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# FEATURES OF TRANSFORMATION PROCESSES IN THE GLOBAL MARITIME TRADE MARKET

# ОСОБЛИВОСТІ ТРАНСФОРМАЦІЙНИХ ПРОЦЕСІВ НА СВІТОВОМУ РИНКУ МОРСЬКОЇ ТОРГІВЛІ

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*Жихарєва В., Примачов М., Фрасинюк Т. Особливості трансформаційних процесів на світовому ринку морської торгівлі. Оглядова стаття.*
Переваги сталого функціонування є одними з найважливіших характеристик будь-якої соціально-економічної структури. Це зумовлює раціональність формування результатів за нормованими витратами. Але особливе значення стійкість має для систем, які зумовлюють оптимізацію стану інших учасників ринкових відносин. У цьому аспекті особливо виділяється діяльність морського транспорту, що забезпечує раціональність міжнародного поділу праці. Усі підсистеми, що формують вантажопотоки, зацікавлені в стабільній роботі морського транспорту, який забезпечує до 80 відсотків зовнішньої торгівлі. Однак періодична нестабільність світового торговельного флоту визначається трьома аспектами: циклічністю світової економіки, конкурентною ситуацією на світовому ринку морської торгівлі та альтернативними підходами протилежних економічних стратегій. Таким чином, для досягнення транспортної безпеки та сталого позиціонування національних або союзних економік важливо відстежувати та розпізнавати небажані кризові ситуації. Відповідно до особливостей зовнішніх впливів вибираються стратегії реагування, що відповідають вимогам забезпечення стійкості. Тому формується специфічний підхід до забезпечення управління ризиками.
*Ключові слова:* судноплавна компанія, ринок морської торгівлі, криза, розвиток, стратегія, оптимізація

*Zhykharyeva V., Primachev M., Frasinyuk T. Features of Transformation Processes in the Global Maritime Trade Market. Review article.*
The benefits of sustainable functioning are among the most important characteristics of any socio-economic structure. It predetermines the rationality of the formation of results at normalized costs. But sustainability is of particular importance to systems that predetermine the optimization of the state of other participants in market relations. In this aspect, the activities of maritime transport are particularly highlighted, ensuring the rationality of the international division of labor. All subsystems that form cargo flows are interested in the sustainable operation of maritime transport, which provides up to 80 percent of foreign trade. However, the periodic instability of the world merchant fleet is determined by three aspects: the cyclical nature of the world economy, the competitive situation within the global maritime trade market and alternative approaches of opposing economic strategies. Therefore, to achieve transport security and sustainable positioning of national or union economies, it is important to monitor and recognize unwanted crisis situations. In accordance with the characteristics of external influences, response strategies are selected to meet the requirements of ensuring sustainability. Therefore, a specific approach to ensuring risk management is being formed.
*Keywords:* shipping company, maritime trade market, crisis, development, strategy, optimization

The global maritime trade market [1], based on the requirements of balancing demand (the volume of cargo flows) and supply (deadweight of the merchant fleet and the capacity of the stevedoring complex of ports), is characterized by both general patterns of development and specific features of the formation of parameters and pricing. The state of the maritime trade market is distinguished by the real absence of a monopoly position of individual operators. Even leading shipping companies operate in conditions of market-based formation of freight rates. Moreover, this process is predetermined by the nature of the overall balance between the fleet's carrying capacity and cargo flow or its violation. In order to avoid monopoly formation of tariff rates, the formation of alliances by individual ship-owning structures is strictly regulated. The position of shipping companies is determined by the technical and economic level of production potential. This, in the

conditions of linear and industrial shipping, predetermines the possibility of setting prices based on the costs and quality of operator services. This is one of the fundamental differences between the maritime trade market and the standards for position formation in other specialized markets.

**Analysis of recent researches and publications**

Researchers are exploring various dimensions that shape the industry's evolution, incorporating factors like digitalization, sustainability, geopolitical dynamics, and the aftermath of global events like the COVID-19 pandemic.

In examining digitalization, the maritime trade sector is experiencing a significant shift towards embracing advanced technologies. Sustainability emerges as a critical theme, reflecting a growing awareness of environmental concerns. The maritime trade market is under pressure to adopt eco-friendly practices, evident in the development of energy-efficient vessels, alternative fuels, and strategies to reduce emissions. This aligns with global initiatives to address climate change and underscores the industry's commitment to responsible and sustainable operations.

