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Determination of Net Income of Shipping Companies: Analysis of Fuel Costs, Shipping Rates, and Shipping Routes mediated by Shipping Insurance

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Abstract: This study aims to analyze the determination of net income in shipping companies in Indonesia by examining the influence of fuel costs, shipping rates, and shipping routes through the mediation of shipping insurance. Using a descriptive qualitative approach through a systematic literature study of 30 relevant articles (SINTA and Scopus), this study synthesizes various findings related to maritime financial performance for the period 2022–2025. The results of the study indicate that: 1) Fuel costs affect shipping insurance; 2) Shipping rates affect shipping insurance; 3) Shipping routes affect shipping insurance; 4) Fuel costs affect net income; 5) Shipping rates affect net income; 6) Shipping routes affect net income; 7) Shipping insurance affects net income; 8) Fuel costs affect net income through shipping insurance; 9) Shipping rates affect net income through shipping insurance; and 10) Shipping routes affect net income through shipping insurance. This research provides a strategic contribution to management in addressing market volatility and IMO 2020 regulations.

Keyword: Net Income, Shipping Insurance, Fuel Costs, Shipping Rates, Shipping Routes.

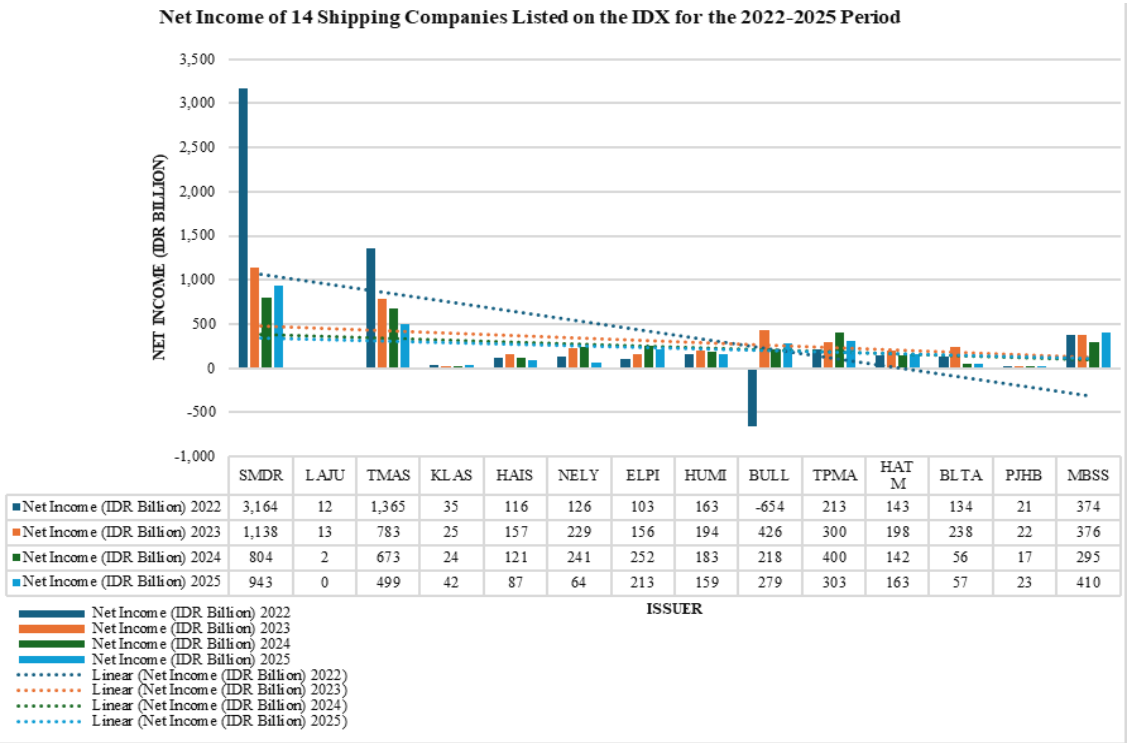
INTRODUCTION

Shipping is a major pillar in the global logistics system which plays a strategic role as the lifeblood of international trade, considering that more than 80% of the world's trade volume is carried out via sea routes (Patampang & Mokodompit, 2025). As the largest archipelagic country, the shipping industry in Indonesia has a higher urgency in maintaining connectivity between regions and supporting the stability of national commodity distribution (Tiodora et al., 2024).

However, this industry is highly dynamic and capital-intensive, where companies are often faced with significant operational challenges, ranging from global fuel price volatility to increasingly complex logistics risks resulting from changing global environmental regulations and supply chain disruptions (Maulita, 2022).

The fundamental performance of shipping companies in Indonesia can generally be measured by net income, which reflects management's effectiveness in balancing tariff revenue with cost efficiency. Net profit is not simply a final figure in financial statements, but a vital indicator for investors and stakeholders to assess a company's resilience to market shocks (Jainuddin, 2023).

Despite its significant market potential, the reality of the Indonesian shipping industry from 2022 to 2025 shows a challenging trend, as reflected in the decline in aggregate net profit. This downward trend is shown in Table 1 below:



	SMDR	LAJU	TMAS	KLAS	HAIS	NELY	ELPI	HUMI	BULL	TPMA	HATM	BLTA	PJHB	MBSS
Net Income (IDR Billion) 2022	3,164	12	1,365	35	116	126	103	163	-654	213	143	134	21	374
Net Income (IDR Billion) 2023	1,138	13	783	25	157	229	156	194	426	300	198	238	22	376
Net Income (IDR Billion) 2024	804	2	673	24	121	241	252	183	218	400	142	56	17	295
Net Income (IDR Billion) 2025	943	0	499	42	87	64	213	159	279	303	163	57	23	410

Figure 1. Net Income of 14 Shipping Companies Listed on the IDX for the 2022-2025 Period
Source: Stockbit, 2026

Figure 1 illustrates the trend in net income of shipping companies in Indonesia from 2022 to 2025, which shows a gradual downward trend. In 2022, net income remained relatively high due to the recovery of economic activity, but in subsequent years, a significant and volatile decline was observed. This condition indicates pressure on the financial performance of shipping companies, stemming from both increased operational costs and unstable revenues.

This decline in net income can be influenced by various factors, such as fluctuations in fuel costs following global oil prices, changes in shipping rates due to market demand dynamics, and the complexity of shipping routes, which increases operational risk. Furthermore, increasing costs related to shipping insurance as a form of risk mitigation also contribute to suppressing company profitability. Therefore, Figure 1 not only reflects the empirical conditions of the shipping industry in Indonesia but also emphasizes the importance of integrated operational cost and risk management to sustainably increase shipping companies' net income.

