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PROBLEMS OF EFFECTIVE PLANNING OF MARITIME TRANSPORT INDUSTRY SUBSYSTEMS

ПРОБЛЕМИ ЕФЕКТИВНОГО ПЛАНУВАННЯ ПІДСИСТЕМ ГАЛУЗІ МОРСЬКОГО ТРАНСПОРТУ

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Балан О.С., Липинська О.А., Шепель М.Є. Проблеми ефективного планування підсистем галузі морського транспорту. Оглядова стаття.

У статті мова йдеться про те, що складність планування діяльності підприємств морського транспорту зумовлена багатовимірністю змін кон'юнктури ринку морської торгівлі та певною ймовірністю майбутнього стану системи. Метою статті є аналіз специфічних фундаментальних особливостей локальних підсистем. Водночас важливо враховувати вплив проблем часових пріоритетів. Тому фінансовий стан особливо середніх і малих судноплавних компаній періодично опиняється в критичному стані. Важливими факторами забезпечення фінансової стійкості підприємств морського транспорту є також оптимізація виробничих потужностей та раціональне використання ресурсів. Розвиток галузі морського транспорту є складним і багатовимірним процесом, який вимагає впровадження ефективних стратегій, використання нових технологій, а також врахування геополітичних і екологічних факторів.

Ключові слова: ефективне планування, підприємства морського транспорту, фінансова стійкість, галузь морського транспорту

Balan O.S., Lypynska O.A., Shepel M.Ye. Problems of Effective Planning of Maritime Transport Industry Subsystems. Review article.

The article deals complexity of planning the activities of maritime transport enterprises is predetermined by the multidimensionality of changes in the maritime trade market condition and a certain probability of the future state of the system. The aim of the article is to analyse specific fundamental features of local subsystems. At the same time, it is important to take into account the impact of the problems of time-based priorities. Therefore, financial condition of especially medium and small shipping companies periodically finds itself in a critical status. The optimization of production capacity and the rational use of resources are also important factors in ensuring the financial stability of maritime transport enterprises. The development of the maritime transport industry is a complex and multidimensional process that requires the implementation of effective strategies, the use of new technologies, and the consideration of geopolitical and environmental factors.

Keywords: effective planning, maritime transport enterprises, financial stability, maritime transport industry

The biggest problem, as the events of 2008, 2009 and the subsequent period of imbalance show, is the inability of the global maritime community and individual ship-owners to plan effectively for development. By 2008, the order book for new dry cargo vessels was reaching the size of the operating fleet, with the deadweight of the most common size tanker fleet reaching half the tonnage in service. The vessels were to be handed over to customers during 2008-2012. Orders for container vessels were approaching 55% of the active fleet (6.5 million TEU).

By 2020, shipbuilding volumes had already declined, predetermining the bankruptcy of specialised enterprises. The economic basis for the pre-crisis development of the global maritime trade market proved to be unconventional growth factors. These included high growth in Chinese exports, significant corporate profits, high oil prices and relatively low costs of standardised products, which led to profitable national markets and a surge in global financial system activity.

However, the dramatic change in global maritime trade market conditions has required a focus on balancing issues with the development priorities of a shipping strategy based on economies of scale. Increasing

concentration of capital assets has required additional attention to the planning system. At the same time, modern factors in the development of merchant shipping in the container segment have led to a decrease in the number of specialised shipping companies.

For individual countries, optimising the current account through the development of a national maritime transport industry is becoming a challenge. At the same time, the expansion of capital exports by the world's leading maritime brands should be taken into account. It is this strategy that ensures the concentration of cash flows by them.

Analysis of recent researches and publications

As a consequence of globalisation, markets for consumer goods and investment resources are periodically transformed. The development of mechanical engineering, construction and shipbuilding has caused the emergence of new regions for the production of ferrous metal and a surge in its maritime transport, which predetermines the desire for growth and renewal of tonnage. Scientific schools of the EU and Ukraine have formed in this respect. A number of interesting monographs have been published and many articles on sustainable positioning issues have been published. Particular attention should be paid to the nature of the division of approaches of business structures and the strengthening of the regulatory role with the development of standards and norms to achieve system security. A special importance in this respect is given to the strategy of the attitude of business structures to the natural environment.

