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Features and concretising objects of assessing the cash flow of an enterprise ^[1]

Abstract: Temporarily available funds separate as building blocks, forming important parameters of economic actors, namely profitability and financial sustainability. Like such assets, as part of a study, address all accumulated resources in cash and the non-cash form, namely (a) contribute to the achievement of strategically significant parameters, which are characterised by repayment capacity reserve (spare monetary); (b) are formed quantitative and qualitative effectiveness cash flow movement. In doing so, repayment capacity reserve is interpreted as the ability of an economic actor to continue its activities (not even after instantaneous liquidation of all obligations). The study aims to examine the features estimation of cash-flows of an enterprise and specify means of such an assessment. The specific topics are (1) the characterisation of the transformation conventional approach to the grouping cash flow and (2) the studies of balance generated, distributed and used net cash flows, which are seen as specifying means of such an assessment. The study aims to focus on the application of the technique of balancing book-keeping capacity in the form of elements that form variance between the amounts of receipts and the disbursement of resources. As part of a study form of quantitative goals and qualitative balancing, generated, distributed and used net cash flows are seen as specifying evaluation tools. The fundamental purpose of balances will be to fill out schematised, cognitive cash flow and create a sectional division on the form of their capacity to pay. It has been possible through this movement from one scheme spare monetary to another (that is more optimal to achieve strategically significant parameters). The assessment of the cash flow of an enterprise should be based on the establishment of a realistic amount of spare money capital. It is feasible to use specifying means such as an assessment, namely balance generated, distributed and used net cash flows. They illustrate the findings of the assessment could be achieved if the framework specifying means such an assessment forms on the 2-way table, in which (1) the left side consolidates information on the ratio expressing net cash flows and changes in financial resources (with the availability of credit) according to balance sheets and (2) the right part presents elements, that makeup difference between receipts and disbursement of resources and is kept of solvency reserve. These results can be used to build a budgeting system cash flow which abuts the operating analytics. The technique represents the variance between receipts and disbursement of resources, which will lead to the expansion of analytical processes to support strategic and tactical decisions on return on financial assets and financial viability.

Keywords: profitability, financial sustainability, spare monetary, cash and the non-cash form, instantaneous liquidation of all obligations, strategically important parameters, balancing and balance method.



УДК 657.631.6

Василь Михайлович Головачко, Оксана Омелянівна Королівич, Олеся Василівна Гаврилець

Особливості та конкретизуючі об'єкти оцінки руху грошових потоків підприємства

Анотація: Вільні грошові активи відділяються у якості базових складових, що формують стратегічно важливі параметри суб'єкта економічної діяльності, якими є прибутковість та фінансова стійкість. Під такими активами, у межах дослідження, розглянуті всі акумульовані в готівковій та безготівковій формах ресурси, що сприяють досягненню стратегічно важливих параметрів, які характеризуються наявністю резерву платоспроможності (вільного грошового

капіталу); формуються кількісною та якісною ефективністю їх руху. При цьому резерв платоспроможності інтерпретовано нами як здатність суб'єкта економічної діяльності продовжувати свою діяльність, навіть після одномоментного погашення всіх зобов'язань. Мета статті полягає в дослідженні особливостей оцінки руху грошових потоків підприємства та конкретизуючих засобів такої оцінки. При цьому завданнями дослідження є (1) окреслення особливостей трансформації загально прийнятого підходу до групування грошових потоків; (2) дослідження балансу утворення, розподіл і використання чистих грошових потоків, що розглядаються як конкретизуючий засіб їх оцінки. Модель дослідження передбачає орієнтацію на застосування технік балансування та балансових методів окреслення форм платоспроможності елементів руху, що утворюють різницю між сумами надходжень і виплат грошових коштів. У межах дослідження форм кількісного та якісного балансу утворення, розподілу і використання чистих грошових потоків, розглядається як конкретизуючий засіб їх оцінки. Основне призначення балансу полягатиме у наповненні схематизованої когнітивної картини руху грошових коштів приватними ознаками щодо форм їх платоспроможності, за рахунок чого виявляється можливим рух від однієї схеми формування вільного грошового капіталу до іншої, більш оптимальної для досягненню стратегічно важливих параметрів. Оцінка руху грошових потоків підприємства має базуватися на встановленні реальної величини вільного грошового капіталу. Це доцільно, за допомогою конкретизуючого засобу такої оцінки, а саме балансу утворення, розподілу і використання чистих грошових потоків. Максимального унаочнення результатів оцінки можна досягти, якщо структуру конкретизуючого засобу формувати у вигляді двосторонньої таблиці, де: (1) ліва частина узагальнює дані щодо співвідношень, що відображають рух чистих грошових потоків та зміну фінансових ресурсів (за наявності кредитних надходжень) при дотриманні балансу активів і пасивів; (2) права частина забезпечує конкретизацію елементів руху, що утворюють різницю між сумами надходжень і виплат грошових коштів та формують резерв платоспроможності. Отримані результати можуть бути використані для побудови системи бюджетування грошових потоків, поєднаних з операційною аналітикою. Наявність окресленої техніки відображення різниці між сумами надходжень і виплат грошових коштів дозволить домогтися достатнього рівня збільшення аналітичних процесів для підтримки, як стратегічних так і повсякденних тактичних рішень щодо досягнення прибутковості та фінансової стійкості.

Ключові слова: прибутковість; фінансова стійкість; вільні грошові активи; готівкова та безготівкова форма; одномоментне погашення всіх зобов'язань; стратегічно важливі параметри; балансування та балансові методи.



Abbreviations:

AIP is accrued income payable

AP is accounts payable

DI is disposable income

EG is equity growth

ER is equity reduction

GDP is gross output

IC is intermediate consumption

IDP is internal debt payment

NCF is net cash flow

NCF_{DDP} is part of the net cash flow that passes from the enterprise to its domestic debt

OC or M is own capital

SR is solvency reserve

ΔCC is changes in the company's capital

ΔCG is capital gain

ΔDDP is domestic debt payment

ΔI is changes in the portion of cash flow remaining as property in the form of assets

ΔIW is increase in wear

Introduction

Free monetary assets are separated as essential components that form an economic entity's strategically important parameters: profitability and financial stability.

Under such assets, in the framework of the study, all resources accumulated in cash and non-cash forms are considered, which:

- favour the achievement of strategically important parameters, characterised by the presence of a reserve of solvency (free monetary capital);
- they are formed by the quantitative and qualitative efficiency of their movement.

At the same time, we interpret the solvency reserve as the ability of an economic entity to continue its activities, even after simultaneous repayment of all obligations.

Analysis of the latest scientific research on the problem under study and identification of issues that have not been resolved. Traditionally, the valuation of monetary assets is presented as an abstract concept and is explored through impersonal movement operations, namely, what to use and involve them. Examples are the methods proposed in the works of M. Y. Chik (2015), G. K. Koshelok (2013), Richard Lot (2007), and I. Artyukh (2009). They all assess the degree of synchronisation of positive and negative cash flows in an impersonal form. The assessment results characterise monetary assets' balance, but not the quantitative and qualitative expression of movement iterations, affecting the strategically significant parameters of economic activity subject.

Quantitative data are insufficient to assess the degree of participation of monetary assets in total current assets. Existing estimates are worth supplementing with qualitative details of the mobile cash flow on accounting accounts, like additional non-systemic accounting and non-accounting indicators.

Among the scientists who actively sought to minimise abstraction in the assessment of monetary assets (due to the quantitative and qualitative balance of education, distribution and use), one can single out: Ya. Titarenko (2012), A.I. Khrolenko and T.P. Lobodzinskaya (2017), purse (Skashko, 2018), etc. the specific thing is that these scientists paid attention to free money capital; as a result, forming strategically significant parameters of the subject of economic activity, and not to the balance of education, distribution and use of cash flows.

The study aims to research the features of assessing the cash flow of an enterprise and specify the means of such an assessment. At the same time, the objectives of the study are:

- outline the features of the transformation of the generally accepted approach to grouping cash flows;
- study the form of the balance of education,

- distribute and use net cash flows, considered as a concretising means of their assessment.

The results of the study

Within the framework of the study of the forms of quantitative and qualitative balance of formation, distribution and use of net cash flows, it is considered as a concretising means of their assessment. The main purpose of the balance sheet will be to fill the schematised cognitive picture of cash flow with private features relative to the forms of their solvency, due to which it is possible to move from one scheme for the formation of free money capital to another, more optimal for achieving strategically significant parameters. At the same time, in order to process identifying forms of solvency to receive quantitative and qualitative expression, it is advisable (*Artyukh, 2009; Krylova, 2019; Skashko, 2018*):

- (1) transform the generally accepted approach to grouping cash flows. Thus, to assess their movement, instead of the traditional grouping of flows by type of activity (by current activity, investment activity, financial activity), it is advisable to switch to the directions of movement that affect the state of the solvency reserve (by the stage of formation, the stage of distribution and use of the solvency reserve) with a focus on the ratio that reflects (*Table 1*) the direction of net cash flow and changes in financial resources (if there are credit receipts) while maintaining the balance of assets and liabilities;
- (2) ensure the allocation of forms of cash flow to indicate forms of solvency. At the same time:
 - monetary form of flows (*mf*) or transformation of its non-monetary form into monetary (e.g., repayment of receivables) or settlements focused on the use of money to pay obligations;
 - non-monetary form of flows (*nmf*) is exchange of its monetary form into non-monetary (acquisition of fixed assets and intangible assets) and settlements that do not involve the use of money;
- (3) provide identification of transition operations (software) that involve a specific exchange within the basic ratios, which do not just change the structure of assets or liabilities but transform the designation of forms of solvency. As an example, we can cite the second basic transition operation: payment of accounts payable (*AP*), namely “obligations – money – property”; AI payment (*AIP*), namely “accrued income to payments – money – reduction of domestic debt”. In the presence of such operations, a system of inequalities is worth providing within the evaluation framework (1, 2) (*Kosbelok, 2019*):

$$NCF_{mf} = DI_{mf} + AIP_{mf} + AP \quad (1)$$

$$NCF_{nmf} = DI_{nmf} + AIP_{nmf} - EG \quad (2)$$

where:

- DI_{mf} and DI_{nmf} are disposable income in monetary and non-monetary forms;
- AIP_{nmf} and AIP_{nmcf} are accrued income payable in monetary and non-monetary forms;
- AP is transition operations of the enterprise.

According to the specifics of identifying forms of solvency, it is appropriate to illustrate a concretising tool for assessing the movement of net cash flows of an enterprise at the stage of forming a solvency reserve (*Table 2*).

As long as the cash flow is formed without defining the forms of solvency, it is possible to determine only the net and financial resources formed. The resulting solvency reserve formed by cash flow is not just its financial resource but only its incremental monetary form, which is also replenished by borrowed capital (*BC*). Since the primary solvency Reserve, as part of the generated financial resources, can be fully consumed during distribution and use, it can be identified as a preliminary reserve for continuing operations.

An illustration of a concretising tool for assessing the movement of net cash flows of an enterprise at the stage of distribution of the solvency reserve (*Table 3*).

Thus, the cash flow of an enterprise, at the distribution stage of net cash flows, is formed based on disposable income and accrued income to payments. However, the solvency reserve arises, provided these flows are carried out in monetary forms. The outlined provision is worth adjusting for a portion of negative net cash flow, which means that:

- (1) passes from the enterprise to its internal debt ΔID (the solvency reserve is replenished by attracting additional borrowed capital);
- (2) leads to a decrease in equity, in which the solvency reserve is adjusted by ΔID ;
- (3) leads to a decrease in equity, in which the solvency reserve is adjusted at the expense of ΔCRC (this leads to an increase in ΔCRC and ΔID).

The appendix (*Table 4*) illustrates the concretising effect of the collapse of the pure penny flows of the cash flow on the stage of the reservoir of the plateaus.

Thus, the collapse of the penny flows of the cash flow on the stage of the pure penny flow of the Kintsevo begins with a reserve of plateaus ($\Delta I_{mf} > 0$), which positively means I am strategically significant. This is because the $\Delta I_{mf} > 0$ allows the enterprise to use opportunities that increase its value (if you can, you can start, as EV/Sales (revenue), EV/EBITDA, EV/EBIT, EV/Net Income).

Conclusion

The company's cash flow assessment is worth based on determining the real amount of free money capital. This is advisable by concretising such an assessment, namely, the balance of formation, distribution, and use of net cash flows.

The maximum visual clarity of the evaluation results can be achieved if the structure of the concretising tool is formed in the form of a two-sided table, where:

- (1) the left-hand side summarises data on ratios that reflect the movement of net cash flows and changes in financial resources (if credit receipts are available) while maintaining the balance of assets and liabilities;
- (2) the right-hand side specifies the movement elements that form the difference between the amounts of cash receipts and payments and form the solvency reserve.

Prospects for further scientific developments in this area. The results can be used to build a cash flow budgeting system combined with operational analytics.

Practical significance. The presence of a well-defined technique for reflecting the difference between the amounts of cash receipts and payments will allow for achieving a sufficient level of increase in analytical processes to support both strategic and everyday tactical decisions to achieve profitability and financial stability.

Conflict of interest

The authors declare that there is no conflict of interest.



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Appendix

Table 1. Ratios reflecting the direction of net cash flow and changes in financial resources

Basic ratios	Formalising the ratio
Direction of net cash flow (NCF)	$NCF = GDP - IC = DI + EG = \Delta CG + \Delta IW + \Delta EG$ if $NCF = FR_{mf} + FR_{nmf}$ and $NCF_{nmf} = DI_{nmf} + EG_{nmf} - AP_{mf}$ $NCF_{mf} = DI_{mf} + EG_{mf} - AP_{nmf}$
Changes in financial resources in the presence of credit receipts (FR)	$FR = NCF_{app} + \Delta DDP = DI + EG + \Delta DDP = \Delta M + \Delta IW + \Delta IDP$

Note: Developed based on (Artyukh, 2009; Koshelok, 2019; Krylova, 2019; Skashko et al., 2018)

Table 2. Illustration of a concretising tool for assessing the movement of net cash flows of an enterprise at the stage of forming a solvency reserve

Characteristics of the data collection principle	Formed financial resources of the <i>FR</i> or <i>NCF</i>	Solvency reserve (<i>SR</i>)	Purpose
The cost of processing products created at the enterprise or the cost of goods sold	The difference between gross output (<i>GDP</i>) and intermediate consumption (<i>IC</i>) generates net cash flow (<i>NCF</i>) Calculation algorithm: $NCF_{app} = GDP - IC$ $= NCF_{nmf} + SR_{mf}$ If there are credit receipts: $FR_{app} = SR + \Delta DDP$	$SR_{app} = NCF_{mf} + \Delta DDP_{mf}$	Reserve standby mode for continuing operations

Note: Developed based on (Koshelok, 2019; Titarenko, 2012)

Table 3. Illustration of a concretising tool for assessing the movement of net cash flows of an enterprise at the stage of distribution of the solvency reserve (developed based on (Koshelok, 2019; Titarenko, 2012; Chick, 2015))

Characteristics of the data collection principle	Formed financial resources <i>FR</i> or <i>NCF</i>	Distributed solvency reserve	Purpose
The cost of processing products created at the enterprise or the cost of goods sold is divided into disposable income and accrued income to payments	Calculation algorithm $NCF_{exp} = DI + EG$ If there are credit receipts: $FR_{exp} = DI + EG + \Delta DDP$	$SR = DI_{mf} + EG_{mf} + OB1$ For negative values $NCF_{exp.mf}$ and growth ER and NCF_{DDP} reserve is 0.	Mode of forming a reserve for continuing operations. In the case of unprofitable activities, the actual loss is formed

Note: this element is formed by the increase in wear and tear (ΔIW) and equity ΔOC .