This research provides a theoretical contribution by expanding the maritime financial management literature through the integration of operational aspects (routes & fuel) and protection aspects (insurance). Practically, this research provides guidance for shipping issuers on the Indonesia Stock Exchange in managing cost and risk structures to increase company value.

There is an inconsistent research gap in previous research regarding the influence of shipping routes and fuel costs on net income. Some studies indicate a dominant direct effect, while others identify uncharted risk factors. This research addresses this gap by positioning Shipping Insurance as a mediating variable, which has rarely been integrated into shipping net income determination models.

This research is novel in developing a conceptual model that simultaneously integrates operational, market, and risk factors in explaining the determinants of net income of shipping companies. Unlike previous studies that generally examine the influence of fuel costs, shipping rates, and shipping routes partially, this study presents a more comprehensive approach by incorporating shipping insurance as a mediating variable that plays a strategic role in linking operational efficiency and financial stability. Furthermore, this study combines a systematic literature review approach with thematic synthesis and bibliometric analysis, thus providing a more in-depth contribution both theoretically and conceptually to the development of operational management literature and the shipping industry.

The urgency of this research lies in the critical condition of the Indonesian shipping industry in the 2022-2025 period, which faces post-pandemic bunker price volatility and the implementation of the IMO 2020 sulfur emission regulations. The significant decline in net income during this period demands a strategic model that can explain how operational efficiency can be translated into financial stability.

Based on the above background, the following research questions are formulated to generate hypotheses for further research, specifically for shipping companies Do fuel costs, shipping rates and shipping routes affect the net income of shipping companies either directly or indirectly through shipping insurance?

METHOD

This study uses a Systematic Literature Review (SLR) approach by adopting the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) protocol to ensure transparency, systematicity, and replicability in the literature selection process. The PRISMA process is carried out through four main stages: identification, screening, eligibility, and inclusion. In the identification stage, researchers collected articles from various reputable databases, particularly Scopus and SINTA, using relevant keywords such as shipping net income, fuel cost, freight rate, shipping route, and marine insurance. The initial search results yielded a large number of articles, which were then filtered in the next stage (Zulfikar et al., 2024).

In the screening stage, articles were selected based on their titles and abstracts to ensure their relevance to the research topic. Irrelevant articles, duplicates, and non-scientific publications were eliminated. Next, in the eligibility stage, a full-text review was conducted to ensure their relevance to the research variables. In the final stage, inclusion, 30 articles were selected that met all criteria for further analysis (Susanto et al., 2024).

Data collection techniques were conducted through a documentation study of selected scientific articles. This process included collecting, grouping, and organizing literature based on research variables. Each article was analyzed to identify concepts, indicators, and relationships between variables relevant to the research focus (Renggo & Kom, 2022)

Data analysis was conducted using a thematic synthesis approach to identify patterns of relationships between variables in the analyzed literature. This process included open coding

to identify key concepts, axial coding to connect concepts, and selective coding to build the research's conceptual framework. Key themes identified included fuel cost efficiency, shipping rate dynamics, shipping route optimization, and the role of shipping insurance in risk mitigation. Furthermore, this study employed a descriptive bibliometric analysis approach to map research trends, author contributions, and developments in research topics in the fields of shipping and operational management. This analysis provides an overview of current research directions and strengthens the validity of the findings (Zulfikar et al., 2024).

RESULT AND DISCUSSION

Results

Based on the problem formulation above, the results obtained from this literature study are as follows:

Net Income of Shipping Companies

A shipping company's net income is the net profit earned after all revenues are subtracted from all operating costs, non-operating costs, taxes, and other expenses within a given period. Net income not only reflects a company's ability to generate profits from transporting goods or passengers but is also a key indicator of operational efficiency and business sustainability. Shipping companies' revenues generally come from transportation services, ship charters, and additional services such as logistics and warehousing (Xu & Zhang, 2021).

Indicators or dimensions contained in the net income variable of a shipping company include: 1) Net Profit Margin: A ratio that shows the percentage of revenue remaining after deducting all operating costs, interest, and taxes. This measures how efficiently a company converts revenue into profit; 2) Annual Profit Growth: An indicator that compares the current year's net profit with the previous year. This reflects business sustainability amidst global economic fluctuations; 3) Earnings per Share: The portion of profit allocated to each outstanding common share. This indicator is crucial for investors in assessing the value of a shipping company on the stock exchange (Mujino et al., 2021).

The shipping company net income variable is relevant to previous research conducted by: (Spyrou, 2024), (A. J. Saputra & Angriani, 2023), (Manurung et al., 2020).

Shipping Insurance

Shipping insurance is a form of financial protection provided to shipping companies or goods owners against the risk of loss that may occur during sea transportation. These risks can include damage to goods, loss of cargo, ship accidents, fires, and natural disasters such as storms and high waves. Shipping insurance serves as a crucial risk mitigation mechanism in the shipping industry, which is characterized by high levels of uncertainty. Insurance policies typically include various types of coverage, such as marine cargo insurance (for goods), hull insurance (for ships), and protection and indemnity (P&I) insurance, which covers the legal liability of ship operators (Li et al., 2023).

Indicators or dimensions contained in shipping insurance variables include: 1) Insurance Premium Amount: The value of the fee that must be paid by the company to the insurance provider based on the type of cargo, the value of the goods, and the risk level of the shipping route; 2) Coverage: A dimension that measures the extent to which the insurance policy covers risks, such as total loss (Total Loss), partial damage, or third party liability (Protection & Indemnity); 3) Claim Ratio: The frequency and success of claims filed for incidents that occur. A low ratio usually reflects good shipping safety management (Ma et al., 2023).

The shipping insurance variable is relevant to previous research conducted by: (Li et al., 2021), (Popilaya & Hasibuan, 2023).

Fuel Costs

Fuel costs in the shipping industry are one of the largest operational costs a company must bear. Ship fuel, often referred to as bunker fuel, is used to power a ship's main engines and support various operational systems. Fuel costs are heavily influenced by global oil prices, the type of fuel used (such as marine diesel oil or heavy fuel oil), and the ship's fuel efficiency (Tiodora et al., 2024).

