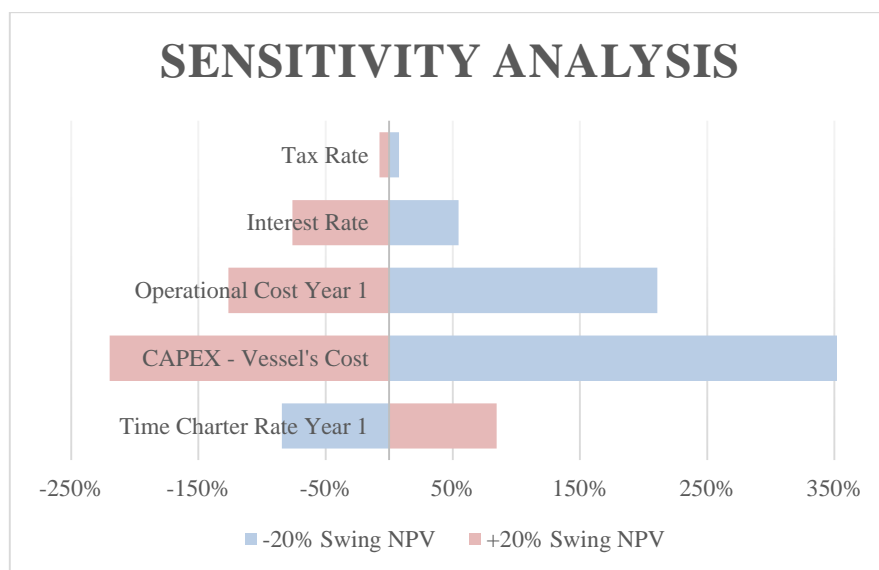


Figure 9 – Project 3 Sensitivity Analysis (Author’s Processed Data)



2. Scenario Analysis – Project 3

The outcomes of the scenario analysis for Project 3 will be further explained below.

Table X – Project 3 Scenario Analysis

Scenario	Components	Value	NPV	IRR
Worst Scenario	Vessel's Cost	\$ 45,460,000	\$ -12,681,225	-0.45%
	OPEX Year 1	\$ 6,580		
	Time Charter Year 1	\$ 16,900		
Base Scenario	Vessel's Cost	\$ 31,780,000	\$ 1,053,483	10.83%
	OPEX Year 1	\$ 5,313		
	Time Charter Year 1	\$ 24,100		
Best Scenario	Vessel's Cost	\$ 24,020,000	\$ 8,151,138	27.23%
	OPEX Year 1	\$ 5,009		
	Time Charter Year 1	\$ 26,100		

3. Risk Analysis – Project 3

The risk register preparation yielded the identification of 8 risk events which can be seen below.

No.	Risk Event	Impact	Mitigation	Inherent			Residual			Level Risiko	
				P	I	R	P	I	R	Inherent	Residual
1	The non-availability of the MR ship being targeted for purchase	1. Investment scenario realization does not align with its expected profitability 2. Opportunity loss of project income	1. Conduct a comprehensive inspection and survey of the vessel, including technical and structural assessments. 2. Create warranties or guarantees from the seller regarding the vessel's condition & availability	5	4	54	1	1	11	High Risk	Low Risk
2	Delays or discrepancy in project's financing	Difficulty in obtaining financing or securing favorable loan terms can impact the feasibility of the investment.	1. Develop a robust business plan and financial projections to demonstrate the investment's viability. 2. Maintain a good credit rating and consider establishing relationships with multiple financial institutions to increase options for financing.	3	5	35	1	1	11	High Risk	Low Risk
3	Increased OPEX Cost	Decrease in project profitability	Monitoring the realization of monthly operational costs	3	5	35	2	1	21	High Risk	Low Risk
4	Market Volatility	Decrease charter rates and vessel value, impacting the profitability of the investment.	1. Conduct thorough market research and analyse to assess the current market conditions and forecast future trends. 2. Diversifying the investment portfolio across multiple vessel types or market segments to reduce exposure to a specific market.	2	4	24	1	3	13	Moderate Risk	Low Risk
5	Potential risks of process safety, fire, work accidents, environmental pollution and other hazards at the location	1. Financial Losses 2. Declining corporate image 3. Fatality 4. Damage to assets	1. Training/upskilling for employees regarding the implementation of a safe work environment 2. Scheduled docking of ships	2	4	24	1	3	13	Moderate Risk	Low Risk
6	Decrease in the technical performance of the ship	Increased maintenance activity which impacted the decrease in revenue stream	Monitor the ship's monthly performance across all aspects	2	4	24	1	1	11	Moderate Risk	Low Risk
7	Plague outbreak aboard the vessel	1. Serious health issues that have the potential to be life-threatening. 2. Interruption of operational activities	1. Verify that the vaccination program for the crew members of the ship has been implemented. 2. Ensuring the availability of emergency protocols to effectively manage the spread of outbreaks on ships	2	4	24	1	3	13	Moderate Risk	Low Risk
8	Potential of ships facing restrictions due to operational permits	Delayed ship's operational period	Ensure licensing, regulatory and taxation schemes with law firms	3	1	31	1	1	11	Low Risk	Low Risk

