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Identification of Financial Risks in Vietnam Maritime Corporation

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Abstract. In the context of increasingly volatile and complex global economics, financial risk management has become a key factor determining the survival and sustainable development of businesses. Financial risks such as exchange rate fluctuations, interest rates, commodity prices, liquidity, and credit risks are always present and can have significant negative impacts on business operations. Particularly, in the context of deep international economic integration, Vietnamese enterprises are facing many new challenges and opportunities, requiring enhanced financial risk management capabilities to ensure stability and growth. The aim of this paper is to propose solutions for identifying financial risks in Vietnam Maritime Corporation. The paper suggests methods such as time-series forecasting for exchange rate prediction to aid in risk identification.

Keywords: Risk management, risk identification, logistics, freight forwarding.

1. Introduction

Financial risk management is not just about preventing and minimizing losses; it is also a strategic tool that helps businesses optimize resources, enhance capital utilization, and create a competitive advantage. An effective financial risk management system will enable businesses to identify potential risks early, assess their severity accurately, and implement appropriate solutions. This way, businesses can make informed decisions on resource allocation, investment opportunities, and long-term development strategies. However, many Vietnamese businesses still lack full awareness of the importance of financial risk management, or do not have sufficient knowledge and tools to implement it effectively. Many businesses are still using outdated, reactive, and non-strategic risk management methods, making them vulnerable to market fluctuations and less able to capitalize on potential business opportunities.

Vietnam Maritime Corporation was established on April 29, 1995, under the Decision of the Prime Minister, with the mission of being the leading enterprise in Vietnam's maritime industry. Previously known internationally as Vinalines, the corporation officially became a joint-stock company on August 18, 2020, under Decision No. 751/QĐ-TTg dated June 20, 2018. The new brand name of the corporation after its transformation into a joint-stock company is VIMC (Vietnam Maritime Corporation). The charter capital of VIMC is 12.006 trillion VND.

In 1995: Vietnam Maritime Corporation (Vinalines) was established as a state-owned enterprise playing a leading role in the Vietnamese maritime industry, according to Decision No. 250/TTg of the Prime Minister. The corporation included 24 member companies with a fleet of 49 ships totaling about 400,000 DWT, a port system with 6,900 meters of wharf, and total state capital of nearly 1,500 billion VND.

In 2000: After five years, Vinalines' fleet expanded to 79 ships, with a total tonnage of more than 844,000 DWT. The company also launched an inland container transport route, marking a significant development in container transport and multimodal transport in Vietnam.

In 2005: Vinalines had 104 ships with a total tonnage of nearly 1.2 million DWT, and the average age of the ships was 17.4 years. The total length of wharves was nearly 9,000 meters, with state capital

exceeding 2,900 billion VND. The corporation also inaugurated the Ocean Park building at 01 Dao Duy Anh Street, a 21-story office building serving as the headquarters of Vinalines and a rental office space.

In 2010: Vinalines had a fleet of 150 ships with a total tonnage of nearly 2.7 million DWT, and the average age was 16.2 years. The total length of wharves was more than 16,000 meters, and the port throughput was nearly 70 million tons, with state capital reaching 8,087 billion VND. The corporation contributed over 3,900 billion VND to the State Budget.

In 2015: The corporation restructured and privatized its member enterprises. It focused on three main areas: maritime transport, port operation, and maritime & logistics services.

In 2018: Vinalines completed its privatization and IPO of the parent company, Vietnam Maritime Corporation.

In 2020: The corporation successfully held a general shareholder meeting to establish a joint-stock company, transitioning to the new operating model with the new brand name VIMC on August 18, 2020.

Maritime services cover various activities, all primarily related to the sea. These include shipbuilding, maritime transport, port operations, and supporting activities such as piloting, maritime safety, agencies, brokerage, freight forwarding, etc.

Maritime transport refers to the transportation of goods using sea vessels and infrastructure to serve the purpose of cargo movement. The vessels used in maritime transport are ships, and the infrastructure includes ports. Ports are transportation hubs where cargo is loaded and unloaded from sea transport to other modes of transport and vice versa. Port operations include the systems that support vessel navigation, port services, cargo handling, storage, and inland transportation connections.

Logistics services include all activities involved in planning and organizing services related to transport (maritime, road, air, inland waterways, etc.), warehousing, sorting, packaging, and preparing goods for transportation and distribution to various destinations as required by the client.