Indicators or dimensions contained in the fuel cost variable include: 1) Fuel Consumption per Nautical Mile: A measure of a ship's technical efficiency in using fuel to cover a certain distance. Influenced by engine age and ship speed; 2) Bunker Price (Fuel Price Volatility): Fluctuations in the price of MFO (Marine Fuel Oil) or HSD (High Speed Diesel) fuel purchased at certain ports; 3) Environmental Regulation Implementation Costs (LSFO): Additional costs arising from the use of low-sulfur fuel according to IMO 2020 regulations to reduce exhaust emissions (Setiawan et al., 2024).

The fuel cost variable is relevant to previous research conducted by: (Budiyanto & Dawangi, 2022), (Amrullah et al., 2024).

Shipping Rates

Shipping rates are the prices or fees charged by shipping companies to customers for transporting goods or passengers from one location to another via sea routes. These rates are the primary source of revenue for shipping companies and are typically determined based on various factors, such as the type and volume of goods, shipping distance, service type (regular or express), and market conditions. In the context of international trade, shipping rates are also influenced by supply and demand dynamics, global economic conditions, and the level of competition between shipping companies (N. C. Saputra & Bailey, 2022).

Indicators or dimensions contained in the shipping rate variable include: 1) Basic Rate: The main cost of shipping based on volume (CBM), weight (Ton), or container units (TEUs) from the port of origin to the destination; 2) Additional Cost: Extra costs outside the basic rate, such as Bunker Adjustment Factor (BAF) due to fuel price increases or Currency Adjustment Factor (CAF) due to foreign exchange fluctuations; 3) Compatibility with Market Prices: The level of competitiveness of the company's rates compared to the average rate index on the same route (for example compared to the Shanghai Containerized Freight Index) (Prayogi et al., 2025).

The shipping rate variable is relevant to previous research conducted by: (Tjahjuadi, 2023), (N. C. Saputra & Bailey, 2022).

Shipping Route

A shipping route is a path or route taken by a ship to transport goods or passengers from the port of origin to the port of destination. Determining the shipping route is a strategic aspect of shipping company operations, as it directly impacts time efficiency, operational costs, and the level of travel risk. Shipping routes are determined not only based on the shortest distance but also take into account various factors such as weather conditions, ocean currents, regional security, maritime traffic density, and the availability of port facilities (Prabaswara et al., 2024).

Indicators or dimensions contained in the shipping route variable include: 1) Distance and Transit Time: Total nautical miles traveled and the duration of time required from the point of departure to arrival at the destination port; 2) Route Density and Connectivity: Frequency of ship visits on a particular route. Busy routes (such as the Strait of Malacca) are usually more efficient but have the risk of delays due to port queues; 3) Availability of Port of Call Infrastructure: The adequacy of port basin depth and loading and unloading facilities along the route that determine whether large ships can dock or not (Setiawan et al., 2024).

The shipping route variables are relevant to previous research conducted by: (Tjoea & Halim, 2023), (Prabaswara et al., 2024).

Previous Research

Based on the above findings and previous research, the research discussion is formulated as follows:

Table 1. Relevant Previous Research Results

No	Author (Year)	Research Result	Similarities with this study	Differences with this research	Hypothesis
1	(Utomo et al., 2025)	Fuel Price Variables, Ship Rates Influence Shipping Insurance and Ship Loading Performance at PT Sarana Anugerah Samudra	The similarity with this research is that the independent variable is Fuel Price and the dependent variable is Shipping Insurance.	There is research objects carried out at PT Sarana Anugerah Samudra	H1
2	(Popilaya & Hasibuan, 2023)	Claim Settlement Process and Shipping Rates variables affect Shipping Insurance	The similarity with this research is that the independent variable is Shipping Rates and the dependent variable is Shipping Insurance.	The difference with this research is in the other independent variables, namely Claim Settlement.	H2
3	(Dermawan, 2022)	Shipping Route and Transportation Cost Variables Influence Shipping Insurance at CV Jaya Abadi	The similarity with this research is in the independent variable Shipping Route and the dependent variable Shipping Insurance.	There are research objects carried out at CV Jaya Abadi	H3
4	(Rohmatulloh, 2022)	The Agency Division Activity and Ship Fuel Cost Variables Influence the Company's Net Income	The similarity with this research is that the independent variable is Ship Fuel Cost and the dependent variable is Net Income.	The difference with this research is in the other independent variables, namely Agency Division Activities.	H4
5	(Adani et al., 2026)	The variables of income, shipping rates and total debt have an impact on the net income of transportation and logistics companies on the Indonesian Stock Exchange (BEI) in 2019-2024.	The similarity with this research is that the independent variable is Shipping Rates and the dependent variable is Net Income.	The difference with this research is in the other independent variables, namely Total Debt.	H5
6	(Febriansyah, 2023)	Operational Cost and Shipping Route Variables Influence Net Profit of BEI Transportation and Logistics Companies in 2017-2021	The similarity with this research is in the independent variable Shipping Route and the dependent variable Net Profit.	The difference with this research is in the other independent variables, namely Operational Costs.	H6
7	(Irsyadi, 2022)	Shipping Insurance Variables Influence Risk Mitigation and Net Profit of Heavy Equipment Shipping to Papua by PT Fardana Berlian Papua Surabaya	The similarities with this research are in the independent variable Shipping Insurance, and the dependent variable Net Profit.	There are research objects carried out at PT Fardana Berlian Papua Surabaya	H7

Discussion

Based on the formulation of the problem, research objectives and the results of previous research above, the discussion in the research which focuses on shipping companies in Indonesia is as follows:

1. The Impact of Fuel Costs on Shipping Insurance for Shipping Companies

Based on a literature review and relevant previous research, it is known that fuel costs influence the implementation of shipping insurance for shipping companies in Indonesia.

To implement shipping insurance for shipping companies, management or management of shipping companies must consider three main fuel cost indicators: 1) Fuel consumption per nautical mile: Management must implement a real-time fuel consumption monitoring system and perform regular preventive maintenance; 2) Bunker prices: Company management must implement hedging strategies or enter into long-term contracts with fuel suppliers to ensure cost certainty; 3) Costs of implementing environmental regulations: Management is required to allocate a budget for the use of low-sulfur fuel (LSFO) or scrubber technology. Compliance with these international regulations demonstrates that the company has good governance and is law-abiding.