Table 4. Illustration of a concretising tool for assessing the cash flow of an enterprise at the stage of using the solvency reserve (developed based on (Kosbelok, 2019; Skashko et al., 2018))

Characteristics of the data collection principle	Generated financial resources FR or NCF_t	Solvency reserve	Purpose
Reflection of final changes in the company's capital, taking into account all changes in liabilities NCF_t	<p>Calculation algorithm</p> $NCF = \Delta OC + \Delta DDP + \Delta NCF_{DDP}$ <p>If there are credit receipts</p> $FR_t = \Delta M + \Delta IW + \Delta D$	$\Delta I_{mf} > 0$ Provided that the balance is met $\Delta M = \Delta CC$	Definition of the part of cash flow that remains in the form of property or assets in monetary terms.

The role of corporate management in developing the hospitality industry ^[2]

Abstract: The article examines the role of corporate management in the development of the hospitality industry, which is a significant factor in ensuring the competitiveness and efficiency of enterprises. The study's object is corporate management processes in the hospitality industry. The study focuses on introducing modern corporate governance methods, which will improve the efficiency of hospitality industry enterprises and ensure their sustainable growth in a changing market environment. The article aims to determine the impact of corporate management on developing enterprises in the hospitality industry and its role in increasing competitiveness and ensuring the quality of customer service. The methods of analysis, synthesis, abstraction, classification and systematisation, generalisation, etc., were used in the study course. The authors examine the theoretical aspects of corporate governance, including human resources, finance, and marketing management, which contribute to optimising business processes and improving the level of service. The main problematic aspects of corporate management in the hospitality industry are identified, including low staff motivation, insufficient qualifications of managers, lack of strategic planning and flexibility to external changes. Strategic directions for developing corporate governance are proposed, including innovative approaches, digitalisation of processes, increased social responsibility and development of customer-oriented strategies. The authors conclude that corporate management is a crucial element of the successful functioning of hospitality enterprises. Its correct application will help overcome existing problems and ensure the sustainable development of enterprises in the face of constant market changes.

Keywords: management, process, hospitality industry, development, planning, efficiency, strategy.



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Роль корпоративного менеджменту у розвитку індустрії гостинності

Анотація: У статті досліджується роль корпоративного менеджменту у розвитку індустрії гостинності, що є важливим чинником для забезпечення конкурентоспроможності та ефективності підприємств. Об'єктом дослідження виступають процеси корпоративного управління на підприємствах індустрії гостинності. У дослідженні акцентовано увагу на впровадженні сучасних методів корпоративного управління, що дозволить покращити ефективність діяльності підприємств індустрії гостинності та забезпечити їх стійке зростання в умовах мінливого ринкового середовища. Метою статті є визначення впливу корпоративного менеджменту на розвиток підприємств у сфері гостинності та його роль у підвищенні конкурентоспроможності, забезпеченні якості обслуговування клієнтів. У процесі дослідження використано методи аналізу, синтезу, абстрагування, класифікації та систематизації, узагальнення та ін. Авторами розглянуто теоретичні аспекти корпоративного управління, включаючи управління персоналом, фінансами, маркетингом, які сприяють оптимізації бізнес-процесів і підвищенню рівня обслуговування. Визначено основні проблемні аспекти корпоративного менеджменту в індустрії гостинності, серед яких: низька мотивація персоналу, недостатня кваліфікація керівників, відсутність стратегічного планування та гнучкості до зовнішніх змін. Запропоновано стратегічні напрями розвитку корпоративного управління, що включають інноваційні підходи, цифровізацію процесів, підвищення соціальної відповідальності та розвиток клієнтоорієнтованих стратегій.

Ключові слова: менеджмент, процес, індустрія гостинності, розвиток, планування, ефективність, стратегія.



Abbreviations:

AI is artificial intelligence

IoT is the Internet of Things

Introduction

The hospitality industry is one of the fastest-growing sectors of the global economy. The success of enterprises in this area largely depends on effective corporate management. In the context of increasing competition and customer expectations, modern enterprises in this field must introduce innovative management practices to achieve high-quality services and long-term stability. This makes the study of the role of corporate management in developing the hospitality industry extremely relevant.

Many domestic scientific studies are devoted to studying corporate management development in the hospitality industry. In particular, O.M. Bazarov and O.B. Zvyagintseva studied the essence of the hotel and restaurant business and its significance in the hospitality sector of Ukraine (2024). Risk management in hotel and restaurant business activities is considered in the I. Baneva and I. Piurenko's works (2024). Management and marketing in the hotel and restaurant business were studied by M.N. Bogdan and I.V. Szegega (2024). V.O. Ivanenko, V.I. Skrynnik and Yu.L. Lukashevich identified the problems and prospects of financial management in the hotel and restaurant business (2024). Introduction of sustainable practices in the hospitality industry reviewed by A. Ivashura (2024). K.M. Kashchuk, I.V. Mosiychuk and I.V. Saukh investigated modern management technologies in the hotel and restaurant business (2023). S. Kozhukhovskiy and V.A. Rusavskaya considered services in the context of the hospitality industry's digitalisation (2024). Hospitality management as an instrumental component of the mechanism of state management of the tourism sector is the object of research by O.K. Lyubchuk and Yu.V. Yarchenko (2019). The Economics and finance of the hotel and restaurant business are characterised by N. Nebaba, M. Razinkova and N. Stelyuk (2022). The features of forming a system of strategic management of hospitality enterprises in modern conditions are considered by T. Nezveschuk-Kogut (2023). The current state, financial support, investment attractiveness and prospects for further development of the hotel and restaurant business in Ukraine are studied by Yu.M. Nikolchuk (2020). The development of the hospitality industry in Ukraine and the world is considered in N.V. Onishchuk's work (2019). I. V. Petrik, Zh.V. Semchuk and B.P. Koshevoy investigated the innovative potential in hotel and restaurant business and tourism (2019). The specifics of innovation management of enterprises in the hospitality industry are considered I. Povoroznyuk (2024). Increasing customer satisfaction in the hospitality industry is studied in R. Sherstyuk and V. Latinsky's work (2024). The essence of the concept and classification of risks in the tourism industry is considered by K.M. Yarmola and N.I. Chukhrai (2023).

The study's object of this research is corporate governance processes in companies in the hospitality industry. The study aims to determine the impact of corporate management on the development of enterprises in the hospitality sector and its role in improving competitiveness and ensuring the quality of customer service. To achieve this purpose, the following research objectives are defined:

- characterise the main elements of corporate management in the hospitality industry;
- analyse the impact of corporate culture on the efficiency of enterprises;
- identify innovative approaches to corporate governance in the hospitality industry;
- develop recommendations for improving corporate management in the hospitality industry.

The methodological basis of the research is formed by methods of analysis that characterise the components of corporate management, its impact on the activities of enterprises in the hospitality industry, like identify critical aspects of management processes that affect the efficiency of companies; synthesis, which allowed combining individual elements of corporate management into an integral system, which allows you to better understand how different management aspects interact with each other and affect the development of the enterprise in the hospitality industry; abstraction – to highlight the most general and significant patterns of corporate management that affect the effectiveness of the development of the hospitality industry; classification and systematisation, which allowed to streamline knowledge about management processes and simplified the analysis of effective strategies; generalisation – to summarise the results of research and develop recommendations on corporate governance in the hospitality industry.

The results can be helpful for scientists who study the problems of management processes in the hospitality industry, investors interested in developing this business, and owners and managers of companies specialising in hospitality.

The results of the study

Theoretical aspects of corporate management in the hospitality industry

The theoretical essence of corporate management in the hospitality industry covers a set of principles, concepts, and methods used to manage enterprises in this industry. It is based on general management principles but considers the specifics of the hospitality industry, where quality of service, customer experience management, flexibility, and adaptability to changes are significant aspects.

Corporate culture is of great significance in the hospitality industry. It affects employees' behaviour and motivation and, accordingly, the quality of guest service. The organisation's culture should promote high customer orientation, teamwork, and continuous improvement. Effective leadership is key to creating and maintaining an organisational culture focused on quality service and customer satisfaction. Leaders in the hospitality industry must demonstrate adaptability and the ability to motivate staff.

In the hospitality industry, strategic management involves developing a mission, vision, and goals that meet market conditions and customer needs. Strategies may include expanding into new markets, differentiating services, or developing new products. This includes assessing the

competitive environment, economic conditions, and social and cultural factors that may affect the business. It is also crucial to consider trends in consumer behaviour, technological innovations, and environmental aspects.

Operational management in the hospitality industry focuses on maintaining a high level of service quality, which requires standards, procedures and constant compliance monitoring. This area is highly dependent on human factors, so it is crucial to ensure proper personnel training. A significant aspect is the management of resources (human, financial, material) to ensure the effective operation of the enterprise, including inventory management, planning of personnel needs, budgeting and financial control. The significance of the human factor determines the need for professional selection and training of personnel focused on customers and high standards of service, like using motivation systems (material and non-material) to support employee engagement and stimulate their professional growth.

Success in the hospitality industry largely depends on understanding the needs and expectations of customers, which includes analysing consumer behaviour, forming value propositions, and creating a positive customer experience. For this purpose, loyalty programmes, personalised marketing strategies, and CRM systems can be used to maintain long-term relationships with customers and increase their satisfaction. Modern corporate management in this area actively uses digital technologies, such as online booking platforms, mobile applications, and automated management systems that increase service efficiency and customer satisfaction. The hospitality industry must adapt to modern technological processes by introducing innovations in its products and services, such as virtual reality and interactive services.

Thus, the theoretical essence of corporate management in the hospitality industry is to integrate management practices, strategies, and models focused on ensuring high service quality, optimising operational processes, effective human resource management, and building long-term relationships with customers. This is achieved through flexibility, adaptability to market changes, and an innovative approach to doing business.

Problematic aspects of corporate management in the hospitality industry

Corporate management in the hospitality industry faces many problematic aspects that can affect business efficiency, service quality, and customer satisfaction. These challenges include human resource management, ensuring the stability of operational processes, adapting to a rapidly changing market environment, technological transformation, and meeting environmental and social standards.

In the hospitality industry, there is often high staff turnover, which can lead to additional recruitment and training costs, like a decrease in the quality of service due to insufficient qualifications or experience of new employees. Ensuring an adequate level of employee motivation is a difficult task, especially in low-wage and rugged working conditions. Retaining highly qualified employees is also a challenge due to limited career opportunities. The constant need to update the knowledge and skills of personnel, especially when introducing new technologies and changes in service standards, requires significant investment in training programs for specialists.

Providing a consistently high level of service in the hospitality industry is challenging due to demand variability and seasonal fluctuations. Effectively responding to customer suggestions is essential to maintaining the brand's reputation and ensuring customer loyalty in the future. However, not paying attention to customer reviews can lead to the formation of a negative image of the company in the market and the loss of a significant number of customers.

The introduction of new technologies and infrastructure modernisation in the hospitality sector requires significant financial resources, which may not be available to most enterprises, especially in conditions of economic instability. Therefore, cost optimisation is a crucial challenge for these businesses, especially in the face of rising prices for raw materials, energy and services. This may require reviewing operational processes in the enterprise and reducing costs while maintaining a high quality of services provided.

Implementing new technologies, such as artificial intelligence, process automation, or big data, can be difficult for small businesses in the hospitality industry due to insufficient technical training of staff or lack of investment. A key aspect in this area is protecting customer data and Privacy, which is significant in the face of growing cyber threats. Non-compliance with security standards can lead to a loss of customer trust and significant financial losses for the enterprise. However, due to the lack of investment resources, many establishments in the hospitality industry use outdated management systems, which can be inefficient and costly to maintain, which makes it challenging to implement new technological solutions.

The constant change in consumer preferences and trends in the hospitality industry requires companies to adapt their marketing strategies and offers quickly. The growing impact of social media and feedback platforms creates new challenges for managing these businesses' reputations, as negative reviews can spread rapidly, affecting customer trust and demand for services. Waiting for guests to receive personalised service requires implementing CRM systems and extensive data analysis, which can be technologically complex and financially expensive.

Also, a very significant aspect of the activities of hospitality establishments is compliance with environmental standards, reducing the environmental impact by using environmentally friendly materials, and reducing energy costs, which may require significant investment. In modern conditions, it is essential to strictly comply with the requirements for social responsibility, which implies fair remuneration, respect for human rights, and support for local communities. Changes in the regulatory environment may require adaptation of business processes, particularly compliance with sanitary standards, data protection rules and security standards.

Thus, corporate management in the hospitality industry should consider all aspects and develop strategies that will effectively respond to challenges. This complex process can include adapting to market changes, innovating in management, using resources efficiently, and maintaining high service standards. To successfully overcome these challenges, it is significant to implement integrated management approaches that include technological innovation, personnel development, strategic planning, and sustainable business management.

Strategic directions of corporate governance development in the hospitality industry

Corporate management in the hospitality industry encompasses various aspects of management (human resource management strategy, operational processes, finance, marketing,

and customer relations) that help ensure the effective functioning of businesses operating in this market. The diagram shows the hospitality industry's key components of corporate management (*Figure 1*).

Corporate management in this area requires an integrated approach and the ability to adapt to constantly changing market conditions through effective resource management, an innovative approach to customer service and responsibility to society. Therefore, strategic directions for developing corporate management in the hospitality industry aim to increase competitiveness, improve service quality, implement effective resource management, and ensure sustainable development. In modern conditions, this area requires a flexible management approach that allows you to quickly adapt to market changes and customer expectations.

Introducing the latest technologies, such as AI, Big Data, IoT and blockchain, will help optimise processes, personalise services and improve customer interaction. Using automated systems for managing bookings, settlements, and other operational processes will allow the company to increase efficiency and reduce costs. Integrating innovative management technologies will increase the comfort and safety of guests, and using CRM systems to collect and analyse guest data will allow you to provide individual offers and increase customer satisfaction. Therefore, companies in the hospitality industry need to develop strategies to create a positive customer experience at all stages of interaction, from booking to departure, like using social media and digital channels for feedback, to manage their reputation and attract new customers.

The introduction of continuous training and development programs to improve employees' skills and adapt to new technologies and changes in service standards provides for developing a system of motivation and incentives for employees, including material and non-material bonuses, career opportunities, and a favourable working environment.

For hospitality enterprises, it is advisable to optimise costs by introducing the latest technologies, automating processes, using alternative energy sources, and developing resource-saving solutions. To create additional sources of income, the company must develop new products and services, such as offers for long-term residence, like partner programs with other companies. Using the latest analytical tools in your work will allow you to predict demand, effectively manage revenue, and develop financial strategies to increase profitability.

Introducing environmentally friendly technologies such as energy management systems, water conservation, and waste management in hospitality establishments' business activities helps reduce the negative environmental impact. Developing social responsibility programmes that support local communities will ensure job creation, support for local suppliers, and participation in social initiatives. It is also essential to adhere to ethical standards in relationships with customers, employees, suppliers, and partners and ensure transparency and responsibility in all business processes. Strategic brand management, which includes active communication with customers, responding to feedback, and maintaining a positive company image, is also a significant aspect of the company's operations.

Developing and implementing a long-term strategy that considers the peculiarities of local markets, culture, and customer preferences, ensuring the enterprise's competitiveness, involves forming strategic partnerships with other industry representatives, including airlines, travel

agencies, and technology suppliers, to expand opportunities and create modern products for customers.

So, the strategic directions of corporate management development in the hospitality industry aim to improve management efficiency, customer experience, and sustainable development. To achieve these goals, it is necessary to integrate the latest technologies, develop human resources, effectively manage resources and actively respond to global challenges. Implementing such strategies will allow enterprises in the hospitality industry to remain competitive and thrive in the face of rapid changes in the market environment.

Discussion

Corporate management is crucial for the effective functioning of any enterprise, particularly in the hospitality industry. However, there is a problem with underestimating or inefficiently using corporate governance principles in this area. Insufficient attention to strategic planning, corporate ethics, human resources management, finance, and customer relations can lead to inadequate service quality, financial losses, and deterioration of enterprises' reputations in the market.

Research on the role of corporate management in the development of the hospitality industry helps to understand how effective management strategies can contribute to improving enterprises' competitiveness and sustainable development. Proper use of corporate management helps:

- improve customer service standards and maintain their loyalty;
- optimise management processes, which will help increase productivity and reduce costs;
- develop and implement corporate governance strategies aimed at the long term, which allows this industry to be flexible to changes and challenges.