This reinforces the need to assess the influence of the external environment on the implementation of managerial decisions in a system of entrepreneurial priorities.

Unsolved aspects of the problem

Unfortunately, despite many years of research of world analytical schools, revealing new trends [7] have not paid attention to the formation of distinctive trends of economic growth in a number of countries and their possible subsequent influence on the nature of economic cycles.

The aim of the article is to analyse specific fundamental features of local subsystems. At the same time, it is important to take into account the impact of the problems of time-based priorities. This disturbs the system of sustainability of business structures. In accordance with this, it is necessary to continuously disclose the features of normalized positioning of subsystems of the national maritime industry.

The main part

The increasing complexity of cyclical processes, despite the anti-crisis factors of production management, is due to the dynamism of capital exports. With the appreciation of the European, Japanese and Chinese currencies, production costs were closer to US levels. At the same time there was a fundamental shift in exchange rates, which led to an increase in capital exports to the US. Fluctuations in the euro predetermine the variability of construction and co-investment costs. The consequence of these global economic processes has been an increase in the role of maritime transport and a change in the structure and direction of freight flows.

A feature of the beginning of the third decade of the 21st century should be seen in the increasing share of settlement in national currencies in a number of parts of world trade.

One consequence of the transformation in the cost of resources, labour and exchange rate fluctuations is the concentration of shipbuilding in Asian countries. In the pre-crisis period, Japanese, Korean and Chinese shipyards accounted for 32, 35 and 20 per cent, respectively, of global newbuilding orders. The rest of the world's shipyards accounted for less than 10 per cent of world shipbuilding. The remaining European shipyards reduced their workforce from 400.000 to 85.000. In doing so, the EU used the principle of direct subsidies for shipbuilding.

In the post-crisis period, there is greater resilience in the shipbuilding and shipping industries of countries able to concentrate significant investment resources. China has demonstrated this by providing and actual support to countries with which it has stable economic relations.

Two areas of development and functionality of the merchant fleet should be distinguished. The first is shaping capital and operating cost growth factors. This reflects the nature of the implementation of safety requirements with the installation of state-of-the-art equipment, guaranteeing navigational safety and preventing sea and air pollution. Strict control by classification societies is envisaged. The second one is related to minimization of negative financial consequences on the basis of adequate growth of ship productivity, which restrains the growth rate of costs and, consequently, tariff rates. At the same time, the principle of economies of scale creates the risk of significant losses under certain conditions, as demonstrated by the Evergreen container ship incident in the Suez Canal.

In this respect, IT technologies are becoming one of the most important areas for optimising the use of production capacity of maritime transport companies according to the criteria of intensity of use. However, keep in mind that they are also, to a defining extent, a reflection of the additional costs of decarbonisation, automation and cyber-security technology to shipowners.

Ultimately, the results of transport services for international economic relations in the context of the formation of global transport and economic relations are quite contradictory. This is due to the ambiguity of the approaches taken by the major maritime powers in balancing cargo flows and the carrying capacity of the fleet.

When working out a strategy for the development of the national maritime transport complex, it is necessary to take into account that economic growth in individual regions occurs in a system of interrelation with the global trend [1, 7]. Therefore, attention should be focused on various historical processes – the level of investment priorities, the nature of human capital formation and its export, the pace of implementation of innovation processes in the sectors and in the merchant fleet system.

Effective participation in the international division of labour in an era of globalisation and competitive technology depends on two main circumstances. Firstly, the quality and price attractiveness of products, and secondly, the economics and reliability of their delivery. The latter determines the constant improvement of means of transport and optimisation of routes. Therefore, exporting countries, despite retaining a role in supplying oil products to the European market by traditional routes, are implementing alternative projects involving pipeline and maritime transport.