If shipping company management or management consistently pays attention to these three fuel cost indicators, it will positively impact the implementation of shipping insurance by shipping companies in Indonesia, including: 1) Insurance premiums: If management can demonstrate fuel efficiency and good engine maintenance, the vessel's technical risk profile decreases. This provides shipping companies with bargaining power to negotiate lower premiums or obtain discounts due to their perceived safe and reliable fleet; 2) Coverage: Compliance with environmental regulations (using LSFO) allows companies to obtain more comprehensive protection. Insurance companies tend to be more willing to provide additional coverage (endorsements), including protection against marine pollution risks or third-party legal liability; 3) Claim ratio: Management's focus on engine efficiency automatically reduces the number of accidents due to technical failures. By reducing the frequency of accidents, claims filed with insurance companies also decrease.

The results of this study align with previous research conducted by (Utomo et al., 2025), which states that there is an influence between fuel costs and the implementation of shipping insurance in shipping companies in Indonesia.

2. The Influence of Shipping Rates on Shipping Insurance for Shipping Companies

Based on a literature review and relevant previous research, it is known that shipping rates influence the implementation of shipping insurance for shipping companies in Indonesia.

To implement shipping insurance for shipping companies, management or management of shipping companies must consider three main indicators of shipping rates: 1) Base rates: Management must set competitive base rates while still covering all operational risk costs; 2) Additional costs: Company management must transparently determine additional costs, such as the Bunker Adjustment Factor (BAF) or War Risk Surcharge on hazardous routes. These additional costs must be managed in such a way that they can be directly allocated to cover insurance premium increases under special conditions (when passing through the conflict zone in the Strait of Hormuz) that occurred from mid-February 2026 to March 2026; 3) Compliance with market prices: Management is required to benchmark rates against global and domestic market indices.

If shipping company management or management consistently monitors these three shipping rate indicators, this will positively impact the implementation of shipping insurance by shipping companies in Indonesia, including: 1) Insurance premium amounts: When companies are able to maintain healthy base rates, insurance companies perceive financial stability in their customers. Stable revenue from rates allows companies to pay insurance premiums on time, thereby avoiding the risk of policy cancellations that could increase future premium expenses; 2) Coverage coverage: When companies charge additional rates for high-risk shipments, these funds can be used to expand insurance coverage to include All Risk or

higher legal liability coverage; 3) Claim ratio: Rates that are in line with market prices allow companies to avoid overworking their fleets in pursuit of revenue.

The results of this study align with previous research conducted by (Popilaya & Hasibuan, 2023), which states that there is an influence between shipping rates and the implementation of shipping insurance at shipping companies in Indonesia.

3. The Influence of Shipping Routes on Shipping Insurance for Shipping Companies

Based on a literature review and relevant previous research, it is known that shipping routes influence the implementation of shipping insurance for shipping companies in Indonesia.

To implement shipping insurance for shipping companies, management or management of shipping companies must consider three key shipping route indicators: 1) Distance and transit time: Management must design the most efficient yet safe route. Management also needs to utilize modern navigation systems to precisely monitor transit times; 2) Route density and connectivity: Company management must evaluate routes based on traffic density (such as the Strait of Malacca or the Indonesian Archipelagic Sea Lanes/ALKI). Management must also ensure that ship crews possess competency certifications appropriate to the complexity of the route and equip ships with the latest anti-collision technology (AIS/Radar); 3) Availability of port of call infrastructure: Management must select routes that provide access to ports with adequate emergency, repair, and loading and unloading facilities.

If shipping company management or management consistently pays attention to these three route indicators, it will positively impact the implementation of shipping insurance for shipping companies in Indonesia, including: 1) Insurance premiums: If management can demonstrate that the selected route has a good safety record and is supported by remote monitoring technology, insurers can offer more competitive premiums; 2) Coverage: With routes that have good port connectivity, insurance companies are more willing to provide comprehensive coverage. This is because the risk of total loss is reduced if the ship can easily reach assistance at the nearest port of call; 3) Claim ratio: Route management that focuses on safety aspects automatically reduces the frequency of collisions or cargo damage due to weather. This results in a low claim ratio, which can strengthen the company's bargaining position during policy renewals and convey the image of a low-risk shipping company.

The results of this study align with previous research conducted by (Dermawan, 2022), which states that there is an influence between shipping routes and the implementation of shipping insurance in shipping companies in Indonesia.

4. The Effect of Fuel Costs on Net Income of Shipping Companies

Based on a literature review and relevant previous research, it is known that fuel costs impact net income for shipping companies in Indonesia.

To increase net income for shipping companies, management or management must pay attention to three key fuel cost indicators: 1) Fuel consumption per nautical mile: Management should adopt Weather Routing and Slow Steaming technologies. By setting ship speeds at optimal levels (eco-speed) and selecting routes that minimize current/wind resistance, fuel consumption can be significantly reduced; 2) Bunker prices: Company management must be proficient in financial instruments such as fuel hedging or bulk purchase contracts with established suppliers; 3) Costs of implementing environmental regulations: Management must invest in greener engine technology or the installation of efficient scrubbers.

If management or management of shipping companies consistently pays attention to these three fuel cost indicators, it will positively impact net income for shipping companies in Indonesia, including: 1) Net profit margin: When fuel costs decrease without reducing shipping volumes, the gap between revenue and total costs will widen. This indicates high operational efficiency, where the company is able to generate greater residual income for

every rupiah generated; 2) Annual profit growth: With hedging strategies and consumption efficiency, the company is resilient to external shocks. Net profit will not plummet when oil prices rise, so the year-over-year profit growth trend is more stable and predictable for investors; 3) Earnings per share: The accumulation of thickening margins and growing profits will increase EPS. High EPS is a positive signal to the capital market (according to Signaling Theory), indicating that the company is highly profitable for shareholders, which will ultimately boost the stock price and overall company value.

The results of this study align with previous research conducted by (Rohmatulloh, 2022), which states that there is an influence between fuel costs and net income in shipping companies in Indonesia.

5. The Influence of Shipping Rates on Net Income of Shipping Companies

Based on a literature review and relevant previous research, it is known that shipping rates impact net income for shipping companies in Indonesia.

To increase net income for shipping companies, management or management must pay attention to three key shipping rate indicators: 1) Base rate: Management must accurately calculate the cost per container or per ton to ensure the set base rate covers fixed costs while providing a profit margin; 2) Surcharge: Company management must be able to implement additional cost components such as the Bunker Adjustment Factor (BAF) to mitigate the risk of rising fuel prices or Terminal Handling Charges (THC); 3) Compliance with market prices: Management must monitor tariff indices (such as the Indonesia Freight Index) to ensure the company's tariffs remain competitive.