Promising areas of further research on the role of corporate management in the development of the hospitality industry are the study of the impact of digital technologies and innovation management, crisis management, and effective personnel management, like optimisation of supply chains, to improve the economic efficiency of enterprises. These areas will help you understand current challenges and opportunities, contributing to the industry's sustainable development.

Conclusion

Corporate management in the hospitality industry plays a significant role in shaping an effective enterprise development strategy. The theoretical foundations of corporate governance include human resource management, finance, marketing, and customer relations. Based on modern research, effective corporate governance ensures resource optimisation and increases the competitiveness of hospitality enterprises. Transparency in decision-making, corporate social responsibility, and integration of modern technologies into business processes are significant components of this process.

The main problems of corporate management in the hospitality industry are insufficient attention to professional training of personnel, inefficient resource management and lack of a long-term development strategy. There is also a problem of low staff motivation, which directly affects the quality of customer service. Insufficient adaptation of enterprises to changes in the

external environment exacerbates these problems, which requires greater flexibility and innovation in corporate management.

For further development of the hospitality industry, it is necessary to introduce modern approaches to corporate management focused on innovation and sustainable development. Key strategic areas include investing in staff training, process digitalisation, and business process automation. A significant aspect is the creation of sustainable risk management systems and increasing enterprises' social responsibility levels. In addition, it is necessary to adhere to a customer-oriented approach that will ensure customer loyalty and strengthen the competitive position of enterprises in the market.

Thus, corporate management is a crucial element of the successful functioning of hospitality enterprises. Its correct application will help overcome existing problems and ensure the sustainable development of enterprises in the face of constant market changes.

Conflict of interest

The authors declare that there is no conflict of interest.



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Appendix



Figure 1. Strategic directions of corporate management development in the hospitality industry

Strategic managing in the management system of enterprises in the tourism and hospitality sectors ^[3]

Abstract: The relevance of the research is because the sphere of operation of enterprises in the tourism and hospitality sectors is one of the most dynamic industries in the global economy. It is driven by their significant dependence on technological changes, economic conditions, political situations, and consumer preferences, considering the direct contact with the customer. Additional factors that enhance the dynamism of enterprises in the tourism and hospitality sectors include global challenges such as pandemics, climate change, and geopolitical conflicts. It is significant to note that, regardless of the specific nature of these challenges, each such shift or the intensification of an additional factor requires the management systems of enterprises to adapt existing strategies or develop fundamentally new management strategies. It has gradually led to a situation where, within the management system of enterprises in the tourism and hospitality sector, management strategy cannot be a static category but must be flexible and adaptive. The study's object is the content and processes of shaping the future as a fundamental feature of strategic management within the management system of enterprises in the tourism and hospitality sectors. The study aims to identify the features of strategic management within the management system of enterprises in the tourism and hospitality sectors. The authors used scientific abstraction, generalisation, and logical analysis to analyse strategic management systems in tourism and hospitality. The authors used the works of Ukrainian researchers G. Mashika, V. Zelich, A. Kizyun, V.O. Zhmudenko, L.G. Kovalenko, I.V. Chukina, L. Cherchyk, A. Lazhnik, etc. and foreign specialists M. Ekouaghe, A.T. Niyazbayeva, A.S. Yessengeldina, David B. Weaver, Ziyang Zhang and Zhe Yang. The results showed that these systems exhibit significant dynamism and adaptability, setting them apart from other sectors.

Keywords: potential threats or opportunities, early warning systems, changes in the external environment, flexible plans, dynamism, adaptability.



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Стратегічне управління в системі менеджменту підприємств сфери туризму та гостинності

Анотація: Актуальність дослідження зумовлена неймовірною динамічністю сфер туризму та гостинності. Це зумовлене їх значною залежністю від змін в технологіях, економічних умовах, політичному становищі та смаках споживачів враховуючи безпосередній контакт з клієнтом. Додаткові фактори, які підсилюють динамічність функціонування підприємств сфер туризму та гостинності, – це глобальні виклики, такі як пандемії, зміни клімату та геополітичні конфлікти. Зазначимо, що не залежно від конкретного змісту, кожна така зміна або посилення впливу додаткового фактора вимагають від системи менеджменту підприємств постійної адаптації чинних або розробки якісно нових стратегій управління. Це, своєю чергою, сформувало таке становище, при якому в системі менеджменту підприємств сфери туризму та гостинності стратегія управління більше не може бути статичною категорією, а лише гнучкою та адаптивною. Об'єктом дослідження є зміст та процеси формування майбутнього як базової риси стратегічного управління в системі менеджменту підприємств сфер туризму та гостинності. Метою дослідження є ідентифікація особливостей стратегічного управління в системі менеджменту підприємств сфер

туризму та гостинності. За допомогою методів наукової абстракції, узагальнення та логічного аналізу автори проаналізували системи стратегічного управління в туризмі та гостинності. Отримані результати дозволили виявити, що такі системи відзначаються вираженою динамічністю та адаптивністю, що є їхньою відмінною рисою від інших галузей.

Ключові слова: потенційні загрози або можливості, системи раннього попередження, зміни зовнішнього середовища, гнучкі плани, динамічність, адаптивність.



Abbreviations:

EWP is early warning process

EWS is early warning system

KPI is key performance indicators

Introduction

The study's relevance is because the sphere of functioning of Tourism and Hospitality Enterprises is one of the most dynamic in the world economy. This is due to their significant dependence on technological changes, economic conditions, political situation and consumer tastes, considering direct contact with the client. Additional factors that increase the dynamic functioning of tourism and hospitality enterprises are global challenges, such as pandemics, climate change, and geopolitical conflicts. It is worth noting that regardless of the specific content, each change or increase in influencing an additional factor requires the enterprise management system to adjust existing strategies or develop qualitatively new ones constantly. Since 2022, there have been a significant number of cases in management practice when tourism and hospitality enterprises are not able to form a sustainable strategy that would ensure their sustainability and competitiveness in the long term. This leads to a loss of market positions and a decrease in profitability. At the same time, some enterprises have successfully adapted to new realities and even strengthened their position in the market. However, in the management system, the management strategy they formed ceased to be a static category and was transformed into a flexible and adaptive one.

Modern scientists dealing with the problems of forming strategic management in the management system of enterprises in tourism and hospitality increasingly point to the growth of requirements for flexibility and adaptability of strategy, like the actualisation of many problems that require special attention from managers of tourism enterprises. Thus, G. Mashika, V. Zelich, A. Kizyun, etc. (2023) point out the lack of a single format that guarantees the effectiveness of tracking and completeness of analysis of changes in the external environment. As a basic problem, uncertainty is identified about the mechanisms that will allow timely identification of potential threats or opportunities that may affect the operation of the enterprise (Brygilevich & Voitenko, 2021). V.O. Zhmudenko, L.G. Kovalenko, and I.V. Chukina (2024, pp. 131-134) point out the lack of established mechanisms for flexible planning and personnel involvement, which managers of tourist enterprises should focus on for successful management in conditions of uncertainty. Also, during the study, the authors used the works in tourism management of L. Cherchyk and A. Lazhnik (2021), M. Ekouaghe (2019), A.T. Niyazbayeva

and A.S. Yessengeldina (2019), David B. Weaver (2014), Ziyang Zhang and Zhe Yang (2021). Thus, the relevance of the study of strategic management in tourism and hospitality is beyond doubt. It is key to ensuring the successful development of tourism and hospitality businesses in a dynamic and unpredictable world.

The study aims to identify the features of strategic management in the management system of enterprises in the tourism and hospitality sectors.

Based on the purpose of the study, the following tasks were identified and solved:

- research of the management strategy of tourism and hospitality enterprises as living organisms;
- definition and systematic description of the processes of active formation of the future as a basic feature of strategic management in the management system of enterprises in the tourism and hospitality sectors.

The study's object of research is the content and processes of forming the future as a basic feature of strategic management in the management system of enterprises in the tourism and hospitality sectors.

The authors used scientific abstraction, generalisation, and logical analysis to analyse strategic management systems in tourism and hospitality. The results revealed that such systems are characterised by pronounced dynamism and adaptability, distinguishing them from other spheres of the economy.

The results of the study

Implementing the focus of research through the study of strategic management systems in terms of their dynamism and adaptability, we emphasise that dynamism is understood as a constant change, development and adaptation of the system to new conditions. Adaptability is the ability to quickly and flexibly respond to changes in the external and internal environment, adjusting their strategies and plans. Therefore, agreeing with V.A. Zhmudenko, L.G. Kovalenko and I.V. Chukina (2024, pp. 131-134), it is argued that striving for the outlined features and strategies in tourism and hospitality are transformed into “living” organisms. This means constant self-development, a quick response to changes, and a close relationship of strategy elements. The main characteristics of such “live” strategies are shown in the appendix (*Table 1*).

To illustrate the operation of the enterprise management strategy as a living organism, consider the example of the River Side Resort Hotel (Polyana Village). Until 2022, the hotel was successfully positioned in the segment of wealthy clients, offering exclusive services. However, Russia's full-scale invasion of Ukraine significantly changed consumer demand and the competitive environment. In response to these challenges, the hotel was forced to reconsider its strategy, adapting to new realities radically. This has led to noticeable changes in its performance, reflected in the appendix (*Table 2*).

The River Side Hotel has shown a vivid example of how a strategy can transform into a “living organism”. To survive in the new conditions, the subject has made many transformations, in particular:

- diversified the range of services;
- developed more affordable service packages;

- established partnerships with local businesses;
- focused on the environmental aspects of doing business;
- actively implemented digital technologies.

These changes were due to the need to adapt to new market realities.

The constant evolution of the River Side Hotel's strategy, traced during 2023-2024, indicates its ability to self-develop. It has gone from a static concept to a dynamic system constantly being improved and developed. This process is comparable to the evolution of biological species, where organisms adapt to changing environmental conditions, develop new characteristics, and pass them on to subsequent generations (*Pobigun, 2015*). In addition, it is worth noting the relationship of elements of the River Side Hotel's strategy: changes in one area (e.g., introducing new services) affected others (marketing, sales).

The authors interpret the active formation of the future as a primary feature of strategic management in the management system of tourism and hospitality enterprises as a proactive approach to business management, which involves responding to changes and their conscious formation. Therefore, agreeing with G. Mashika, V. Zelich, and A. Kizyun (*2023*), it can be noted that for implementing this approach. It is significant not only for the strategy itself but also for the qualitative construction of fundamental processes that will become the basis for determining long-term development goals and developing ways to achieve them. In particular, among such processes, the most significant are:

1. Tracking and analysing changes in the external environment should ensure a systematic process of collecting, processing and interpreting information about factors that may affect the company's activities (*Zhmudenko et al., 2024*). For example, it is significant for a travel company to monitor changes in tourism legislation, analyse trends in the tourism industry, and track currency exchange rates. As for hotels, it is critical to track changes in demand for different types of rooms depending on the season, analyse the competitive environment (prices, services, reputation), and monitor customer reviews and hotel ratings on different platforms. In addition, for any enterprise, regardless of the field of activity, it is significant to monitor the general state of the external environment and the nature of its changes. Considering variable and broad information needs, the effectiveness of the outlined process is ensured by the inclusion of components in it (*Table 3*):

- monitoring of macro- and microenvironment;
- trend analysis;
- creating scenarios for the development of events based on the collected information.

Thus, the outlined format for tracking and analysing changes should provide a change horizon scan that can identify potential threats and opportunities for the enterprise.

2. Creating an EWS should ensure the development and implementation of mechanisms that allow timely identification of potential threats and opportunities (provided that they can affect the enterprise's activities) (*Brygilevich & Voitenko, 2021*). This allows you to create and configure an alarm system that warns you about approaching changes. For example, an EWS can detect a decline in sales even before it becomes apparent, allowing an enterprise to take steps to boost demand. The EWS may show signs of increased competition, changes in legislation, or other risks that may negatively affect the business. An EWS can reveal new market

niches, technologies, or business growth opportunities. The effectiveness of this process is ensured by including the following components (*Table 4*):

- KPIs;
- regular data collection and analysis;
- development of an alert system.

Early warning systems allow you to set up automatic notification generation when certain thresholds relative to key indicators are reached to detect anomalies.

3. Creating and applying flexible plan systems should ensure the transition to strategic guidelines that are easily adapted to changes in the internal and external environment (*Pobigun, 2015; Dekahynk, 2017*). Considering the focus on variability, the effectiveness of the outlined process is ensured by including the following components (*Table 5*):

- scenario planning (for developing alternative development scenarios);
- identification of crucial control points;
- quick adaptation.

It is evident that thanks to the features of flexible planning, there is a transition from rigid, detailed plans to flexible guidelines that allow businesses in the tourism and hospitality sectors to respond quickly to unforeseen situations and take advantage of new opportunities. An example of such benchmarks is the focus on leadership in the ecotourism market in the region (which involves the development of a variety of eco-products and services, such as excursions, accommodation and meals, with adaptation to changing preferences of tourists and regulatory requirements) or the focus on providing an unforgettable experience for each guest (which involves creating opportunities for experimentation and innovation, which allows management to constantly improve the quality of their services and go beyond standard offers).

Strategic guidelines are flexible because:

- do not have a clearly defined time frame;
- can be adjusted depending on the situation;
- have a wide range of interpretations (so that businesses can interpret them in their way, adapting them to their resources and capabilities);
- result-oriented, not process-oriented.

Therefore, the transition to such guidelines is impossible unless changes in the structure of the strategic management organisation accompany it. Reducing management levels to speed up decision-making and creating management teams with autonomy in decision-making are particularly significant, as this allows them to respond quickly to changes.

4. Involvement of personnel in strategic management should ensure the process during which employees of all levels of the enterprise in tourism and hospitality (*Yakushev et al., 2022*):

- they are included in the strategy development process (in particular, they have the opportunity to express their ideas, suggestions and comments on development directions);
- actively participate in implementing the strategy (in particular, they understand their role in achieving common goals and contribute to their implementation);
- they are involved in evaluating the strategy's effectiveness (in particular, they jointly participate in analysing results, problems and ways to solve them).

Considering the need for maximum involvement of personnel in the decision-making process, the effectiveness of this process is ensured by including the following components (*Table 6*):

- culture of innovation;
- resource availability;
- training and development.

For example, staff involvement in the development of an enterprise strategy can occur through the organisation of a series of workshops, where employees from different departments discuss new ideas for product development, or through the introduction of a system of regular employee surveys that allow you to collect opinions on the strategic directions of enterprise development and suggestions for their improvement.

The outlined process should not be constructed as a simple strategy statement. It should provide:

- full involvement of personnel in the decision-making process;
- creating a sense of personal responsibility for achieving common goals.

It is worth noting that implementing the processes of defining long-term development goals and developing ways to achieve them, in conjunction with a strategy that acts as a living organism, allows managers of tourism and hospitality enterprises not just to wait for the market to change but to influence the process of change actively.

Discussion

The authors prove that the implementation of the processes of defining long-term development goals and developing ways to achieve them, in conjunction with a strategy that acts as a living organism, is a complex process that covers not only the analysis of internal changes inherent in them but also the mechanisms through which managers can influence the processes of change (through anticipating customer needs, searching for new niches, products, services or business models that can bring success).

Conclusion

The study confirms that pronounced dynamics and adaptability are significant for strategic management in tourism and hospitality. At the same time, the following conclusions are drawn, which, in terms of content, confirm the thesis we have formed:

1. Features of dynamism and adaptability of strategic management transform the management strategies of tourism and hospitality enterprises into living organisms capable of self-renewal and development. Rapid adaptation of the strategy content to changes in the external environment (whether technological innovations, economic crises, or changing climatic conditions) becomes a key factor in the survival and prosperity of enterprises. Constant interaction between different strategy elements, from marketing to operational activities, ensures synchronicity and efficiency of all processes. It is this strategy format that allows tourism and hospitality companies not only to respond to challenges but also to shape the future actively, anticipating customer needs and creating new development opportunities.

