# KAPITEL 2 / *CHAPTER 2* [2]
# CONCEPTUAL APPROACHES TO ENSURING EFFICIENCY AND COMPETITIVENESS OF PORT INDUSTRY ENTERPRISES

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## Introduction

The competitiveness of port industry enterprises is one of the key categories of a market economy, reflecting the ability of business entities to operate effectively, adapt to changes in the external environment, and ensure sustainable development in the long term. In the context of contemporary globalization processes and Ukraine's integration into the European and global economic space, the requirements for the competitiveness level of maritime industry enterprises – particularly port operators – are increasing significantly. These enterprises must respond not only to national challenges but also to the demands of transnational logistics systems, environmental standards, and digital transformations.

Ukraine's modern economy is currently undergoing the formation of a fully-fledged competitive environment, within which maritime enterprises are compelled to seek new tools, management models, and organizational solutions that ensure their resilience, efficiency, and attractiveness to partners and investors. Competition in this sector is becoming increasingly complex and necessitates a systematic renewal of enterprise development strategies, the implementation of innovations, and greater flexibility in responding to market challenges.

Under these conditions, the state must play an active role in ensuring the sustainable development of the maritime industry, particularly by supporting key enterprises, creating a favorable institutional environment, stimulating investments in infrastructure modernization, and protecting against the destructive impact of global economic, political, or security factors. Balanced development of the maritime sector should become an integral part of national policies aimed at achieving economic

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stability and energy-logistics independence.

The study of port enterprises' competitiveness is gaining particular importance amidst the growing role of digital technologies, the need to comply with environmental standards, changes in global supply chains, and the rising significance of "green" investments. In this context, competitiveness should be considered not only as a set of traditional financial and economic indicators but also as a complex, multi-level category encompassing technological innovation, organizational flexibility, human capital, the level of digitalization, environmental responsibility, and the ability to integrate into international logistics networks.

In addition to traditional challenges, port enterprises today face urgent pressures related to environmental sustainability and digital transformation. International environmental regulations and growing societal expectations are driving ports to adopt greener practices, such as reducing emissions, improving energy efficiency, and transitioning towards renewable energy sources. These ecological imperatives not only ensure compliance but also offer opportunities for enhancing operational efficiency, reducing costs, and strengthening the enterprise's reputation among increasingly environmentally conscious customers and investors.

Simultaneously, the digital revolution reshapes port operations by introducing automation, advanced data analytics, blockchain technologies, and artificial intelligence. These tools enable more transparent, efficient, and flexible logistics processes, allowing ports to respond faster to market demands and disruptions. The integration of smart technologies facilitates real-time monitoring, predictive maintenance, and seamless coordination among stakeholders, contributing to a competitive edge in the global market.

At present, the port services market is becoming increasingly saturated. Many enterprises offer similar products and services, yet only those capable of creating and maintaining unique competitive advantages manage to survive and grow. This generates intense competition not only among Ukrainian ports but also within the broader context of the Black Sea and European maritime regions, where an active struggle for cargo flows, investments, and integration into the Trans-European

Transport Network (TEN-T) is underway.

Despite the availability of a considerable body of theoretical and methodological research on assessing the competitiveness of port industry enterprises, a comprehensive view of this process under current transformations is still insufficiently reflected in academic literature. Issues related to digital competitiveness, institutional constraints, changing logistics service consumer demands, sustainable development challenges, and the energy transition receive inadequate attention.

Therefore, research into the theoretical and methodological foundations of evaluating and managing the competitiveness of port enterprises is especially relevant. The results of such research can serve as the basis for shaping an effective strategy for the development of Ukraine's maritime infrastructure, aimed at strengthening its role in global logistics and ensuring national economic security.

Moreover, the intensification of geopolitical risks and global economic turbulence further highlight the strategic importance of enhancing the competitiveness of Ukraine's port enterprises. This calls for a holistic approach that integrates economic efficiency, environmental sustainability, digital innovation, and social responsibility to build resilient, forward-looking maritime enterprises capable of securing Ukraine's place in the evolving global maritime landscape.

## 2.1 Conceptual Foundations and Strategic Directions for Enhancing the Competitiveness of Port Industry Enterprises

Competitiveness is generally defined as an enterprise's ability to operate efficiently within a market environment, ensuring sustainable profitability and maintaining a stable position in relation to other market participants.

In the context of port enterprises, competitiveness depends on a wide range of factors, including:

- the quality and diversity of port services;
- the degree of technological advancement and process digitalization;
- the efficiency of logistics and supply chain management;

- compliance with environmental regulations and international standards;
- investment attractiveness and financial stability.

There are several established theoretical approaches to assessing competitiveness:

- the resource-based approach, which emphasizes internal capabilities and assets;
- the industry-based approach, focusing on the external environment and sectoral dynamics;
- the integrated approach, which considers both internal and external determinants of competitiveness.

Competitiveness remains a multifaceted and dynamic phenomenon. In his foundational economic work, Adam Smith conceptualized competition as a natural force driving market actors-buyers and sellers – towards optimizing their positions. His introduction of the "invisible hand" metaphor reflects the idea that self-interested actions can, collectively, align with desirable economic outcomes.

Friedrich Hayek further contributed to the discourse by highlighting that open and competitive markets are more effective in achieving social and economic objectives than regulated or closed systems [6].

Michael Porter's widely recognized definition suggests that enterprise competitiveness is determined by the relative efficiency with which it utilizes all available resources. From this perspective, competitiveness becomes a comparative indicator of performance within a homogeneous group of firms.

A number of scholars emphasize that competitiveness should be viewed as a critical systemic property – determined by the extent to which a firm can realize its actual or potential competitive advantages in a given market context. Accordingly, it is useful to distinguish between different levels and objects of competitiveness – such as that of products, services, industries, or national economies.

Economists note that society as a whole benefits from competition when it drives cost efficiency and productivity growth. However, meaningful competition can only emerge within a dynamic economic environment – characterized by changing production conditions, technological innovation, and improved resource allocation.

Such processes not only enhance individual enterprise performance but also contribute to macroeconomic growth, reduced unemployment, and greater social resilience.

International and domestic studies demonstrate that competitiveness is a complex construct encompassing various dimensions: the firm's capacity to withstand competition, its market strategies, governance mechanisms, customer orientation, ability to cooperate along the supply chain, staff development, and organizational adaptability. One of the key attributes of a competitive enterprise is its responsiveness to external change – especially in conditions of market volatility and systemic crises.

It is important to underscore that competitiveness is inherently comparative. It is often evaluated through the characteristics of products or services, though high competitiveness does not necessarily imply high quality. It may also reflect lower prices or the application of advanced technologies that reduce costs and improve value for customers. Therefore, competitiveness must be approached as a multidimensional concept.

The purpose of this chapter is to provide a comprehensive analysis of the categories of competition and enterprise competitiveness within the framework of the contemporary economy, with a particular focus on the port industry. This involves the substantiation of theoretical and methodological approaches to the formation and assessment of competitiveness, as well as the identification of effective strategic directions for its enhancement, especially in the context of dynamic transformations, integration processes, and digitalization within the maritime sector.

To achieve this objective, it is necessary to explore and evaluate the following key factors that shape the competitiveness of port enterprises:

- the development level of transport and logistics infrastructure;
- access to capital and investment attractiveness;
- the state of technological and technical equipment of ports;
- the degree of digitalization of operational processes;
- the effectiveness of cooperation with other stakeholders in the logistics chain and integration into international transport networks;
- institutional and regulatory constraints;

- and environmental requirements and compliance with sustainability standards.

Thus, the work is aimed at forming the theoretical foundations and practical recommendations for ensuring the long-term competitiveness of enterprises in the port sector of Ukraine under the growing pressure of the global market and the necessity to adapt to new challenges.

The object of the research is the processes of ensuring and increasing the competitiveness of enterprises in the port industry under the conditions of the modern market environment, digital transformation, and globalization challenges.

The subject of the research consists of the theoretical foundations, methodological approaches, and practical tools for forming and evaluating the competitiveness of port business enterprises, as well as the factors influencing its level in the short-term and long-term perspectives.