If management or management of shipping companies consistently pay attention to these three shipping rate indicators, it will positively impact net income for shipping companies in Indonesia, including: 1) Net profit margin: When base rates and surcharges are managed to consistently remain above the break-even point, each additional unit of cargo will contribute directly to an increase in profit margin; 2) Annual profit growth: With a flexible yet manageable tariff structure, the company is resilient to economic cycles. This allows the company to record a positive profit growth trend annually, indicating the fundamental health of the shipping company. 3) Earnings per share: Increasing EPS is a strong signal (Signalling Theory) to investors that management is successfully converting market opportunities into real profits, which will ultimately boost the Company's Value (PBV).

The results of this study align with previous research conducted by (Adani et al., 2026), which states that there is an influence between shipping rates and net income in shipping companies in Indonesia.

6. The Influence of Shipping Routes on Shipping Company Net Income

Based on a literature review and relevant previous research, it is known that shipping routes influence net income for shipping companies in Indonesia.

To increase net income for shipping companies, management or management must pay attention to three key route indicators: 1) Distance and transit time: Management must use intelligent navigation systems to determine the shortest and fastest routes with minimal weather constraints; 2) Route density and connectivity: Company management must be discerning in selecting routes with high and stable cargo demand. Management needs to build a connectivity network connecting main ports with receiving ports; 3) Availability of port of call infrastructure: Management must map routes based on the quality of port of call. Ports with modern infrastructure (sufficient water depth and high loading and unloading speeds/gantry cranes) will expedite operational processes.

If shipping company management or management consistently monitors these three route indicators, it will positively impact net income for shipping companies in Indonesia, including: 1) Net profit margin: With faster transit times and port efficiency, total operational costs can be reduced while revenue from cargo volume remains stable or increases. This

widens the profit margin, resulting in a thicker and healthier net profit margin. 2) Annual profit growth: Route resilience to seasonal or economic disruptions ensures the company can record consistent profit growth, reflecting strong company fundamentals in the eyes of creditors and shareholders. 3) Earnings per share: Route efficiency, which leads to accumulated net profit, will increase EPS.

The results of this study align with previous research conducted by (Febriansyah, 2023), which states that there is an influence between shipping routes and net income in shipping companies in Indonesia.

7. The Impact of Shipping Insurance on Net Income of Shipping Companies

Based on a literature review and relevant previous research, it is known that shipping insurance impacts net income of shipping companies in Indonesia.

To increase net income of shipping companies, management or management must pay attention to three key indicators of shipping insurance: 1) Insurance premium size: Management must be able to implement premium efficiency strategies without sacrificing the quality of protection. This can be achieved through contract negotiations with insurance companies, selecting risk-based premium schemes, and implementing sound internal risk management to lower the company's risk profile; 2) Coverage: Management needs to ensure that insurance coverage is comprehensive yet selective, covering key risks such as cargo damage, loss, legal liability, and environmental risks; 3) Claims ratio: Management should focus on reducing the claims ratio by improving operational safety standards, crew training, and implementing more advanced navigation and security technology.

If shipping company management or management consistently addresses these three shipping insurance indicators, it will positively impact net income for shipping companies in Indonesia, including: 1) Net profit margin: Optimal premium management will reduce operational costs, thereby directly increasing net profit margin; 2) Annual profit growth: Optimal coverage will minimize the potential for significant losses, thereby maintaining stable earnings per share (EPS) and increasing investor confidence. This also contributes to sustainable annual profit growth because the company is more resilient to operational shocks; 3) Earnings per share: A low claims ratio will result in lower premiums in the following period and reduce unexpected losses. This directly increases net profit margin and strengthens earnings per share performance, as the company is able to maintain financial stability and reduce earnings volatility.

The results of this study align with previous research conducted by (Irsyadi, 2022), which states that there is an influence between shipping insurance and net income in shipping companies in Indonesia.

8. The Impact of Fuel Costs on Shipping Companies' Net Income through Shipping Insurance

Based on a literature review and relevant previous research, it is known that fuel costs impact the net income of shipping companies in Indonesia through shipping insurance.

To increase net income for shipping companies, management or management must pay attention to six key indicators of fuel costs and shipping insurance, including: 1) Fuel consumption per nautical mile: Management must optimize fuel consumption efficiency through the implementation of voyage optimization, the use of fuel monitoring system technology, and slow steaming strategies; 2) Bunker prices: Require management to implement hedging strategies, long-term contracts, and diversify fuel sources; 3) Costs of implementing environmental regulations: Management must make appropriate investments between regulatory compliance and cost efficiency, such as limiting sulfur emissions (IMO 2020); 4) Insurance premium amounts: Management must integrate fuel policies with premium negotiation strategies; 5) Coverage: Management needs to tailor insurance coverage to the risks arising from fuel usage strategies, such as engine risks due to low-quality fuel or

route changes. 6) Claims ratio: Management must ensure fuel quality and vessel operational standards.

If shipping company management or management consistently addresses these six fuel and insurance cost indicators, it will positively impact net income for shipping companies in Indonesia, including: 1) Net profit margin: Reducing dual operating costs (fuel and insurance premiums) mathematically directly increases the profit margin per unit shipped; 2) Annual profit growth: With insurance that covers a broad range of risks, the company is protected from revenue volatility due to accidents or operational disruptions. This ensures more stable and measurable profit growth each year; 3) Earnings per share: The accumulation of these efficiencies will increase aggregate net income. Increasing EPS provides a strong signal to investors that the company has excellent risk and cost management, which ultimately boosts its Company Value (PBV).

The results of this study align with previous research conducted by (Suwarsa & Wahidah, 2025), which states that there is an influence between fuel costs and net income in shipping companies in Indonesia through shipping insurance.

9. The Influence of Shipping Rates on Shipping Company Net Income through Shipping Insurance

Based on a literature review and relevant previous research, it is known that shipping rates impact net income for shipping companies in Indonesia through shipping insurance.

To increase net income for shipping companies, management or management must consider six key indicators of shipping rates and shipping insurance, including: 1) Base rates: Management must implement data-driven dynamic pricing. Base rates should not be based solely on distance traveled but should also include risk-adjusted pricing; 2) Additional costs: Management must transparently separate additional costs such as fuel surcharges, port congestion surcharges, and seasonal risk surcharges (e.g., during the west season/strong winds); 3) Alignment with market prices: Management needs to conduct regular benchmarking. If rates are too low compared to the market, volume increases but cumulative risk increases without adequate risk premiums. If they are too high, volume decreases and underwriting risk becomes inefficient for partner insurance companies because the vessel's fixed costs are not covered; 4) Insurance premium amounts: Management must negotiate fleet policies with underwriters based on historical loss ratios; 5) Coverage: Management must ensure that insurance policies include Institute Cargo Clauses (A) for high-value goods and War & Strikes for certain routes; 6) Claims ratio: Management must establish a claims management team tasked with mitigating claims through pre-accident investigations and expediting claim payments.