2. The definition of active formation of the future as a basic feature of strategic management in the management system of enterprises in the tourism and hospitality sectors is interpreted by the authors as a proactive approach to business management (it involves not just responding to changes, but their conscious formation). Implementing this approach is significant for the strategy itself and the qualitative construction of basic processes that will become the basis for determining long-term development goals and developing ways to achieve them. In particular, among such processes, the most important are tracking and analysing changes in the external environment, creating an early warning system, developing a flexible plan system, and involving personnel in strategic management. By implementing these processes in conjunction with a strategy that acts as a living organism, managers of tourism and hospitality enterprises do not just wait for the market to change but actively influence this process.

A promising area of further research is the development of practical tools and methodologies for effectively implementing a proactive strategy in a dynamic tourism and hospitality market, particularly early warning systems, flexible plans, and mechanisms for involving personnel in the strategic management process.

Conflict of interest

The authors declare that there is no conflict of interest.



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Appendix

Table 1. Main characteristics of management strategies of tourism and hospitality enterprises as living organisms (*Zhmudenko et al., 2024; Brygilevich & Voitenko, 2021*)

Characteristics	Impact of the characteristic on the management strategy format	Example of a characteristic of a management strategy
Constant self-development	Strategies are dynamic structures that constantly change. Each change responds to the transformation of the external environment and internal conditions of the enterprise.	The strategy is regularly reviewed and adjusted, considering new trends in the tourism and hospitality market, changes in consumer behaviour, and actions of new competitors ¹ .
Fast adaptation	Strategies are open structures that are flexible and reactive to changes (including pandemics, economic crises, and changes in legislation).	Transition of enterprises to new formats of work during the pandemic (online booking, food delivery), development of new travel and hospitality products that meet the new requirements of consumers.
Dense relationship of elements	Strategies are formed as balanced structures that have the consistency of all elements of the strategy (missions, goals, strategies, policies, procedures) to achieve a common goal.	Integration of marketing, operational and financial aspects of the strategy to ensure the effective functioning of the hotel business.

¹ For example, hospitality companies can achieve this through transitioning to environmental standards, individualisation of services, and developing additional services. Travel companies can implement this by transitioning to online platforms (where the business entity offers a wide range of tours and services online), niche tours, and partnerships with influencers.

Table 2. Directions of changes in the external environment and internal operating conditions of the River Side Resort Hotel (Polyana Village) from February 2022

Directions for changes that have devalued the strategy	Main changes in the external environment and internal conditions of the enterprise	Impact on the internal conditions of the enterprise and the results of strategy implementation	Features of strategy transformation during 2023-2024
Rapid change in consumer tastes	The popularity of ecotourism and outdoor activities has increased. Young travellers have come to prefer a more authentic experience and more affordable prices	The decline in demand for exclusive services and luxury rooms among the main target audience of the hotel. Reduction of the average receipt.	Forming a strategy that actively responds to new market realities through: Continuous use of the range of services ¹ . Create more accessible service packages ² .

Emergence of new competitors	The active relocation of businesses due to Russia's military rejection of Ukraine has led to the emergence of new hotels that offer a wider range of services and more affordable prices.	Increased competition in the market, reduced share of the River Side hotel	Partnership with local businesses ³ . Focus on environmental friendliness ⁴ . Use of digital technologies ⁵ .
The deepening of the economic crisis	Reducing the population's ability to pay and limiting vacation expenses.	A decline in demand for expensive tourist and hotel products, a decrease in the average receipt.	

Notes:

¹ In addition to the standard services, the hotel has started offering yoga, surfing, and excursions to local attractions.

² Special offers were developed for young people and families with children, including discounts on accommodation, free access to Entertainment and playgrounds, like the organisation of thematic events.

³ The hotel has started working with local restaurants, bike rentals, and other companies to offer its guests more diverse entertainment options.

⁴ Environmental conservation programmes were implemented, which attracted environmentally conscious tourists.

⁵ A mobile app was created for booking rooms, ordering services, and getting hotel information.

Table 3. Characteristics of tracking and analysing changes in the external environment as a basis for strategic management of tourism and hospitality enterprises (*Zhmudenko et al., 2024; Brygilevich & Voitenko, 2021; Dekalyuk, 2017*).

Process components	Characteristics of the component that forms the process	Features that ensure the effectiveness of strategy formation
Macro environment monitoring	Identifying and assessing political, economic, social, technological, economic and legal factors affecting the company's activities.	Allows the company to adapt to changes and minimise negative consequences quickly. It helps you identify new niches in the market and expand your business. It gives the company an advantage over competitors who are slower to respond to changes. It allows you to identify potential threats and develop strategies to avoid them.
Microenvironment monitoring	Research the activities of competitors, suppliers, customers, intermediaries and other stakeholders.	
Trend analysis	Identify new market trends, such as the growing popularity of ecotourism, the emergence of new ways to use digital technologies and personalize services, etc.	
Predicting changes	Based on the collected information, scenarios for the development of events are developed ¹ . This process involves analysing the collected information, identifying key factors and trends, and creating alternative models for the development of events.	

Note:

¹ The scenario should be helpful, including anticipating future changes, assessing potential risks, and developing appropriate strategies.

Table 4. Characteristics of the EWP about approaching changes as the basis for Strategic Management of enterprises in the tourism and hospitality sectors (*Brygilevich & Voitenko, 2021; Dekalyuk, 2017*).

Process components	Characteristics of the component that forms the process	Features that ensure the effectiveness of strategy formation
Identifying key performance indicators	Selection of indicators that allow you to assess the effectiveness of the hotel and tourism business and identify deviations from the planned results in a timely manner ¹ .	Allows the enterprise to define changes as specific, measurable, achievable, relevant, and time-limited.
Regular data collection and analysis	Selection of data collection and analysis tools, such as customer feedback collection systems, sales analysis systems, social media monitoring systems, etc ² .	It helps the company identify processes that occur regularly and systematically. It helps the company identify anomalies in its performance that may indicate the beginning of changes.
Development of an alert system	Implement proactive risk management mechanisms, which provide for constant monitoring of the external environment and prompt informing management of any changes that may affect achieving the goals set ³ .	

Notes:

¹ Hotel occupancy, average receipt, percentage of repeat bookings, customer reviews, length of stay of guests, conversion of customers from an online request to a reservation.

² Booking, CRM, website analytics, review collection systems (Google My Business, TripAdvisor), and social networks (Facebook, Instagram).

³ Email, SMS, push notifications, internal chats, and portals for employees.

Table 5. Characteristics of the process of creating a system of flexible plans as a basis for strategic management of tourism and hospitality enterprises (*Brygilevich & Voitenko, 2021; Dekalyuk, 2017; Mashika et al., 2023; Pobigun, 2015*)

Process components	Characteristics of the component that forms the process	Features that ensure the effectiveness of strategy formation
Developing alternative scenarios	Creating development plans with shift options allows one to consider different situations and changes in the external environment.	Allows you to anticipate various scenarios and prepare appropriate actions ¹ . Allows you to detect deviations from strategic guidelines promptly and make timely adjustments ² .
Identifying key control points	A significant element of effective management is creating a change management system that involves conducting planned strategy reviews at key moments, such as when launching a new product, starting a new marketing season, or changing suppliers.	It allows you to form a situational reaction to any changes in the external environment.
Implementation of rapid adaptation mechanisms	Create procedures that allow you to make changes to your strategy quickly. Note that these can be either formal procedures (for example, regular meetings to review the strategy) or informal ones (e.g., the ability of employees to suggest new ideas).	

Note

¹ Possible scenarios: an increase in demand for services of tourism and hospitality enterprises, a decline in the economy, and the emergence of a new competitor.

² Possible control points: quarterly meetings to analyse indicators and monthly meetings with department managers to discuss current projects.

³ Possible adaptation mechanisms are flexible budgets, indicators with change intervals, rapid response teams to crises, and automated data analysis systems.

Table 6. Characteristics of the process of personnel involvement in the strategic management systems of tourism and hospitality enterprises (*Brygilevich & Voitenko, 2021; Yakushev et al., 2022*)

Process components	Characteristics of the component that forms the process	Features that ensure the effectiveness of strategy formation
Creating a culture of innovation	Creating an atmosphere where staff generates ideas and suggestions, like supporting innovation.	Allows you to support initiatives to develop new products or services. It allows you to create budgets for developing new projects and provide employees with access to the necessary databases and technologies.
Providing the necessary resources	Creation of resource support systems for personnel to implement their ideas and participate in strategic projects.	Allows you to implement training on leadership and strategic thinking regularly.
Staff training and development	Invest in developing the employee skills needed to participate in strategic management.	Allows you to implement creative training and project management.

Patterns and trends in the formation of maritime trade market's parameters^[4]

Abstract: The maritime trade market is a complex and dynamic system shaped by various global factors. One of the critical patterns influencing this market is the growth of international trade, which directly affects demand for shipping services. Economic cycles, such as recessions and booms, also impact the supply-demand balance, leading to fluctuations in freight rates. Additionally, geopolitical events, like trade wars or sanctions, can disrupt shipping routes and affect market stability. Technological advancements, such as the digitalization of shipping and the introduction of autonomous vessels, represent another trend reshaping the market. These innovations aim to increase efficiency, reduce operational costs, and minimize environmental impact, in line with growing regulatory pressures on the industry to lower carbon emissions. Developing port infrastructure and integrating logistics systems also play a crucial role, as they enhance the ability to handle increasing cargo volumes and streamline supply chains. Moreover, shifts in consumer behavior, such as the rise of e-commerce, create additional demand for rapid and efficient shipping solutions. The study's object is the maritime trade market, focusing on the shipping companies operating within it. The study aims to investigate how shipping companies can maintain financial and strategic independence despite adverse market conditions, particularly by leveraging capital assets and innovative positioning strategies. The study's main methods include a comparative analysis of the most developed maritime transport countries according to various parameters. The works of prominent maritime economists and industry experts, such as M. Stopford, J. C. Coates, M. Photis, M. Shuo, found this study's theoretical framework. Additionally, industry reports from organizations like the International Maritime Organization and Clarkson Research are utilized for up-to-date market analysis. The authors conclude that economic, technological, geopolitical, and environmental factors influence the maritime trade market, all contributing to its evolving parameters. These elements create a dynamic landscape that industry companies must navigate to remain competitive.

Keywords: parameters, maritime trade market, sustainability, strategies, transport.



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Закономірності та тенденція формування параметрів ринку морської торгівлі

Анотація: Ринок морської торгівлі є складною та динамічною системою, сформованою різними глобальними факторами. Однією з ключових закономірностей, що впливають на цей ринок, є зростання світової торгівлі, яка безпосередньо впливає на попит на послуги з доставки. Економічні цикли, такі як рецесії та буми, також впливають на баланс попиту та пропозиції, що призводить до коливань фрахтових ставок. Крім того, геополітичні події, такі як торговельні війни чи санкції, можуть порушити судноплавні маршрути та вплинути на стабільність ринку. Технологічні досягнення, такі як цифровізація судноплавства та впровадження автономних суден, представляють ще одну тенденцію, яка змінює ринок. Ці інновації спрямовані на підвищення ефективності, зниження експлуатаційних витрат і мінімізацію впливу на навколишнє середовище відповідно до зростаючого регуляторного тиску на галузь щодо зниження викидів вуглецю. Розвиток інфраструктури в портах та інтеграція логістичних систем також відіграють вирішальну роль, оскільки вони підвищують здатність обробляти зростаючі обсяги вантажів і оптимізувати ланцюги поставок. Крім того, зміни в поведінці споживачів, такі як зростання електронної

комерції, створюють додатковий попит на швидкі та ефективні рішення доставки. Таким чином, ринок морської торгівлі перебуває під впливом комбінації економічних, технологічних, геополітичних і екологічних факторів, усі з яких впливають на зміну його параметрів. Ці елементи створюють динамічний ландшафт, яким компанії в галузі повинні орієнтуватися, щоб залишатися конкурентоспроможними.

Ключові слова: параметри, ринок морської торгівлі, стійкість, стратегії, транспорт.



Abbreviations:

HAROPA is Havre, de Rouen et de Paris

IMO is the International Maritime Organization

M&A is mergers and acquisitions

Introduction

The relevance of the study topic. In the standard conditions of the global maritime trade market, the independence of a shipping company is the ability to optimize the enterprise's financial condition even under unfavorable conditions for other operators. Independence of positioning in merchant shipping means not only ensuring the stability of the company's economic condition based on the priority of capital assets but also not striving for unification of behavior in the maritime trade market. The latter is quite complex but reflects the principle of reaction to standards that change under many conditions (*Shuo, 2020*). Despite fluctuations in demand in many segments of the maritime trade market, the assertion of a position justifies the concentration of funds based on new approaches to prioritizing particular advantages of the shipping company's positioning. The independence of a shipping company within the global maritime trade market is a sign of financial stability and a strategic advantage that allows it to withstand unfavorable conditions faced by other operators. This independence becomes critical in globalization, where volatility in demand and supply chains is frequent. When positioned independently, shipping companies demonstrate resilience by optimizing capital asset management and responding flexibly to changing market standards without merely adhering to industry-wide trends. This ability to maintain a unique market position is especially relevant today, as the maritime trade market experiences disruptions from global economic shifts, technological innovations, and regulatory pressures to reduce carbon emissions. Thus, the relevance of this topic stems from the increasing challenges facing maritime operators, including fluctuating freight rates, regulatory demands for sustainability, and the rapid development of new technologies in shipping. Understanding how shipping companies can maintain independence and avoid standardized responses to market pressures is crucial for ensuring long-term profitability and competitive advantage (*UNCTAD..., 2022*).

The study's object is the maritime trade market, focusing on the shipping companies operating within it.

The study aims to investigate how shipping companies can maintain financial and strategic independence despite adverse market conditions, particularly by leveraging capital assets and innovative positioning strategies.

The study's main methods include a comparative analysis of the most developed maritime transport countries according to various parameters.

The works of prominent maritime economists and industry experts, such as M. Stopford in "Maritime Economics" (2008), J. C. Coates in "Mergers, Acquisitions, and Restructurings" (2014), M. Photis in "The Routledge Handbook of Maritime Management" (2020), M. Shuo in "Maritime Economics Business" (2020) found this study's theoretical framework. Additionally, industry reports from organizations like the IMO and Clarkson Research are utilized for up-to-date market analysis.

The results of the study

Sustainability of development and balance of the maritime trade market

Suppose the significance of assessing the indicators of the economic efficiency of the development of maritime transport enterprises from the standpoint of business structures and effectiveness from the standpoint of macroeconomic and global interests is not disputed. In that case, the violation of any position of market equilibrium and the principle of using absolute and relative advantages in the international division of labor predetermines the totality of economic losses.

Even if one does not consider the strategy of sanctions directed against the economic advantages of competitors, the strategy of using the effect of scale is expanded, which is regarded as one of the forms of limiting the activities of competitors. Thus, the principle of M&A to scale up the share of the maritime trade market is based on:

- elimination of competitors;
- improving your financial situation.

However, neither of them guarantees optimization of the consumer segment's state. Unfortunately, only the role of ignoring the leading operators' approaches to the symmetry and balance of the position of all participants in economic relations is expanding.

From the viewpoint of internal state optimization, attention should be paid to the unification of seaport administrations of the same region, both within and between states. This demonstrates the interaction between Copenhagen (Denmark) and Malmö (Sweden) seaport administrations. The association of the ports of the Netherlands and Belgium is being formed.

In France, the HAROPA association was created – Le Havre, Rouen. Paris. This is significantly different from the principle of removing the independence of the administrations of ports of Ukraine, in which the new administrative structure has no influence on the parameters of port activity except for the withdrawal of port fees. Cargo turnover did not increase due to such management (Katerna, 2018).