The plan highlights a pipeline for Azeri oil to the Mediterranean Sea and the development of deep-water ports. This will allow the use of tankers of an economy of scale concept.

As another example of the separation of commercial viability and system security, consider the famous \$3.9 billion sale of the ports business by P&O Ports. The deal included 7 major US ports that had previously been operated by a foreign Danish-Dutch company. But as soon as the new buyer turned out to be Dubai Ports World, the US government, based on a congressional decision, cancelled the deal, not on the transfer of ownership, but on the possible risk of diminishing the security of national interests.

The maritime trade market is characterised by a steady, and at times dramatic, increase in fleet deadweight and carrying capacity. This process is realized both in the form of replenishment of vessels by traditional ship-owning structures and due to emergence of new operators. With the subsequent increase in demand (cargo flows) and full use of the fleet's carrying capacity, the composition of competitors on the most important international traffic routes expands.

At the end of the twentieth century, a fundamentally new trend in the development of the world economy emerged with the transition to globalisation. The most developed countries have intensified their integration ties with each other. That is, products and investments form flows in this group of states. While in the 1960s developed countries' exports to other developed countries amounted to 40%, by the beginning of the 21st century this figure reached 76%. At the end of the twentieth century, post-industrialised countries imported 1.2% of world GNP in goods and services from developing countries. The share of US investment in Europe was as high as 50 per cent, up from 33 per cent in the 1970s. It is this feature that has had a significant impact on the direction of maritime transport of the leading maritime nations without a reflagging strategy.

When deadweight increases substantially in excess of cargo flows, there is a sign of unbalanced capacity in terms of quality and quantity and foreign trade turnover. A high share of fixed costs creates conditions for protracted tariff competition. It can last until cargo flows increase to ensure sufficient fleet utilisation. In this situation, a period of relative stability of tariff rates is formed and shipowners' activity in the maritime trade market sectors becomes profitable, until the lack of adequate deadweight causes a new round of order portfolio activation, which happened in the first decade of the 21st century.

This, even in some cases, in the absence of a declining phase of the economic cycle, leads to a drop in tariff levels and unprofitable operations for shipbuilders and operators. The key is to recover variable costs and to maintain employment levels, especially if the company is one of the mainstays in the region.

It should be noted that the key importance of the Black Sea and the Danube Waterway in the system of development of transit flows on the route Asia - Europe, despite the formation of alternative transport corridors [8]. That is why, despite the transformation of a unified maritime transport market, the New Silk Road project remains of fundamental importance. Unfortunately in Ukraine, for a number of reasons, the priority in this regard has shifted to Turkey and Romania.

At the same time, the rigidity of the IMO's approach to the decarbonisation of transport fleet operations, despite their 3% participation in the negative impact on atmospheric warming, must be taken into account. The multitasking nature of clean ship energy choices predetermines an increase in the specific capital intensity of the transportation process, which may have a negative impact on the operator structure.

In accordance with the arisen problems of energy supply of transportation process in view of increase in prices for fuel and regulation of decarbonisation level the urgency of estimation of variants of positioning of ships with various innovative characteristics in the market of maritime trade increases [9]. Parameters of change of the expenses reflecting efficiency are formed under the condition:

$$\Delta E_e = \sum \left(\frac{p_{cti} N_{loi}}{D_{voi} V_{doi}} - \frac{p_{cti} N_{lni}}{D_{vni} V_{dni}} \right) D_{vni} V_{dni} k_{vni} T_{nrri}, \quad (1)$$

while p_{cti} – the price of the relevant fuel under the conditions in question,

N_{loi} – the rate of fuel consumption of the comparable variants of the basic vessel (o) and the new vessel (n),

D_{voi} – the deadweight of the transport vessels being compared,

V_{doi} – the ship-daily rate of the estimated voyage by vessel variation,

k_{vni} – technical speed realization rate according to the route conditions,

T_{nrri} – the running time of the voyage by the new ship design.