METHODOLOGY

Identification of Financial Risk Management in Vietnam Maritime Corporation

Vietnam Maritime Corporation transitioned to a joint-stock company model on August 18, 2020. Therefore, the first fiscal year of the joint-stock company ran from August 18, 2020, to December 31, 2020. The corporation prepared separate financial statements for the accounting periods from January 1, 2020, to August 17, 2020, and from August 18, 2020, to December 31, 2020, as per the accounting regulations for preparing separate financial statements. For consolidated financial statements, the corporation prepared consolidated financial reports for the full fiscal year of 12 months, ending on December 31, 2020.

Three major events that significantly impacted the corporation are as follows:

First, in January 2020, the COVID-19 pandemic caused the collapse of global supply chains for major products due to the Wuhan lockdown in China. Since then, global transportation chaos occurred due to port lockdowns as port workers were infected with COVID-19.

Second, in March 2021, the Taiwanese ship Ever Given became stuck in the Suez Canal, blocking the world’s largest maritime trade route for six days.

Third, in February 2022, Russia's invasion of Ukraine disrupted global supply chains for energy, food, and semiconductor materials, causing many countries worldwide to enter a state of emergency.

In response to these events, the VIMC Board of Directors held meetings to identify risk management strategies, assess potential events that could affect the company, and determine whether these events

represented threats or opportunities. This process helped distinguish and clearly understand the internal and external risks the corporation faced.

In 2021, the maritime transport market showed positive trends, with freight rates and related service prices increasing sharply. As a result, revenue from the corporation's core services, including transport, port operations, and maritime services, saw strong growth compared to the previous year. Additionally, the restructuring of debts, the restructuring of the fleet in maritime transport companies, port companies, and the liquidation of certain financial investments also generated significant profits. These factors contributed to a pre-tax profit of over 3,640 billion VND in 2021.

VIMC's financial risks stem from shipping risks, which can be divided into four types: strategic risks, financial risks, operational (industrial) risks, and traditional risks (as shown in the figure below). Strategic risks arise from geo-economic risks and technological advances. A typical example is the Russia-Ukraine War, the U.S.-China trade dispute, and digital transformation following the Fourth Industrial Revolution.

Financial risks occur due to fluctuations in freight rates, oil prices, interest rates, exchange rates, credit, and liquidity. Among these, changes in maritime freight rates are the most significant factor determining the scale of imports by shipping companies. Oil price fluctuations account for about 30% of a ship's operational costs, making it the largest component of a shipping company's expenses.

Additionally, low-cost financing to ensure the safety of ships and ample cash flow for operating expenses are directly related to the survival of shipping companies. Operational (industrial) risks include changes in the macroeconomic environment affecting the shipping industry (market), IT systems, terrorism and piracy, ensuring skilled seafarers, and environmental regulations for international vessels.

Finally, traditional risks in the shipping industry include natural disasters, technical failures, and human errors, which are the main causes of most maritime accidents.

The Board of Directors also assessed the risks, identified how many future events could impact the company's management. A risk matrix was evaluated from two aspects: 'likelihood of risk occurrence' and 'impact' of the events. This is because risk management requires significant investment, and overall management is not easy, so prioritizing risks is essential. Risk response is a step involving five strategies: accept, avoid, mitigate, retain, and transfer individual risks, based on the risk matrix. Predictable risks, such as the bankruptcy of suppliers, while having a small impact, can be avoided through a 'dual sourcing strategy,' such as selecting new suppliers.

As mentioned earlier, the most critical factor for shipping companies is the risk of fluctuations in cargo shipping (also known as market risk), which is inherent in the industry's characteristics, where supply and demand for maritime transport services are rarely elastic. In other words, from a demand perspective, shippers can rarely ensure alternative transport means, no matter how high maritime freight rates rise. Other means of transport, such as road and air, are difficult to compete with maritime shipping in terms of freight costs.

Moreover, from the supply side, it takes an average of 2 to 3 years to build a new ship, so it's difficult to respond promptly to changes in freight rates. The change in ship values according to transport conditions also means a change in the asset value of shipping companies, which is one of the key management objectives. Financial institutions lend money to shipping companies with ships as collateral, so if ship prices fall, they could face bankruptcy in the worst case if they haven't prepared for the repayment needs of financial institutions. Therefore, to manage risks accurately, it is necessary to actively exploit market information provided by specialized organizations. From the companies' perspective, they should prepare for future changes in cargo transport by using Freight Forward Agreement (FFA) or signing a Contract of Affreightment (COA) to hedge freight rates.