If management or shipping company leaders are able to continuously pay attention to these six shipping rate and shipping insurance indicators, it will have a positive impact on net income for shipping companies in Indonesia, including: 1) Net profit margin: Will increase significantly, as this risk-cost efficiency widens the spread between revenue and operating costs, thereby boosting net profit margins; 2) Annual profit growth: Becomes more stable and sustainable, when management is able to demonstrate predictable annual profit growth, which increases investor and bank creditor confidence (critical for financing new vessels); 3) Earnings per share: Consistent EPS increases enable shipping companies to expand their fleets without having to significantly increase debt or distribute higher dividends, ultimately increasing the company's market capitalization.

The results of this study align with previous research conducted by (Casmadi & Hutagalung, 2022), which states that there is an influence between shipping rates and net income for shipping companies in Indonesia through shipping insurance.

10. The Influence of Shipping Routes on Shipping Companies' Net Income through Shipping Insurance

Based on a literature review and relevant previous research, it is known that shipping routes influence the net income of shipping companies in Indonesia through shipping insurance.

To increase net income for shipping companies, management or management must pay attention to six key indicators of shipping routes and shipping insurance, including: 1) Distance and transit time: Management must perform route optimization based on historical data. Management can also use a voyage management system to select the shortest yet safest route; 2) Route density and connectivity: Diversify routes to avoid bottlenecks that can cause delays and potential demurrage claims (delay fees) or damage due to queues; 3) Availability of port of call infrastructure: Conduct regular port assessments of ports of call, including dock depth, loading and unloading facilities, security, and the availability of special handling equipment (reefer containers); 4) Insurance premium amount: Allocate premiums differently for each route based on its risk profile. High-risk routes (routes to conflict areas or shallow waters) should be charged higher premiums, while safe routes receive lower premiums. 5) Coverage coverage: Management must customize coverage based on route characteristics, rather than using a one-size-fits-all approach; 6) Claim ratio: Build a claims database by route to identify routes with high loss ratios and become loss leaders in the insurance portfolio.

If management or management of shipping companies can consistently pay attention to these six indicators of shipping routes and shipping insurance, it will have a positive impact on net income for shipping companies in Indonesia, including: 1) Net profit margin: The spread between revenue and total costs widens, sustainably increasing net profit margins; 2) Annual profit growth: Companies are able to demonstrate consistent annual profit growth, a key indicator for investors and creditors; 3) Earnings per share: Increase and support company valuation. High and stable EPS makes it easier for companies to obtain funding for fleet expansion and new routes.

The results of this study align with previous research conducted by (Harlansyah et al., 2024), which states that there is an influence between shipping routes and net income for shipping companies in Indonesia through shipping insurance.

Conceptual Framework

The conceptual framework is determined based on the problem formulation, research objectives, and previous research relevant to the literature review discussed in this study:

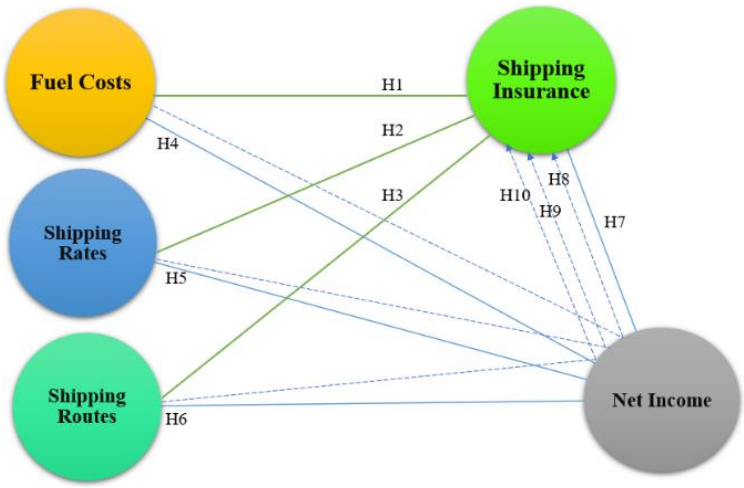


Figure 2. Conceptual Framework

Based on Figure 2 above, fuel costs, shipping rates, and shipping routes influence net income through shipping insurance for shipping companies in Indonesia. However, in addition to fuel costs, shipping rates, and shipping routes, which influence net income through shipping insurance, there are other variables that influence it, including:

1) Geopolitical Stability: (Nugraha, 2021), (Sudirman, 2025), (Marlisa & Munajar, 2026).
2) Delivery Reliability: (Yue & Mangan, 2024), (Eriksen et al., 2021).
3) Quality of Service: (Wang et al., 2021), (Rashid & Rasheed, 2024), (Gupta et al., 2022).

CONCLUSION

Based on the problem formulation, results, and discussion above, the conclusions of this literature review, using a case study of a shipping company in Indonesia, are as follows: 1) Fuel costs affect shipping insurance; 2) Shipping rates affect shipping insurance; 3) Shipping routes affect shipping insurance; 4) Fuel costs affect net income; 5) Shipping rates affect net income; 6) Shipping routes affect net income; 7) Shipping insurance affects net income; 8) Fuel costs affect net income through shipping insurance; 9) Shipping rates affect net income through shipping insurance; and 10) Shipping routes affect net income through shipping insurance.

This study makes a theoretical contribution by developing an integrative model linking operational, financial, and risk management aspects in the shipping industry. Specifically, this study enriches the literature by positioning shipping insurance as a mediating variable that bridges the relationship between operational costs (fuel costs), market factors (shipping rates), and technical factors (shipping routes) on shipping companies' net income. Thus, this study not only broadens understanding of the determinants of shipping companies' financial performance but also offers a new perspective on the integration of operational and risk management.

This research successfully synthesizes the causal relationship between maritime operational determinants and financial performance, providing new insights that insurance is not simply an administrative cost but a strategic instrument that mediates operational efficiency into sustainable net income.

Companies are advised to improve compliance with international environmental regulations to expand insurance coverage and minimize claims ratios.