Geopolitical dynamics play a pivotal role in shaping transformation processes. The ever-changing landscape of trade policies, international relations, and regional conflicts directly impacts maritime trade routes, port activities, and overall trade volumes. Researchers are delving into the complexities of these geopolitical factors, seeking to understand their implications and guide industry stakeholders in navigating uncertainties.

The methodology of the article is based on scientific provisions presented in the works of scientists in the field of economic theory, management of the maritime industry, as well as publications on the problems of effective development of the maritime trade market. The display of marketing research has been transformed and the features of transformation processes in the global maritime trade market have been considered. The fundamental features of the object of research necessitated the use of such methods as: economic analysis – when assessing the factors of formation of the shipping capacity of the fleet and the development of the main components of the maritime trade market; grouping when determining the structure of the functional activity of shipping operators; system analysis – when substantiating patterns and trends in the formation of effective parameters of the global maritime trade market. The information base of the research was made up of the works of famous scientists, practitioners regarding the management of the effectiveness of the development of the global maritime trade market, global legal acts, reporting data of shipping companies and the results of own research, UNCTAD statistics.

**The main part**

It becomes fundamental to form specialists with special knowledge at the level of competence determined by global requirements. This, along with the accessibility to investment resources, predetermines the modern differentiation of the technical and economic level of ports by region of the world. And this aspect reveals the peculiarity of the positioning and development of national trade ports. The compliance of their capital assets with global requirements is determined by the availability of investment resource owners on the principles of concession ownership to ensure that ports comply with the basic requirements of the maritime trade market.

In this regard, merchant fleet vessels are strictly distributed according to their own and equivalent investment sources. At the same time, to ensure the adequacy of the principles for the formation of financial condition, in contrast to other productive capital assets, they formally move from the jurisdiction of the state to the system of countries with free registration of ships – the main form of capital assets of the owner. This, to a certain extent, forms a sign of imperfection of the maritime trade market. At the same time, the presence of a substandard fleet, despite regulatory strategies, confirms the position that the maritime trade market is characterized by the principles of perfect competition. But this is precisely what significantly limits the adequate development of the fleet of states such as Ukraine, which do not have the necessary investment resources even to ensure transport security for the export of national products.

Only political confrontations violate the objective balance of economic relations based on the principles of absolute or comparative advantage. The balance of global economic relations is the only thing that predetermines the formation of entrepreneurial efficiency, synergy and the formation of an emergent effect. Therefore, in the absence of political confrontation, balanced economic growth across all components of the global economy can be ensured.

However, the manifestation of the priority of political strategies on the principles of differentiation of the division of a single maritime transport space according to time priorities results in mutual rather than unilateral losses.

Any non-market restrictions on the principles of balanced foreign trade predetermine price transformation and the collapse of normalized logistics for servicing cargo flows. On this basis, not only the global economy loses, but also the countries that have brought down the balance of relations. This is especially harshly demonstrated by the collapse of world economic relations in 2022-2023. This demonstrates the change in economic growth rates in the leading countries of the opposing blocs.

The balance of the maritime trade market is formed according to individual segments of specialization. With the consistent formation of the global maritime trade market, due to the asymmetry of the reaction of ship-owning structures to the growth of cargo flows, the risk of periodic imbalance is formed (Fig. 1), which leads to cyclical changes in price characteristics for the corresponding cargo flows.

The system of supplying the carrying capacity of a specialized fleet shapes the response of shipping brands to the expected growth in cargo traffic. In this case, two risk factors stand out. The first is the inconsistency in ordering the construction of new ships between specialized ship-owning structures with the simultaneous decommissioning of ships according to life cycle characteristics. And, secondly, the desire to stay ahead of competitors based on economies of scale. However, risks are generally minimized by prioritizing pricing in liner shipping based on the shipping companies' objectives. Cargo-owning structures, taking into account the optimization of the time of use of working capital concluded in the cargo mass, with timely delivery, compensate for high transport costs due to prevailing tariff rates. Risks for the two sides are formed by various forms of transformational relations due to certain types of confrontation, the emergence of new types of crisis (2009) and other factors (2016, 2020). That is, in addition to errors in the calculations of management structures, the complexity of decision-making is determined by the unclear dynamics of trade relations between partners of different scales.

