THE COMPETITIVE STRATEGY PROFILE OF UKRAINIAN INLAND WATER TRANSPORT: ECONOMIC JUSTIFICATION

Purpose. The work aims to build a profile of the competitive strategy of inland water transport of Ukraine and its economic justification.

Methodology. The theoretical and methodological basis of the study was the fundamental scientific principles of general economic theory and transport economics, works by domestic and foreign scientists in the field of competitive strategies, economic justification of competitive strategy profiles, and sustainable foreign economic development. We used methods such as “SNW”, “SPACE”, and “ADL” to solve the tasks of our research. The information base of the study consists of: collected, processed, and summarized primary materials of economic research, official statistics, monographs, and scientific and analytical articles of domestic and foreign authors.

Findings. The work determines the economic essence of the competitive strategy profile. The profile of the Ukrainian inland water transport competitive strategy was constructed. The profile by the method of “SNW” was analyzed and economically justified by the “SPACE” and “ADL” methods. In the context of European integration, a system of strategic recommendations for the Ukrainian inland water transport competitive strategy formation was proposed.

Originality. In this work, the methodological approach to building a profile of competitive strategy of inland water transport of Ukraine was further developed, which, in contrast to existing methods, includes critical elements of competitive potential, such as natural resource, production, labor, institutional, innovation and investment ones. This allows a comprehensive assessment of the results of economic threats and dangers in its use. The proposed system of recommendations for forming a competitive strategy, which will allow positioning Ukraine’s inland water transport in the European market of transport services in terms of European integration.

Practical value. The presented results of the study can be used to improve the management system of Ukrainian inland waterway transport, in particular, in the part of selecting the most appropriate models of financing costs for the implementation of competitive strategies of water transport in Ukraine in the conditions of structural changes in the macro-environment in the context of overcoming the consequences of military aggression in the period of post-war recovery of Ukraine.

Keywords: water transport, competitiveness, strategy, profile, SNW, SPACE, ADL

Introduction. The study’s relevance is conditioned by the fact that the current conditions of doing business in the field of freight services for the transportation of goods and passengers by internal waters of Ukraine require a change in the basic guidelines of economic activity. This is primarily due to the intensification of globalization processes and the strengthening of their impact on the activities of economic entities in the field of transport services for carrying passengers and goods by river network of Ukraine. The main task of economic entities in inland waterways transport is to choose the strategic direction of their development, which involves conducting a strategic analysis of the provision of transport products for freight and passengers by domestic waterways and economic justification of the competitive strategy. This requires a comprehensive analysis of the factors influencing the competitive course of internal navigation in Ukraine. Through a strategic analysis of shipping services’ provision for carrying goods and passengers by navigable continental waters, a list of alternative management decisions is formed to ensure the Ukrainian internal shipping competitive advantages and profitability in its business environment long-run changes.

Literature review. In studying issues related to the domestic shipping competitive strategy profile construction, we analyzed the scientific results presented in the works on approaches to the competitive strategies formation, which are devoted to SNW-analysis issues, where the recommendations on the use of business analysis methods in the development of projects and programs are considered (BABOK [1], Business Analysis [2]); to the economic justification of the profiles of competitive strategies by the SPACE method, which is dedicated to the analysis of the competitive position of the organization using indicators of its external and internal environment (T. Gürbüz [3], T. Dimitrova [4]), and ADL (Ionescu, C. V. [5]), which describes the use of the ADL strategic planning method to improve the process of developing competitive strategies, sustainable economic development (B. Burynskiy, M. Petrushenko, H. Shevchenko, Y. Baranchenko [6], J. Chovancová, E. Litavcová, T. Shevchenko [7]), and transport economics, namely the establishment of a compromise between economic efficiency indicators and environmental objectives in assessing the effectiveness of different scenarios for freight transport and determining the benefits of each of them (P. Kelle, J. Song, M. Jin, H. Schneider, C. Claypool [8]). Some instruments of balanced development of inner water and sea transport in Ukraine are considered to ensure the implementation of social, economic, and environmental development plans in the country (S. Ilichenko, N. Khuma rova, N. Maslii, M. Demianchuk, V. Skribans [9]), and analysis of the impact of passenger and freight flows transported by water on the change in the Ukrainian GDP index in the system of sustainable development goals was performed (V. Gryshechenko, I. Gryshechenko [10]).