To achieve the stated goal, the following scientific tasks are planned to be addressed in this work:

To clarify the content of the categories "competition" and "enterprise competitiveness" in the context of port activities.

To analyze modern trends in the development of enterprises in the port industry of Ukraine and the world from the point of view of competitiveness.

To identify and classify the main factors that affect the competitiveness of port enterprises, including infrastructural, institutional, technological, ecological, and organizational factors.

To study the possibilities of implementing digital technologies and innovative solutions as tools to improve the efficiency of port enterprises.

To assess the role of state policy, strategic planning, and international cooperation in the formation of competitive advantages of maritime economic complex enterprises.

To develop scientifically grounded proposals for improving the mechanisms of managing the competitiveness of enterprises in the port sector under globalization and European integration conditions.

The central idea for understanding market relations is the concept of competition.

Understanding competition, the patterns of its manifestation, and competitive strategies is crucial for the effective management of economic entities. In the conditions of economic globalization, it is important not only for national enterprises to function successfully but also to integrate them into international trade and economic systems. To achieve this, it is necessary to actively apply innovative management methods, study the experience of leading countries, and adapt it to domestic conditions.

Taking these factors into account will allow the development of effective strategies for increasing the competitiveness of enterprises in the constantly changing economic environment and contribute to the development of the national economy as a whole.

Competition comes from the Latin word *concurrentia*, which means "collision," "rivalry" [15, p. 128]. According to the *American Interpreter Merriam-Webster's Collegiate Dictionary*, competition is defined as two or more parties independently acting to protect their business by offering the most favorable conditions to consumers. This means a struggle between parties. This interpretation, as the first approach to defining competition, was formed by economic theory.

With changing market conditions, different opportunities may arise that change the competitive landscape among enterprises:

1. Competition increases when the number of competing enterprises grows or when demand for the product decreases.

2. Competition rises when business conditions in the industry force enterprises to reduce prices and use other means to increase sales volume.

3. Competition is high when buyers' switching costs from one brand of product to another are low.

4. Competition increases when exit costs are high or other barriers exist.

5. The quality of enterprises is very diverse, and most of them are open.

Competition influences economic mechanisms and becomes an economic foundation that requires clear regulation by the state, which should be reflected in legislative documents.

The rules of competition in Ukraine are defined by two main laws: the Law of

Ukraine "On Protection of Economic Competition" and the Law of Ukraine "On Protection Against Unfair Competition".

The Law of Ukraine "On Protection of Economic Competition" defines the legal principles for supporting and protecting economic competition, restricting monopolism in economic activity, and aims to ensure the effective functioning of Ukraine's economy based on the development of competitive relations. It contains the following definition of competition: "economic competition (competition) is a rivalry among economic entities aimed at gaining advantages over other entities through their own achievements, as a result of which consumers and economic entities have the opportunity to choose between several sellers or buyers, and no single economic entity can determine the terms of turnover of goods in the market" [11].

The Law of Ukraine "On Protection Against Unfair Competition" defines the legal foundations for protecting economic entities and consumers from unfair competition and is aimed at establishing, developing, and ensuring trade and other fair business customs in the conduct of economic activities under market relations.

Figure 1 illustrates the following types of competition from the perspective of their impact on consumers and the use of competitive instruments.

The issue of enhancing competitiveness affects nearly all sectors of society.

The competitiveness of a product reflects a set of characteristics that indicate its ability to satisfy competitive demands relative to similar products on the market.

Competitiveness in the broadest sense defines whether a product or service can be sold in the market over a certain period of time.

Interpretations of the term "competitiveness" vary greatly.

Competitiveness is a general concept that reflects a combination of many factors, from the dynamics and level of national economic development to the ability to organize and manage processes that create quality and competitiveness in every business entity.

At the same time, global experience is unthinkable without fierce competition, as it is under open market conditions that the factors emerge which make competitiveness a prerequisite for the survival of raw material producers and the economic prosperity

of countries.

The competitiveness of a company lies in its ability to produce goods quickly, cheaply, and with high quality, to sell them in sufficient quantity, and to provide a high level of technical service.

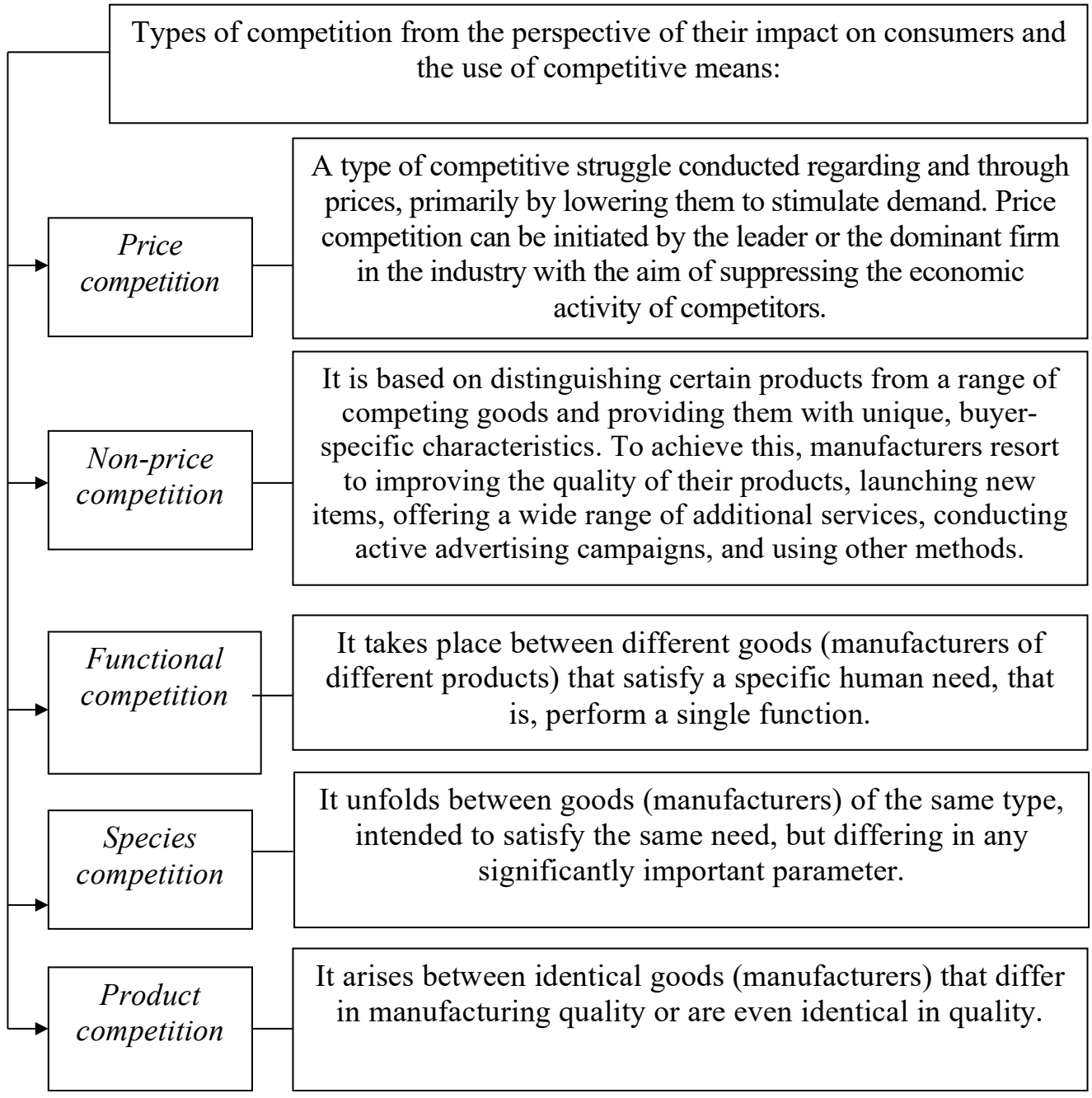


**Figure 1 – Types of competition from the perspective of their impact on consumers and the use of competitive tools**

*A source: compiled by the author based on [5].*

The competitiveness of an enterprise is its ability to effectively manage its own and borrowed resources under market competition.