This research is limited by the use of secondary, literature-based data, which may not capture the qualitative dynamics occurring in the field in real time. In addition, the scope of the study is limited to the shipping sector in Indonesia, so generalizing the findings to global markets with different regulatory characteristics needs to be done with caution.

REFERENCES

Adani, N. A., Kirowati, D., & Kurniawan, Y. D. (2026). Pengaruh Pendapatan, Biaya Operasional dan Total Hutang Terhadap Laba Bersih Perusahaan Sektor Transportasi dan Logistik Yang Terdaftar di Bursa Efek Indonesia (BEI) Periode 2019-2024. *Equivalent: Journal of Economic, Accounting and Management*, *4*(1), 51–72.

Amrullah, Y. F., Ndori, A., & Prasetya, T. B. (2024). Efisiensi Penggunaan Bahan Bakar Minyak (BBM) dan Waktu Berlayar pada Operasional Kapal TB Marina 21. *Indonesian Journal of Port and Shipping Management*, *1*(2), 9–18.

Budiyanto, M. A., & Dawangi, I. D. (2022). Studi Literatur Pengoperasian Hemat Bahan Bakar untuk Rencana Pengelolaan Kapal Hemat Energi. *Pros. SNTTM XX*, 13–14.

Casmadi, Y., & Hutagalung, Y. A. (2022). Pengaruh Biaya Distribusi Terhadap Laba Bersih Pada Perusahaan Di Sektor Transportasi dan Logistik Sub Sektor Logistik dan Pengantaran yang Terdaftar di BEIPeriode 2019-2021. *Jurnal Akuntansi*, *16*(02), 1–10.

Dermawan, D. (2022). Menentukan Rute Pengiriman Produk PT. Unicharm Indonesia Dengan Meminimalkan Biaya Transportasi Menggunakan Metode Saving Matrix di "CV. Jaya Abadi." *Jurnal Ilmiah Wahana Pendidikan*, *8*(12), 63–72.

Eriksen, S., Utne, I. B., & Lützen, M. (2021). An RCM approach for assessing reliability challenges and maintenance needs of unmanned cargo ships. *Reliability Engineering & System Safety*, *210*, 107550.

Febriansyah, M. (2023). *PENGARUH BIAYA OPERASIONAL TERHADAP LABA BERSIH PADA PERUSAHAAN JASA SEKTOR TRANSPORTASI DAN LOGISTIK YANG TERDAFTAR DI BURSA EFEK INDONESIA PERIODE 2017-2021*. SEKOLAH TINGGI ILMU ADMINISTRASI TABALONG.

Gupta, A., Singh, R. K., & Mangla, S. K. (2022). Evaluation of logistics providers for sustainable service quality: Analytics based decision making framework. *Annals of Operations Research*, *315*(2), 1617–1664.

Harlansyah, H., Widiarty, W. S., & Tehupeiory, A. (2024). Tinjauan Yuridis Tanggung Jawab Perusahaan Asuransi Terhadap Pemilik Kapal yang Mengalami Kecelakaan Kapal di Alur Pelayaran dalam Perspektif Hukum. *Action Research Literate*, *8*(5), 1–5.

Irsyadi, W. A. (2022). *Asuransi Kargo Laut (Studi Deskriptif Tentang Penanggulangan Resiko Dalam Pengiriman Alat Berat Ke Papua Oleh PT. Fardana Berlian Papua Surabaya)*. Universitas Airlangga.

Jainuddin, J. (2023). PENGARUH DIGITAL LEADERSHIP TERHADP KINERJA AWAK KAPAL PADA PELAYARAN RUTE MALAYSIA SINGAPURA. *Indonesian Journal Of Economy Studies*, *2*(1).

Li, Y., Li, G., & Pan, X. A. (2023). Optimal return shipping insurance policy with consumers' anticipated regret. *Production and Operations Management*, *32*(10), 3209–3226.

Li, Y., Li, G., Tayi, G. K., & Cheng, T. C. E. (2021). Return shipping insurance: Free versus for-a-fee? *International Journal of Production Economics*, *235*, 108110.

Ma, H.-L., Leung, L. C., Chung, S.-H., & Wong, C. W.-H. (2023). Insurance incentive to shippers by a container port: Issues of risk management in supply chain finance. *Annals of Operations Research*, *331*(1), 121–139.

Manurung, A. H., Hutahayan, B., Deniswara, K., & Kartika, T. R. (2020). Determinant of Net Interest Margin in Indonesia Bank Moderated by Risk. *International Journal of Advanced Science and Technology*, *29*(5), 11317–11328.

Marlisa, S., & Munajar, A. (2026). TERUSAN KRA DAN DINAMIKA GEOPOLITIK JALUR PERDAGANGAN GLOBAL. *Jurnal Pendidikan Sosial Dan Humaniora*, *5*(1), 1055–1064.

Maulita, M. (2022). Pengaruh Tekanan Regulasi Terhadap Inovasi Teknologi Hijau Dan Kinerja Ekonomi Pada Industri Pelayaran Di Samarinda. *Sebatik*, *26*(2), 710–717. https://doi.org/10.46984/sebatik.v26i2.2028

Mujino, M., Sari, P. P., & Widiyanti, I. W. (2021). Pengaruh Return on Asset Return on Equity Net Profit Margin Dan Earning Per Share Terhadap Harga Saham. *Jurnal Ilmiah Edunomika*, *5*(1), 45–47. https://doi.org/10.29040/jie.v5i1.1700

Nugraha, O. N. R. A. C. (2021). ,. *Jurnal Lemhannas RI*, *9*(4), 25–42.

Patampang, F., & Mokodompit, E. A. (2025). Integrasi Transportasi Laut dalam Global Supply Chain: Kajian Literatur Mengenai Efisiensi, Keberlanjutan, dan Daya Saing Falmawanty. *Ekonomika45: Jurnal Ilmiah Manajemen, Ekonomi Bisnis, Kewirausahaan*, *13*(1), 457–468.

Popilaya, C. N. A., & Hasibuan, R. R. A. (2023). Analisis Proses Penyelesaian Klaim terhadap Asuransi Pengiriman Barang Melalui JNE. *As-Syirkah: Islamic Economic & Financial Journal*, *2*(2), 109–118.

Prabaswara, A. D., Kiryanto, K., & Santosa, A. W. B. (2024). Perencanaan Kapal Container 12500 DWT untuk Rute Pelayaran Surabaya-Banjarmasin. *Jurnal Teknik Perkapalan*, *12*(2).