Attention should be paid to reducing contradictions between the forms of ownership of capital assets. The assessment by the authorities of the priority of the development of the sea transport potential of the region remains fundamental. When the attention of municipal authorities is focused on the control of share capital, there are cases of restrictions on the acquisition of shares by private individuals. The management of the maritime transport enterprise concentrates on optimizing the financial condition based on the growth of capital assets of three ownership structures: the state, the region, and entrepreneurs. In this way, the

solution to the employment problem is under the control of the regional government (*Branch, 2004*).

This, in turn, determines the complexity of forming standards for forming the wage fund. The problem lies in the need to consider the role of sailors in ensuring the stability of the world economy and in solving problems of balance, like evaluating the ratio of this indicator in the subsystems that form cargo flows. Therefore, shipping automation should be based not on reducing labor costs but on meeting system security requirements.

The complication of external conditions limiting the achievement of a balanced position implies the need to develop planning standards depending on the nature of implementing adequate competitive strategies. According to the destruction of a single maritime transport space, the latter reflects the concentration of entrepreneurial and macroeconomic efforts. Moreover, as the events 2022 show, environmental restrictions will be leveled. However, simultaneously, the requirements for achieving optimization efficiency and utilizing production potential are increasing.

Thus, the concentration of efforts on implementing national economic tasks predetermines the demand for an additional labor force, forming new directions for balancing local economic subsystems.

Globalization and regulatory policy

Global economic processes should be considered the coordinated development of the international economy based on the rational division of labor between countries. This process manifested in the late 1980s and continued until 2022. This period was distinguished by a particular regularity of the connection between world trade and the use of sea transport concerning overall economic growth.

However, the change in the role of individual countries in forming the global economy caused contradictions due to the significant redistribution of cash flows. Therefore, particular approaches to reassess the situation appeared despite the tendency to correspond to world regulators such as the WTO. Even if the negative impact of Covid-19 is not considered, the economic growth rate has decreased. This predetermines allocating individual states' development priorities without considering others' interests. With the growth of the unemployed population in developing countries, the flow of social assistance increases. In the system of transformation of globalization relations, a situation has been created that requires the formation of uniform rules for the market activity of maritime trade market operators. The partnership in the global maritime trade market system is based on the joint use of transport potential. The direction of Asia-Northern Europe occupies a special place in this strategy. The companies remain independent in determining costs, marketing, and concentrating resources for business programs.

The global strategy for improving economic relations forms effectiveness based on optimizing the interaction of individual macroeconomic structures. At the same time, individual entrepreneurial components of the country's production potential, including the maritime transport industry, form integration relations. As a rule, they determine the complexity of creating a set of economic efficiency and synergistic results. Such structures, implementing investment projects, counteract requests for monopolization of the position on the stock

market. In the interests of sustainable development of enterprises, it is significant to avoid a situation that opposes standard forms of integration.

Therefore, it is necessary to consider the system security (*Katerna, 2018*) of investment and functional activity as a criterion for forming new business structures in the maritime transport system. The standardization of shipping and the strengthening of the role of uniform norms and rules predetermine the unity of conditions for adequate positioning of shipping companies and commercial ports. At the same time, it is necessary to consider that these requirements limit the ability to establish new business structures. Therefore, servicing cargo flows in countries with limited resource productivity remains a problematic issue.

It is worth noting that maritime global administrations once considered labor levels in the system of measures to increase the efficiency and sustainability of the merchant fleet's functional activity.

Thus, two problems with the sustainable positioning of maritime transport enterprises should be distinguished. One is related to managing the enterprise's technical and economic level concerning the competitive position's requirements. It depends on managerial approaches and freedom of investment activity. The second reflects the influence of external conditions and requires a timely response to adverse changes (*Photis, 2020*). It depends on the reality of the state's maritime transport policy that the stability of the positioning of the transport system based on the priorities of the transit space is achieved.

In the equilibrium state of the maritime trade market, the level of tariff rates plays the role of cost reimbursement criteria for standard business structures. Therefore, the conditions for normalizing the technical solution while optimizing the most critical parameters of the maritime transport industry are guaranteed to some extent. Otherwise, the shipping company or the commercial port will not be able to reach a competitive technical and economic level regarding the sustainability of functional activity. At the same time, the fleet or terminals conflict with the direction of global regulation according to the criteria of environmental restrictions (*Stopford, 2008*).

Thus, considering the above, it is significant to train crews capable of ensuring safety in specific seafaring conditions in addition to commercial tasks. Given the importance of shipping, the tax burden should reflect the strategy of stimulating the export of services and not negatively impact the competitiveness of prices and the demand for the services of a specialized fleet.

Differentiation of development parameters of individual maritime states

The above transformation processes decisively predetermine the requirements for implementing the differentiation mechanism of the maritime transport strategy implemented by the state. The multifaceted nature of achieving sustainability of merchant shipping positioning predetermines the focus of maritime states on the most significant indicators. Thus, Japan is distinguished by a strategy of reducing the life cycle of ships and building new ones. This ensures its sustainability in terms of the priorities of competitive, innovative technologies.

At the same time, ship owners, such as Greece, replenishing the fleet at the expense of secondary market vessels demonstrate their sustainability priorities based on reducing the cost of capital assets. In the second case, the scale and cost-effectiveness of positioning according to the current parameters of the maritime trade market are highlighted as a priority.

Nevertheless, the symmetry of the development of shipping potential according to the flags of maritime states remains a large-scale problem. This problem is not considered in the legal aspect and predetermines the system of tasks of a rigid imbalance in the distribution of resources and cash flows. A particular type of sanction has been formed concerning countries with no potential for carrying capacity and are subordinate to leading maritime operators.

Thus, an asymmetry is formed in the strategy of achieving transport freight security for residents that generate exports in the corresponding group of states. This situation is formed due to the limited capital resources needed to develop the national maritime transport industry. At the same time, modern maritime states limit the possibilities of entering the market for additional carrying capacity of ships to avoid a drop in price characteristics.

It is worth noting that the process of complicating the management of the development of modern entrepreneurial structures in the maritime trade market system is becoming more complicated. Forming an entrepreneurial structure requires considering the presence of restrictions that reflect the problems of balancing production and technological solutions regarding the growth parameters of transport work. Competitive contradictions arise with modern relationships between microeconomic, macroeconomic, and global processes of limited growth. They are difficult for new subsystems to overcome without state support (*Branch, 2004*).

At the same time, extra-systemic restrictions are formed to meet new, more stringent environmental requirements. Innovative strategies in these conditions are pretty complex for new operators to implement. That is why the Ukrainian merchant fleet did not provide export cargo transportation, for which the country had achieved significant characteristics. Using only the principle of chartering foreign tonnage predetermined the crisis in shipbuilding.

The transport security strategy can only be based on developing an adequate national maritime transport industry. At the same time, in the system of enterprises of the maritime cluster, in the conditions of application of mutually agreed actions, the principle of achieving optimal results and costs is highlighted (*Shuo, 2020*). This approach, in turn, predetermines the need for coordinated interaction to maintain the systemic balance of regional subsystems of the maritime trade market. With the established cargo flow of the spot market of maritime trade, a certain amount of cash flow and profit mass is formed. Therefore, the profit margin is the most significant characteristic of the positioning of existing shipping companies and those implementing the development strategy of the national fleet. In this regard, a possible change in the economic effect of operator activity according to the factor of change in cargo flow is described by the condition:

$$\Delta E_{eq} = \sum [\Delta D_{vi} \Delta T_{ei} p_{di} (p_{ci} - c_{sai}) + C_{sai} \rho_f \Delta D_{vi} p_{di}] \gamma_i \quad (1)$$

where:

ΔD_{vi} is deadweight of the i -th vessel for which the corresponding transformation processes are noted;

ΔT_{ei} is aggregate change in the duration of ship handling in commercial ports due to development factors or crises;

p_{di} is a standard deadweight performance of the vessel;

p_{ci} is established price characteristics for the transportation of a specific cargo;

c_{sai} is the cost of transportation of one ton of cargo under normal conditions;

C_{sai} is ship daily standard costs in the estimated operational period;

ρ_f is the share of fixed costs in the cost structure of vessel maintenance;

γ_i is a coefficient reflecting the reaction of operators to changes in the time characteristics of the maritime trade market in terms of the intensity of tonnage servicing.

The dynamism of the conditions of operator activity in the modern features of changing the position of individual states complicates the tasks of making decisions on achieving financial stability. Therefore, controlling the nature of changes in the basic patterns is essential. Among the criteria for assessing the formation of corporate priorities in merchant shipping are:

- independence of operator activity based on competitive capital assets;
- management of the adequacy of the state with changing parameters (*Photis, 2020*);
- the ability to implement advanced strategies in the current contradictions;
- systemic orientation to regulatory standards and risks of variability of the parameters of the maritime trade market.

Implementing a corporate strategy for internal priorities ensures various aspects of independence. At the same time, a corporate response to global organizations' perception of administrative regulation is formed, such as the IMO, which considers environmental standards. Their innovative approaches to ensuring stability are selected within the norms and standards. This requires a thorough assessment of the possible change in the company's financial condition.

Creative work according to the standards of an independent approach to risk management characterizes the clarity of perception of natural changes. However, leading shipping brands typically implement the chosen strategy autonomously in stable positioning according to the parameters of the sea trade market. For standard operators, it is necessary to carefully control the conditions for participation in the selected segment of the sea trade market (*Katerna, 2018*).

Brand independence reflects the ability to realize the company's production potential in various crises. For modern shipping brands, achieving this position is considered insufficient. This, in turn, limits the free development of the carrying capacity of other shipping operators. The main thing is to achieve and maintain the standard for realizing the potential in the current conditions. Implementing this strategy also indicates systemic independence from external factors since others are leaving the specialization segment.

In summary, the choice of the form for implementing the formed strategy is ensured by the ability to solve the positioning problem under the current restrictions. The criterion is the satisfactory result despite the presence of standard systemic risks. Owner and managerial approaches prioritize the efficiency of using standard technical characteristics of existing capital assets. Because the main thing is the sustainability of the use of the production potential created based on investment projects, the criterion worth considering is the timeliness of the payback of costs.

Discussion

The research topic explores the independence of shipping companies in the global maritime trade market, focusing on how these entities optimize financial and strategic stability despite external challenges. The study's relevance lies in that, in today's volatile global economy,

maritime operators must adapt to fluctuations in freight rates, evolving regulatory demands, and technological advancements. The ability of a shipping company to position itself independently, without conforming to industry-wide behaviors, becomes a strategic advantage. This independence reflects financial stability and the flexibility to respond to market shifts and maintain a unique competitive stance.

Sustainability within the maritime trade market is critical, particularly when companies face disruptions from environmental regulations or geopolitical influences. M&A, while aimed at scaling market share and eliminating competition, often fails to optimize the consumer segment and risks undermining market balance (*Coates, 2014; Evans & Chris, 2010*). Moreover, the role of state and municipal authorities in managing port operations reveals that governance models, such as those observed in European port unions, significantly impact economic outcomes. In contrast, countries like Ukraine, where port administration restructuring has been less effective, have not realized improvements in cargo turnover.

Globalization has further complicated these dynamics, particularly as nations reassess their economic priorities post-2022 (*UNCTAD..., 2022; UNCTAD..., 2023*). Countries like Japan and Greece illustrate different strategies for achieving maritime competitiveness – one focuses on technological innovation through new shipbuilding, while the other leverages cost-efficiency by acquiring secondary market vessels. This differentiation highlights maritime states' various approaches to balancing cost, innovation, and capacity. However, the ongoing asymmetry in resource distribution between developed and developing maritime states poses a significant challenge to the global maritime trade balance.

Finally, regulatory policies, such as those of the IMO, continue to shape the operational environment, mainly through environmental standards. Shipping companies must align their business strategies with these regulations while innovating to remain competitive and resilient (*The past..., 2009*). The discussion highlights the need for a multifaceted approach to strategic positioning, incorporating financial stability and environmental responsibility, to ensure long-term success in the highly competitive and regulated maritime trade market.

Conclusion

The study of the independence of shipping companies within the global maritime trade market underscores the importance of financial stability, strategic flexibility, and innovative approaches to asset management. The ability of a company to maintain its independence despite market fluctuations, environmental regulations, and technological advancements represents a critical competitive advantage. This research has highlighted how different maritime states, such as Japan and Greece, pursue diverse strategies to achieve sustainability – whether through technological innovation or cost-efficiency. The analysis of global economic and regulatory processes demonstrates that external factors, such as globalization and environmental restrictions, play a significant role in shaping maritime enterprises' operational and financial stability.

Furthermore, the balance between state intervention, ownership structures, and private capital in managing port operations reveals a nuanced dynamic where governance models directly influence economic outcomes. The significance of developing maritime transport policies that promote the independence and sustainability of shipping companies cannot be

overstated. As external conditions evolve, particularly in light of global economic shifts and regulatory pressures, maritime operators must continue to innovate while adhering to international standards.

Thus, shipping companies' independence in the maritime trade market is a hallmark of financial resilience and a strategic imperative that requires careful planning, innovation, and alignment with global regulatory frameworks. By optimizing capital assets and maintaining flexibility in response to market changes, these companies can secure long-term profitability and sustain their competitive edge in an increasingly complex and interconnected global trade environment.

Conflict of interest

The authors declare that there is no conflict of interest.



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General trend in the development of the global maritime transport industry ^[5]

Abstract: The global maritime transport industry is witnessing significant changes driven by environmental regulations, evolving trade routes, and advancements in ship design. A major trend is the shift towards sustainability, with stringent international standards like IMO 2020 pushing shipping companies to reduce sulfur emissions and adopt cleaner fuels such as LNG (liquefied natural gas). Additionally, alternative energy sources, including hydrogen and wind-assisted propulsion, are gaining traction as the industry seeks to lower its carbon footprint. Another key development is the changing landscape of global trade. Geopolitical factors, regional trade agreements, and emerging market growth reshape traditional shipping routes. Ports and logistics hubs are being modernized to handle increased volumes, larger vessels, and more efficient loading and unloading processes. Investments in port infrastructure, especially in Asia and Africa, are helping to facilitate the growth of maritime commerce. The ongoing modernization of ships, coupled with new regulations and trade dynamics, is positioning the maritime industry to become more sustainable, efficient, and adaptable to future challenges. The study's object is the maritime trade market itself, focusing on the factors influencing the formation of its parameters – such as freight rates, demand for shipping services, vessel capacity, and the influence of external factors like economic cycles, regulatory frameworks, and technological advancements. The study primarily aims to analyze the key patterns that shape the maritime trade market and identify the emerging trends that will influence its future development. The research draws on the works of leading scholars and industry experts, such as P. Alderton, C. Sellberg, J.-J. Lambin, N. Husarina, M. Assen, O. Katerna, and J. Lambin. The results of this study are intended for a wide audience, including industry professionals seeking to understand market dynamics, policymakers responsible for regulating maritime trade, and academics researching global trade systems. By providing a comprehensive analysis, this study offers valuable insights that will contribute to informed decision-making in the maritime sector.

Keywords: trend, development, globalization, transport industry, management.



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Загальна тенденція розвитку глобальної морської транспортної індустрії

Анотація: Глобальна галузь морського транспорту зазнає значних змін, викликаних екологічними нормами, розвитком торговельних шляхів і прогресом у конструкції суден. Основною тенденцією є зрушення в бік сталого розвитку, оскільки суворі міжнародні стандарти, як-от ІМО 2020, спонукають судноплавні компанії зменшувати викиди сірки та використовувати більш чисті види палива, такі як LNG (скраплений природний газ). Крім того, альтернативні джерела енергії, включно з воднем і вітровими двигунами, набирають обертів, оскільки галузь прагне зменшити свій вуглецевий слід. Іншою важливою подією є мінливий ландшафт світової торгівлі. Геополітичні фактори, регіональні торговельні угоди та зростання ринків, що розвиваються, змінюють традиційні судноплавні маршрути. Порти та логістичні центри модернізуються для обробки збільшених обсягів, більших суден і більш ефективних процесів завантаження та розвантаження. Інвестиції в портову інфраструктуру, особливо в Азії та Африці, допомагають сприяти зростанню морської торгівлі. Поточна модернізація суден у поєднанні з новими правилами та динамікою торгівлі робить морську галузь більш стійкою, ефективною та адаптованою до майбутніх викликів.