The concept of competitiveness encompasses a broad set of economic, legal, and other characteristics that determine the position of an enterprise in an industry, region, or global market.

This set may include not only the characteristics of the product determined by the region of production but also the factors that shape the macroeconomic conditions of product manufacturing and sales.

The level of an enterprise's competitiveness is a mirror that reflects the overall efficiency of nearly all departments of the enterprise and the state of the external environment.

An enterprise's competitiveness depends on many factors that objectively affect its functioning, as well as on subjective factors that depend on the management of the enterprise, its organization, and operational focus related to ensuring competitiveness.

The problem of increasing competitiveness has several aspects: technical, organizational, economic, social, legal, and commercial.

Although they represent a unified system for ensuring the competitiveness of products and services, there is a certain order for solving the tasks of each aspect.

The development of transport companies' activities involves studying and analyzing the details of the competitive situation in the transport services market from all aspects.

Today's competition is unprecedented in scale, characterized by dynamism, intensity, and the following features:

1. The level of competition in the market is increasing due to the privatization and denationalization of property, the development of entrepreneurship, easier access to foreign markets, and the relative opening of borders to foreigners. It depends on the growing number of competitors. Their activity is focused on goods management and the liberalization of the economy.

2. Competition is intensifying due to the fact that, alongside monopolies, giant corporations, and joint-stock companies, increasingly aggressive small and medium-

sized enterprises are entering the fight for markets and consumers.

3. Enterprises and competition methods are rapidly evolving; the influx of new competitive products is increasing; the importance of non-price competition is growing; new sales markets are emerging; profits are increasing. Competition is focused on reducing production costs and advancing products to consumers to attract them, while maximizing the quality, reliability, and service of the offered products.

4. The use of novelty, scientific and technological progress results, and the implementation of innovations in all areas of production and product promotion among consumers is becoming increasingly important.

Novelty is a key factor in today's competition. Accelerated technical and technological progress shortens the time for implementing commercial ideas, leading to cost reduction, cheaper products, and shorter product life cycles. As a result, companies are forced to constantly update their product ranges, introduce innovations, and invest in research and development.

5. Non-price factors also have a significant impact on competition, such as:

- product quality;
- reliability in use;
- level of service and after-sales support;
- design and appearance;
- strictness of government regulation of competition;
- emergence of new communication technologies;
- globalization and market consolidation.

These factors increase the importance of non-price competition, where the priority is not so much cost and price but rather the intellectual, aesthetic, and innovative potential of the product, as well as the company’s flexibility in responding to market needs.

The generalized characteristics of the modern competitive environment are presented in Table 1.

**Table 1 – Generalized Features of the Modern Competitive Environment**

| Feature of Competition | Content Description | Causes of Occurrence | Consequences for Port Industry Enterprises | Necessary Managerial Actions |
|---|---|---|---|---|
| Increase in competition intensity | Privatization, entrepreneurship development, market openness | Economic decentralization, globalization, access to international markets | Increased pressure on the domestic market, need to adapt to new players | Search for new markets, increase flexibility and adaptability of business models |
| Activation of small and medium-sized enterprises | Their flexibility, ability to innovate, rapid adaptation | Technological changes, digitalization, access to financing | Intensification of competition, need to optimize costs | Development of partnerships, cluster associations, cooperation with startups |
| Dynamism and renewal of competition methods | Increasing role of non-price factors, renewal of products and services | Information technologies, consumer demands, short product life cycles | Constant need for innovations, modernization of services and technologies | Investment in R&D, digital transformation, development of service functions |
| Innovation Focus of Competitive Struggle | Implementation of scientific and technological progress, product intellectualization, automation | Digitalization, Industry 4.0, changes in consumer behavior | Need for technological renewal, innovative approaches to customer service | Introduction of an innovation strategy, equipment modernization, staff training |
| Priority of Non-Price Factors | Quality, reliability, service, image, communication | Rising consumer expectations, reputation economy | Growing importance of brand and trust, need to improve service levels | Improvement of quality control systems, development of customer-oriented services |

*A source: compiled by the author.*

Competitive struggle of an enterprise is not just about being the best – it's about constantly growing and improving. Several key factors shape how a company stays competitive and builds meaningful relationships with others in the market.

1. Quality of products and services. It's vital that what a company offers truly meets the needs of its customers. But quality goes beyond just how something works – it's about how the product makes people's lives better. Companies that care about the details, maintain high standards, and earn customer trust build strong, lasting advantages.

2. Innovation and technology. Innovation isn't just about new gadgets or tools – it's an ongoing journey of finding better ways to do things. This helps companies not only meet today's demands but also anticipate what customers will want tomorrow, keeping them ahead of the curve.

3. Pricing strategy. Price isn't just a number on a tag. It has to reflect the value the customer receives. Finding the right balance between cost and benefit creates fair conditions that build customer loyalty and trust.

4. Marketing. Marketing is more than ads – it's about understanding people's needs, connecting with them emotionally, and creating a brand that feels like a part of their lives. It's the story that explains why this product or service matters to them.

5. Resources and infrastructure. Having the right tools and people– and using them well – helps companies work efficiently and flexibly. Good infrastructure supports smooth operations and helps a business adapt when things change.

6. Organizational structure and management. How work is organized and how people feel valued is important. Flexible teams and responsive leaders allow companies to quickly adjust to new challenges and come up with creative solutions.

7. Partnerships. Today's success often comes from working together. Strategic partnerships let companies share knowledge, resources, and ideas, strengthening their position in the market.

8. External environment. Companies don't operate in isolation – changes in laws, economy, or society affect them too. Being ready for change and managing uncertainty is key to long-term success.

9. Reputation and branding. A strong reputation goes beyond profits – it's about what a company stands for and how it treats customers and society. A trusted brand builds lasting relationships.

10. Adaptability and willingness to change. The world is always evolving. Companies that embrace change, try new approaches, and remain flexible are the ones that thrive and keep their competitive edge.

The factors influencing the company's competitive struggle are presented in Table 2 and Figure 2.

**Table 2 – Factors influencing the competitive struggle of the enterprise**

| Factor | Description of Impact | Significance for the Port Industry Enterprise | Management Recommendations |
|---|---|---|---|
| Quality of Products and Services | Meeting consumer needs, enhancing their life value, maintaining high quality standards | Building sustainable competitive positions, gaining customer trust | Implementing quality control systems, regularly updating products and services |
| Innovation and Technology | Continuous improvement, use of cutting-edge technologies, anticipating future trends | Strengthening competitive advantages, entering new markets | Investing in research and development, digitalization of business processes |
| Pricing Policy | Balance between price and consumer value, formation of attractive offers | Strengthening customer loyalty, competitiveness | Development of flexible pricing strategies, analysis of the competitive environment |
| Marketing | Understanding consumer needs, creating emotional connections, building a strong brand | Increasing recognition and attractiveness of goods and services | Development of comprehensive marketing campaigns, enhancement of company image |
| Resources and Infrastructure | Provision of material and human resources, efficiency of infrastructure use | Increased productivity, business flexibility | Resource optimization, development of logistics and technological base |
| Organizational Structure and Management | Flexibility of organizational processes, prompt decision-making, consideration of employee needs | Rapid adaptation to market changes, increased staff motivation | Modernization of management structure, development of leadership competencies |
| Partnership Relations | Creation of strategic alliances, exchange of experience, resources, and ideas | Strengthening competitive positions, expanding opportunities | Formation of partnership networks, development of cooperation with other market participants |
| External Environment | Influence of legislative, economic, and other external factors; ability to operate under uncertainty | Maintaining operational stability in changing conditions | Monitoring changes in the external environment, development of anti-crisis strategies |
| Reputation and Branding | Building a positive image, reflecting company values, attitude towards clients and society | Ensuring long-term competitive advantage | Active corporate social responsibility efforts, PR campaigns |

Continuation of Table 2

| Factor | Description of Impact | Significance for the Port Industry Enterprise | Management Recommendations |
|---|---|---|---|
| Adaptability and Change Readiness | Willingness to change strategies, search for new approaches, response to external and internal challenges | Enhancing business resilience and flexibility | Implementing a culture of change, employee training, strategic planning |

*A source: compiled by the author.*

To build the chart "Factors Influencing the Competitive Struggle of the Enterprise", we will use a Table 3.