Figure 10 – Project 3 Risk Analysis (Author's Processed Data)

4. Implementation Plan – Project 3

The acquisition of the ship is scheduled to commence in January 2024, with an anticipated delivery date set for February 2024. More information regarding the project's requirement and timeline will be elaborated below.



Activity	2023				2024		
	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Investment Proposal							
Drafting Feasibility Study	█	█					
CS Gate Review			█	█			
Vessel Acquisition							
Vessel Inspection & Appraisal			█	█			
MOA					█		
Delivery						█	

Figure 11 – Project 3 Expected Timeline (Author’s Processed Data)

Table XI – Project 3 Proposed Specification

<i>Proposed Specification</i>	
Cargo	Crude Oil Tanker
DWT	30,000 – 45,000 DWT
Special Requirement	Heater @60°C/140°F
Proposed Ship	MT Hulda Maersk

Project 4

Project 4 entails an investment in a secondhand ship. The evaluation of acquiring the ship will involve the application of an 9.59% hurdle rate, which encompasses a weighted average cost of capital (WACC) of 7.09% and an additional risk premium of 2.5%. This hurdle rate will serve as a benchmark against which the required rate of return for the project will be compared, with the project's internal rate of return (IRR) expected to surpass the hurdle rate. The investment's capital structure consists of 75% debt and 25% equity. Further elaboration on the specific details of the project will be provided in the subsequent explanation.

Table XII – Project 4 Financial Results

<i>Project No.</i>	<i>CAPEX</i>	<i>Delivery</i>	<i>NPV</i>	<i>Remarks</i>	<i>IRR</i>	<i>Remarks</i>	<i>Decision</i>
Project 4	\$ 32,807,589	Jun. 2025	\$ 1,294,656	>0	10.98%	> 9.59%	Feasible

There are also several additional financial calculations to support the investment project for the purchase of tankers, namely sensitivity, scenario and risk analysis. The results of these calculations will be explained in more detail below.

1. Sensitivity Analysis – Project 4

Same as before, sensitivity analysis of project 4 demonstrate that the most influential components on the overall project economy are CAPEX (capital expenditure) and OPEX (operational expenditure).

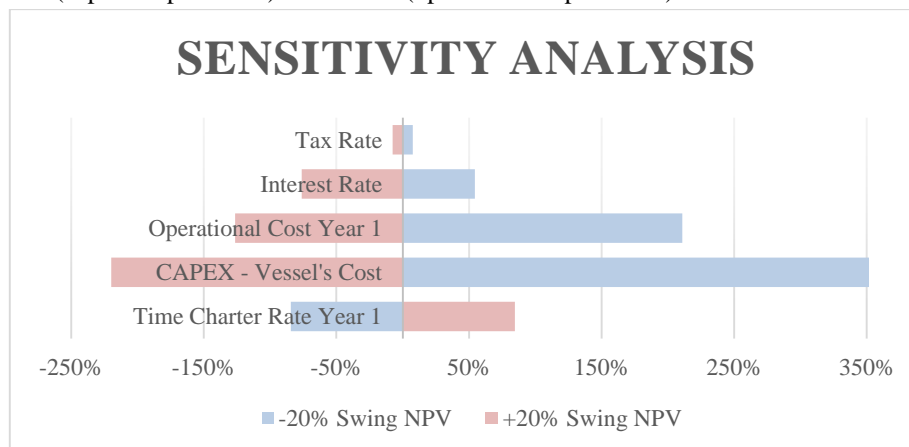


Figure 12 – Project 4 Sensitivity Analysis (Author’s Processed Data)



2. Scenario Analysis – Project 4

The outcomes of the scenario analysis for Project 4 will be further explained below.

Table XIII – Project 4 Scenario Analysis

Scenario	Components	Value	NPV	IRR
Worst Scenario	Vessel's Cost	\$ 45,460,000		
	OPEX Year 1	\$ 6,580	\$ -15,058,039	-1.21%
	Time Charter Year 1	\$ 16,900		
Base Scenario	Vessel's Cost	\$ 31,740,000		
	OPEX Year 1	\$ 5,313	\$ 1,294,656	10.98%
	Time Charter Year 1	\$ 24,100		
Best Scenario	Vessel's Cost	\$ 24,020,000		
	OPEX Year 1	\$ 5,009	\$ 10,404,224	29.42%
	Time Charter Year 1	\$ 26,100		

3. Risk Analysis – Project 4

The risk register preparation yielded the identification of 8 risk events which can be seen below.