Abbreviations:

GDP is gross domestic product

IAPH is the International Association of Ports and Harbors

ICS is the International Chamber of Shipping

IMO is the International Maritime Organization

VR is virtual reality

Introduction

The maritime trade market plays a critical role in the global economy, serving as a primary conduit for international trade and the exchange of goods. Studying patterns and trends in forming its parameters is paramount due to the dynamic nature of global trade, changing geopolitical landscapes, and environmental considerations. In recent years, the volatility of freight rates, the evolution of vessel sizes, the development of port infrastructures, and the shifting balance of trade routes have drawn increased attention from industry experts and policymakers. As such, understanding these trends is essential for stakeholders in global trade, including shipping companies, port authorities, logistics providers, and governmental bodies.

The study's object is the maritime trade market itself, focusing on the factors influencing the formation of its parameters – such as freight rates, demand for shipping services, vessel capacity, and the influence of external factors like economic cycles, regulatory frameworks, and technological advancements.

The study primarily aims to analyze the key patterns that shape the maritime trade market and identify the emerging trends that will influence its future development. To achieve this, the study sets the following objectives:

- examine historical data and identify cyclical trends;
- assess the impact of technological innovations, particularly in vessel design and digitalization of shipping processes;
- evaluate the effects of regulatory and environmental policies on the market.

The study employs various research methods, including statistical analysis, formula representation, and specific market segments case studies. These methods help uncover both long-term structural changes and short-term fluctuations within the industry.

The research draws on the works of leading scholars and industry experts, such as Alderton P. (2003), whose contributions to maritime transport provide foundational insights, the works of researchers such as C. Sellberg (2017), J.-J Lambin (2012), N. Husarina (2023), who offer critical perspectives on regulatory impacts, like the works of authors who contributed to management research such as M. Assen in his publication “Transitional Approach to Change” (2017), O. Katerna in “Concept Formulation of Intelligent Management in Transport” (2018) and earlier mentioned J. Lambin in “Market-Driven Management: Strategic and Operational Marketing” (2012).

The results of this study are intended for a wide audience, including industry professionals seeking to understand market dynamics, policymakers responsible for regulating maritime trade, and academics researching global trade systems. By providing a comprehensive analysis, this study offers valuable insights that will contribute to informed decision-making in the maritime sector.

The results of the study

Problems of sustainability of world development in the period of globalization

Natural processes of globalization, reflecting the standards of the international division of labor based on the advantages of absolute or comparative efficiency characteristics, established in 1991, determined the corresponding nature of the development of the maritime transport potential of individual countries. Based on the patterns of development of the international division of labor, the parameters of the carrying capacity of the merchant fleet are formed. At the same time, there is a concentration of capital assets in the maritime transport industry in a certain group of maritime states.

The general risks of the market form of relations standardly predetermine the imbalance of the global maritime trade market. However, in 2020 and 2022, events occurred that predetermined strategies transformed the single space of the international division of labor. At the same time, group technologies for choosing a form of sustainability from the standpoint of local interests are strengthening.

A problem has arisen in balancing positioning in the global space and relations between the United States and China, the two leading economies in the world.

Thus, an imbalance is formed in the division of cash flow in the global maritime trade market system. The fleet's carrying capacity predetermines the cash flow, the distribution of which is not balanced with the volumes of foreign trade of many states. Therefore, with increasing competition in servicing cargo flows, the problem of choosing the principles of interaction or integration also becomes more acute.

Due to the concentration of capital assets in a group of developed countries, a characteristic relationship between global GDP, the volume of world trade, and the carrying capacity of the fleet has formed. The relationship of these indicators reflects the nature of the relationship between the three groups of countries according to their internal economic characteristics. However, the form of concentration of capital assets according to the availability of investment resources has determined the priorities in obtaining income.

In this regard, implementing the principle of placing a production zone to reduce current costs based on cheap labor or high productivity has changed. As a result, centers of advanced growth have emerged. However, the subsequent strategy of competitive advancement of the fleet's carrying capacity growth in many maritime countries has predetermined the imbalance of demand for the fleet's carrying capacity and the availability of deadweight, which has determined the pricing dynamics in the freight market sectors.

It is worth noting that the maritime trade market system reflects not only the systemic patterns of the price characteristics of the balance of cargo flows and the carrying capacity of ships but also the features of technological processes and the organization of competitive positioning strategies.

At the same time, a strategy for the sustainability of a group of shipping companies and commercial ports was formed based on the creation of various types of non-systemic effects and perceived value on the part of consumers of products of maritime transport enterprises (*Alderton, 2003*). Along with the noted special form of sustainability and efficiency, the attitude to the natural environment should be considered. Even with some decrease in the entrepreneurial effect, the second component of efficiency determines sustainability in the life cycle system. This form of sustainability is predetermined by the degree of adequacy of ships' technical and economic level to the standards predetermined by the IMO. In entrepreneurial activity, efficiency is formed under the influence of state and global administration.

At a particular stage of the technical and economic level of production relations, while maintaining the basic market foundations of production activities, the role of social and environmental restrictions increases. This predetermines the reassessment of managerial approaches to managing and forming enterprises' production potential. Specific legal relations are created in the system of adoption of economic strategies.

The expected increase in the cost of products or services for a complex set of factors and the strengthening of external factors in the formation of price characteristics predetermined the revaluation of the ratio of capital assets and working capital in forming competitive advantages of ship-owning structures. At the same time, despite the growth of quantitative characteristics of the maritime trade market, despite innovative technologies and management automation, the severity of the manifestation of shipping risks is noted (*Katerna, 2018*).

Strengthening the role of investment areas of development based on the noted factors with tightening control by international administrations. This approach predetermines transport vessels' technological level and commercial ports' subsequent reaction. At the same time, this approach has strengthened the differentiation of the development of maritime transport of individual states (*Amado & Ambrose, 2011*). This, in particular, predetermined that Ukraine's most significant export cargo flow is 90 percent served by a foreign fleet with an outflow of funds from the country's balance of payments.

One of the trends in the development of international trade is the differentiation of the role of individual maritime ranges by many factors that reveal transport advantages. Therefore, problems arise in effectively using the potential of other projects from the standpoint of entrepreneurial interests and global issues of balance. In this regard, the IMO, the ICS, and the IAPH have formulated a declaration on the tasks of close cooperation in ensuring the openness of the port industry to world trade. The emergence of this task emphasizes that the role of power approaches is increasing in the strategy for solving economic problems of the modern period. However, any violation of market balance predetermines bilateral losses (*Husarina et al., 2023*).

However, this concept is destroyed by implementing a known set of economic relations regarding handling cargo flows of many states in a significant set of ports. The latter causes disruptions in the operation of maritime merchant shipping, regardless of the flag of registration of ships. At the same time, the current situation reflects the risks of losing balance in world relations with the limited development of national maritime transport (*Alderton, 2003*).

Violating the principle of uninterrupted operation of commercial ports causes problems for the states against which sanctions are directed and other participants in export-import

operations. Therefore, the openness of ports predetermines the efficiency of the global maritime trade market. This simultaneously reflects some imbalance in the formation and legal aspects of using the space of the World Ocean.

When standard economic and legal relations are violated in the cargo delivery system, losses increase due to the formation of additional storage costs and the search for resources to ensure additional working capital needs.

$$\Delta C_{st} = \sum \Delta t_{in} \left(C_{ss} Q_{sv} + \frac{Q_i}{365} \gamma_i p_c e_p \right), \quad (1)$$

where:

Δt_{in} is loss of processing time for a certain cargo flow due to various factors that violate standard strategies;

C_{ss} is average current costs for storing 1 ton of cargo;

Q_{sv} is the size of the cargo consignment for which standard sea delivery times have been missed;

Q_i is individual groups of goods, according to the parameters of the formation of the needs for working capital of the producer or consumer;

γ_i is working capital standard for a specific cargo;

p_c is the cost of one ton of cargo, the acceleration of delivery of which reduces the need for working capital;

e_p is the standard for the efficiency of using this type of working capital.

Optimizing this cargo flow predetermines the choice of multimodal delivery routes (*Swann, 1991*). In this regard, it is necessary to distinguish between managerial and innovative strategies for solving the problem. The former ensures the search for optimal logistic forms of solving the problem. The latter provides for the technical reliability of ensuring the delivery of goods according to productivity and reserve capacity parameters.

Both simultaneously predetermine the differentiation of maritime states according to the availability of a solution to the problem. Therefore, integration processes are formed based on standard approaches to achieving compliance with requirements.

Thus, with problems of forming subsidiary objects in commercial ports or concession projects, one should expect a differentiation of the role of individual port complexes. At the same time, the merchant fleet, implementing the principle of scale economy, determines the requirements for expanding the transshipment strategy. On this basis, strategies for positioning individual maritime states in dividing economic relations should be developed.

Problems of sustainable development of the maritime trade market

It is worth noting that the problems of managing the sustainability of the maritime transport industry and the carrying capacity of shipping companies in individual countries are multifaceted and multidimensional. At the same time, it is necessary to distinguish between objective external factors and erroneous reactions of the owners of production potential. Many management decisions do not meet the sustainability requirements of the maritime trade market.

The same applies to the shortage of officers due to a decrease in attention to the training of specialists by the so-called traditional maritime states, a focus on foreign scientific bases, and the complexity of managing the safety of shipping. The problem is aggravated by the inability to respond clearly to non-systemic threats. Thus, in March 2021, 200 thousands of seafarers

whose contracts for work on the ship expired could not change. This predetermined not only the risks of emergencies due to overwork. The management system of work in maritime transport was also perceived negatively. This situation has demonstrated the limitations of the systemic effectiveness of managing activities only within merchant shipping, which largely guarantees the sustainability of global economic relations. Management systems focused only on current regional problems and ignored the key role of maritime specialists' labor in global economic sustainability (*Lambin, 2012*). Consequently, all significant divisions of merchant shipping should be perceived by other structures of the global economy.

Violating the principle of balance in the national maritime transport industry and planning due to concentrating attention and resources on the technical and economic superiority of capital assets and ignoring the training of specialists leads to a decline in synergy (*Heilbroner, 1994*).

Other factors also limit the training of highly qualified specialists in maritime transport. Therefore, international specialized organizations are paying close attention to this issue. However, in many countries, the process does not find the necessary support at the state level.

It is also a mistake for many shipping companies to ignore the advisability of providing places for trainees on their vessels. This condition or trend causes an increase in the risk of a balanced supply of specialists' labor in the future. Training centers do not exclude the priority of practical skills. Despite the high level of various innovative technologies in the development system of the merchant fleet, the manifestation of particular customs, habits, and signs remains, and these are also worth considering when solving the problems of balancing supply and demand.

Despite the expansion of the use of VR in modern simulators, specialists react differently to those who have undergone real practical training on ships (*Sellberg, 2017*). Even standard situations manifest themselves differently depending on the state of the sea in various territorial subsystems. In the World Ocean, individual characteristics are manifested (*Alderton, 2003*).

Despite opposite assessments of the priorities of using individual technologies and methods to form the ship's crew members' competence, the most significant remains the practical acquisition of skills. With high theoretical forms of training, practical skills remain significant in the system of perception of real transformations of basic provisions.

In modern approaches to optimizing the labor intensity of the transportation process on the principles of managing the number of crew members based on the growth of capital intensity and innovative technologies, one should not ignore the limits of perception of other forms of fatigue and loss of attention, specialists on watch on difficult sections of ship routes.

Thus, the problems of sustainability and balance of the maritime trade market are determined by the system of traditional factors of economic growth and the fundamental features of seafarers' work from the position of their key significance for optimizing the international division of labor. Additionally, this was emphasized by implementing various forms of sanctions as the main form of economic confrontation instead of standard competitive relations.

Entrepreneurship's leading role in the cash flow growth system creates the principle of priority and state mechanisms for managing cash flows. Such an increase in the role of

government agencies with limited professional training violates the basic principles of forming a balanced economy.

In reality, three problems of sustainable development and positioning of shipping companies and trading ports in the maritime trade market system should be distinguished. First, the nature of transformation processes in the system of servicing cargo flows of world trade. Second, freedom of access to investment resources according to the strategy of innovative advantages. Third, the symmetry of the reaction to the economic sustainability problems of government agencies and entrepreneurial potential.

Considering these basic conditions and according to the regulatory framework of the IMO, the management of the owner's subsystems decides to achieve the sustainability of operator activities according to the criteria of the company's life cycle. When various transport companies participate in servicing cargo flows, their interaction creates synergy and an extra-systemic effect of rational correlation. When an imbalance occurs, risks of a crisis state appear. Thus, for the port complex, due to the instability of relationships and the balance of cargo flows, increases or losses in efficiency arise.

$$\Delta E_{fb} = \sum_{i=1}^n [C_{st}\Delta T_{ei} + D_{vi}\Delta T_{ei}p_{di}(p_{ci} - c_{si}) \mp P_{ri}], \quad (2)$$

where:

n is number of technological schemes for handling cargo flows;

C_{st} is the cost of maintaining the relevant vehicles during the implementation of the relevant technological process;

ΔT_{ei} is deviation of the time required to complete a specific transport operation from standards or contractual parameters;

D_{vi} is deadweight of vessels of the corresponding size range;

p_{di} is daily productivity under the relevant conditions of use of the vessels;

p_{ci} is tariff (freight) rate for transportation according to the conditions of the maritime trade market;

c_{si} is the cost of transporting tons of cargo on the route in question;

P_{ri} is the form of compensation cash flows provided for by the relevant agreement.

This form of reflection on the emergence of real situations reveals the main directions on which management must concentrate to optimize the use of production potential. At the same time, the most important thing remains the formation of contractual relations and the adoption of appropriate innovative technologies that ensure the achievement of adequacy to the conditions for normalizing the state of the enterprise (*Assen, 2017*).

Thus, this process emphasizes the importance and need for implementing the digital economy in the system of clarity of work of maritime transport enterprises and the relative reduction of current costs for accounting for results and implementing relevant decisions.

Discussion

The maritime trade market is a highly dynamic and multifaceted system, influenced by various factors, including technological advancements, geopolitical shifts, and environmental policies. The discussion of patterns and trends in forming its parameters reveals several critical areas that affect the future of this global sector. One of the main drivers of change is the

increasing automation and digitalization of shipping processes, which has led to a transformation in fleet management and cargo handling, enhancing efficiency and reducing costs. However, this shift also raises questions about the need for specialized skills in managing these new technologies and ensuring the safety of maritime operations.

Another significant trend is the imbalance in the distribution of global shipping capacity. The concentration of capital assets in a few developed countries has led to unequal resource access, creating challenges for smaller or developing nations to compete in the global market. This imbalance is exacerbated by the unequal distribution of fleet capacity concerning trade volumes, leading to volatility in freight rates and increased competition among shipping companies. As a result, shipping lines are forced to explore new strategies, including mergers, alliances, and investments in larger vessels, to maintain competitiveness (Coates, 2014).

Environmental sustainability has also become a crucial consideration in the maritime trade market. Regulations imposed by international organizations, such as the IMO, have forced shipping companies to adopt greener practices, such as reducing emissions and improving fuel efficiency. While these measures are necessary to combat climate change, they also increase operational costs and require substantial investments in new technologies and vessel retrofits. The question is whether smaller operators can afford these changes or if the industry will see further consolidation, with larger companies absorbing the additional costs.

In terms of regional development, the maritime trade market has seen the rise of new trade routes, especially in response to geopolitical events, such as the Belt and Road Initiative led by China. This has shifted global trade flows and placed new importance on specific port hubs and shipping lanes. However, these developments have also created tensions between the United States and China, as both superpowers seek to assert their influence over global maritime trade. This geopolitical rivalry will likely continue shaping trade routes and influencing decisions in the sector.