**Table 3 – Factors influencing the competitive struggle of the enterprise**

| Factor | Description (Port-Specific) | Importance (1–10) |
|---|---|---|
| Port service quality | Compliance with customer needs, efficiency, and international quality standards | 9 |
| Innovation and technology | Implementation of smart port solutions, digitalization, automation of operations | 8 |
| Pricing policy | Competitive tariff structure, balance of price and value for cargo owners | 7 |
| Marketing and client relations | Promotion of port services, long-term relationships with shipping lines and freight forwarders | 8 |
| Infrastructure and equipment | Availability, modernization, and effective use of port facilities and handling equipment | 9 |
| Management and governance | Flexibility, transparency, and responsiveness of port authority or terminal operator management | 7 |
| Partnerships and integration | Cooperation with logistics chains, shipping companies, rail and road operators | 6 |
| External regulatory environment | Influence of national policies, international regulations, and port-related legal framework | 5 |
| Reputation and reliability | Image of reliability, safety, environmental standards, and trust among international partners | 8 |
| Adaptability and resilience | Capacity to respond to global trade shifts, crises, or logistic disruptions | 8 |

*A source: compiled by the author.*

Competition is not merely a struggle for market share, but also a process of continuous development and improvement. Enterprises that aim not only to win the competitive battle but also to create value for consumers have a greater chance of achieving long-term success.

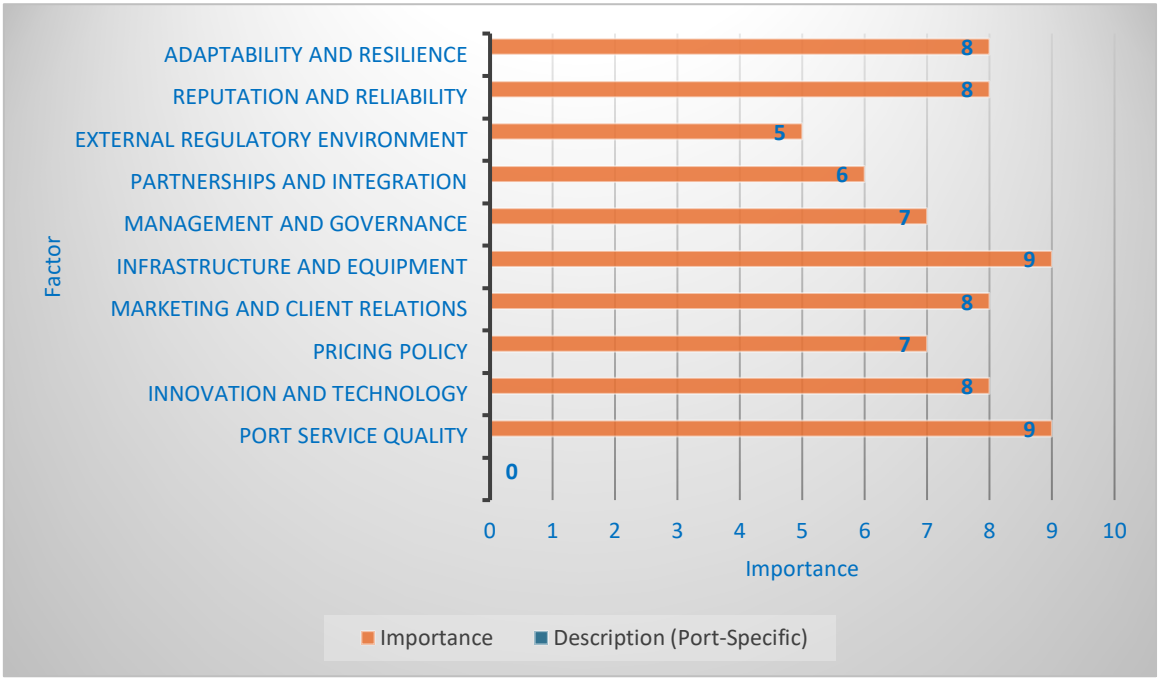


**Figure 2 – Factors influencing the competitive struggle of the enterprise**

*A source: compiled by the author.*

Let us take a closer look at the port services market, which represents the sphere of interaction between port enterprises and cargo owners. Under modern conditions, these economic entities are increasingly less likely to engage in direct relationships with one another.

There are various factors in the port services market that can influence the role of competitors – for example, port enterprises become dominant when supply exceeds demand, while cargo owners gain influence when demand outpaces supply. A "buyer's market" for port services currently exists, where the demand for such services has significantly declined compared to the throughput capacity of Ukraine's port system.

The competitive environment of port operations is primarily determined by the business climate, market entry and exit barriers, and competition among different enterprises. To compete effectively in the port services sector, companies may apply various strategic approaches. Enterprises that operate multiple port terminals may compete within one or several ports in a given region. Their goals often include profit maximization, market share growth, and operational efficiency. The quality and cost of port services are critical factors in determining competitive success.

Seaports also compete within designated port zones. Competitive advantage may include strategies aimed at attracting public and private investment, developing production capacity, and offering a wide range of services to carriers and operators.

The degree of competition is defined by the level of market accessibility. Due to the slow introduction of new services and inefficient utilization of existing port capacities, the overall supply of port services tends to remain relatively unchanged, particularly in the short term. The construction of modern terminals requires vast land areas. This entry barrier is accompanied by high investment costs, which are generally regarded as sunk costs. Both entry and exit barriers affect the industry's concentration processes.

Port competitiveness reflects the extent to which organizational, technical, technological, and economic characteristics of the services meet the needs of key consumer segments. It defines a port enterprise's market share while preventing market redistribution in favor of competing transport companies. The development of transport enterprises requires a thorough analysis and assessment of the competitive situation in transport markets.

The competitiveness of a port enterprise is determined by its current market position and future competitive advantages. A competitive advantage is any factor that enables a company to achieve superior financial results. It is considered a success factor and a core competency that gives a company an edge over competitors in the market. Some scholars argue that competitive advantage consists of internal strengths that offer the company superiority over rivals.

Summarizing the above, a company's competitive advantage can be defined as a significant distinction that provides a clear edge over its competitors.

To achieve strategic goals, each maritime transport enterprise must develop and implement a competitive strategy. According to scholars [2, 17], the following competitive advantage strategies can be applied to shipping companies:

1. Cost Leadership Strategy (forceful strategy):

This strategy is based on the aim of achieving cost savings compared to competitors. It enables a company to increase the volume of services while maintaining

a lower market price, or to generate higher profits from transportation activities while keeping prices at the industry average. The strategy requires the company to focus on the most profitable and promising segments of the transport services market.

2. Product Differentiation Strategy (commutant strategy):

This strategy is based on the goal of creating uniqueness for the transport company, for instance, by introducing innovative services for cargo owners. The uniqueness may be based on specific quality criteria and features, aligning the transport service with customers' increasingly individualized demands.

3. Focus Strategy (patent strategy):

This approach combines cost leadership and product differentiation for each product or service type in order to capture a niche within a narrow market segment through innovation and new technologies.

4. Efficiency Strategy:

This strategy involves being the first to offer superior services compared to competitors.

5. Synergy Strategy:

This strategy is characterized by a situation where the overall outcome of the company’s activity exceeds the sum of the individual effects across its operational areas. Synergy must be taken into account during the selection, planning, and organization of corporate activities within a market environment.

Although companies may attempt to implement nearly all of the strategies mentioned above, the most applicable in the port services sector are cost leadership, product differentiation, and focus strategy [2].

When justifying the choice of a competitive strategy, each port enterprise must take into account the following factors and specific considerations:

1. The risks (or disadvantages) of existing competitive strategies [2].
2. The strategy should ensure the achievement of the best market position, the use of competitive advantages, and gaining an edge over competitors.
3. The implementation of the strategy should aim at maximizing profitability and market value. This can be achieved by improving the efficiency of the process of

forming and developing the company's potential, which includes various components.

4. External operating conditions and the internal capabilities of the enterprise.
5. Alignment with the overall corporate strategy.