No.	Risk Event	Impact	Mitigation	Inherent		Residual		Level Risiko			
				P	I	R	P	I	R	Inherent	Residual
1	The non-availability of the MR ship being targeted for purchase	1. Investment scenario realization does not align with its expected profitability 2. Opportunity loss of project income	1. Conduct a comprehensive inspection and survey of the vessel, including technical and structural assessments. 2. Create warranties or guarantees from the seller regarding the vessels condition & availability	5	4	54	1	1	11	High Risk	Low Risk
2	Delays or discrepancy in project's financing	Difficulty in obtaining financing or securing favorable loan terms can impact the feasibility of the investment.	1. Develop a robust business plan and financial projections to demonstrate the investment's viability. 2. Maintain a good credit rating and consider establishing relationships with multiple financial institutions to increase options for financing.	3	5	35	1	1	11	High Risk	Low Risk
3	Increased OPEX Cost	Decrease in project profitability	Monitoring the realization of monthly operational costs	3	5	35	2	1	21	High Risk	Low Risk
4	Market Volatility	Decrease charter rates and vessel value, impacting the profitability of the investment.	1. Conduct thorough market research and analysis to assess the current market conditions and forecast future trends. 2. Diversifying the investment portfolio across multiple vessel types or market segments to reduce exposure to a specific market.	2	4	24	1	3	13	Moderate Risk	Low Risk
5	Potential risks of process safety, fire, work accidents, environmental pollution and other hazards at the location	1. Financial Losses 2. Declining corporate image 3. Fatality 4. Damage to assets	1. Training/upskilling for employees regarding the implementation of a safe work environment 2. Scheduled docking of ships	2	4	24	1	3	13	Moderate Risk	Low Risk
6	Decrease in the technical performance of the ship	Increased maintenance activity which impacted the decrease in revenue stream	Monitor the ship's monthly performance across all aspects	2	4	24	1	1	11	Moderate Risk	Low Risk
7	Plague outbreak aboard the vessel	1. Serious health issues that have the potential to be life-threatening. 2. Interruption of operational activities	1. Verify that the vaccination program for the crew members of the ship has been implemented. 2. Ensuring the availability of emergency protocols to effectively manage the spread of outbreaks on ships	2	4	24	1	3	13	Moderate Risk	Low Risk
8	Potential of ships facing restrictions due to operational permits	Delayed ship's operational period	Ensure licensing, regulatory and taxation schemes with law firms	3	1	31	1	1	11	Low Risk	Low Risk

Figure 13 – Project 4 Risk Analysis (Author's Processed Data)

4. Implementation Plan – Project 4

The acquisition of the ship is scheduled to commence in May 2025, with an anticipated delivery date set for June 2025. More information regarding the project's requirement and timeline will be elaborated below.



Activity	2025						
	Jan	Feb	Mar	Apr	May	Jun	Jul
Investment Proposal							
Drafting Feasibility Study							
CS Gate Review							
Vessel Acquisition							
Vessel Inspection & Appraisal							
MOA							
Delivery							

Figure 14 – Project 4 Expected Timeline (Author’s Processed Data)

Table XIV – Project 4 Proposed Specification

<i>Proposed Specification</i>	
Cargo	Crude Oil Tanker
DWT	30,000 – 45,000 DWT
Special Requirement	Heater @60°C/140°F
Proposed Ship	MT Henry Maersk

Project 5

Project 5 revolves around investing in a secondhand ship. The assessment of acquiring the ship will involve the utilization of an 9.59% hurdle rate, which includes a weighted average cost of capital (WACC) of 7.09% and an additional 2.5% risk premium. This hurdle rate will serve as a benchmark against which the required rate of return for the project will be compared, with the project's internal rate of return (IRR) expected to exceed the hurdle rate. The investment's capital structure is composed of 75% debt and 25% equity. Further elucidation regarding the specific details of the project will be provided in subsequent explanations.

Table XV – Project 5 Financial Results

<i>Project No.</i>	<i>CAPEX</i>	<i>Delivery</i>	<i>NPV</i>	<i>Remarks</i>	<i>IRR</i>	<i>Remarks</i>	<i>Decision</i>
Project 5	\$ 35,160,889	Jan. 2025	\$ 813,554	>0	10.50%	> 9.59%	Feasible

There are also several additional financial calculations to support the investment project for the purchase of tankers, namely sensitivity, scenario and risk analysis. The results of these calculations will be explained in more detail below.

