

SWOT analysis of Ukraine's transport industry

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Abstract. The study conducted a critical analysis of scientific research and methods of strategic planning and determined that SWOT analysis is one of the effective tools. Based on this, the methods of statistical analysis, system-structural methods, comparative method, as well as the SWOT analysis method were used. The scientific novelty of the proposed innovations is determined by the complexity of the assessment of development trends and consequences of transformation of national transport sector in the period of dynamic changes, as well as the authors' SWOT analysis of country transport sector as a national economic system component. In the course of the study the possibility of effective use of the proposed tools and further taking into account the current changes has been established.

1. Introduction

The transport industry of any country is a key sector of its economy. Transport is a driver of the country's overall development. Both the level of development of a particular national economy and the success of its individual industries depend on the effectiveness of constructing transport networks and infrastructure.

The transport sector of developed countries is a balanced, extensive set of connection routes, modern transport infrastructure facilities, and the number of innovative enterprises in various transport sectors, both national and foreign, operating in its market. In contrast, the transport systems of developing countries have various distinctive differences.

Some developing countries have more up-to-date transport systems and have invested heavily in their development, while others prefer to develop other sectors of the economy. The dynamic development of the transport sector is one of the reasons why countries such as China and Turkey have been able to move into the group of fast-growing economies.

At present, most researchers use the term "transport and logistics industry" to mean a much broader concept than just the transport component, understanding it as a totality of transport and logistics infrastructure, transport links, transport enterprises, logistics companies, retail facilities, and much more.

One should definitely agree with the correctness of such a definition, but in this study only the transport component is studied, and therefore the concept of "transport industry" is used.

2. Literature review and defining the problem

A large number of transport studies are offered by both organisations and international institutions. Particularly noteworthy are the studies by the European Commission [1], Deloitte [2] and the TRAN Committee [3], which are publicly available and can be read freely by anyone. All of these studies are distinguished by a significant level of depth and describe in detail the state of the transport industry in a global perspective. There are also in-depth studies by private companies that include large amounts of information, but they are not freely available and can be accessed on a paid basis.

Analysing the most important scientific studies related to the transport sector, the following should be especially noted.

Kumar's study [4] is devoted to modelling the implementation of ISO social responsibility standards in the field of cargo transportation. Rey et al in [5] propose a study on the implementation of the Internet of Things project in the transport and logistics sector.

On the example of Australia, Lowe et al in [6] identified the adaptive potential of the transport industry. The impact of the transport sector on the reduction of harmful emissions into the atmosphere was studied by Sun et al in [7]. A comprehensive analysis of the transport industry on the example of Vietnam in order to qualitatively assess the impact of cargo transport management was carried out by Thi and Ngoc in [8].

The study of the environmental sustainability of the Nigerian transport sector conducted in [9] allowed to define a framework for the implementation of the basic policy of environmental sustainability of the country. Candemir and Çelebi conducted a comprehensive

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analysis of the importance of the transport and logistics sectors in the country's economic development [10].

The study by Scarişoreanu and Ghiculescu [11] analysed the multimodal cargo transport sector in Romania and identified appropriate priority strategies to achieve the goals set by the European Green Deal.

Jalolova et al in [12] identified trends in the development of the transport and logistics sector of the Republic of Uzbekistan and the relevant negative factors and proposed measures to increase the transit component and overall effectiveness of the transport and logistics sector of the economy.

In scientific papers [13-17], the authors propose tools for the development of enterprises in various sectors of the national economy of Ukraine.

The application of the SWOT-analysis method for various objects is very common. The most interesting, from our point of view, studies have been critically evaluated. The application of the SWOT-analysis method for various objects is very common. A critical assessment of the most interesting studies has been performed.

The problem of assessing the effectiveness of reverse logistics activity transfer to outside suppliers using SWOT analysis is implemented by Tavana et al in [18]. The study of Zhikang [19] is devoted to the use of SWOT analysis to assess the status and challenges of reverse logistics of the automotive industry in China. These studies have become a pilot in this field. As noted by Ellis [20], SWOT, PEST (PESTE/PESTEL) and Porter's five factors are the most widely used strategic frameworks in the management of air transport. The author proposes a strategic framework combining politics, economics and geography (PEG).