Thus, a well-grounded selection and implementation of an appropriate strategy enables the formation of competitive advantages that can not only positively impact the company's performance but also be long-term in nature, as it would take competitors a significantly longer time to develop their resources to achieve similar advantages.

Therefore, despite the aforementioned constraints, building sustainable competitive advantages is a key task for every port enterprise. In the context of transport enterprises, the mechanisms for managing such advantages must be developed with consideration of both strategic and tactical factors.

## 2.2 Conceptual Approaches to Diagnosing and Enhancing Competitiveness in the Port Sector

This section examines key methodologies for assessing competitiveness employed within the port industry:

2.1. SWOT Analysis

SWOT analysis facilitates the identification and evaluation of an enterprise's internal strengths and weaknesses, alongside external opportunities and threats. It is a versatile and widely applied tool for strategic development and decision-making.

2.2. Benchmarking

Benchmarking enables comparative analysis of a port enterprise's performance relative to leading global ports based on critical indicators such as cargo throughput, logistics process efficiency, and the degree of digitalization.

2.3. Competitive Position Assessment (BCG Matrix)

The BCG matrix is used to determine the strategic market position of an enterprise and to guide managerial decisions concerning resource allocation and investment priorities.

2.4. Integral Assessment Method

This comprehensive method synthesizes multiple groups of indicators—including financial, production-logistics, marketing, and innovation metrics—to provide an aggregated evaluation of enterprise competitiveness.

Further, this section examines the key directions for improving the competitiveness of port industry enterprises

1. Adoption of Innovative Technologies

The automation of operational processes, implementation of blockchain technologies for cargo flow management, digital platforms, and advanced supply chain management systems contribute significantly to improving port operational efficiency.

2. Development of Environmentally Sustainable Technologies

In response to environmental challenges and the mandates of the European Green Deal, the adoption of alternative energy sources, emission reduction strategies, and energy consumption optimization represent critical priorities.

3. Enhancement of Logistics Infrastructure

Investment in modernizing port facilities, along with improved integration with rail and road transportation networks, facilitates more efficient cargo handling and reduces operational costs.

4. Optimization of Managerial Decision-Making

Implementing contemporary management models, fostering strategic partnerships with international logistics companies, and incorporating lean management principles serve to bolster the competitiveness of port enterprises.

5. Improvement of Port Service Quality

Focusing on customer orientation, expanding the range of services offered, and enhancing the speed and reliability of cargo handling are essential to consolidating a firm’s competitive market position.

Port enterprises in Ukraine operate within a highly competitive market environment, facing increasing rivalry both domestically and from neighboring countries. This situation necessitates a systematic reassessment of theoretical and practical frameworks governing the management of the material and technical base of

port enterprises.

Fundamental to this process is the research and development of robust theoretical and methodological foundations. Their implementation ensures decision-making processes are appropriately aligned with contemporary economic conditions and aimed at strengthening the competitiveness of port enterprises.

Despite the diverse definitions of "enterprise competitiveness" in both theory and practice, a variety of assessment approaches have been proposed, as documented in the works of both foreign and domestic scholars.

Given the multifaceted nature of competitiveness – which encompasses various aspects of enterprise activity often described qualitatively rather than quantitatively—most existing evaluation methods have inherent limitations. These arise from differences in evaluation approaches, reliance on various indicators characterizing competitiveness, and the frequent lack of sufficient data. Consequently, results may contain significant errors, and the assessment process can be resource-intensive.

Some scholars integrate both competitiveness and competitive resilience indicators within evaluation systems. Since these concepts characterize an enterprise in static and dynamic contexts respectively, and their assessment results apply to different practical domains, the chosen evaluative approach must accommodate these distinctions.

Among domestic and foreign scholars, significant contributions to the development of modern competitiveness theory were made by Porter M. [14], Havryliuk S.P., Hradov A.P., Lupak R.L. [9], Vasyltsiv T.H., Mazaraki A.A., Ushakova N.M., Savitska O.P., Balabanova I.V., Chornenka N.V., and others.

A literature review showed the following main approaches and methods for assessing enterprise competitiveness based on various conceptual foundations: industry competition analysis by Ye. Holubkov; industry competition analysis by O. Mlotok; strategic macroenvironment analysis by A. Thompson and A. Strickland; competitive environment diagnostics by H. Bahiyev; parametric assessments by K. Shchyborsh; index method by M. Braham; hierarchy method by V. Pavlova; rating evaluations by K. Shchyborsh; integral indicator by Ye. Holubkov; McKinsey–General

Electric matrix; methods based on product quality theory; product competitiveness evaluation by R. Fathutdinov; integral indicator by Kh. Faskhiev; integral indicator by I. Zulkarnayev and L. Ilyasova; assessment methods based on effective competition theory; evaluation by effective competition theory by H. Ivashchenko; general competitiveness indicator based on consumer satisfaction and production efficiency; profit norm evaluation by V. Zakharchenko; business value evaluation by O. Krotkov and Yu. Yeleneva; methods based on comparative advantage principles; methods based on multiplier theory.

It should be noted that identical names of competitiveness assessment methods do not mean these methods are identical. Such methods are mostly different, although similarities in assessment principles may be observed.

Let us analyze some of the above methods.

The method of assessing enterprise competitiveness based on comparative advantage theory is used when a static evaluation of the enterprise's market position is needed without analyzing its future actions under changing external conditions, and when considering the feasibility of production scale expansion.

An enterprise can secure a strong competitive status by having comparative advantages, expressed as lower production costs compared to competitors. This only characterizes production efficiency and scale but does not show the enterprise's market performance or its interaction with product consumers. Therefore, when assessing competitiveness by this method, alongside production costs, indicators such as production volume, profit rate, sales volume, market share, and production profitability are used as comparison bases. A higher level of one indicator in an enterprise is considered sufficient to conclude that it is more competitive.

However, this approach, based on the enterprise's operational scale, does not reflect the competitiveness level of its products, and production and economic performance cannot be characterized solely by profitability, since its temporary decrease may often contribute to enhancing enterprise competitiveness by allocating resources to market expansion and innovation for efficient future production.

The method of assessing enterprise competitiveness based on product quality

theory assumes that the main criterion of competitive advantage is the consumer value of the products manufactured. The competitiveness level conclusion is made by comparing the characteristics of one's own products and competitors' products with the ideal and best market values, determining desired requirements for product characteristics considering their impact on changes in production profitability and sales.

One method to assess an enterprise's competitiveness focuses on evaluating the effectiveness of its production and business activities, as well as the competitiveness of its products. This approach is based on the theory of effective competition. Enterprises are compared using several indicators: efficiency of production and sales operations, production performance, and financial stability. Comparisons are made not only between competitors' individual and group indicators but also against industry averages.

Drawing from this theory, a methodological approach for evaluating competitiveness was developed by V.F. Oberemchuk. He identified eight groups of factors influencing competitiveness to varying degrees, assigned weighting coefficients through expert judgment, and based on these, calculated an overall competitiveness score (1):

$$K_{\text{i}=\sqrt[8]{0,22P_1 0,14P_2\ 0,10P_3 0,19P_4 0,14P_5 0,07P_6 0,04P_7\ 0,1P_8}}, \quad (1)$$

where P1 – product competitiveness;

P2 – financial condition of the enterprise;

P3 – sales and product promotion efficiency;

P4 – production efficiency;

P5 – competitive potential of the enterprise;

P6 – environmental sustainability of production;

P7 – social effectiveness;

P8 – enterprise image.

The advantage of this approach lies in its comprehensive consideration of the most important aspects of the enterprise's activity. However, its drawbacks include the following: it does not account for the dynamics of factors affecting the enterprise's competitiveness level, meaning the calculation provides a static assessment. The composition of composite indicators is incomplete. It includes indicators that simultaneously determine both the current competitiveness and the competitive stability of the enterprise.

A similar approach to indicator formation was proposed by H.A. Ivashchenko. The evaluation of factors shaping enterprise competitiveness was conducted using generalized taxonomic indicators of development level: efficiency of production activity; financial activity effectiveness; personnel management effectiveness; innovation activity effectiveness; and marketing activity effectiveness. This approach includes the broadest set of generalized indicators but still does not reflect the dynamics of factors influencing competitiveness.