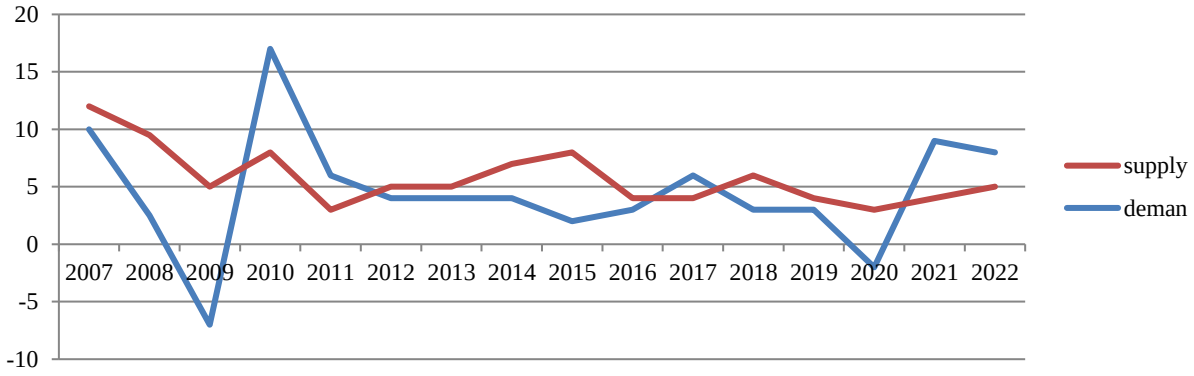


Figure 1. The nature of the relationship between demand (container traffic) and supply (container capacity) of vessels
*Source: UNCTAD secretariat calculations based on Review of Maritime Transport 2022*

As it is clearly seen in the segment of expensive transport services for world trade, the standard situation is an imbalance of the most important parameters of this segment of the maritime trade market, which determines the complexity of the assessment of the upcoming project for the development of price characteristics. The lack of equilibrium in the considered segment of the maritime trade market is caused by factors that do not correspond to the patterns considered in the product segment.

In fact, imbalance in the maritime trade market system becomes the result of an imbalance in the use of individual development factors. This is also demonstrated by other basic segments of the maritime trade market: tankers and bulk carriers. However, in this aspect, with the growth of production, optimization of the use of resources for production is formed. The difference in production growth rates in value terms and resource provision is not fully reflected in the deadweight of the new fleet. This leads to the problem of productivity in the use of tonnage, despite innovative technologies.

The conditions for strict positioning of maritime transport enterprises [2] in the specialization segments of the maritime trade market are determined both by the requirements of competitive compliance and by a set of regulatory strategies. The latter determine the differentiation of the reaction and the choice of the form of positioning independence.

The information and logical model presented in Figure 2 reflects a complex set of requirements to ensure the sustainability of subsystems of the international division of labor from the perspective of the requirements and interests of the development of the maritime transport industry. At the same time, ship-owning structures need to choose a system for responding to imbalances in the maritime trade market. The emergence of external externalities that predetermine the use of the carrying capacity of ships and the required volume of shipbuilding is considered positive. But the competitive reaction to the advance of the replenishment of new tonnage by various ship-owning companies subsequently leads to excess fleet carrying capacity (Fig. 1) and a collapse in the level of freight rates. This condition predetermines the requirement for choosing the form of efficiency of new types of ships.

In the system of maritime transport services for world trade, strict conditions and requirements have actually developed not only regarding entrepreneurial performance. Requirements to achieve system safety and restrictions on balancing the company's environmental position are increasing. However, with a diversified increase in the costs of maintaining merchant fleet vessels, there is a danger of limiting the structure of operators.

Thus, it is necessary to take into account the manifestation of transformation processes, on the one hand, due to the tightening of safety and environmental standards, and, on the other, the formation of destructive anti-market technologies and threats. The latter includes the replacement of modern pirate technologies with various cyber-attacks.