However, it also has its weaknesses, which are manifested in the issue of regulation and basing on the outdated bilateral system, which is not sufficiently explored by the author.

The behaviour modelling system for post-recovery air transport proposed by Zhu et al [21], using the Bayesian network and including expert assessments, public policy analysis and interviewing methods, allows effective risk management for fundamental shifts in markets with sensitivity assessments.

Conducted by D'Adamo et al in [22] and [23] an integrated SWOT-AHP analysis of renewable energy sources in the European transport sector allowed to determine the global priority factors and argue that biomethane can become a widely used clean transport fuel with the implementation of public support programs.

The methodological framework formed on the basis of the SWOT analysis associated with Delphi method surveys and multi-criteria assessment (AHP) to evaluate the status and strategic profile of the 30 leading sugar ethanol companies in Brazil proposed by Barbosa et al in [24] should be recognized as an interesting theoretical advancement, which can be effectively used in other studies.

An in-depth SWOT analysis of the LNG market, in particular exporters and importers, conducted by Meza et al [25] has argued that a flexible logistics network is a key competitive advantage for suppliers.

Büyüközkan et al [26] defined and analyzed various digital transformation strategies in the aviation industry using AHP-MARCOS integrated fuzzy methodology based on SWOT. The uniqueness of this study is determined by the object of research and the principles of formation of SWOT-factor weighting indexes.

Critically analyzing the methods proposed in previous scientific studies, in conducting the given study methods of statistical analysis were used – to assess the structure of transportation by different modes of transport; system-structural methods – to classify the development trends and consequences of the transformation of Ukrainian transport industry in a period of dynamic changes; comparative method - to compare and evaluate the development opportunities in the transport industry of Ukraine; SWOT-analysis method – to identify strengths and weaknesses, threats and opportunities for the development of Ukrainian transport industry.

3. Research aim and objectives

The application of the SWOT-analysis method in assessing the state of the Ukrainian transport industry will help to identify its strengths and weaknesses, as well as opportunities and threats that arise. In general, the SWOT analysis tool belongs to the group of strategic analysis methods.

Obviously, SWOT-analysis itself is not a final evaluation tool and can only serve as a basis for further in-depth research of the Ukrainian transport industry using more advanced tools. The value of this method lies primarily in its time efficiency and flexibility in analysing the object under study.

Thus, the aim of the study is to conduct a SWOT analysis of Ukraine's transport industry. To achieve this aim, the following objectives have been solved:

- to critically analyse scientific research on the analysis of the country's transport industry and the principles of using the SWOT analysis tool in the assessment of economic entities, including at the macro level;
- a SWOT analysis of Ukraine's transport industry was carried out to identify strengths, weaknesses, threats and opportunities;
- the possibility of use is described of the results of the SWOT analysis of Ukraine's transport industry tool in further scientific research of this problem have been developed.

4 Overview of key findings

As noted earlier, SWOT analysis is one of the tools used in strategic planning, both at the micro and macro levels.

Fig. 1 shows the methods used in strategic planning [27].

It is worth noting that all these methods have different goals and carry different theoretical content and have different practical applications. The following is an attempt to describe their importance and principles of use on the example of the Ukrainian transport industry.

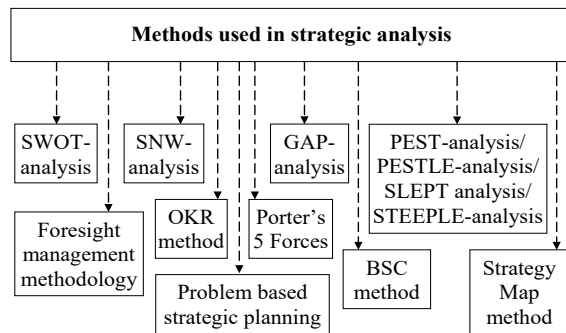


Fig. 1: Methods used for strategic analysis

PEST-analysis is a marketing tool that analyses the political, economic, social and technological aspects of the external environment of the object under analysis. The relevance of PEST-analysis for the transport sector of Ukraine is significant, as it helps to assess the regulatory and state influence factors that are among the key ones for this sector. It is the insufficient implementation of EU norms, standards and directives that is currently a weakness in Ukraine's integration into the EU.