Unsolved aspects of the problem. At the same time, further research is needed on issues related to the economic justification of internal navigation competitive strategies profiles in the country’s economic security system. Insufficient development and scientific and methodological significance of these issues led to the study’s choice of topic and purpose.

Purpose. The work aims to build a profile of the competitive strategy of inland shipping in Ukraine and its economic justification.

Methods. The study results suggest that one of the most successful methods of river navigation competitive strategies
economic evaluation is constructing “profiles”. This method allows us to assess the competitive action program of our investigation object for specific economic and technical indicators.

The competitive action program profile is usually understood as a graphical representation of the value of the selected technical and economic indicators that characterize such a scheme, according to clearly defined rules. The rectangular evaluation field is distributed at the level of the part, the number of which is equal to \((n - 1)\), where \(n\) is the number of technical and economic indicators used to evaluate the competitive master plan. The weight of all technical and economic indicators can be assumed to be the same. The evaluation field dimensions \((H\ –\ field\ width\ and\ I\ –\ distance\ between\ axes\ of\ adjacent\ indicators)\) are determined arbitrarily.

Then, on the corresponding axes with a scale from 0 to 1, the relative value of technical and economic indicators of the competitive approach of inland water transport \(h_i\) is plotted. It can be calculated by the formula

\[
h_i = \begin{cases} hi_{\text{ACTUAL VALUE}}/hi_{\text{BENCHMARK}} & \text{if the highest value of an indicator is preferred} \\ hi_{\text{BENCHMARK}}/hi_{\text{ACTUAL VALUE}} & \text{if the lowest value of an indicator is preferred} \end{cases}
\]

Thus, on the corresponding scales of technical and economic indicators, on the left there are worse values of these indicators (the worse values of the indicators are closer to 0), and on the right – their better values (the better values of the indicators are closer to 1).

The profile of the competitive policy \((x_{0i}^{\text{UARS}})\) is used for its economic evaluation \((RS_{x_i}^{\text{UARS}})\) by comparing it with the profile of another competitive plot and/or its benchmark \((S^0_{x_i}^{\text{BENCHMARK}})\), which are built on one evaluation field according to the following formula

\[
RS_{x_i}^{\text{UARS}} = \frac{\sum_{i=1}^{n} \left( l \min(h_i, 1) \right)}{H - I (n-1)}.
\]

To determine the strategic positions of Ukrainian waterways compared to European navigable waters, we will conduct an SNW-analysis of its competitive grand design profile – an improved version of the study of its strengths and weaknesses.

SNW-analysis of the profile of the competitive strategy of indoor navigation in Ukraine, as practice shows, is one of the most effective ways to determine its strategic position in the transport services market. This type of analysis provides an opportunity to analyze the strengths and weaknesses of Ukraine’s fluvial shipping competitive set of tactics and to identify and consider its neutral (N) positions, i.e., those currently are neither its strengths nor weaknesses but may become so soon. As a neutral level of strategic position, it is best to choose the average market situation for the specific condition being analyzed. Thus, the so-called zero point of competition in the freight services market is fixed.

Such an approach can be the basis for developing strategic recommendations for further improvement of solid competitive positions and the complete elimination or partial modification of weak competitive parts. In this case, timely identification and analysis of neutral parts of Ukraine’s internal navigation competitive strategy provides an opportunity to develop strategic recommendations to ensure the transition of these parties to the strong ones, or prevent their transformation into weak ones, i.e., position Ukraine’s hinterland waterway in the European transport market in the European integration conditions.

The SPACE method – Strategic (S) Position (P) and Action (AC) Evaluation – can be used to economically justify Ukrainian river traffic competitive action program and develop strategic recommendations to further strengthen its competitive position in the context of European integration. Furthermore, this method dramatically facilitates making strategic management decisions and creating plans for their implementation.