1. Sensitivity Analysis – Project 5

Same as before, sensitivity analysis of project 5 demonstrate that the most influential components on the overall project economy are CAPEX (capital expenditure) and OPEX (operational expenditure).

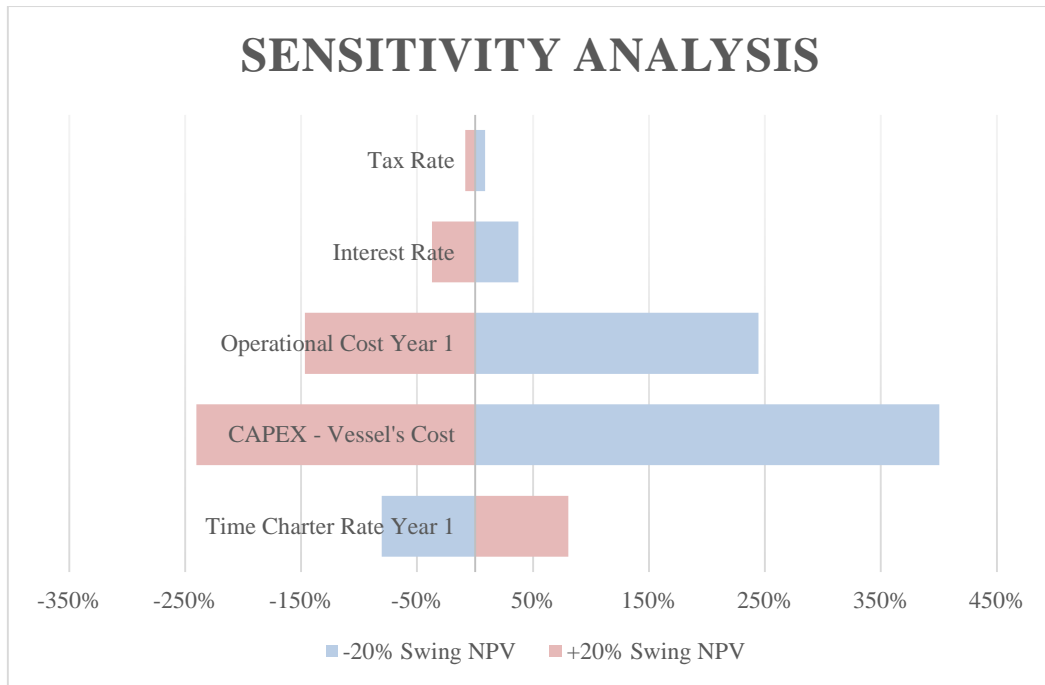


Figure 15 – Project 5 Sensitivity Analysis (Author’s Processed Data)

2. Scenario Analysis – Project 5

The outcomes of the scenario analysis for Project 5 will be further explained below.

Table XVI – Project 5 Scenario Analysis

Scenario	Components	Value	NPV	IRR
Worst Scenario	Vessel’s Cost	\$ 45,460,000		
	OPEX Year 1	\$ 6,580	\$ -13,535,332	-0.98%
	Time Charter Year 1	\$ 16,900		
Base Scenario	Vessel’s Cost	\$ 34,070,000		
	OPEX Year 1	\$ 5,313	\$ 813,554	10.50%
	Time Charter Year 1	\$ 24,100		
Best Scenario	Vessel’s Cost	\$ 24,020,000		
	OPEX Year 1	\$ 5,009	\$ 14,070,000	67.21%
	Time Charter Year 1	\$ 26,100		

3. Risk Analysis – Project 5

The process of preparing the risk register resulted in the identification of 8 risk events, which are depicted below.