Strategies employed by shipping companies to address the risk of oil price fluctuations are among their top concerns, including the Bunker Adjustment Factor (BAF) and slow-steaming strategies. Recently, interest rates have been increased to curb inflation worldwide, including by the U.S. Federal Reserve, and shipping companies placing large orders for new ships are facing an increased financial burden due to higher interest rates. KMI data indicates that raising base interest rates by 2.5% will increase borrowing costs for domestic and foreign shipping companies by 828.7 billion won. Since bank loans for the maritime sector have decreased significantly since the global financial crisis in 2008, small and medium-sized unlisted shipping companies may face a shortage of working capital and the necessary funds to secure new ships in the future.

In 2022, despite a slowdown in the last months of the year, the maritime transport market continued to show positive trends from late 2021. Freight rates and related service prices remained high compared to previous years. Accordingly, revenue from VIMC's core services, such as transport, port operations, and maritime services, all grew strongly compared to the previous year. Additionally, debt restructuring and fleet restructuring in maritime transport companies contributed to substantial profits. These factors resulted in a pre-tax profit of over 3,055.3 billion VND in 2022.

One of the company's successes is identifying the risks it faces in its business operations, which serves as a basis for implementing measures to control, address, and finance financial risks. Risk identification is an essential step because only when a company recognizes a risk can it proceed with the subsequent steps of risk management. VIMC considers financial risk identification a critical activity, primarily through financial statement analysis and financial indicators, supported by an information system. Accordingly, the company often faces four types of financial risks: market risk, trade credit risk, liquidity risk, and financial leverage risk.

- Credit risk: Receivables increase at a large rate, which is in line with the expansion of production and business scale, but with it a decrease in the turnover of receivables. Although businesses have also taken measures to manage receivables, the huge increase in receivables has increased credit risk for businesses.
- Liquidity risk: The liabilities of businesses fluctuate in an upward direction, followed by an increase in short-term assets. Identifying liquidity risks shows that the solvency of businesses has many fluctuations, especially at the beginning of 2020 when the Covid-19 pandemic broke out, making it difficult for many economies to implement social distancing and trade. This volatility has increased liquidity risks for businesses.
- Financial leverage risk: The debt ratio increases at the end of each period, indicating that businesses are increasing their use of financial leverage to increase ROE. The increase in the average debt ratio led to an increase in the use of financial leverage, but the ROE fluctuated in a decreasing direction. Thus, the use of financial leverage is ineffective in the condition that the size of capital increases and the efficiency of using business capital is also reduced due to poor performance in the use of receivables.
- Exchange rate risk: With the fluctuation of the exchange rate in the world and the domestic fluctuation under the regulation of the State Bank, it has greatly affected businesses in the production and business process. Businesses are exposed to exchange rate risks and this item has great fluctuations in the years in an upward trend and then decreases with a tendency to decrease more than increase.

Thirdly, regarding the measurement of financial risk: Enterprises have used both qualitative and quantitative methods. Qualitative methods include: Ratio of overdue debts to total outstanding loans; ratio of restructured debts to total outstanding debts; the rate of provisioning; the impact of financial leverage (DOL), operational performance, operational efficiency. The quantitative method includes the sensitivity method to measure the fluctuation of exchange rate differences affecting profit after tax. The

analysis also shows that with a small fluctuation of the exchange rate difference, it also has a great impact on profit after tax, especially in the period of 2020 – 2023, there are only 2 years of positive differences, namely 2022 and 2023, the rest of the years are negative. It is the fluctuation in the direction of less than 0 that has greatly reduced profit after tax. Therefore, measuring exchange rate risk by the sensitivity method is very necessary and important for businesses and serves as a basis for providing solutions to control and finance this risk.

Fourth, on financial risk control and prevention: VIMC has used control and prevention measures for credit risk, payment risk and exchange rate risk. These measures include measures applicable to VIMC and measures for each type of risk in member units.

- General measures are:

+ The Finance or Accounting Department also plays the role of financial risk management.

+ Hiring organizations and individuals to advise and guide enterprises on issues related to financial risk management.

+ Organizing and operating the internal control system in each member enterprise.

+ Conduct property insurance.

+ Financial planning.

- Specific measures for each type of risk:

+ Credit risk control: Apply OTC sales policy; analyze the creditworthiness of new customers; only conduct transactions with customers with an appropriate credit history...

+ Liquidity risk control: Maintain a reasonably high level of short-term assets compared to the principal liabilities, regularly monitor accounts payable and anticipate future payables.

+ Adjust the impact of financial leverage.