Technological factors are one of the drivers of the development of any industry in any country. Unfortunately, Ukraine lags far behind in terms of implementing innovative technologies and solutions. Ukraine's transport industry has a significant gap with the most developed countries in Europe and the world in terms of infrastructure technological support and the use of best practices in technological operations at transport infrastructure facilities such as ports, airports, warehouses, logistics centres, railway stations, etc. It is also worth pointing out the difficulty of assessing various sectors of the Ukrainian economy, including the transport sector, by economic factors in PEST analysis.

This is due to the incomplete compliance of the dependencies of various economic criteria with established global standards. Varieties of PEST-analysis, such as PESTLE-analysis, SLEPT analysis and STEEPLE-analysis, can also be useful in assessing the transport sector in Ukraine.

SNW-analysis is a tool that can be used to assess individual transport companies, including the level of strategic planning, innovation, branding, marketing, integration, etc. This tool can be especially useful for more advanced transport companies, especially airlines, airports, and logistics operators.

GAP analysis is a complex tool that can be used in different ways. For example, it can be an important element in a consulting audit. In its general form, its key module is a set of scenarios based on the predictive measures taken. For transport companies, a consulting audit is a very difficult task, given the specifics of their operation.

As practice shows, the consulting audit process is especially difficult for technologically and innovatively advanced enterprises, especially for network airlines and global logistics operators. As for the classical use of GAP analysis in scenario modelling and the development of practical recommendations based on it, this tool is

relevant for almost any transport company with a generally high level of successful outcomes.

Problem-based strategic planning is one of the tools used in the first steps of an assessment. In general, it is also effective and relevant for transport enterprises. It can also be used to assess the Ukrainian transport industry or its components. It can be used as a preliminary stage for more advanced methods of strategic dominance using its results as input data. The Balanced Scorecard is also a time-tested and effective method of strategic planning. It is useful for assessing the contribution of each sector, division, and department to the overall result.

It can be relevant both at the level of an individual transport company and at the level of the industry or its part. The strategic mapping method is a complement to the balanced scorecard method and is relevant for assessing individual strategic and tactical goals. The OKR method is another tool for assessing the goals and values of key indicators.

The Porter's 5 Forces method is effective for assessing competitors in the meso-environment. In general, it can be applied both at the industry level and at the level of individual enterprises. However, it may not always be appropriate for use at the industry level.

Thus, almost all of the methods described above are to some extent, with a greater or lesser level of effectiveness, possible and even preferable when assessing the transport industry in Ukraine. It should be emphasised that, primarily, the transport industry of Ukraine requires a detailed assessment using one of the key tools of strategic analysis – SWOT analysis, which was carried out further in the paper.

Based on the development trends, the consequences of the transformation of the transport industry of Ukraine in a period of dynamic changes, as well as based on certain opportunities for the development of Ukraine's transport industry, the SWOT analysis of the transport industry of Ukraine in 2023 was proposed (Table 1).

Undoubtedly, the strengths of Ukraine's transport industry in the form of a developed transport network of transport infrastructure facilities and a favourable geographical location create significant advantages, which, however, have been significantly levelled down recently due to the war. Other advantages noted are not so obvious, and some of them, such as the digitalisation of transport processes, are at the initial stage of implementation.

The military aggression of the Russian Federation has exacerbated weaknesses in the transport sector. This is especially true of the insufficient capacity of checkpoints on the western border for road transport. The intensification of the use of road transport since the beginning of the war, both for passenger and cargo transportation, makes it necessary to look for new opportunities to increase the capacity of the relevant checkpoints.

At the same time, rail transport, which could become an alternative to road transport, is considerably underperforming due to poor organisation of cargo delivery, longer delivery and cargo processing times at sections, and different gauges in Ukraine and neighbouring countries.