In summary, the discussion touches upon the labor force within the maritime industry. There is a growing shortage of qualified seafarers, particularly officers, as traditional maritime nations face declining interest in maritime careers. This shortage is exacerbated by the increasing complexity of ships and the technical expertise required to operate them. Training and retaining maritime professionals will be essential to ensuring the sustainability of global trade, yet many shipping companies are reluctant to invest in crew development due to cost concerns.

Conclusion

In conclusion, the maritime trade market is experiencing profound transformations driven by technological advancements, environmental regulations, and shifting geopolitical dynamics. The study of patterns and trends in forming its parameters highlights key challenges and opportunities that will shape the future of global trade. Automation, digitalization, and innovations in vessel design are improving efficiency but also demanding new skills and investments from industry participants. Meanwhile, the imbalance in shipping capacity and the concentration of capital assets in a few developed nations underscore the competitive pressures facing smaller economies and shipping companies.

Environmental sustainability has emerged as a critical factor, with international regulations mandating significant changes in operations. While necessary for the planet's long-term health,

these requirements impose financial burdens on many shipping firms, especially those lacking the resources for compliance. This trend points toward potential consolidation within the industry as larger, better-capitalized firms absorb smaller players unable to meet the rising costs.

Geopolitical tensions, particularly between major powers like the United States and China, continue to influence trade routes and resource access, adding another layer of complexity to the market. The evolving labor dynamics, characterized by a shortage of qualified maritime professionals, further complicate the sector's sustainability. Addressing these labor challenges will be crucial to maintaining the smooth operation of global trade networks.

Ultimately, the maritime trade market stands at a pivotal moment. To ensure its future sustainability, industry stakeholders must embrace technological innovations, comply with environmental regulations, and invest in human capital development. Only by addressing these factors can the global maritime sector remain resilient and competitive in the face of ongoing change.

Conflict of interest

The authors declare that there is no conflict of interest.



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Alla Ya. Paulyk ^[12]

Condition and directions of hotel and restaurant industry's development ^[6]

Abstract: The article is devoted to developing the hotel and restaurant industry in modern conditions. The role and significance of the hospitality industry in developing the country's economy and the region, the intensification of economic sectors, and the formation of interest in the country among foreign tourists are substantiated. The main problems faced by the hospitality industry during the pandemic and war are revealed. The change in the number of hotel enterprises from 2020 to 2022 is studied. Attention is focused on how the regional peculiarities of the hotel and restaurant industry have changed since the beginning of the full-scale invasion. The author examines the negative trends in the development of the hospitality industry in today's demanding conditions. The author considers the main factors that influence the formation and development of the hotel and restaurant industry. The study's object is trends in the development of the hotel and restaurant industry in modern conditions. The study aims to investigate the current state of the hotel and restaurant industry and formulate future directions for its development. Using analysis methods, generalisation, and abstraction made it possible to study and analyse the status and directions of development of the hotel and restaurant industry in modern conditions. The author outlines the main development directions of the hotel and restaurant industry. The study of the current state and formation of promising development directions of the hotel and restaurant industry is especially relevant in the country's post-war reconstruction process.

Keywords: hospitality industry, hotel and restaurant industry, tourism, factors of development of hotel and restaurant industry, hotel product.

*Алла Ярославівна Паулік*

Стан та напрямки розвитку готельного–ресторанного господарства

Анотація: Стаття присвячена висвітленню проблеми розвитку готельно-ресторанного господарства в сучасних умовах. Обґрунтовано роль та значення індустрії гостинності у розвитку економіки країни а регіону, активізуванні діяльності галузей економіки, формуванні зацікавленості країною у іноземних туристів. Розкрито основні проблеми з якими зіткнулась індустрія гостинності в період пандемії та війни. Досліджено зміну кількості готельних підприємств у період з 2020 року по 2022 рік. Зосереджено увагу на тому яким чином змінились регіональні особливості розвитку готельно-ресторанного господарства з початком повномасштабного вторгнення. Досліджено негативні тенденції у розвитку індустрії гостинності, що склалися в сучасних складних умовах. Автором розглянуто основні фактори які впливають на формування та розвиток готельно-ресторанного господарства. Об'єктом дослідження є тенденції розвитку готельно-ресторанного господарства у сучасних умовах. Метою дослідження є дослідження сучасного стану готельно-ресторанного господарства та сформулювати перспективні напрями його розвитку. Застосування методів аналізу, узагальнення на абстракції дали можливість дослідити та проаналізувати стан та напрями розвитку готельно-ресторанного господарства в сучасних умовах. Автором окреслено основні напрями розвитку готельно-ресторанного господарства. Дослідження сучасного стану та формування перспективних напрямків розвитку готельно-ресторанного господарства є особливо актуальними в процесі післявоєнної відбудови країни.

Ключові слова: індустрія гостинності, готельно-ресторанне господарство, туризм, чинники розвитку готельно-ресторанного господарства, готельний продукт.



Introduction

The hotel and restaurant industry is an integral part of the hospitality industry and one of the most promising sectors of the economy, and plays a significant role in developing social and economic life in the country and region. The growth of the service sector, particularly tourism, gives a special impetus to the hotel and restaurant business. The situation in the hotel and restaurant industry is dynamic and depends on many factors. The state of development of the hospitality industry was significantly affected by quarantine restrictions and war; there was an urgent need to adapt to the new realities of the functioning of the economy and the country and the formation of directions for developing the industry in post-war development. In addition, the development of the hotel and restaurant industry depends on the requests and needs of travellers and the quality of services offered by hotel and restaurant businesses.

Such domestic scientists formed the theoretical basis for studying the hospitality industry's state and development. Thus, T. Brykova investigated the main trends in the hotel and restaurant industry in the context of crisis phenomena (Brykova, 2023). Ryabev A. analysed the hotel industry's condition in the context of the country's regions (Ryabev, 2020). L. Matviychuk, M. Lepky, and D. Molnar-Babilya conducted a regional analysis of the development of the hotel industry in Ukraine and summarised the factors influencing the state and development of the hotel industry (Matviychuk et al., 2021). L. Bezruchko, S. Belous, and M. Fil devoted their research to the peculiarities of the functioning of the hotel industry in the conditions of entry and analysis of the condition and prospects of its development (Bezruchko et al., 2023). O. Morgulets, M. Korobkina, and P. Vofsi studied the influence of institutional factors on the development of the hotel and restaurant industry (Morgulets et al., 2023).

The article aims to study the hotel and restaurant industry's current condition and formulate the perspective directions of its development. To achieve this purpose, the following tasks are outlined:

- identify factors influencing the hotel and restaurant industry's development;
- determine the role of hotel management in developing the economy;
- investigate changes in the hospitality industry's condition caused by the pandemic and war;
- form promising areas for developing the hotel and restaurant industry.

The study of the current condition and the formation of promising directions for developing the hotel and restaurant industry is particularly relevant to the country's post-war reconstruction.

The results of the study

The hospitality industry is usually considered an integral part of tourism, forming its material and technical base. The hotel and restaurant industry occupies the main place in the formation and development of the hospitality industry. Exploring the hotel and restaurant industry as an object of managerial influence, it includes a set of hotel enterprises specialising in

providing temporary accommodation, additional services, and food establishments. The category of hotel and Restaurant Management combines the totality of such accommodation facilities as hotels, campsites, tourist bases, boarding houses, motels, hostels (*Ryaben, 2020*) and food establishments that sell their products (*Nezveshchuk-Kogut & Yazina, 2020*). The main feature of the functioning of such enterprises is the combination of tangible and intangible services. Hotel companies create a range of services, forming the attractiveness of the tourism industry as a whole. The development of the hotel industry plays no role in the development of the region's economy, the formation of a positive image of the region in the international arena, the activation of the development of other sectors of the economy and, as a result, ensuring a high level of competitiveness of the region and the country.

The primary purpose of hotel and restaurant enterprises is to meet travellers' needs for accommodation, food, and additional services, creating conditions for guests' comfortable stays in the relevant institution. At the same time, it is significant to comply with international standards of hospitality, provide high-quality services, and apply new approaches to creating and providing hotel services to meet consumers' needs.

The hotel and restaurant industry of the region is formed and develops under the influence of factors that determine its structure and features:

- institutional (legislative framework and stability of the legal system, regulation and control and industries, investment policy of the state, tax policy, policy in standardisation and certification) (*Morgulets et al., 2023*);
- specialisation of hotel services;
- availability and condition of infrastructure, including tourism;
- geographical, environmental and natural factors;
- staffing;
- competition;
- regional security;
- demographic data;
- range and quality of services (*Matviychuk et al., 2021*);
- availability of tourist resources;
- social and cultural factors.

The hotel and restaurant industry's development has many positive impacts on the economy of the country and the region:

- solving problems of unemployment and improving the standard of population living;
- promoting the development of other sectors of the economy;
- increased investment activity and attractiveness;
- strengthening interregional cooperation;
- promotion of certain types of tourism (green, eco-friendly);
- budget revenues at various levels;
- stimulating infrastructure development;
- formation of the international image of the country and region.

In modern conditions, the hotel and restaurant industry has faced a number of challenges and problems that have significantly affected its development and efficiency.

The most common indicator that characterises the state of the hospitality industry is the number of accommodation and catering establishments and their dynamics. In 2020, 71,748 accommodation and catering establishments operated in Ukraine (*Official website of the SSS of Ukraine, 2024*). In 2021, their number decreased by almost 3% and amounted to 69,775 enterprises. The pandemic and quarantine restrictions caused a downward trend. 2022 was a turning point in the history of our country and in the development of the hotel and restaurant industry. Military operations on the territory of Ukraine and the temporary occupation of a significant part of the territory led to a sharp reduction in temporary accommodation and food establishments to 57,734 units, -20% compared to 2022 (*Official website of the SSS of Ukraine, 2024*). 2022 was a particularly difficult year for the hotel and restaurant industry. There is no reliable information about the number of hotel and restaurant farms destroyed, damaged, and ceased their activities due to the fighting.

The deployment of a full-scale war of Russia against Ukraine led to the shutdown of the country's hotel and restaurant farms and significant financial losses due to a sharp reduction in tourist flows. Hospitality establishments have focused their business activities on providing accommodation services for internally displaced persons. The activity of hotel and restaurant farms today depends on the region. The situation developed so that hotel and restaurant farms in the western regions were overcrowded by fellow citizens who left their homes due to military operations; hotel companies in other regions suffered significant losses or ceased their activities (*Vlasyuk, 2024*). The activity of hotel and restaurant Farms is affected by the distance from the regions where active military operations are conducted. The best conditions for conducting business activities by enterprises of the hospitality industry in Transcarpathian, Ivano-Frankivsk, Chernivtsi, Lviv, Volyn, and Ternopil regions. This is evidenced by the increase in the tourist tax for the first half of 2022, particularly in the Lviv region. this figure was 193% (compared to the same period in 2021), Ivano-Frankivsk – 176%, Ternopil – 145%, Transcarpathian – 144%, Khmelnytskyi region – 114%, Kirovohrad region – 105%, Chernivtsi region – 103%. In the first half of 2022, the state budget received 26% less revenue from the tourism industry than in 2021 (*State Tourism Development Agency, 2022*). The Odesa and Kyiv regions felt the most significant reduction in revenues from the activities of hotel and restaurant farms.

The conditions in which modern hotel and restaurant farms operate have formed many negative trends and consequences, namely:

- reduced investment activity in the hospitality industry;
- suspension of the hotel and restaurant industry's innovative development;
- reducing the flow of foreign tourists;
- suspension of pre-war projects;
- loss of material and technical base.

The security situation in the country has affected the contingent of visitors to hotel and restaurant farms. Conventionally, hotel visitors could be divided into three main categories: internally displaced persons, representatives of diplomatic missions who moved to safer regions, and foreign journalists (*Bezruchko et al., 2023*).

Ukraine will face a post-war reconstruction period, as the hospitality industry is a significant and integral part of the economy. Changes will also affect hotel and restaurant farms. Enterprises in the hospitality industry will develop in the following areas:

- formation of new types of services aimed at meeting the needs for rehabilitation of victims of military operations;
- development of hotel facilities located in resort areas and promotion of medical and medical tourism;
- focus on ensuring the autonomy of functioning, including energy, greening hotel and restaurant farms, and switching to alternative energy sources;
- strengthening security measures and retrofitting hotels according to new requirements;
- expansion of hotels aimed at providing long-term stay services for families;
- promoting the activities of hotel and restaurant farms located in safer regions;
- promoting the development of business tourism and providing it with appropriate hospitality facilities with a wide range of additional services;
- attracting investment, developing tourism, and the hospitality industry in particular.

In recent years, it has been observed that hotel and restaurant farms operate in the context of Strategic and structural changes that form the main trends in their development, namely;

- rapid dissemination and implementation of information technologies in the activities of enterprises in the hospitality industry;
- diversification of the hotel and restaurant services market, reorientation to new consumers and complexity of services;
- increased competition, predominance of non-price competition;
- wide application of new methods and sales channels and modern marketing tools.

So, it is worth noting that the directions and trends in developing the hotel and restaurant industry discussed above will make it possible to increase the efficiency of its activities by adapting to the conditions and challenges of our time.

Discussion

The author substantiates the role of hotel and restaurant management in developing the country's economy. Factors influencing the activity and development of enterprises in the hospitality industry are considered. While studying the hotel and restaurant industry's condition, the author outlined the consequences of negative phenomena in the epidemiological, economic, and security spheres and identified the main directions of its development in the post-war period.

Conclusion

Given the above, it is worth noting that the hotel and restaurant industry is a significant and integral part of the country's economy, contributing to its industries' development. Considering the changes that are taking place in the economic and political situation and under martial law, hotel and restaurant enterprises face new management challenges to ensure the efficiency of their functioning. The study of the hotel and restaurant industry's current condition made it possible to identify the main problems that affect its development. There is a negative

trend of reducing the number of hospitality enterprises caused by the negative consequences of quarantine restrictions during the pandemic and martial law. A deeper study of the state of the hotel and restaurant industry makes it possible to form directions for its development, considering changes that occur in the external environment of functioning. Ensuring the effective functioning of the hotel and restaurant industry requires a detailed study of the main trends in its development in modern conditions, changes in the needs of consumers of the hotel product, the latest approaches to sales and marketing activities, and the specifics of their application. A promising area of research is the development of practical recommendations for adapting the activities of the hotel and restaurant industry to the realities of war and post-war times.

Conflict of interest

The author declares that there is no conflict of interest.



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Cognitive-behavioural factors influencing the development of healthy sexual self-regulation in adolescence ^[7]

Abstract: The article addresses the significance of sexual self-regulation as a critical component of sexual behaviour and development during adolescence. It explores the cognitive-behavioural factors that influence the formation of healthy sexual self-regulation. The focus is placed on both internal and external factors that affect psychosexual development in adolescence. The study's relevance is driven by the need to foster healthy sexual self-regulation in the context of modern social challenges, risky sexual behaviours, and psychological issues, such as early pregnancy, sexually transmitted infections (STIs), or emotional trauma. The study's object encompasses a broad spectrum of cognitive-behavioural influences that shape and regulate healthy sexuality during adolescence. Biological changes during adolescence, like social interactions with the environment, particularly the impact of parents, peers, and media, are crucial. The article aims to conduct a theoretical investigation and systematise the cognitive and behavioural mechanisms contributing to healthy sexual self-regulation. The study's tasks include reviewing scientific publications on this topic, identifying key factors that promote the development of healthy sexual self-regulation, and determining cultural, gender, and social factors that impact the formation of self-regulation. Systematic review methods were employed in the study. The works of researchers such as Crandall, Magnusson, Novilla, Silitonga, Almigo, Pringle, Hasiuk, Fedyk, Smolska, Kryvoruka, and others are reviewed, focusing on the impact of cognitive-behavioral factors on self-regulation in adolescence. It is expected that cognitive-behavioural approaches will contribute to developing healthy sexual behaviour in adolescence, reducing the risks of physiological and psychological problems.

Keywords: sexual behaviour, sexual self-regulation, adolescence, cognitive-behavioural influence, risky sexual behaviour, sexual health.