In the realm of maritime transport services for global trade, stringent conditions and requirements have evolved beyond merely assessing entrepreneurial performance. The focus has expanded to encompass stringent criteria for ensuring system safety and imposing constraints on companies to uphold environmentally responsible practices. Despite these crucial considerations, the diversification of costs associated with maintaining merchant fleet vessels poses a tangible risk of constraining operators' structural flexibility.

The ongoing transformation processes within the maritime industry are marked by two significant dynamics. Firstly, there's a tightening of safety and environmental standards, reflecting a collective global effort to enhance the sustainability and eco-friendliness of maritime operations. This shift is essential for mitigating the environmental impact of shipping activities and fostering a safer maritime environment. On the other hand, the industry is grappling with the emergence of destructive anti-market technologies and threats, introducing a layer of complexity to the operational landscape.

One notable challenge is the escalating costs associated with meeting heightened safety and environmental standards. While these measures are crucial for the long-term sustainability of maritime trade, they simultaneously contribute to an increase in operational expenses for shipping companies. This cost escalation, if not carefully managed, has the potential to limit the operational capabilities and economic viability of maritime transport operators.

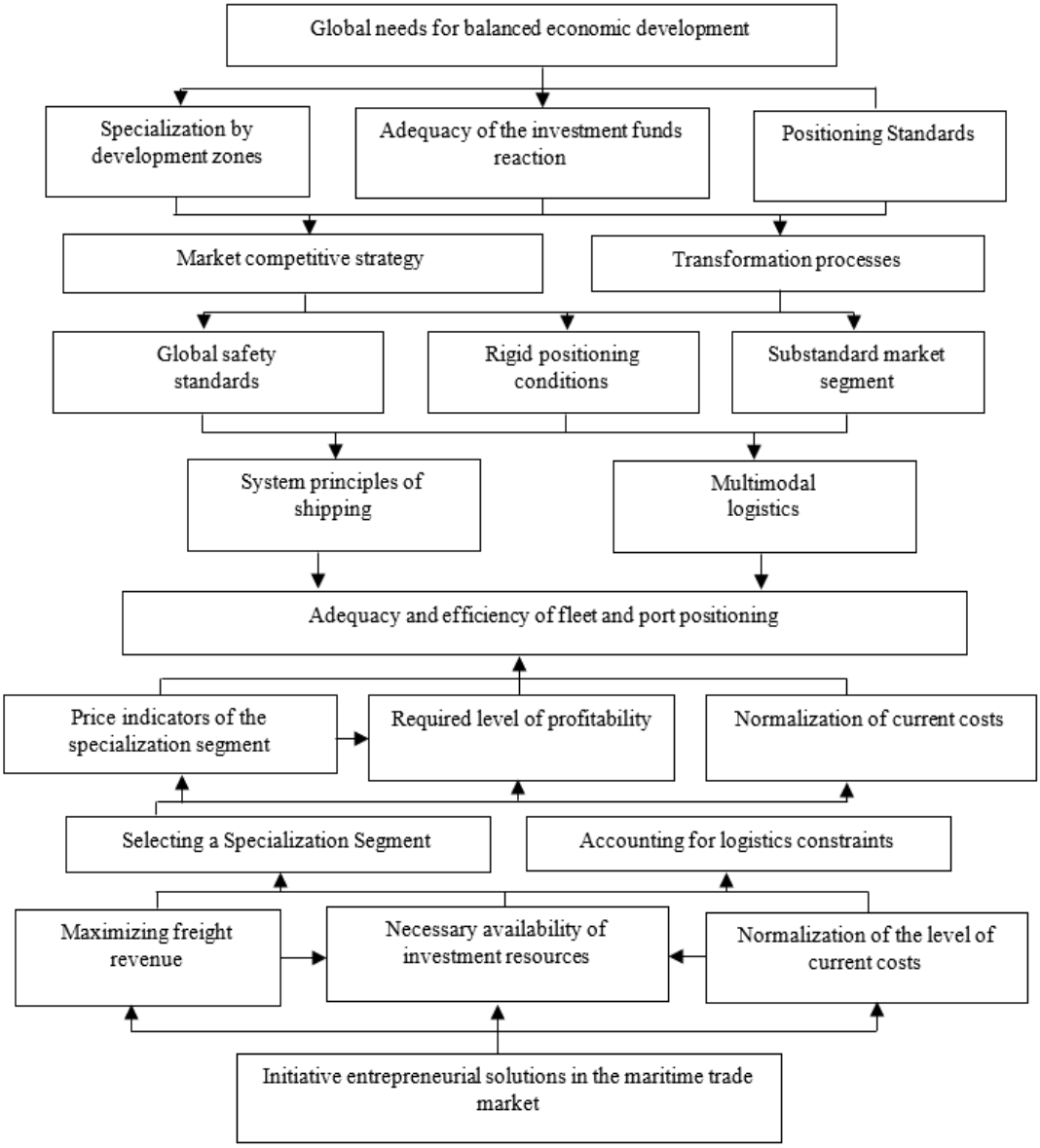


Figure 2. Set of conditions for balanced positioning of maritime transport enterprises
*Source: the author's own elaboration*

It should be noted that the monopoly influence in the maritime trade market system on the state of the main segments of specialization is limited. The position of business structures is determined by the scale of use of innovative technologies and shipping management priorities. Perhaps this is the only area of business activity

where the legitimacy of positioning according to the priorities of productivity and quality is quite clearly ensured. The concentration of volumes of the transshipment and transportation process is predetermined by competitive and qualitative characteristics. This predetermines the positions of the shipping companies COSCO, Maersk and others, as well as the ports of Rotterdam, Shanghai, Singapore, and Amsterdam.

At the same time, the development of maritime transport enterprises is characterized by the creation of a complex set of public goods. This is indirectly confirmed by the higher standard of living of maritime states. In this regard, maritime transport is proving to be a leading industry implementing a decarbonization strategy through entrepreneurial resources.

Typically, in the maritime transport system, the development of production potential is based by business structures on an assessment of the feasibility of this type of specialization. At the same time, two limitations are highlighted: the specificity of the competence of specialists and the presence of a special form of risks [3]. This predetermines the admissibility of the corresponding capital intensity of the fleet and port terminals. Therefore, a special specificity of the development and activities of specialized enterprises