+ Exchange rate risk control: Linking with banks in payment; regularly monitor exchange rate fluctuations to limit adverse effects on businesses, implement L/C contracts in payment.

Fifth, regarding financial risk financing: One of the measures that VIMC uses is to set aside provisions and use reserve funds. The reserve fund is a source of compensation for the shortage of capital, so it is very important for businesses. In addition, sometimes businesses also open L/Cs at banks to minimize financial risks in trading activities with exporters.

**** Limitations and causes of limitations in financial risk management at VIMC***

Firstly, financial risk identification activities are mainly based on the analysis of financial statements, which is a common method that most businesses apply, businesses have not applied modern financial risk identification methods, especially tools to forecast financial risks, so the effectiveness of financial risk management is not yet tall. In fact, businesses have not used any tools to forecast financial risks. Therefore, the effectiveness of financial risk identification at VIMC is self-assessed at an average level.

Secondly, VIMC and its member enterprises are aware of the risks they face, but the measurement of financial risk is mainly limited to qualitative measurement methods.

VIMC also believes that risks occur due to many internal and external reasons, leading to the goals of the business may not be achieved. The measurement of financial risks of enterprises has only approached simple qualitative methods, has not used quantitative methods and has not properly assessed the financial capacity, the level of losses and risks of financial risks of enterprises, reducing the effectiveness of financial risk management of enterprises. Among the risks that enterprises encounter, enterprises only use the sensitivity method to measure exchange rate risks, while for other risks, no tools have been used

to measure them. Therefore, the effectiveness of financial risk measurement in self-assessment enterprises is average.

Thirdly, financial risk control is a very important stage, especially for the shipping industry, financial risk managers attach great importance to this issue, but in fact, financial risk control solutions are still limited and not really effective. Practical example of exchange rate risk: Only L/C contracts have been used. Previously, when the State Bank did not have a message on the direction of exchange rate management, businesses did not use derivatives to hedge exchange rate risks, and VIMC itself has not paid attention to and considered exchange rate risk prevention as a mandatory business in corporate governance. In fact, businesses estimate the level of exchange rate fluctuations in the short term, calculate the worst exchange rate adjustment announced by the State Bank, compare it with the difference between USD and VND deposit interest rates to make a decision on whether or not to use exchange rate hedging. Actually, businesses do not want to lose more costs because they think that exchange rate fluctuations are under their control.

Fourthly, financial risk financing is an indispensable content in financial risk management, but VIMC is sometimes passive in allocating financial resources as well as forecasting early to have financial resources for losses once they occur. Enterprises have also set aside provisions and used reserve funds to finance financial risks, but not all member units have set aside provisions. Fifth, financial resources and human resources for financial risk management activities in enterprises are still lacking and not really effective.

**** Causes of these shortcomings***

(1) Objective causes:

Firstly, there has never been a period when the economy has had complicated and unpredictable developments like the past time. Force majeure fluctuations from the epidemic, war, and political instability have caused many economies to falter. Accordingly, the shipping industry is also heavily affected. In that situation, VIMC is no exception.

Second: the legal environment of risk management activities in general and financial risk management in particular still has many inadequacies. When participating in international business, Vietnamese enterprises are subject to both the regulation of the Vietnamese legal system and the law and international business practices. Many laws regulating business activities of enterprises have been newly promulgated or amended and supplemented such as: Law on Investment, Law on Enterprises, Law on E-commerce, Law on Electronic Transactions, Law on Technology Transfer,... Although many laws have been promulgated in recent years, the system of documents under the law has not been promulgated in time, leading to the situation that the law has been promulgated but has not yet come into life, causing difficulties for businesses and limiting the competitiveness of businesses.

Third, another cause of this problem is the development of the economy. In the process of developing an economy, in the initial stage when the country's economy is small, enterprises are not large enough in both scale and management level, so they cannot pay too much attention to risks or prevention, until the economy develops. The competition is getting more and more fierce, so this issue is often a matter of concern.

Fourthly, the infrastructure (information technology system, legal consulting,...) for financial risk management has not met the practical requirements of financial risk management. In fact, the development speed of technology, information, propaganda and consulting systems is not synchronized with the development speed of business activities. The desire of businesses is to be able to take advantage of the common facilities of modern information technology to find out information and access the market instead of having to invest too much from the capital of the business.