In general, the analysis performed by the SPACE method is a matrix. At the top of the Y-axis, there are indicators that characterize the object’s economic potential and financial strength \((FS)\). At the bottom of the Y-axis, there are indicators that characterize the stability of the business environment \((ES)\). Finally, to the left of the zero position on the X-axis competitive advantages of the object under study \((CA)\) are indicated, and to the right – the industry’s attractiveness \((IA)\).

\[
\begin{align*}
ES &= \sum_{j} E_j \cdot ES_j; \\
IA &= \sum_{i} I_i \cdot IA_i; \\
CA &= \sum_{i} C_i \cdot CA_i; \\
FS &= \sum_{j} F_j \cdot FS_j;
\end{align*}
\]

\[
R_{x_i}^{\text{UARS}}(x = CA - IA; \ y = FS - ES),
\]

where \(ES, IA, CA, FS\) are weighted estimates of indicators for each group. Next, the coordinates \((x = CA - IA; y = FS - ES)\) for which the competitive vector \(R_{x_i}^{\text{UARS}}(x, y)\) is constructed, are determined for the object of the study. Such a competitive vector is located in one of the four quadrants of the evaluation field of the SPACE matrix, each of which corresponds to one of four strategic states (conservative, aggressive, competitive, or protective state). We should note that being in one of the determined states involves selecting and applying appropriate generalized competitive strategies.

To clarify the strategic recommendations for improving the competitive position of inward shipping in Ukraine, we will use the ADL LC method, which is a tool for strategic analysis developed by experts from “Arthur D. Little”. It is based on the concept of the industry’s life cycle.

Results. We use five main groups of technical and economic indicators, which can broadly characterize the competitive strategy of our investigation object, taking into account the factor of economic security, namely: natural resource potential, labor potential, production potential, institutional capacity, innovation, and investment potential of river freight.

The initial data for our calculations are data from UNECE [11], UNCTAD [12], WorldBank [13], Eurostat [14], and the State Statistics Service of Ukraine [15, 16], posted in the public domain on the websites of the above organizations. Based on the initial data, we calculate the relative value of technical and economic indicators to build a profile of the competitive scheme of internal navigation, group them and build such a profile (Fig. 1).

We conduct an SNW-analysis of the Ukrainian navigable waters competitive strategy profile according to five main elements of competitive potential. For that, we assess the strategic position of Ukrainian waterways and fill in a special table (Table 1).

As a result of our research, we found that according to the SNW scale of twenty studied indicators of the Ukrainian internal navigation competitive approach profile, its position can be assessed as strong on only two indicators, as neutral – on five indicators, as weak – on thirteen indicators out of twenty (these are indicators of production and partially labor, institutional, innovation, and investment potential).

We can define the overall level of the competitive policy of the Ukrainian waterways profile on the SNW scale as weak

\[
R_{x_i}^{\text{UARS}} = \frac{7.530}{1.1 \cdot (20 - 1)} - \frac{7.530}{0.396} = 0.396.
\]
To formulate specific strategic recommendations, taking into account the direction and length of the competitive vector of Ukraine’s domestic shipping, you can use the extended version of the SPACE matrix (Fig. 2).

\[ ES = \sum_{i=1}^{n} \gamma_i \cdot ES_i^{x} = 2.80600; \]
\[ IA = \sum_{i=1}^{n} \gamma_i \cdot IA_i^{x} = 2.734667; \]
\[ CA = \sum_{i=1}^{n} \gamma_i \cdot CA_i^{x} = 2.57511; \]
\[ FS = \sum_{i=1}^{n} \gamma_i \cdot FS_i^{x} = 0.047085. \]
\[ x = CA - IA = 2.57511 - 2.734667 = -0.15956; \]
\[ y = FS - ES = 0.047085 - 2.80600 = -2.75891; \]
\[ RS = \sqrt{(-0.15956)^2 + (-2.75891)^2}. \]

According to the results of the calculations, the competitive vector falls into the CAES1 quadrant, which indicates that according to the general recommendations of the SPACE matrix, the competitive plot of Ukrainian navigable waters should be protective and aimed at reorganizing the industry. In determining the competitive position of Ukrainian internal navigation, we used the calculation method and built a profile of its competitive grand design on a special scale (Fig. 3).