No.	Risk Event	Impact	Mitigation	Inherent			Residual			Level Risiko	
				P	I	R	P	I	R	Inherent	Residual
1	The non-availability of the MR ship being targeted for purchase	1. Investment scenario realization does not align with its expected profitability 2. Opportunity loss of project income	1. Conduct a comprehensive inspection and survey of the vessel, including technical and structural assessments. 2. Create warranties or guarantees from the seller regarding the vessel's condition & availability	5	4	54	1	1	11	High Risk	Low Risk
2	Delays or discrepancy in project's financing	Difficulty in obtaining financing or securing favorable loan terms can impact the feasibility of the investment.	1. Develop a robust business plan and financial projections to demonstrate the investment's viability. 2. Maintain a good credit rating and consider establishing relationships with multiple financial institutions to increase options for financing.	3	5	35	1	1	11	High Risk	Low Risk
3	Increased OPEX Cost	Decrease in project profitability	Monitoring the realization of monthly operational costs	3	5	35	2	1	21	High Risk	Low Risk
4	Market Volatility	Decrease charter rates and vessel value, impacting the profitability of the investment.	1. Conduct thorough market research and analysis to assess the current market conditions and forecast future trends. 2. Diversifying the investment portfolio across multiple vessel types or market segments to reduce exposure to a specific market.	2	4	24	1	3	13	Moderate Risk	Low Risk
5	Potential risks of process safety, fire, work accidents, environmental pollution and other hazards at the location	1. Financial Losses 2. Declining corporate image 3. Fatality 4. Damage to assets	1. Training/upskilling for employees regarding the implementation of a safe work environment 2. Scheduled docking of ships	2	4	24	1	3	13	Moderate Risk	Low Risk
6	Decrease in the technical performance of the ship	Increased maintenance activity which impacted the decrease in revenue stream	Monitor the ship's monthly performance across all aspects	2	4	24	1	1	11	Moderate Risk	Low Risk
7	Plague outbreak aboard the vessel	1. Serious health issues that have the potential to be life-threatening. 2. Interruption of operational activities	1. Verify that the vaccination program for the crew members of the ship has been implemented. 2. Ensuring the availability of emergency protocols to effectively manage the spread of outbreaks on ships	2	4	24	1	3	13	Moderate Risk	Low Risk
8	Potential of ships facing restrictions due to operational permits	Delayed ship's operational period	Ensure licensing, regulatory and taxation schemes with law firms	3	1	31	1	1	11	Low Risk	Low Risk

Figure 16 – Project 5 Risk Analysis (Author’s Processed Data)

4. Implementation Plan – Project 5

The acquisition of the ship is scheduled to commence in December 2024, with an anticipated delivery date set for January 2025. More information regarding the project's timeline and proposed specification will be elaborated below.

Activity	2024					2025	
	Aug	Sep	Oct	Nov	Dec	Jan	Feb
Investment Proposal							
Drafting Feasibility Study							
CS Gate Review							
Vessel Acquisition							
Vessel Inspection & Appraisal							
MOA							
Delivery							

Figure 17 – Project 5 Expected Timeline (Author’s Processed Data)

Table XVII – Project 5 Proposed Specification

Proposed Specification	
Cargo	White Oil Tanker
DWT	30,000 – 45,000 DWT
Special Requirement	-
Proposed Ship	MT Sagami



Project 6

Project 6 focuses on making an investment in a secondhand ship. The evaluation of acquiring the ship will involve applying an 9.59% hurdle rate, which comprises a weighted average cost of capital (WACC) of 7.09% along with an additional 2.5% risk premium. This hurdle rate will act as a reference point for comparing the required rate of return for the project, where the project's internal rate of return (IRR) is anticipated to surpass the hurdle rate. The investment's capital structure consists of 75% debt and 25% equity. More detailed information regarding the specific aspects of the project will be provided in subsequent explanations.

Table XVIII – Project 6 Financial Results

Project No.	CAPEX	Delivery	NPV	Remarks	IRR	Remarks	Decision
Project 6	\$ 32,292,489	Oct. 2025	\$ 749,302	>0	10.34%	> 9.59%	Feasible

There are also several additional financial calculations to support the investment project for the purchase of tankers, namely sensitivity, scenario and risk analysis. The results of these calculations will be explained in more detail below.

1. Sensitivity Analysis – Project 6

Similar to previous cases, the sensitivity analysis of project 6 reveals that the most influential factors affecting the overall project economics are the capital expenditure (CAPEX) and operational expenditure (OPEX). These components play a significant role in shaping the financial outcomes and performance of the project.

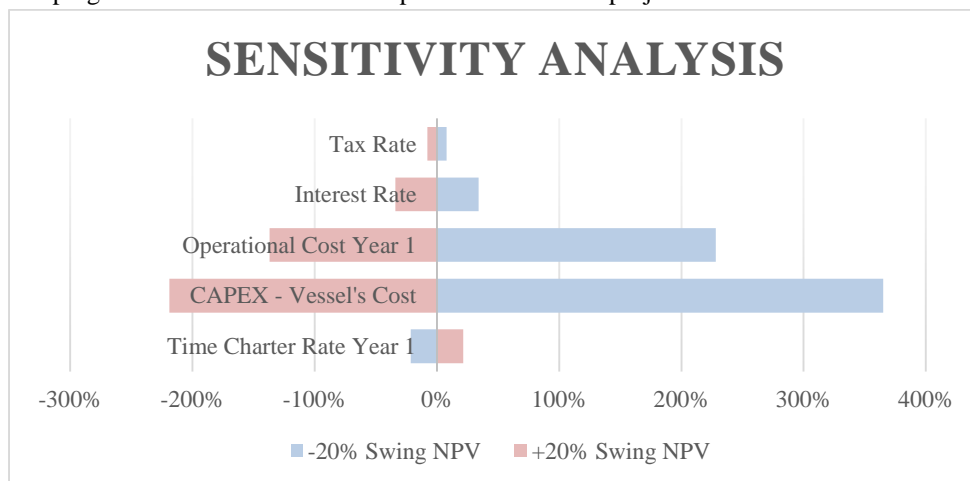


Figure 18 – Project 6 Sensitivity Analysis (Author’s Processed Data)