One of the features of today's freight market development is the dominance of large-scale shipping corporations. They are shaping the atmosphere of competition based on the use of innovative technologies. Under the influence of this process there is a polarization of the quality of merchant fleet by shipping companies and its handling in ports [10]. The limitation of the possibility of adequate fleet development by most countries participating in the international division of labour leads to the search by shipowners for organizational forms of maintaining the operational activity. Simultaneously with strengthening of capital concentration and use of principles of external leveling of this process for the substandard fleet the framework of use of the state support is narrowed.

The most important sign of freight market efficiency is a competitive environment, reflecting the extent to which each sector is accessible to potential participants in the transportation process. Unfortunately, economic growth of the main positions of maritime trade, despite integration processes, forms conditions of limited access, especially to the highly profitable sectors of the freight market, for new ship-owners. At the same time, the process is virtually unregulated at the level of international maritime organisations as well. Therefore, in the system of positioning strategies for the merchant fleet it is important to take into account the provision: "... there cannot be a state of stable equilibrium" [11]. This reality stipulates the role of reserves of production capacity and finance in the crisis management system.

Conclusions

The principle of differentiating them according to factors of origin should be used as a basis for assessing the objectivity of maritime transport flows. Particularly important is the grouping according to the two most important conditions: purely commercial, and conditioned by the tasks of military-political strategy. Orientation only on the total volume of traffic does not take into account the nature of formation of individual parts and the use of the mode of protectionism.

In order to achieve adequate conditions for national shipping companies in the global maritime market, with uniformity of pricing forms and methods, the same principles of payroll taxation must be achieved.

The conclusion that "fixed costs do not influence the optimal price, but they do determine the long-term lower bound on the price" should be taken into account. [12]. Such a boundary was formed under the influence of the improvement of the foreign merchant fleet, which implemented the strategy of displacing ships of other maritime powers, primarily Ukraine.

Abstract

During the development of certain strategies it is important to combine clarity of requirements for the state of the maritime transport enterprise with the likelihood of the state of the maritime trade market sector in question. Attention should therefore be focused on the nature of the emergence of new trends or patterns. The actual increasing role of sea transport industry enterprises in ensuring market relations in the international division of labour, despite the differentiated approaches of individual centres, predetermines the requirements to optimize the condition of the country's merchant fleet and ports. At the same time, two trends in the system of international division of labour are intensifying.

The priorities of sustainable positioning of the national economy are bordering on the opposition of others, seeking not only to ensure export priorities but also to change the structure of production. Against this background, contradictions arise not only with regard to the WTO position, but also with regard to the classical principles of price formation. In other words, for the effective positioning of sea transport enterprises it is necessary to take into account new transformational factors. The complexity of planning the activities of maritime transport enterprises is predetermined by the multidimensionality of changes in the maritime trade market condition and a certain probability of the future state of the system.

Therefore, financial condition of especially medium and small shipping companies periodically finds itself in a critical status. In this aspect, two approaches have traditionally been used, related to the need to reserve resources and to optimise the technical and economic level of production capacity. With the ever-increasing demands on shipping safety and decarbonisation, sustainability challenges arise in terms of cost-effectiveness criteria. In order to ensure the sustainable development of maritime transport enterprises, it is necessary to develop and implement effective strategies that take into account the changing market conditions and the emergence of new trends. Such strategies should focus on optimizing the condition of the country's merchant fleet and ports, as well as on the development of new technologies and the improvement of production processes. The optimization of production capacity and the rational use of resources are also important factors in ensuring the financial stability of maritime transport enterprises.

The development of the maritime transport industry is a complex and multidimensional process that requires the implementation of effective strategies, the use of new technologies, and the consideration of geopolitical and environmental factors. The challenges facing the industry are diverse and require a comprehensive approach to their solution. The sustainable development of maritime transport enterprises is essential for the economic growth of countries and the well-being of their populations.

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