The results of our study indicate that Ukraine’s river traffic of the twenty studied parameters on the ADL scale occupies a strong competitive position in only two indicators of natural resource potential, moderate – in five indicators (three indicators of labor potential, one indicator of institutional capacity, and one indicator of innovation and investment potential, respectively). The other thirteen indicators out of twenty correspond to a weak competitive position, and all indicators of production potential (five out of twenty indicators) are at a non-viable level. The overall competitive position of Ukraine’s inner waterway transport on the ADL scale can be defined as weak.

The stage of the life cycle of Ukrainian river navigation is determined using the expert method. The group of experts included leading scientists in the field of water transport, who represented institutions such as the State Organization “Institute of Economics and Forecasting of the National Academy of Sciences of Ukraine”, State Organization “Institute of Market and Economic & Ecological Researches of the National Academy of Sciences of Ukraine”, Odesa I.I. Mechnikov National University, Odesa National Maritime University, Kherson National Technical University, Admiral Makarov National University of Shipbuilding, State University of Infrastructure and Technologies.

The results of processing the data obtained by our survey allow us to conclude that Ukraine’s internal navigation is at such a stage of the life cycle as “maturity”.

Thus, the position of Ukraine’s inland water transport competitive strategy on the ADL-matrix is defined by us as the

### Table 1

<table>
<thead>
<tr>
<th>Elements of competitive potential</th>
<th>Qualitative assessment of competitive positions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Values</td>
</tr>
<tr>
<td></td>
<td>S</td>
</tr>
<tr>
<td>Natural resource potential</td>
<td></td>
</tr>
<tr>
<td>Length of inland waterway, points</td>
<td>0.234</td>
</tr>
<tr>
<td>No links, points</td>
<td>1.000</td>
</tr>
<tr>
<td>The main bottlenecks, points</td>
<td>0.250</td>
</tr>
<tr>
<td>Strategic bottlenecks, points</td>
<td>1.000</td>
</tr>
<tr>
<td>Labor potential</td>
<td></td>
</tr>
<tr>
<td>Population, points</td>
<td>0.522</td>
</tr>
<tr>
<td>The number of employees, points</td>
<td>0.454</td>
</tr>
<tr>
<td>Health level, points</td>
<td>0.656</td>
</tr>
<tr>
<td>Qualification level</td>
<td>0.699</td>
</tr>
<tr>
<td>Production potential</td>
<td></td>
</tr>
<tr>
<td>Loading capacity of vessels, points</td>
<td>0.040</td>
</tr>
<tr>
<td>The volume of cargo transportation, points</td>
<td>0.011</td>
</tr>
<tr>
<td>Shipbuilding, points</td>
<td>0.000</td>
</tr>
<tr>
<td>Disposal of ships, points</td>
<td>0.093</td>
</tr>
<tr>
<td>Innovation and investment potential</td>
<td></td>
</tr>
<tr>
<td>Investments in fleet and infrastructure development, points</td>
<td>0.005</td>
</tr>
<tr>
<td>Innovative capacity, points</td>
<td>0.401</td>
</tr>
<tr>
<td>Financial market stability, points</td>
<td>0.423</td>
</tr>
<tr>
<td>Macroeconomic stability, points</td>
<td>0.579</td>
</tr>
<tr>
<td>The overall level of the competitive strategy of Ukraine’s inland water transport profile</td>
<td>0.396</td>
</tr>
</tbody>
</table>
position of “Weak-Maturity”. This is an unprofitable position, which is characterized by selective investment or refusal to invest, as well as areas of improvement of competitive set of tactics related to proving the viability of the industry, such as “Turnaround” and “Prolong Existence” or “Abandon”, if it is not possible to prove the viability of river freight in Ukraine with the help of strategies “Turnaround” and “Prolong Existence”.