in the maritime trade market is being formed. The adjustments are also determined by the limited number of people forming the labor market. Therefore, the global maritime trade market is expanding systematically in the context of the participation of government priorities, as Japan, South Korea and China have historically demonstrated. The strategy of Singapore and the United Arab Emirates should also be mentioned. In fact, the effectiveness of government structures' reflection of market development mechanisms is demonstrated.

The main thing in this strategy should be the application of international practice of quality management systems and optimization of resource provision. In order to improve the efficiency and competitiveness of the company on the global maritime trade market, it is necessary to create an integrated transport system for transporting goods based on the principle of multimodal strategies. This, taking into account transshipment, determines direct connections with cargo-creating enterprises. Formation of the principle of cluster technologies also helps to attract additional cargo flows and investment resources.

The adequacy and effectiveness of positioning the fleet and ports according to the factors of innovative technologies [4] predetermines the priority of the formation of uniform rules and standards for the development of the fleet and ports, regardless of the political approaches of individual states. This predetermines the nature of its positioning in the specialization segment of the maritime trade market.

Leaders should consider optimizing the economic efficiency of development based on a set of external requirements and standards of market freedom of operator activities according to adequate technical and economic parameters.

A standard problem considers the availability of resources for a return guarantee based on the effectiveness of the implementation of the relevant project. It is the differentiation of efficiency guarantees based on current market relations and political stability that predetermines the corresponding differentiation, which predetermines the modern structure of distribution of cargo traffic among shipping companies and commercial ports of various states.

The growth of productivity or technical reliability is limited by the level of permissible fluctuation of tariff or freight rates. Any innovation should provide an increase in productivity potential with a relative decrease in costs, and not affect the increase in the price of sea freight delivery. This condition is described by the following algebraic constraint:

$$E_{pi}= \Sigma_{i=1}^{m} (P_{dni}-P_{dbi}\frac{K_{pbi}}{K_{pbi}})D_{vt}\epsilon_i T_{wi}(P_{cm}-C_{si}), \quad (1)$$

$P_{di}$ – productivity of the compared options for the development of the functional activity of maritime transport enterprises n – investment option, b – basic option;

$K_p$ – capital cost of new (n) and basic transport facilities (b);

$D_{vt}$ – production potential of the maritime transport enterprise;

$\epsilon_i$ – coefficient of realization of the production potential of the company;

$T_{wi}$ – estimated time of realization of production potential during the year;

$P_{cm}$ – the price of transport work based on the current conditions of the maritime trade market;

$C_{si)}$ – the cost of transport work of the project variant of development.