(2) Subjective Causes:

First, the attitude and perspective of managers towards financial risk management: Despite the fact that financial market risks are highly unpredictable, along with credit risk, liquidity risk, and the risks associated with debt financing, most companies still lack scientific explanations and do not have an official, standardized process for identifying, measuring, controlling, and financing financial risks. Even when large financial consulting firms are hired, companies face difficulties such as high costs and a general reluctance to adopt international standards in their management practices, believing that international norms cannot be applied to their specific business operations. This situation arises from companies lacking the correct attitude and essential knowledge about financial risk management. Furthermore, financial risk evaluation is heavily based on experience, relying on available information, and the lack of transparency in financial reports remains a major challenge. As a result, experts and managers find it difficult to apply models or use computational tools to produce a comprehensive financial risk management report for the business. Therefore, before using quantitative methods in financial risk management, the risk management department needs to enhance its awareness of financial risks and their impact on the business. Financial risk management should be developed as a habit, as a part of the culture in management decision-making.

According to many experts, most companies do not fully understand the necessity, benefits, or how to systematically build, organize, and operate an internal control system. The work of monitoring and controlling often overlaps, is one-sided, and focuses primarily on economic-financial indicators and final results, with a habit of fault-finding and assigning blame, rather than focusing on comprehensive checks and controls throughout the organization's activities, with an emphasis on prevention and risk mitigation. This is one of the weaknesses that businesses need to address in order to enhance their competitiveness as they integrate into the global economy. The fundamental cause of this issue lies in cultural beliefs and attitudes. East Asians in general, and Vietnamese people in particular, tend to avoid discussing risks, as they view such discussions as mentioning bad luck or misfortune, which they believe could negatively affect business outcomes.

Second, the financial risk management work has not been performed regularly, continuously, mandatorily, and extensively within the company. One of the reasons is that financial risk management when building internal control systems in Vietnamese enterprises has not been considered a top priority. Moreover, many businesses have not disclosed to their staff and employees the potential risks that may arise or have already occurred. In practice, although financial risk management has been incorporated into decision-making and all businesses are required to implement it, each company carries out financial risk management at different levels. This is because businesses have not fully recognized the importance of financial risk management. The mentality that all fluctuations are under control remains widespread and is also a cause of risk for the company.

The effectiveness of monitoring compliance with legal regulations on risk management is still not high. Part of the reason is the respect for business autonomy and self-responsibility, and part is due to the habit of management in a non-professional market economy. Therefore, when risks occur, instead of taking measures to finance the risks, departments often do not disclose risks due to concerns about affecting individual interests, or because the leadership does not disclose the risks for various reasons, or the company does not have a department responsible for internal risk information. As a result, when risks occur, there are no solutions to address them, which impacts the overall effectiveness of the company.

Third, businesses have not effectively used advanced risk management methods and tools. Financial risk management tools have been applied but have not been very effective. Financial instruments are an effective method for prevention, and at the same time, they open up new business opportunities for companies. However, in practice, part of the reason is that derivative financial instruments have not been well-developed in Vietnam, and part is due to regulations regarding their use being unclear and lacking

detail. Additionally, companies have not been able to forecast price fluctuations in the future, which negatively impacts financial risk control.

Fourth, one of the causes of low to average effectiveness of financial risk management is that businesses have not established or applied a suitable risk management model. Most companies do not have a separate risk management department, and the responsibility for this task falls to the finance or accounting department. Without a clear separation of duties, where one department assumes multiple responsibilities, the effectiveness of the work is limited, and this restricts the risk monitoring function.

Fifth, the company's financial resources are limited, and the human resources allocated for financial risk management have not been adequately invested in. For VIMC, it is recognized that there is a need to invest in researching partners before collaborating, providing services, investing, studying the market before making transactions, examining interest rate fluctuations before borrowing, and considering exchange rate fluctuations before making input purchases. However, due to high costs and the issue of budgeting, these steps were either not carried out or, if done, did not yield effective results. As a result, the company did not implement these activities in a systematic and professional manner. This is why the impact of the company's financial resources on the quality of financial risk management is evaluated as being at an average level. Clearly, financial resources are an important part of financial risk management, but since the effectiveness is mostly low, companies self-assess the impact at a modest level.