Conclusions. Thus, based on building the Ukrainian indoor shipping competitive action program profile and its economic justification using “SNW”, “SPACE”, and “ADL” methods, we note that for the direction of “Turnaround”, we can recommend: marketing scheme, such as “market penetration”, which will increase the market share of freight services for the transportation of goods and passengers by internal waters of Ukraine by manipulating the marketing mix, such as lower prices and tariffs for freight and passengers, breadth of cargo traffic, increasing their number and volume of provision through an effective advertising campaign; logistics strategies, such as: “distribution rationalization” — to bring the system of providing shipping services for carrying cargos and travelers by indoor navigation of Ukraine to the most efficient network; “market rationalization” — to focus on fluvial network segments of the freight and passenger transport services market which are the most profitable for Ukraine, for example, the elements with the most significant volume, or details allocated by a specific type of freight traffic or geographical principle; “production rationalization” — to increase the standardization of structures, components, and production processes, as well as to concentrate facilities and transfer the least efficient elements of services for the transportation of goods and passengers by domestic waters of Ukraine to outsourcing; “product line rationalization” — to narrow the range of transport products for shipping assets and wanderers by internal waterways of Ukraine to their most profitable types. If the cargo services for transporting goods and passengers by navigable waters of Ukraine are not streamlined, their number may increase, adding complexity and increasing the cost of maintaining profits in the industry. According to the well-known 80/20 rule, the bulk of income and gains (up to 80%) comes from 20% of the provided freight services. Although streamlining Ukraine’s inland waterway cargo traffic can reduce the complexity of the supply chain and the redundancy of both the portfolio of such services and maintenance costs, such costs can be challenging to quantify. The share of shipping services for transporting products and tourists by domestic waters of Ukraine, which will not be transferred to other types of such services, should be estimated and compensated by entering the portfolio of new kinds of freight traffic or increasing the provision of existing cargo services. It will allow establishing the process of providing transport products for conveying materials and commuters by river network of Ukraine in the most efficient way while ensuring a high level of such services to increase revenues, reduce costs and increase profits; efficiency strategies, such as: “methods and functions efficiency” — investing in new ways of fulfilling the existing tasks of providing transport services for transmitting commodities and sitters by Ukrainian navigable continental waters through the introduction of new “soft” technologies such as new workflow models, computer production planning, inventory control, etc. — to increase the economic efficiency of Ukraine’s internal waterways functioning; “technological efficiency” — improving the efficiency of freight services for delivering wares and boarders by internal waters of Ukraine through technological improvements, fleet renewal, and modernization of the infrastructure of hinterland waterways of Ukraine and “cost-cutting efficiency” — uniform reduction of costs with the help of effective management decisions, which, as a rule, should be aimed at optimizing the use of resources, reducing costs and maximizing profits from the provision of cargo traffic for the carriage of merchan- dises and voyagers by fluvial network of Ukraine.

In the direction of “Prolong Existence”, in addition to the above measures can be recommended: marketing master plan, such as “same products — new markets” — expanding the range of consumers in the existing domestic market of shipping services for the transportation of cargos and voyagers by domestic waters of Ukraine for the current line of freight traffic; “export — same product” — investing in the provision of domestic cargo services for shipping assets and travelers by internal waterways in the international market of transport products for transferring products and sitters by river network, which, unlike the domestic market of transport services of Ukraine, has other characteristics and dynamics; integration approach “backward integration” — a form of vertical integration through which Ukraine’s inward waterway transport expands its capabilities in the market to provide freight services for moving materials and tourists by navigable continental waters to perform tasks previously performed by other entities up the supply chain. In other words, reverse integration is when domestic waterway transport companies absorb other companies that supply products or provide them with services that are necessary for the movement of commodities and wanderers by fluvial network, i.e., to be included in the organization of business for the provision of cargo traffic by internal waterway’s new functions, operations or products that were previously external and served to provide and support existing business operations; go overseas policy “licensing abroad” — licensing of the use of domestic technologies, patents, know-how, brand franchises, etc. in foreign countries; these includes items belonging to domestic entities in the field of shipping services for delivering merchandises and boarders by domestic waters or domestic entities.
ties’ obtaining rights by under a license agreement to intangible property of a foreign company for a certain period; “harvest set of tactics”, such as “little jewel” – to reduce business to the most profitable part and reinvest profits from the provision of freight traffic by indoor waterway in the most successful remaining operations, and “pure survival” – to support the existence of businesses in the field of freight and passengers by internal channels in Ukraine during very unfavorable periods of doing business by eliminating economically inefficient functions, serving for reducing the funding of any activity. Such strategies involve reducing the cost of existing inner waterways and passenger services to maximize profits. As a rule, harvesting strategies are used for cargo services provided by outdated technologies. Their profits are reinvested in new technologies to provide transport products by river network. If it is impossible to prove the viability of Ukraine’s inland waterway transport even with the help of the above strategies, it is necessary to sell assets, withdraw funds and leave the services market for carrying goods and passengers by navigable waters. Such strategies involve reducing the cost of existing hinterland waterway freight and passenger services to maximize profits. It will allow establishing the process of providing transport services for carrying wares and commuters by navigable continental waters of Ukraine in the most efficient way while ensuring a high level of such services to increase revenues, reduce costs and increase profits and increase the competitiveness of Ukrainian water transport in European integration.