One method to assess competitiveness is based on the multiplier theory. The multiplier mechanism regarding competitiveness assessment states that to maintain a high level of competitiveness, an enterprise must continuously invest in developing its strategic potential, as well as in measures related to adapting to conditions shaped by the determinants of Porter's "national diamond" [14]. The impact of these investments grows with the quality of customer satisfaction and, in the long run, leads to higher enterprise revenues and profits. However, these effects depend sequentially on their stimuli; thus, weakening one stimulus can disrupt the entire chain of effects.

The results of the competitiveness assessment method based on the equilibrium theory of enterprise and industry are conditional because, in practice, perfect competition does not exist in the global economy, and industries never reach equilibrium in their development. Therefore, while the method exists, it is practically unused, and in a transitional economy, it is generally inappropriate.

Quantitative methods allow assessing an enterprise's competitive advantages using mathematical tools and making informed managerial decisions [4, 8]. These methods rely on mathematical calculations of indicators (coefficients, indices) for

specific aspects of the enterprise's competitiveness, which are then combined into group and integral indicators.

An enterprise is considered competitive if its product optimally satisfies customer needs and its production is most efficient. This method analyzes not just one product but the entire product range, requiring extensive calculations across various sets of technical and economic characteristics to compare and benchmark them against standard parameters. The integral method offers a comprehensive approach to evaluating competitiveness and provides clear, unequivocal assessments of the enterprise's competitive position. In practice, it is most commonly used because it equally considers both the competitiveness of the product and the efficiency of the enterprise's production and business activities, reflecting the real operating conditions.

The approach proposed by N.M. Solomyanyuk assesses enterprise competitiveness through an integral indicator that accounts for the influence of both microenvironment factors determining competitiveness and probable external environmental factors affecting strategic plans (2):

$$RK_{fl} = \mathrm{RK}_{al} + RK_{al} * \frac{\mathrm{f}_1 * p_1 + \mathrm{f}_2 * p_2 + \cdots + \mathrm{f}_n * p_n}{|\mathrm{f}_1| + |\mathrm{f}_2| + \cdots + |\mathrm{f}_n|}, \quad (2)$$

where RK*fl* – forecasted level of the enterprise's competitiveness;

RK*a* – actual level of the enterprise's competitiveness;

f1, f2, … fn – significance of environmental factors (rated from 0 to 5);

p1, p2, … pn – probability of occurrence of the factor (rated from 0 to 1);

n – number of environmental factors.

However, this approach does not separately consider the static and dynamic properties of the enterprise as a system. The sets of factors that ensure the enterprise's competitiveness at present and those that ensure its preservation in the future are different. Even when such factors overlap, their influence on the enterprise's competitiveness varies in strength.

The taxonometric method allows evaluating the level of enterprise competitiveness, identifying its strengths and weaknesses, and assessing the degree of

external environmental impact. It also helps develop a competitive strategy aimed at moving to a more attractive strategic business zone, which enables increasing competitive advantages and market share.

In this study, the enterprise's competitiveness level is calculated using the following formula (3):

$$\mathrm{C} = R * a * \mathrm{Cp} * b * D * c, \quad (3)$$

where *C* – enterprise competitiveness;

*R* – rating assessment of the enterprise's financial condition;

*Cp* – competitiveness of the enterprise's products;

D – the enterprise's market share;

a, b, c – weighting coefficients corresponding to the financial condition, product competitiveness, and market share, respectively.

A positive aspect of this approach is that product competitiveness is considered as a separate element of enterprise competitiveness, alongside the financial condition and market share, thus forming a competitive space in a three-dimensional framework. Methods based on product competitiveness and production efficiency include: the integral indicator methodology by I. Zulkarnaev and L. Ilyasova, the general competitiveness indicator methodology based on customer satisfaction and production efficiency, and O. Mlotok's evaluation method according to the theory of effective competition.

The methodology proposed by I. Zulkarnaev and L. Ilyasova introduces a model of enterprise competitiveness that reveals the dependence of market share and its dynamics – external factors of competitiveness – on the enterprise's resources. Although the study does not provide a specific list of indicators characterizing the use of enterprise resources, analysis of the example demonstrates that market share size depends on key factors such as labor productivity (which reflects both personnel and production management levels), residual value of fixed assets (indicating material and technical resources), and financial management (which determines the profitability of

equity capital).

Advantages of Zulkarnaev and Ilyasova's method include the mathematically sound choice of the integral indicator's form and an objective evaluation of weighting coefficients. This allows managers to focus efforts on specific areas according to their significance. The authors' insight that any calculated enterprise performance indicator reflects potential – whether realized or unrealized – is also valuable. Therefore, assessing strategic competitiveness should take into account the enterprise's competitive resilience. However, it seems inaccurate to equate the concepts of "enterprise competitiveness" and "market share", as the authors do.

In H. Faskhiev's work, seventy-seven indicators grouped into six categories are proposed for assessing enterprise competitiveness:

- financial and economic activity indicators;
- production indicators;
- product quality indicators;
- development indicators;
- personnel and social sphere indicators;
- management excellence indicators.

On one hand, this reflects a comprehensive approach to competitiveness evaluation, with the large number of indicators enabling a more precise assessment. On the other hand, many of these indicators require access to confidential information and may pose risks of indicator duplication.

K. Shchyborsh proposed a ten-factor model for evaluating the functioning quality of enterprise groups, based on two structural components—economic performance and financial stability. The first group includes four profitability indicators and the fixed assets depreciation rate, characterizing long-term efficiency. The second group includes three liquidity ratios, turnover of current assets, and the share of equity in total liabilities, reflecting current financial stability.

Matrix methods for assessing enterprise competitiveness are widely used. These methods rely on matrices or tables to evaluate specific aspects of enterprise activity, the environment, competitors, and to develop market strategies. Their advantages

include relative simplicity of application, while their drawbacks are that not all indicators can be evaluated by these methods, there is a lack of cause analysis, and not all factors are considered [19].

To analyze the competitive positions of an enterprise, widely known and frequently used models in international practice can be applied. The Boston Consulting Group (BCG) matrix serves as a kind of reflection of the position of a specific business activity within a strategic space defined by two coordinate axes. One axis represents the industry growth rate, while the other shows the controlled relative market share of the product.

This method can be used for a single product or a group of homogeneous products. In this case, the most competitive product – or group of products – is the one that holds a significant market share in a rapidly growing market. A drawback of the method is its inability to analyze the reasons behind the observed phenomena, which complicates the managerial decision-making process.

The "Market Attractiveness – Competitive Strength" model is a development of the aforementioned approach. This matrix allows one to determine the position of a given product (or enterprise) in the market relative to other competitors, and it also enables the formulation of strategic recommendations to improve the competitiveness of the product (or enterprise). It should be noted that defining the factors of the model requires a large amount of information, which is often unavailable. The model is static and reflects only a fixed time period.

Porter's matrix [14] is based on the concept of competitive strategy: the enterprise's focus is not only on satisfying customer needs but also on the competing forces within the market. This concept assumes a special position relative to competitors, but it does not specify the ways to achieve such positions. Moreover, the concept does not account for rapid changes in market conditions.

Matrix methods can be applied to evaluate enterprise competitiveness at various stages of the product and technology life cycle. However, expert evaluations of indicator levels using two- or three-point scales (high, medium, low) without weighting the significance of the indicators make the approach overly simplified.

The most comprehensive methods for assessing an enterprise's competitiveness are integrated (complex) methods, as they focus on analyzing the full spectrum of the most important parameters of the enterprise's functioning. The advantage of such methods lies in obtaining reliable and the most accurate information about the enterprise's competitiveness, its strengths, and "bottlenecks" [9].

Depending on the object of assessment, there are also methods for evaluating the competitiveness of personnel, product competitiveness assessment methods, and organizational competitiveness assessment methods [9].

In the current conditions of intensified global competition, dynamic changes in the market environment, and the need for enterprises to adapt to new challenges, the issue of assessing competitive advantages becomes especially relevant. This issue is particularly important for enterprises in the port industry, which operate in a complex environment involving logistics chains, international trade, environmental challenges, and digital transformations.