Table 1. SWOT analysis of Ukraine’s transport industry

Strengths	Weaknesses
<ol style="list-style-type: none"> 1. Developed transport network of railroads, sea and river ports, airports, main pipelines. 2. Geographical location in the centre of Europe, huge volumes of transit traffic and flights. 3. Second largest exporter of grain and sunflower oil in the world. 4. National Transport Strategy to 2030 and the Action Plan for its implementation, state target programs for the development of modes of transport. 5. High rates of road reconstruction in recent years. 6. Digitalization of transport processes. 7. Qualified human resource potential. 	<ol style="list-style-type: none"> 1. Insufficient throughput capacity of border checkpoints on the western border, inconsistency of border procedures technologies, leading to long delays at the border on both sides. 2. Insufficient number of rolling stock of railways, the need for transshipment of goods due to the change of a 1520 mm track. 3. The incompatibility of the railway infrastructure of Ukraine and the EU. 4. Most of the transport infrastructure facilities are outdated, in need of repair and modernization. 5. Forced change in the logistics of export shipments and change in the areas of freight base formation (the need to redirect to the western border crossings). 6. Changing the logistics of imported cargo (oil products).
Threats	Opportunities
<ol style="list-style-type: none"> 1. Existence of risks associated with territorial conflicts, closure of access to a number of ports. 2. The suspension of civil aircraft flights over the territory of Ukraine. 3. Loss of many industrial companies, displacement of centres of origin and absorption of cargo flows. 4. Significant decrease in the volume of domestic, export-import and transit traffic. 5. Inability to predict the situation. 6. Large emigration of labour resources abroad. 7. An acute need for investments in the reconstruction of the transport infrastructure. 8. Incomplete reformation of the industry in accordance with the European legislation. 	<ol style="list-style-type: none"> 1. Granting Ukraine candidate status to the European Union membership will lead to the gradual opening of the EU market, reforming and renewing the transport industry. 2. Conclusion of the Joint Transport Agreement with the EU is aimed at liberalization of road freight transport to the EU countries. 3. The conclusion of the Joint Aviation Agreement with the EU will open up the EU air transport market. 4. Joining the Convention on a Common Transit Procedure and the Convention on the Simplification of Formalities in Trade in Goods will speed up the operation and coordination of customs services of Ukraine's neighbouring countries and reduce queues at the border. 5. The accession of the Protocol on Regular Passenger Transportation of the Interbus Agreement opens up the European bus transportation market. 6. Integration of Ukraine into the Trans-European Transport Network (TEN-T) will provide interoperability requirements with the EU. 7. Provision of financial support for Ukraine by international financial organizations, the European Union, the United States, Great Britain, Poland and other countries of the world. 8. Launching the work on the development of a plan to restore and modernize the transport infrastructure. 9. Beginning of the reformation of the transport industry management system according to the European legislation aimed at improvement of safety and quality of transportation. 10. The reconstruction of the transport infrastructure should take into account modern construction standards, the requirements of interoperability and digitalization, ensuring the quality of transport services, including persons with disabilities, the number of which during the war is growing significantly. 11. The technology of border crossing points is changing - the distribution of flows to freight and passenger border crossings, general control is being introduced. 12. Shortage of fuel and lubricants will accelerate the introduction of energy-saving technologies, the use of electric cars and public electric transport, and the discarding of obsolete equipment.

All of this indicates a lack of compatibility between Ukraine and the EU that needs to be addressed. In total, the impossibility of delivering goods through established logistics chains causes a significant increase in their cost for final consumption due to the need to radically restructure supply chains, search for new suppliers and transport companies, and most importantly, the use of more expensive transportation options and modes of transport. The complete rejection of the aggressor country's energy supplies has also completely changed the landscape of the national oil market.

In analysing threats, the high level of risks associated with military operations, the limited use of air transport and, to a large extent, waterways, is highlighted. The transformation of cargo flows at the current stage of development of Ukraine's transport industry is becoming evident, with both the directions of their origin and absorption and the structure itself actively changing. This requires the search for more reliable transport and technological delivery schemes, ensuring timeliness, safety and increased operational efficiency of cargo delivery.