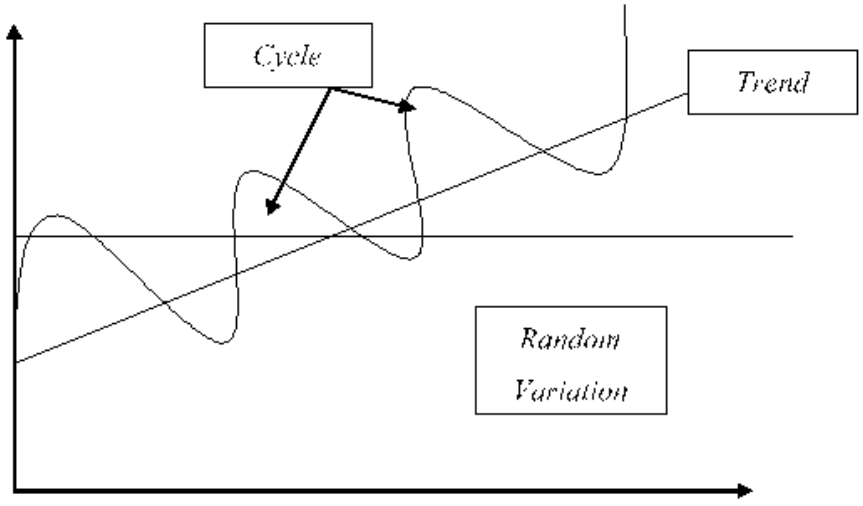
The issue of human resources in the company is also a significant difficulty. If VIMC had a dedicated financial risk management department, the effectiveness of risk management would be higher. Due to limitations in the workforce, VIMC faces many difficulties in establishing a dedicated unit. Furthermore, the company lacks specialized personnel to carry out this task. The impact of the quality of human resources on the quality of financial risk management is also evaluated as having a low impact.

RESULTS AND DISCUSSION

Proposed Solutions to Enhance Financial Risk Identification in Vietnam Maritime Corporation (VIMC)

In practice, maritime enterprises identify financial risks by analyzing financial reports, which helps them detect potential risks they may face in the future. A common method is to apply time series forecasting to predict exchange rates (Figure 1).

Figure 1: Time Series Forecasting



Graph 1. As a model built to describe a time series forecasting method, which is the process of breaking down past data into smaller periods for easy analysis, the four characteristic components of a time series are:

+ Trend: It is the change of the observed variable over a long period of time, the fluctuation of the observed variable can be in different directions (uptrend, downward trend, sinusoidal trend...)

+ Cycle of the phenomenon: It is the time that the phenomenon will repeat, it coordinates with the trend in the multi-year cycle.

+ Seasonal variability: Cyclical variation in a cycle.

+ Stochastic Variation: Stochastic fluctuations around the trend, which can affect the cycles and seasonal variations of the observation series.

- Forecast method of choice: STL method

Selected Forecasting Method: STL

STL (Seasonal and Trend decomposition using Loess) is a flexible and powerful method for decomposing time series.

Step 1: Define the forecasting objective: Exchange rate fluctuations.

Step 2: Select the target variable to forecast: The fluctuation between USD and VND.

Step 3: Determine the forecasting period: The year 2022.

Step 4: Apply the model to forecast exchange rate fluctuations.

Step 5: Gather the necessary data to make the forecast: Exchange rate data from 1995 to 2022.

Step 6: Validate the forecasting model: Choose the STL model.

Step 7: Perform the forecast: Use R statistical software (r-project.org).

CONCLUSION

In conclusion, it is possible to determine that the present tendencies in the sphere of the financial risk management define it as an essential factor of the success and sustainability of the enterprise in conditions of the modern globalized economic environment. The number one challenge is the various financial risks inclusive of fluctuations in exchange rate, credit risks as well as the liquidity risks, these risks are very daunting of which makes so much hard especially for companies such as Vietnam Maritime Corporation (VIMC) to operate in the global marketplace. This paper has stressed the cogent importance of the identification of risks to which VIMC is exposed and has provided recommendations for the amelioration of this plight, including time series forecasting of exchange rate risks.

The proposed strategies can be used to gauge possible financial threats before they occur enabling VIMC to counteract unfavorable consequences when they happen. Using tools like the forecast models, the corporation will benefit from faster identification of trends and possible disruptions of the economy. Also, the development of financial risk management skills is equally important as a tool for increasing the stability of operations, as well as using new opportunities in a continuously changing environment.

Seeing that international economic integration has been gradually advancing, it is necessary for Vietnamese enterprises, especially those in the maritime business, to be more proactive in adjusting risk management measures to ensure its financial stability and promote sustainable development. Thus, the conclusion of this paper underlines the need for more complex and innovative view on the financial risk management that is oriented not only to the too-large precaution, but also to the effective search for opportunities. The possibility of other predictive models and approaches could be studied in future studies to augment risk assessment and mitigation in the global environment. By so doing, VIMC can be all the more placed to become a premier player in the maritime industry and support the economy of Vietnam.

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