2. Scenario Analysis – Project 6

The outcomes of the scenario analysis for Project 6 will be further explained in Table below.

Table XIX – Project 6 Scenario Analysis

Scenario	Components	Value	NPV	IRR
Worst Scenario	Vessel’s Cost	\$ 45,460,000		
	OPEX Year 1	\$ 6,580	\$ -15,823,766	-1.30%
	Time Charter Year 1	\$ 16,900		
Base Scenario	Vessel’s Cost	\$ 31,230,000		
	OPEX Year 1	\$ 5,313	\$ 749,302	10.34%
	Time Charter Year 1	\$ 24,100		
Best Scenario	Vessel’s Cost	\$ 24,020,000		
	OPEX Year 1	\$ 5,009	\$ 8,705,043	22.30%
	Time Charter Year 1	\$ 26,100		



3. Risk Analysis – Project 6

The process of preparing the risk register resulted in the identification of 8 risk events, which are depicted in Figure 19 below.

No.	Risk Event	Impact	Mitigation	Inherent			Residual			Level Risiko	
				P	I	R	P	I	R	Inherent	Residual
1	The non-availability of the MR ship being targeted for purchase	1. Investment scenario realization does not align with its expected profitability 2. Opportunity loss of project income	1. Conduct a comprehensive inspection and survey of the vessel, including technical and structural assessments. 2. Create warranties or guarantees from the seller regarding the vessel's condition & availability	5	4	54	1	1	11	High Risk	Low Risk
2	Delays or discrepancy in project's financing	Difficulty in obtaining financing or securing favorable loan terms can impact the feasibility of the investment.	1. Develop a robust business plan and financial projections to demonstrate the investment's viability. 2. Maintain a good credit rating and consider establishing relationships with multiple financial institutions to increase options for financing.	3	5	35	1	1	11	High Risk	Low Risk
3	Increased OPEX Cost	Decrease in project profitability	Monitoring the realization of monthly operational costs	3	5	35	2	1	21	High Risk	Low Risk
4	Market Volatility	Decrease charter rates and vessel value, impacting the profitability of the investment.	1. Conduct thorough market research and analysis to assess the current market conditions and forecast future trends. 2. Diversifying the investment portfolio across multiple vessel types or market segments to reduce exposure to a specific market.	2	4	24	1	3	13	Moderate Risk	Low Risk
5	Potential risks of process safety, fire, work accidents, environmental pollution and other hazards at the location	1. Financial Losses 2. Declining corporate image 3. Fatality 4. Damage to assets	1. Training/upskilling for employees regarding the implementation of a safe work environment 2. Scheduled docking of ships	2	4	24	1	3	13	Moderate Risk	Low Risk
6	Decrease in the technical performance of the ship	Increased maintenance activity which impacted the decrease in revenue stream	Monitor the ship's monthly performance across all aspects	2	4	24	1	1	11	Moderate Risk	Low Risk
7	Plague outbreak aboard the vessel	1. Serious health issues that have the potential to be life-threatening. 2. Interruption of operational activities	1. Verify that the vaccination program for the crew members of the ship has been implemented. 2. Ensuring the availability of emergency protocols to effectively manage the spread of outbreaks on ships	2	4	24	1	3	13	Moderate Risk	Low Risk
8	Potential of ships facing restrictions due to operational permits	Delayed ship's operational period	Ensure licensing, regulatory and taxation schemes with law firms	3	1	31	1	1	11	Low Risk	Low Risk

Figure 19 – Project 6 Risk Analysis (Author's Processed Data)

4. Implementation Plan – Project 6

The ship acquisition process is scheduled to begin in September 2025, and the expected delivery date is set for October 2025. Further details regarding the project's requirement and timeline will be provided in the subsequent section.