Let us consider the most widespread methods that have proven their effectiveness in practice for determining the potential of enterprises and making strategic management decisions. These methods have an applied nature and can be adapted to the specifics of enterprises engaged in port activities.

For a comprehensive assessment of the economic system status of an enterprise in the context of determining its future development, numerous strategic analysis tools are used. Among the most effective are:

- STEP analysis;
- SWOT analysis;
- SPACE analysis;
- GAP analysis;
- LOTS analysis;
- PIMS analysis;
- GE/McKinsey matrix;
- Competitor ranking method.

Each of these methods allows identifying different aspects of an enterprise's

activities, determining its level of competitiveness, and formulating strategic recommendations for further development.

*STEP Analysis: Assessment of the External Environment*

The STEP analysis method (Social, Technological, Economic, Political) enables the systematization of the impact of the macro-environment on the enterprise's activities. By identifying key external factors – social, technological, economic, political, and legal – analysts can forecast potential changes in the external environment and incorporate them into the strategic planning process. For example, for a port enterprise, the technological factor might include innovations in container logistics or the implementation of automated cargo handling systems.

The impact of each factor is evaluated on a scale that allows quantifying the strength of influence. The results are recorded in a matrix, which serves as the foundation for managerial decision-making.

*SWOT Analysis: The Classic Strategic Tool*

SWOT analysis (Strengths, Weaknesses, Opportunities, Threats) is a universal method that helps identify an enterprise's internal strengths and weaknesses, as well as external opportunities and threats. Its advantages lie in its simplicity, versatility, and flexibility. For port enterprises, for example, strengths may include a favorable geographic location, modern infrastructure, and highly qualified personnel; weaknesses might involve outdated equipment or dependence on one or two major clients.

SWOT analysis not only captures the current situation but also facilitates the development of strategic plans – in particular, strategies aimed at addressing weaknesses by leveraging opportunities or minimizing threats by reinforcing strengths.

*SPACE Analysis: A Deeper Strategic Interpretation*

SPACE analysis (Strategic Position and Action Evaluation) is a logical extension of SWOT that allows a more structured determination of an enterprise's strategic position within a coordinate system. The method is based on four groups of factors:

Financial Strength (FS) – assessed through indicators such as return on investment, profit, and financial stability.

Competitive Advantage (CA) – includes market share, product competitiveness, and the cost of logistics services.

Industry Strength (IS) – considers industry profitability, market capacity, and entry barriers.

Environmental Stability (ES) – reflects the consistency of regulatory policies, demand stability, and the level of innovation.

Constructing a strategic direction vector based on the SPACE matrix enables the enterprise to be recommended an appropriate strategy type – aggressive, competitive, defensive, or conservative.

*GAP Analysis: Essence and Application*

GAP analysis (from English gap – "gap", "discrepancy") is a strategic analysis method used to identify the gap between the current state of an enterprise, process, or project and the desired future state. The goal of GAP analysis is to detect the "gaps" (shortcomings, deviations) in resources, competencies, processes, or performance indicators that hinder the achievement of strategic objectives.

*Key components of GAP analysis:*

Current state (As-Is) – the actual condition of the enterprise, its operations, resources, and results at the time of analysis.

Desired state (To-Be) – the target or optimal condition the enterprise aims to reach within a defined timeframe.

Gap – the distance between the current and desired states, indicating the need for changes and improvements.

*Stages of GAP analysis:*

1. Identification of key performance indicators to be analyzed (e.g., production volumes, service quality, competitiveness level, financial metrics).
2. Assessment of the current state of these indicators based on actual data.
3. Formulation of target values or expected performance indicators aligned with the development strategy.
4. Determination of gaps – the differences between current and target values.
5. Analysis of the causes of gaps and development of measures to eliminate

them.

6. Creation of an action plan to overcome identified gaps and achieve the set goals.

*Practical significance of GAP analysis for port industry enterprises:*

*For port enterprises, GAP analysis helps to:*

1. Determine how well the current level of infrastructure, technology, and service corresponds to strategic development plans.

2. Identify gaps in competitiveness indicators compared to leading competitors or international standards.

3. Develop specific measures to improve efficiency, modernize equipment, and enhance service quality.

4. Plan investments and innovations aimed at eliminating identified shortcomings.

*Advantages and limitations of the method:*

*Advantages:*

1. Clear identification of problem areas.

2. Focus on achieving concrete objectives.

3. Facilitates the formulation of targeted strategic actions.

*Limitations:*

1. Requires reliable and accurate data.

2. Can be complex to apply in unstable environments due to rapid changes.

3. Does not provide automatic solutions but only reveals existing gaps.

*LOTS Analysis: Legal and Operational Factors*

LOTS analysis is a strategic analysis method that helps comprehensively assess the external environment of an enterprise by examining it through four main types of factors:

L (Legal) – legal factors: laws, regulations, and policies that affect the enterprise's activities.

O (Operational) – operational factors: internal processes, production efficiency, logistics, and resource management.

T (Technical) – technical factors: level of technology, innovations, technical

equipment, and scientific-technical progress.

S (Social) – social factors: demographics, culture, social trends, and consumer behavior.

This analysis helps identify both external and internal aspects influencing the competitiveness of the enterprise and supports strategy development considering all these components.

The LOTS method is useful for comprehensive evaluation of risks and opportunities across various areas of enterprise activity.

*PIMS Analysis: Profitability and Strategy*

PIMS (Profit Impact of Market Strategy) is a strategic analysis method based on the collection and analysis of large amounts of data on the activities of enterprises from various industries to identify the relationship between their strategic decisions and financial results.

*Essence of PIMS Analysis:*

It studies the impact of various factors such as market share, product quality, marketing investments, and production efficiency on the profitability of an enterprise.

It analyzes which strategies and market conditions ensure better financial returns.

It enables forecasting the financial outcomes of the enterprise under different strategic decision scenarios.

*Advantages:*

1. Informed strategic decision-making based on empirical data.
2. Identification of key success factors.
3. Increasing competitiveness through strategy optimization.

*Application:*

PIMS analysis is especially useful for enterprises aiming to understand how their strategic moves affect long-term profitability and competitive positions in the market.

*GE/McKinsey: Multifactor Strategic Assessment Model*

The GE/McKinsey model is a strategic analysis tool that enables a comprehensive evaluation of a company's portfolio of strategic business units or directions. It is based on two key criteria:

Market Attractiveness – assessed by indicators that characterize the potential and growth prospects of the market. For a port enterprise, these may include:

1. Cargo flow volume.
2. Industry growth rates.
3. Investment attractiveness of the region.
4. Level of competition.
5. Technological trends.

Competitive Position of the Enterprise – evaluates the internal resources and capabilities of the company to compete successfully in the market. For a port enterprise, this includes:

1. Port capacity.
2. Technical condition of equipment.
3. Quality of service.
4. Management competencies.
5. Level of innovation.

The GE/McKinsey matrix is a 3×3 grid, where each cell corresponds to a specific strategic position of the enterprise, as shown in Table 4.

**Table 4 – GE/McKinsey Matrix**

| Competitive Position | Low Market Attractiveness | Medium Market Attractiveness | High Market Attractiveness |
|---|---|---|---|
| Strong competitive position | Maintain with caution | Selective investment | Invest aggressively |
| Medium competitive position | Reduce investments | Maintain and optimize | Invest and develop |
| Weak competitive position | Exit or restructure | Maintain if improvement is possible | Invest cautiously |

*A source: compiled by the author.*

*Strategic Recommendations Based on the Model:*

1. Invest – strengthen the development of the direction, increase resources, and expand market presence.

2. Maintain – sustain the current level, optimize costs, and uphold

competitiveness.

3. Exit the Market – discontinue operations or sell assets if the business direction is unpromising.

4. Restructure or Improve – implement measures to strengthen market position and enhance efficiency.

This model supports informed decision-making regarding investment allocation, optimization of the project portfolio, and setting priorities for further enterprise development.