Therefore, optimization of route characteristics stands out among the most important areas of innovative development of the global transport industry. Different approaches to the solution of this problem are being formed in the form of the well-known pan-European transport corridors and the "one belt – one road" initiative. The 7th Danube transport corridor and the direction of the new Silk Road are of fundamental importance for the country, taking into account the alternative transport of goods in international trade East-West. They, in turn, actually support the Euro-Asian transport corridor, focused on the transport potential of the Caucasus and Central Asia.

That is, in the system of development of maritime transport enterprises in modern conditions, the requirements for the adequacy of capital assets and technologies to forms of optimization of logistics in the form of creating new integrated transport corridors are particularly emphasized. That is, in addition to specialization in

cargo flows, requirements are formed for adequacy to the standards of servicing cargo flows in terms of time, quality and technological advantages. This, taking into account the search for appropriate investment resources, predetermines the structure of competitive shipping companies and commercial ports.

One of the difficult issues is the choice of economic strategy for the development of shipping companies based on the criteria of stability of life, financial condition and investment processes. Strategic decisions in this regard should include resource provision for basic needs and maintaining adequacy to the most important provisions of the transport services market.

**Conclusions**

The participation of the maritime transport industry in providing 80 percent of global maritime trade determines its importance for development directions, regardless of transformation processes. The change in global economic relations, predetermined by the priority of the leading economic system, in fact, into multipolar development systems determines the nature of the change in basic logistics systems.

New routes are being formed, determined not only by the "One Belt – One Road" strategy, but also by a combination of sanctions. The need for unconditional delivery of products and resources predetermines an increase in investment and current costs, which causes risks of a decrease in overall economic efficiency with an increase in the synergy effect across opposing subsystems of the global economy. At the same time, concentrating efforts on achieving a balanced development of new economic subsystems predetermines the formation of efficiency while strengthening the principles of division of labor in various subsystems of the world economy.

This, in turn, determines the strengthening of the security of the international division of labor on new principles due to the emergence of additional production parameters of the maritime transport industry. It is systemic security, reflecting the ability of maritime transport to ensure foreign economic relations at the expense of the technical and economic level, predetermine the balance of relations in the structure of the natural environment and the formation of an intra-industry economic effect that determines the significance of the development of the national maritime transport industry.

**Abstract**

The benefits of sustainable functioning are among the most important characteristics of any socio-economic structure. It predetermines the rationality of the formation of results at normalized costs. But sustainability is of particular importance to systems that predetermine the optimization of the state of other participants in market relations. In this aspect, the activities of maritime transport are particularly highlighted, ensuring the rationality of the international division of labor. All subsystems that form cargo flows are interested in the sustainable operation of maritime transport, which provides up to 80 percent of foreign trade. However, the periodic instability of the world merchant fleet is determined by three aspects: the cyclical nature of the world economy, the competitive situation within the global maritime trade market and alternative approaches of opposing economic strategies. Therefore, to achieve transport security and sustainable positioning of national or union economies, it is important to monitor and recognize unwanted crisis situations. In accordance with the characteristics of external influences, response strategies are selected to meet the requirements of ensuring sustainability. Therefore, a specific approach to ensuring risk management is being formed.

Sustainability is a crucial aspect of any socio-economic structure, reflecting the rationality of achieving results at normalized costs. This holds particular significance for systems guiding the optimization of participants' states in market relations. The maritime transport sector, vital for the international division of labour, plays a central role in sustaining rationality, especially considering its contribution of up to 80 percent to foreign trade.

Despite its pivotal role, the periodic instability of the world merchant fleet is influenced by three key factors: the cyclical nature of the global economy, competitive dynamics within the maritime trade market, and conflicting economic strategies. To secure transport stability and sustainably position national or union economies, vigilance is required in monitoring and identifying potential crisis situations. Tailored response strategies, aligned with external influences, become imperative to meet the demands of ensuring sustainability. As a result, a distinct approach to risk management is evolving, ensuring a proactive stance in navigating challenges and fostering the resilience of maritime transport systems.

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