Activity	2025						
	May	Jun	Jul	Aug	Sep	Oct	Nov
Investment Proposal							
Drafting Feasibility Study							
CS Gate Review							
Vessel Acquisition							
Vessel Inspection & Appraisal							
MOA							
Delivery							

Figure 20 – Project 6 Implementation Plan (Author's Processed Data)



Table XX – Project 6 Proposed Specification

<i>Proposed Specification</i>	
Cargo	White Oil Tanker
DWT	30,000 – 45,000 DWT
Special Requirement	-
Proposed Ship	MT Henriette Maersk

Project 7

Project 7 centers around an investment opportunity in a secondhand ship. The assessment of acquiring the ship will involve the application of an 9.59% hurdle rate, which encompasses a weighted average cost of capital (WACC) of 7.09% along with an additional 2.5% risk premium. This hurdle rate will serve as a benchmark for comparing the required rate of return for the project, with the expectation that the project's internal rate of return (IRR) will exceed the hurdle rate. The investment's capital structure comprises 75% debt and 25% equity. Further detailed information pertaining to the specific aspects of the project will be provided in subsequent explanations.

Table XXI – Project 7 Financial Results

<i>Project No.</i>	<i>CAPEX</i>	<i>Delivery</i>	<i>NPV</i>	<i>Remarks</i>	<i>IRR</i>	<i>Remarks</i>	<i>Decision</i>
Project 7	\$ 32,342,989	Jul. 2025	\$ 756,958	>0	10.39%	> 9.59%	Feasible

There are also several additional financial calculations to support the investment project for the purchase of tankers, namely sensitivity, scenario and risk analysis. The results of these calculations will be explained in more detail below.

1. Sensitivity Analysis – Project 7

Like previous instances, the sensitivity analysis of project 7 indicates that the capital expenditure (CAPEX) and operational expenditure (OPEX) have the greatest impact on the overall project economics. These elements hold substantial importance in determining the financial results and success of the project.

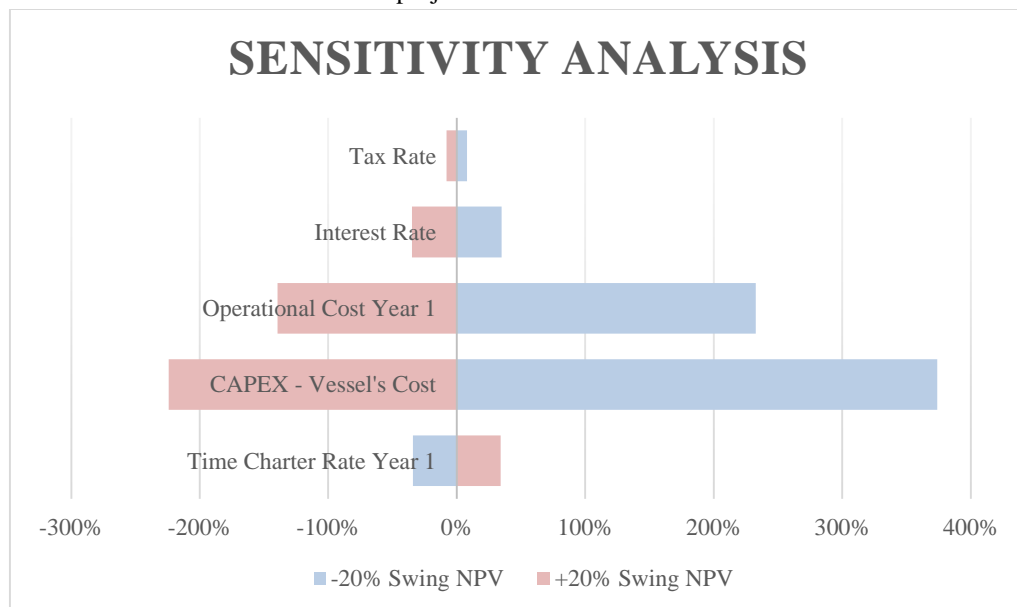


Figure 21 – Project 7 Sensitivity Analysis (Author’s Processed Data)



2. Scenario Analysis – Project 7

The outcomes of the scenario analysis for Project 7 will be further explained in Table below.

Table XXII – Project 7 Scenario Analysis

Scenario	Components	Value	NPV	IRR
Worst Scenario	Vessel's Cost	\$ 45,460,000	\$ -15,843,934	-1.75%
	OPEX Year 1	\$ 6,580		
	Time Charter Year 1	\$ 16,900		
Base Scenario	Vessel's Cost	\$ 31,230,000	\$ 756,958	10.39%
	OPEX Year 1	\$ 5,313		
	Time Charter Year 1	\$ 24,100		
Best Scenario	Vessel's Cost	\$ 24,020,000	\$ 9,133,266	24.65%
	OPEX Year 1	\$ 5,009		
	Time Charter Year 1	\$ 26,100		

3. Risk Analysis – Project 7

The process of preparing the risk register resulted in the identification of 8 risk events, which are depicted in Figure 22 below.