Unfortunately, it should be noted that Ukraine was not ready for such drastic changes and the necessary measures are being developed in real time, which causes significant inconvenience, especially in terms of strategic planning for the future. The problem of the outflow of skilled personnel will continue to worsen and the shortage of qualified personnel will be felt by the transport and related sectors of the Ukrainian economy for a very long time.

Significant damage to the infrastructure will require its repair and reconstruction. There is also the problem of not using some of the infrastructure during the war, especially airports and sea and river ports, which also significantly worsens its overall condition. The lack of comprehensive reform of the transport sector to meet EU standards is also a significant drawback that needs to be addressed urgently.

However, new opportunities are also emerging in Ukraine's transport sector at this difficult time. It is fair to state that the process of opening the EU market to Ukraine is ongoing. Despite considerable opposition, Ukraine's integration into European markets is deepening. Various agreements on common space and transport links in various modes of transport between Ukraine and the EU have given a significant impetus to the development of domestic markets, increasing their integrative capabilities and increasing their overall attractiveness to foreign investors.

The removal of trade and transit restrictions has greatly simplified border customs procedures and should ultimately serve as a catalyst for the successful development of Ukraine's transport market in the coming years. These measures should offset the threats that have arisen on Ukraine's western borders due to increased car traffic and resulting queues at the border.

The joining of the Interbus agreement opens up huge opportunities, as it will integrate the Ukrainian market into the European bus transport market to the fullest extent possible. Integration measures for Ukraine's accession to the Trans-European Transport Network (TEN-T) ensure compatibility with EU standards and make the Ukrainian market not only part of the pan-European integrated market, but also enable it to build effective cooperation with non-European markets, especially Turkey.

The new financial opportunities that are opening up for Ukraine due to increased financial support from international financial organisations, the European Union, the United States, the United Kingdom, Poland and other countries give hope for the implementation of innovative infrastructure projects that are essential for the country to create the preconditions for integration into global supply chains for cargo carriers and to ensure transport mobility and accessibility for passengers.

In terms of the pre-war state of Ukraine's transport infrastructure, there was an uneven development across the country, and, more importantly, the freight market lagged behind the passenger market. This is due to the fact that Ukraine hosted major events requiring the transportation of large numbers of people, such as the European Football Championship Euro 2012, and thus

carried out a complete reconstruction of the airports in the cities hosting the championship.

Meanwhile, the cargo business at the same airports was developing on a residual basis and no modernisation of airport infrastructure was actually carried out. It should also be noted that Ukraine is not in a priority position in the world in terms of cargo flows formation, especially when it comes to servicing global supply chains and handling high-value cargo, particularly by air.

Implementation of new technologies at checkpoints, dividing the flows into cargo and passenger will maximise the effect, significantly reduce the time for document processing and reduce inconveniences when passing these checkpoints.

Recently, the impact of the shortage of fuels and lubricants has clearly accelerated the implementation of energy-saving technologies, the use of electric vehicles and public electric transport, and significantly reduced the use of various outdated equipment.

The conducted SWOT analysis of the transport industry of Ukraine allows concluding that the new opportunities opening up to Ukraine, significantly overlap the current threats. Another nuance is that a number of threats, primarily those associated with changes in logistics, are temporary and will be eliminated over time. At the same time, threats of a technological nature require significant financial costs and time to eliminate them.

5 Conclusions

During the analysis of scientific sources the authors identified the most pressing issues of development of transport systems of different regions of the world, at the same time the evaluation of methodological approaches to preliminary studies allows to speak about high efficiency of the SWOT analysis method as one of the methods of strategic planning and its relevance for the assessment of Ukraine's transport industry in modern conditions.

The structure of export cargo processing in Ukraine was analyzed, the development trends and consequences of transforming Ukraine's transport industry during the period of dynamic changes by modes of transport were determined. The carried out analysis was implemented with the use of system-structural methods and comparison.

The implemented SWOT analysis of the transport industry of Ukraine has defined the strengths and weaknesses, as well as threats and opportunities facing the transport industry of Ukraine at the present stage. The authors emphasize that the identified opportunities significantly outweigh the threats that currently take place.

Further research should focus on the implementation of the other main methods of strategic analysis – PEST, SNW, GAP analysis, OKR, etc.

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