*Ranking Method: Simplicity That Works*

Though relatively simple, the ranking method allows for a comparative evaluation of a company against a group of competitors. Based on the total score from individual indicators (revenue, profitability, cargo handling speed, etc.), companies are classified as market leaders, average performers, or laggards. This approach is especially useful when there is limited access to detailed financial data of competitors, but open reports or aggregated data are available.

*Refining Evaluation Approaches*

In our opinion, it is essential to distinguish between indicators of competitiveness (reflecting the current state of the enterprise) and competitive resilience (reflecting the ability to withstand market pressure in the future). This distinction allows for a more robust analytical foundation to justify strategic decisions.

In general, there is no universally accepted methodology recognized by both scholars and practitioners. Each approach has its advantages and limitations, depending on the availability of information, research goals, and the specifics of the enterprise.

*Summary of Competitiveness Indicators*

Summarizing researchers' perspectives, four key groups of indicators can be distinguished:

1. Product-related indicators – service profitability, service quality, tariff index.

2. Material resource utilization indicators – condition and efficiency of fixed assets, asset turnover, depreciation rates.

3. Labor resource indicators – labor productivity, staff turnover, employee

turnover ratios.

4. Financial indicators – autonomy ratio, liquidity, business activity, overall profitability.

*Challenges of Information Access*

In evaluating the competitive advantages of port enterprises, researchers inevitably face several informational barriers. One of the most significant issues is the limited access to complete and reliable data necessary for comprehensive analysis. A large portion of financial and operational indicators – such as service cost, profitability of individual business lines, expenditure levels, and pricing policies – fall under commercial confidentiality. This creates objective difficulties for using traditional quantitative assessment methods, which require open primary data and detailed statistics.

This issue is particularly relevant given the heightened information security requirements at the current stage of Ukraine's development, especially under martial law. Many statistical data that were previously publicly accessible are now either closed or published with significant delays. The situation is further complicated by the fact that state-owned port enterprises often do not ensure sufficient transparency in their reporting, limiting opportunities for independent analysis of their activities.

Considering these circumstances, it is advisable to apply a combined approach that integrates elements of quantitative analysis with expert assessment. In particular, a valuable tool is the industry expert survey method – involving representatives of port authorities, logistics companies, shipping operators, and freight forwarders. Their professional insights help generate qualitative information on competitiveness that cannot be captured through open reports.

Indirect (proxy) indicators also play a special role – such as cargo turnover dynamics, the number of vessel calls, port capacity utilization rates, and the share of transit traffic. These can be viewed as proxy variables indicating general development trends and the enterprise’s market position.

Thus, the issue of limited access to information should not become an obstacle to research. It requires a flexible, interdisciplinary approach that relies not only on

classical quantitative methods but also on the incorporation of qualitative expert assessments, scenario analysis, and systems thinking. Such an approach ensures an appropriate level of objectivity, analytical depth, and practical relevance in studying the competitiveness of enterprises in the port sector.

**Summary and conclusions**

In the face of rapid global transformation and the ever-increasing complexity of international logistics, port enterprises are under growing pressure to adapt, innovate, and enhance their competitive positions. The assessment and improvement of competitiveness in this sector are not simply technical exercises but involve a deep and ongoing reassessment of strategic priorities, operational models, and long-term visions. Competitiveness today is no longer measured solely in terms of physical throughput or infrastructure capacity. It is a multi-layered concept that encompasses innovation potential, digital readiness, environmental responsibility, integration into global value chains, and human development.

As the maritime economy becomes increasingly interlinked with broader environmental and digital agendas, the capacity of port enterprises to align with these processes is emerging as a critical determinant of long-term success. In this respect, ecological modernization is no longer an optional or reputational concern – it is a fundamental business imperative. Climate change regulations, growing stakeholder expectations, and rising operational costs have compelled many ports to rethink their environmental impact and adopt cleaner, smarter practices. Ukrainian ports are no exception to this trend and must prioritize ecological innovation if they are to remain relevant and sustainable.

Some of the most promising avenues for greening port operations include the introduction of shore-side electricity (cold ironing), the shift to alternative marine fuels such as LNG, biofuels, or hydrogen, the electrification of terminal equipment, and the use of renewable energy sources within port territories. Waste management, water quality monitoring, and emission tracking systems are also essential tools for aligning

with international environmental standards, including those of the European Union and the International Maritime Organization. These innovations not only reduce environmental harm but also help ports improve their reputational capital and strengthen ties with environmentally conscious partners and logistics operators.

Closely connected to environmental transformation is the ongoing digitalization of the port industry. Digital technologies are fundamentally reshaping how ports operate, communicate, and create value. From smart port platforms and digital twins to blockchain-enabled logistics tracking and AI-driven predictive analytics, the port of the future will be defined not just by cranes and docks but by data, connectivity, and software. The implementation of such technologies in Ukrainian port enterprises can significantly increase transparency, reduce operational inefficiencies, minimize human error, and accelerate decision-making processes.

In particular, the shift to paperless processes – including e-freight systems, smart customs clearance, and the use of electronic contracts – has proven to be an effective tool in enhancing speed and efficiency across the supply chain. These innovations are especially valuable in the context of complex, multimodal cargo flows, where time and accuracy are vital competitive factors. Furthermore, by creating real-time data ecosystems, port authorities and operators can make more informed decisions about vessel scheduling, berth allocation, and resource planning, resulting in higher service quality and reduced environmental footprint.

Yet, despite the clear benefits of environmental and digital transformation, it is crucial to recognize that technology alone does not guarantee competitiveness. At the core of successful transformation lies human capital – the people who plan, implement, manage, and continuously improve port operations. Investing in workforce training, reskilling, and lifelong learning is therefore indispensable. Ukrainian ports must nurture professionals capable of navigating the intersection of logistics, digital systems, sustainability, and strategic management. Collaborations with academic institutions, international training programs, and knowledge exchange platforms will be key to fostering the skills required in the ports of tomorrow.

Another strategic pillar of port competitiveness is infrastructure modernization

and connectivity. The ability of Ukrainian ports to integrate effectively into regional and global transport networks depends not only on internal port infrastructure but also on intermodal and hinterland connections. Upgrading rail, road, and inland waterway links, as well as developing intermodal terminals and dry ports, are essential for increasing throughput capacity, improving service reliability, and reducing bottlenecks. Participation in trans-European transport corridors and international investment projects provides both funding opportunities and technical guidance for such developments.

Strategic partnerships also play an essential role. In an increasingly interdependent world, no port can thrive in isolation. Building cooperative relationships with shipping lines, terminal operators, logistics companies, international donors, and environmental organizations enhances a port's ability to access resources, share risks, and learn from best practices. Ukrainian ports stand to gain much by deepening their integration with EU logistics frameworks, particularly through joint infrastructure projects, environmental programs, and digital innovation hubs.

Equally important is the modernization of governance models. Transparent, accountable, and forward-looking management structures form the backbone of a resilient port sector. The application of ESG (Environmental, Social, and Governance) principles helps enterprises align their operations with broader societal goals while enhancing investor confidence. For port authorities, this means introducing robust performance monitoring systems, ensuring fair labor practices, and promoting community engagement. For private operators, it involves maintaining ethical supply chains, responsible procurement, and proactive risk management. In both cases, clear strategic planning and adaptable organizational structures are indispensable.

Looking ahead, the capacity of Ukrainian port enterprises to succeed will increasingly be defined by their agility – that is, their ability to anticipate global trends, respond to disruptions, and seize emerging opportunities. As global trade patterns shift, supply chains diversify, and technological innovation accelerates, the most competitive ports will be those that can position themselves as nodes of reliability, efficiency, and innovation.

In summary, building and maintaining competitiveness in the port sector is a continuous and complex task that demands a holistic, strategic approach. It requires simultaneous investments in people, processes, infrastructure, and technologies, guided by a clear understanding of global trends and local strengths. The intersection of ecological responsibility and digital transformation offers a unique window of opportunity for Ukrainian port enterprises to redefine their roles in the global logistics system.

By embracing sustainability as a core business value, by making digital solutions a routine part of everyday operations, and by investing in the people who make ports work, Ukrainian port enterprises can move beyond merely reacting to external pressures. Instead, they can become active shapers of their future – resilient, adaptive, and internationally competitive.