No.	Risk Event	Impact	Mitigation	Inherent			Residual			Level Risiko	
				P	I	R	P	I	R	Inherent	Residual
1	The non-availability of the MR ship being targeted for purchase	1. Investment scenario realization does not align with its expected profitability 2. Opportunity loss of project income	1. Conduct a comprehensive inspection and survey of the vessel, including technical and structural assessments. 2. Create warranties or guarantees from the seller regarding the vessel's condition & availability	5	4	54	1	1	11	High Risk	Low Risk
2	Delays or discrepancy in project's financing	Difficulty in obtaining financing or securing favorable loan terms can impact the feasibility of the investment.	1. Develop a robust business plan and financial projections to demonstrate the investment's viability. 2. Maintain a good credit rating and consider establishing relationships with multiple financial institutions to increase options for financing.	3	5	35	1	1	11	High Risk	Low Risk
3	Increased OPEX Cost	Decrease in project profitability	Monitoring the realization of monthly operational costs	3	5	35	2	1	21	High Risk	Low Risk
4	Market Volatility	Decrease charter rates and vessel value, impacting the profitability of the investment.	1. Conduct thorough market research and analysis to assess the current market conditions and forecast future trends. 2. Diversifying the investment portfolio across multiple vessel types or market segments to reduce exposure to a specific market.	2	4	24	1	3	13	Moderate Risk	Low Risk
5	Potential risks of process safety, fire, work accidents, environmental pollution and other hazards at the location	1. Financial Losses 2. Declining corporate image 3. Fatality 4. Damage to assets	1. Training/upskilling for employees regarding the implementation of a safe work environment 2. Scheduled docking of ships	2	4	24	1	3	13	Moderate Risk	Low Risk
6	Decrease in the technical performance of the ship	Increased maintenance activity which impacted the decrease in revenue stream	Monitor the ship's monthly performance across all aspects	2	4	24	1	1	11	Moderate Risk	Low Risk
7	Plague outbreak aboard the vessel	1. Serious health issues that have the potential to be life-threatening. 2. Interruption of operational activities	1. Verify that the vaccination program for the crew members of the ship has been implemented. 2. Ensuring the availability of emergency protocols to effectively manage the spread of outbreaks on ships	2	4	24	1	3	13	Moderate Risk	Low Risk
8	Potential of ships facing restrictions due to operational permits	Delayed ship's operational period	Ensure licensing, regulatory and taxation schemes with law firms	3	1	31	1	1	11	Low Risk	Low Risk

Figure 22 – Project 7 Risk Analysis (Author's Processed Data)

4. Implementation Plan – Project 7

The process of acquiring the ship is planned to commence in June 2025, with the anticipated delivery date scheduled for July 2025. Additional information concerning the project's requirement and timeline will be provided in the following section.



Activity	2025						
	Feb	Mar	Apr	May	Jun	Jul	Aug
Investment Proposal							
Drafting Feasibility Study							
CS Gate Review							
Vessel Acquisition							
Vessel Inspection & Appraisal							
MOA							
Delivery							

Figure 22 – Project 7 Expected Timeline (Author’s Processed Data)

Table XXIII – Project 7 Proposed Specification

<i>Proposed Specification</i>	
Cargo	Chemical Tanker
DWT	30,000 – 45,000 DWT
Special Requirement	IMO Type II
Proposed Ship	MT MTM Dublin

RECOMMENDATION

Here is each project’s summary that was used as a basis for granting recommendations:

Table XXIV – Investment Project Summary

<i>Project No.</i>	<i>NPV</i>	<i>Remarks</i>	<i>IRR</i>	<i>Remarks</i>	<i>Decision</i>
Project 1	\$ 2,269,037		10.40%	> 9.09%	Feasible
Project 2	\$ 1,729,839		10.07%		Feasible
Project 3	\$ 1,053,483		10.83%		Feasible
Project 4	\$ 1,294,656	>0	10.98%		Feasible
Project 5	\$ 813,554		10.50%	>9.59%	Feasible
Project 6	\$ 749,302		10.34%		Feasible
Project 7	\$ 756,958		10.39%		Feasible

Based on the projects financial calculations, all the results indicate positive outcomes, leading to the conclusion that the seven projects are viable and feasible to pursue. Furthermore, by incorporating additional analyses such as risk analysis, sensitivity analysis, and scenario analysis, it is expected that these projects can be executed optimally. These analyses provide a deeper understanding of potential risks, variations in project outcomes based on different variables, and the impact of various scenarios. By considering these factors, the aim is to ensure that the projects contribute positively to the economic productivity of the company

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