Prayogi, A. C., Kusuma, I. C., & Afif, M. N. (2025). ANALISIS PERHITUNGAN HARGA POKOK JASA PENGIRIMAN DALAM PENETAPAN TARIF PENGIRIMAN BARANG DOMESTIK DENGAN PENDEKATAN VARIABLE COSTING PADA CV. BOGOR LOGISTIC CARGO. *Jurnal Akuntansi Kompetif*, *8*(3), 943–950.

Priyanda, R., Agustina, T. S., Ariantini, N. S., Rusmayani, N. G. A. L., Aslindar, D. A., Ningsih, K. P., Wulandari, S., Putranto, P., & Yuniati, I. (2022). *Metodologi Penelitian Kuantitatif*. Pradina Pustaka. https://books.google.co.id/books?id=B5t1EAAAQBAJ

Rashid, D. A., & Rasheed, D. R. (2024). Logistics service quality and product satisfaction in e-commerce. *Sage Open*, *14*(1), 21582440231224250.

Renggo, Y. R., & Kom, S. (2022). POPULASI DAN SAMPEL KUANTITATIF. *METODOLOGI PENELITIAN KUANTITATIF, KUALITATIF DAN KOMBINASI*, *43*.

Rohmatulloh, P. (2022). Analisis Pengaruh Kegiatan Divisi Jasa Keagenan Kapal Dan Penggunaan Bahan Bakar Kapal Dalam Meningkatkan Pendapatan Perusahaan. *The Asia Pacific Journal of Management Studies*, *9*(2).

Saputra, A. J., & Angriani, R. (2023). Pengaruh Capital Adequacy Ratio (CAR), Non Performing Loan (NPL), Net Interest Margin (NIM), Loan To Deposit Ratio (LDR) Dan Biaya Operasional Pendapatan Operasional (BOPO) Terhadap Return On Asset (ROA) Pada Bank Perkreditan Rakyat (BPR) di Kota Batam. *Akuntansi Dan Manajemen*, *18*(1), 93–115. https://doi.org/10.30630/jam.v18i1.210

Saputra, N. C., & Bailey, A. N. (2022). ANALISIS BIAYA TRANSPORTASI DALAM PENETAPAN TARIF PENGIRIMAN BARANG PADA J&T EXPRESS DP RH FISABILILLAH TANJUNGPINANG. *Economic, Accounting Scientific Journal (CASH)*, *6*(1), 11–17.

Setiawan, A., Hadi, A. R. B. A., Widyaningsih, U., & Pamungkas, A. (2024). Optimalisasi Penentuan Rute Terbaik Pelayaran Berbasis Analisis Big Data untuk Efisiensi Bahan Bakar Kapal Laut. *Jurnal Riset & Teknologi Terapan Kemaritiman*, *3*(1), 32–39.

Spyrou, E. (2024). *Financial statements and the process of decision making in shipping companies*. Πανεπιστήμιο Πειραιώς.

Sudirman, R. D. (2025). BLACK SEA GRAIN INITIATIVE SEBAGAI INSTRUMEN STABILITAS GLOBAL: KETAHANAN PANGAN DAN GEOPOLITIK PASCA INVASI RUSIA. *Triwikrama: Jurnal Ilmu Sosial*, *9*(4), 1–10.

Susanto, P. C., Arini, D. U., Marlita, D., Yuntina, L., & Saribanon, E. (2024). Mixed Methods Research Design Concepts : Quantitative, Qualitative, Exploratory Sequential, Exploratory Sequential, Embedded and Parallel Convergent. *International Journal of Advanced Multidisciplinary (IJAM)*, *3*(3), 471–485.

Suwarsa, T., & Wahidah, I. S. (2025). PENGARUH BIAYA TRANSPORTASI TERHADAP LABA BERSIH PADA PERUSAHAAN DI SEKTOR TRANSPORTASI DAN LOGISTIK KHUSUSNYA TRANSPORTASI DARAT YANG TERDAFTAR DI BEI PERIODE 2020-2022. *Jurnal Akuntansi*, *21*(1), 15–22.

Tiodora, B., Suryadhini, P. P., & Nopendri, N. (2024). Perancangan Rute Optimal Distribusi Kargo Bahan Bakar Minyak dengan Metode Brute-Force Untuk Meminimasi Biaya Konsumsi Bahan Bakar Minyak Perusahaan Pelayaran PT XYZ. *Ranah Research: Journal of Multidisciplinary Research and Development*, *6*(6), 2623–2632.

Tjahjuadi, E. (2023). Analisis kualitas layanan, ketepatan waktu pengiriman dan persepsi tarif pengiriman terhadap keputusan menggunakan jasa ekspedisi PT. Nusatrans Anugerah Makmur. *MAPAN: Jurnal Manajemen Akuntansi Palapa Nusantara*, *8*(2), 62–70.

Tjoea, F., & Halim, S. (2023). Evaluasi rute pelayaran kapal dengan pendekatan modified minimum spanning tree. *Jurnal Titra*, *11*(2), 265–272.

Utomo, A. P. B., Soedarmanto, S., Kristiawati, I., & Mudayat, M. (2025). PENGARUH HARGA BAHAN BAKAR DAN TARIF FREIGHT MUATAN BATU BARA TERHADAP KINERJA MUAT KAPAL TUGBOAT DAN TONGKANG PADA PT. SARANA ANUGERAH SAMUDRA. *JUTRANIS*, *2*(02).

Wang, S., Zhuge, D., Zhen, L., & Lee, C.-Y. (2021). Liner shipping service planning under sulfur emission regulations. *Transportation Science*, *55*(2), 491–509.

Xu, J., & Zhang, Y. (2021). Exploring the nonlinear effect of intellectual capital on financial performance: evidence from listed shipping companies in China. *Complexity*, *2021*(1), 9004907.

Yue, Z., & Mangan, J. (2024). A framework for understanding reliability in container shipping networks. *Maritime Economics & Logistics*, *26*(3), 523–544.

Zulfikar, R., Sari, F. P., Fatmayati, A., Wandiri, K., Haryati, T., Jumini, S., Nurjanah, Annisa, S., Kusumawardhani, O. B., Mutiah, R., Linggi, A. I., & Fadilah, H. (2024). Quantitative Research Methods (Theory, Method, and Practice). In *Jurnal Ilmu Pendidikan* (Vol. 7, Issue 2). Widina Media Utama.