This article contains the results of research conducted under the National Academy of Sciences of Ukraine grants “Institutional and economic ensure mechanisms of the water transport competitiveness in Ukraine” (0121U108151).

References.

Профіль конкурентної стратегії внутрішнього водного транспорту України: економічне обґрунтування

Б. В. Буркинський, С. В. Ільченко, В. Ф. Гріщенко*, І. В. Гріщенко

Державна установа “Інститут ринку та економіко-екологічних досліджень НАН України”, м. Одеса, Україна

*Автор-кореспондент e-mail: v.f.gryshchenko@gmail.com

Мета. Полягає в побудові профілю конкурентної стратегії внутрішнього водного транспорту України та його економічному обґрунтуванні.

Методика. Теоретико-методичну основу дослідження склали фундаментальні наукові положення загальної економічної теорії та економіки транспорту, праці вітчизняних і зарубіжних учених у галузі формування конкурентних стратегій, економічного обґрунтування профілів конкурентних стратегій і стійкого економічного розвитку. Для вирішення поставлених завдань у роботі використовувались такі методи, як “SNW” “SPACE” та “ADL”. Інформаційну базу дослідження склали: збрані, опрацьовані та узагальнені первинні матеріали економічних досліджень, офіційні статистичні дані, монографії та наукові-аналітичні статті вітчизняних і зарубіжних авторів.

Результати. У роботі визначена економічна сутність профілю конкурентних стратегій. Побудовано профіль конкурентної стратегії внутрішнього водного транспорту України. Проведено аналіз цього профілю методом “SNW” та його економічне обґрунтування методами “SPACE” та “ADL”. Запропонована система стратегічних рекомендацій щодо формування конкурентної стратегії внутрішнього водного транспорту України в умовах Європейтізації.

Наукова новизна. У роботі набув подальшого розвитку метоючний підхід до побудови профілю конкурентної стратегії внутрішнього водного транспорту України, що, на відміну від існуючих підходів, включає основні елементи конкурентного потенціалу, такі як: природно-ресурсний, виробничий, трудовий, інституційний та інноваційно-інвестиційний. Це дозволяє комплексно оцінити результати прийняття економічних загроз і небезпек при його використанні. Запропонована система рекомендацій щодо формування конкурентної стратегії внутрішнього водного транспорту України у вимовах Європейтізації.

Практична значимість. Представлений в результати дослідження можуть бути використані для вдосконалення системи управління внутрішнім водним транспортом України, яка, у часі вибору найбільш прийнятних моделей фінансування витрат для реалізації конкурентних стратегій водного транспорту України, яким в Україні, зокрема, у частині вибору найбільш прийнятних моделей фінансування витрат для реалізації конкурентних стратегій водного транспорту України, в умовах структурних змін макросклоподібних в контексті подолання наслідків військової агресії в період посиленого відновлення України.

Ключові слова: водний транспорт, конкурентоспроможність, стратегія, профіль, SNW, SPACE, ADL

The manuscript was submitted 22.02.22.