Олександр Павлович Малигін

Когнітивно-поведінкові чинники, що впливають на формування здорової сексуальної саморегуляції у юнацькому віці

Анотація: В статті розглянута проблема важливості сексуальної саморегуляції, що є ключовим компонентом сексуальної поведінки та розвитку у юнацькому віці. Досліджено когнітивно-поведінкові чинники, які впливають на формування здорової сексуальної саморегуляції. Акцентовано увагу на внутрішні та зовнішні фактори, що впливають на психосексуальний розвиток в юнацькому віці. Актуальність дослідження обумовлена важливістю формування здорової сексуальної саморегуляції у контексті сучасних соціальних викликів, ризикованої сексуальної поведінки й психологічних проблем, таких як рання вагітність, захворювання що передаються статевим шляхом або емоційні травми. Об'єкт дослідження охоплює широкий спектр когнітивно-поведінкових впливів, що формують і регулюють здорову сексуальність у підлітковому віці. Важливими є як біологічні зміни під час підліткового періоду, так і соціальні взаємодії з оточенням, зокрема вплив батьків, однолітків та медіа. Мета статті полягає в здійсненні

теоретичного дослідження та систематизації когнітивних та поведінкових механізмів, що сприяють розвитку здорової сексуальної саморегуляції. Завданнями є вивчення наукових публікацій з цієї тематики, ідентифікація ключових факторів, що сприяють розвитку здорової сексуальної саморегуляції, а також визначення культурних, гендерних та соціальних чинників, що впливають на формування здорової саморегуляції. У дослідженні використано методи систематичного огляду. Розглянуто праці таких дослідників, як Крандал (Crandall), Магнуссон (Magnusson), Новілла (Novilla), Сілітонга (Silitonga), Алміго (Almigo), Прингл (Pringle), Гасюк, Федик, Смольська, Криворука та інші, які досліджували вплив когнітивно-поведінкових факторів на саморегуляцію у підлітковому та юнацькому віці. Передбачається, що когнітивно-поведінкові підходи сприятимуть розвитку здорової сексуальної поведінки у юнацькому віці, знижуючи ризики фізіологічних та психологічних проблем.

Ключові слова: сексуальна поведінка, сексуальна саморегуляція, юнацький вік, когнітивно-поведінковий вплив, ризикована сексуальна поведінка, сексуальне здоров'я.



Introduction

Every year, more and more researchers focus on the fact that self-regulation plays a significant role in academic achievement (as, e.g., Dent and Koenko note) and in many other aspects of human life. Many studies indicate individual differences in self-regulation inherent in the individual, and scientists also indicate the presence of predictive features that indicate the nature of inherent social skills, risky behaviour, physical health, problems of internal and external adaptation, and even unemployment. Therefore, as you know, researchers Cooper and Koenko naturally emphasise the significance of self-regulation for well-being throughout a person's life. Using meta-reviews is relevant and necessary to provide a generalised understanding of the factors that influence the development of self-regulation. (*Wesarg-Menzel et al., 2023*).

However, it is worth noting that in modern society, the problem of forming self-regulation of young people in the context of developing healthy sexuality of individuals, like “entering adulthood” society citizens, is gaining particular resonance. After all, sexuality is a significant part of the individual, which is one of the factors that determines the formation of psychological, mental and physical integrity. What is the deterministic interdependence of biological, psychological, and sociocultural dimensions of human functioning as a sexual being (*Crandall et al., 2018; Smolska & Donets, 2018*)? Therefore, it is not surprising that the age stage of youth development from adolescence to adolescence is associated with many changes, in particular physical, emotional and social, affecting their inherent behavioural responses, including sexual behaviour. The ability to self-regulate sexual behaviour is crucial for psychosocial development, as it not only determines the physical health of young people but also affects their social adaptation and emotional well-being. Research shows that low levels of self-regulation are crucial to engaging in risky sexual behaviours that can have long-term negative consequences, such as sexually transmitted infections, unplanned pregnancies, or emotional trauma.

Cognitive behavioural approaches to healthy sexual self-regulation play a significant role in helping young people in their youth to control their desires more effectively, make informed

decisions and avoid risky sexual practices. Therefore, the study of factors that affect self-regulation and represent a necessary condition for developing the ability of young people in adolescence to control their emotions, desires and actions aimed at promoting an increase in the level of sexual consciousness and responsibility becomes particularly relevant.

Analysis of recent research and publications

The review of scientific publications devoted to the study of cognitive behavioural factors' problems influencing the formation of healthy sexual self-regulation in adolescence highlights critical aspects of influencing self-regulation on sexual behaviour and developing healthy interpersonal relationships. The results of the study confirm the significance of self-regulation as a tool for preventing sexual risks and creating a reliable basis for healthy sexual behaviour.

Thus, the study conducted by Crandall, Magnusson, Novilla, Silitonga, and Almigo aimed to study the growth of self-regulation in adolescents and its impact on risky sexual behaviour. They found that increasing self-regulation significantly reduces the likelihood of young people engaging in risky sexual activities, highlighting the need to develop these skills early to reduce future risks. In turn, researcher Pringle and his colleagues highlighted the physiological aspects of sexual behaviour in adolescents, in particular, how cognitive and behavioural factors affect the ability to self-regulate. Their work provides a better understanding of how biological processes occurring during adolescence affect emotional and cognitive responses during adolescence and adolescence, especially in the context of sexual behaviour.

Meanwhile, researchers Farley and Kim-Spoon investigated how social interactions with parents, peers, friends, and romantic partners affect the development of self-regulation in adolescents. Their work has shown that the social environment plays a crucial role in forming self-regulatory skills, where emotional support is a significant factor in this process.

Gajda, Malkowska-Szkutnik, and Rodzeń conducted a cross-cultural study of self-regulation among adolescents in Poland, highlighting cultural features that can influence the formation of self-regulation. Their work provided an opportunity to identify how social and cultural contexts shape behavioural self-regulation in young people.

Researchers Kalina, Orosová, Kriaucioniene, and Lukács studied the effects of self-regulation and optimism on student sexual behaviour in Hungary, Lithuania, and Slovakia. Their research has shown that high levels of self-regulation significantly reduce the likelihood of risky sexual behaviour, emphasising the significance of these skills in preventing risks.

In a meta-review conducted by Wesarg-Menzel and colleagues, the researchers examined the development and socialisation of self-regulation from childhood to adolescence. They identified the differences between self-regulatory abilities, goals, and motivation and showed how these cognitive-behavioural factors influence self-regulation development.

Mirzaee, Ahmadi, and Zangiabadi investigated the effectiveness of cognitive behavioural therapy and psychoeducational counselling in improving sexual health in women. Their results confirmed that such methods are effective in overcoming sexual dysfunctions and improving the quality of sexual life. A study by Jangi, Nurizadeh, and Sattarzadeh-Jahdi found that cognitive behavioural interventions and sex education promote sexual confidence in newly married women. They stressed that such educational activities can play a significant role in shaping healthy sexual self-regulation.

Meanwhile, Ukrainian researchers such as Gasyuk and Fedik have looked at the internal psychological aspects of sexual health, emphasising the importance of the psychoemotional State for the development of healthy sexual relationships. Krivoruka and Kushmiruk focused on the psychocorrection of sexual attitudes in adolescents, which is a significant stage in their healthy sexual development. Moskalenko and Prisnyakova focused on the level of readiness of young people for sexual relations, noting that this factor significantly affects self-regulation and the choice of healthy sexual behaviour. Potocki et al. investigated the impact of sexual stereotypes on the social functioning of young people, finding that these stereotypes can influence the choice of risky or healthy sexual behaviour patterns of young men and women.

Among the Ukrainian scientists studying the psychology of sexuality, we consider it appropriate to note the contribution made by such researchers as B.M. Vornik, S.V. Didenko, T.V. Govorun, V.A. Gupalovskaya, O.S. Kozlova, O.V. Fedik, etc. (*Potocka ma in., 2019*). Today, there are a significant number of scientific publications devoted to the study of adolescent sexual behaviour. Such scientists as L.P. Butuzova, O.M. Gridkovets, T.P. Ivakhnenko, O.M. Kikinezhdi, V.P. Kravets, O.V. Petrunko, O.Y. Rybalka, O.V. Secheyko, T.M. Titarenko, S. V. Yashnik, etc. argue that the problem of premarital sexual relations is worth solving systematically and comprehensively: highlight and hygiene of sexual life, self-defence against sexually transmitted diseases and other negative consequences of promiscuous sexual contacts, moral and value orientation of young people regarding sex (*Moskalenko & Prisnyakova, 2021*). Researcher Smolskaya noticed the psychological and spiritual aspects of sexual self-regulation, emphasising the significance of value attitudes in the decision-making process regarding the sexual behaviour of young people. Thus, the analysis of scientific publications demonstrates that cognitive behavioural factors, in particular self-regulation, play a critical role in forming healthy sexual behaviour in adolescence.

The study object covers a wide range of cognitive behavioural influences that shape and regulate healthy sexuality in adolescence.

The article aims to conduct a theoretical study, systematise the cognitive and behavioural mechanisms that contribute to developing healthy sexual self-regulation, also conduct a thorough analysis of the scientific literature concerning cognitive and behavioural mechanisms of self-regulation in adolescence, and identify critical factors influencing the formation of healthy sexual self-regulation in adolescence. Moreover, it describes psychological, social and cultural aspects that can influence cognitive behavioural processes in self-regulation.

The main methods used in the study. In the scientific work course to study the cognitive behavioural factors' problem influencing the formation of healthy sexual self-regulation in adolescence, the results of the studies mentioned above in cognitive behavioural therapy, self-regulation and sexual behaviour were systematised and generalised by using the analysis and synthesis of scientific sources as methods that allow integrating disparate data, highlighting significant aspects for further study. To implement the study and compare the cognitive behavioural factors' influence on sexual self-regulation in different cultural and social conditions, the method of comparative data analysis was used, which contributes to a deeper understanding of the influence of cultural and social contexts on sexual behaviour.

To generalise and evaluate the results of many studies concerning the impact of cognitive behavioural approaches on the development of sexual self-regulation in adolescence, meta-

analysis was used to combine data from different sources, evaluate the effectiveness of approaches, and identify general trends. Also, the logical generalisation method was used to formulate conclusions and recommendations on using cognitive behavioural interventions to develop healthy sexual behaviour in adolescence. This method helps to structure the results obtained, develop practical recommendations, and identify directions for further research.

Discussion

Sexual self-regulation is a critical factor in young people's lives, as it affects their health, social adaptation, and overall development. According to Sarwono's research, sexual behaviour involves all actions resulting from sexual desires and can be directed at another person, an imaginary image, or even at yourself (*Silitonga & Almigo, 2023*). These activities can range from experiencing emotional attraction and dating to physical contact, such as kissing or having sex. However, as known, young people in adolescence are more likely to engage in risky behaviour, in particular, the use of alcohol, drugs or unprotected sex. This is because they have more freedom to experiment at this stage of life and are more likely to enter into short-term relationships (*Kalina et al., 2017*). So, the author can say that self-regulation becomes increasingly relevant in such circumstances as a scientific research subject focusing on risky behaviour and as a necessary factor for applied educational work with adolescent population segments. Thus, since self-regulation involves the ability to control emotions, thoughts, and behaviours to achieve goals and also includes planning skills and delaying pleasure, the development of a high level of self-regulation and sexual self-regulation is a predictor of protecting young men and young women from risky sexual behaviour (*Kalina et al., 2017*). It positively influences the forming and development of healthy sexuality.

It is worth noting that social factors play a significant role in forming healthy sexual self-regulation in adolescence. In particular, many researchers have noticed that teenage girls show more self-control than boys. This may be because boys usually experience less physiological pressure due to the lack of pregnancy risk, which may encourage them to engage in more risky forms of sexual behaviour (*Lestari et al., 2023*). Another equally significant factor is socioeconomic status, which also plays a significant role in shaping sexual behaviour in adolescence. For example, young people with low socio-economic status are more likely to resort to early marriages or pregnancies in order to ensure economic stability. Equally significant are personal factors such as emotional maturity, intelligence levels, and spiritual values, which also influence the development of healthy sexual self-regulation. Therefore, as the researchers note, young people with high levels of emotional intelligence better control their impulses and avoid risky behaviour. Spiritual values form an internal framework of self-control that allows young men and women to make more informed decisions (*Lestari et al., 2023*). Thus, the development of self-regulation affects not only sexual behaviour but also overall life satisfaction, mental well-being, and success.

A meta-analysis conducted by J.S. Hyde and M.B. Oliver, based on 177 studies of gender differences in sexual activity, confirms that men are more likely to masturbate and tend to approve of sex without commitment. At the same time, women are more likely to experience anxiety, fear, and guilt associated with sexual activity. In addition, a review of J. Peter and P.M. Valkenburg's research, which focuses on pornography use among young people, indicates that

men are more likely to turn to pornography and pornography use is associated with the formation of sexual attitudes that approve of sex without commitment and aggressive forms of sex (*Smolska & Donets, 2018*). This, in turn, does not contribute to the formation of healthy sexuality due to the unrealistic perception of sexual intercourse by young men. In addition, an analysis of these data shows that girls in adolescence are less likely to objectify a sexual partner, have lower levels of sexual excitability, and are less likely to use pornography. At the same time, their sexual attitudes are more often marked by greater maturity and responsibility. A high level of psychological maturity in girls correlates with a higher level of satisfaction with their sex life. In contrast, high social self-control can cause dissatisfaction, leading to neurotic reactions (*Smolska & Donets, 2018*).

Thus, it can be concluded that young people in their teens who can control their emotions and behaviour are less likely to be influenced by their peers and engage in dangerous, risky activities (*Gajda et al., 2022*). Sexual self-regulation is a multidimensional construct that includes emotional, behavioural and cognitive aspects, embodying the “normative process of development” formed by biopsychosocial factors. The researchers note that in early childhood, this process occurs through co-regulation and modelling of adult behaviour, and in adolescence and young age, through interactions with peers and romantic partners (*Wesary-Menzel et al., 2023*). The rapid maturation of the brain in adolescence allows for the development of the ability to plan, anticipate consequences, and control emotions, which makes the study of self-regulation during adulthood, adolescence, and entry into adulthood a significant area of scientific research on life and personality development (*Gajda et al., 2022*). Thus, healthy sexual self-regulation helps avoid risky behaviour and contributes to the successful performance of significant developmental tasks in adolescence and young age, including building relationships and adapting to new social roles (*Jangi et al., 2023*).

We consider it necessary to note that sexual behaviour in adolescence is formed under the influence of many factors, including physiological, cultural and social aspects. Studies by Zimmer-Hembeck and Collins have shown that adolescents with high levels of physiological development are more likely to have more sexual partners. This indicates the need for gender-sensitive interventions to prevent risky sexual behaviour in adolescents (*Pringle, et al., 2017*). One of the key motives for sexual behaviour is the desire to be recognised and receive a positive assessment from others. Dissatisfaction with this need can lead to compensatory sexual behaviour, such as hyperactivity or masturbation. However, if a teenager receives recognition and support, he or she can develop stable and deep relationships without deviant sexual behaviour (*Smolska, 2020*). Sigmund Freud noted that sexual attraction is the driving force behind healthy sexuality. However, sexual excitability is not exclusively a physiological process; it is formed under the influence of the emotional and communicative experience of the individual. This approach is worth reflecting on in sex education programs that combine scientific evidence and cultural aspects that can evoke profound emotional experiences and shape healthy sexuality (*Smolska, 2020*). Therefore, we believe that the current understanding of healthy sexuality requires a comprehensive approach that covers physiological, psychological and socio-cultural aspects in the ontogenetic perspective of human development. After all, education on love and healthy sexual behaviour begins in childhood and forms the basis for mature relationships in the future. Psychologists play a significant role in educating parents and

should contribute to harmonising family relations (*Smolska, 2020*). Strategies for developing sexual culture should consider national and spiritual values aimed at fostering responsible behaviour among young people.

However, as young people in their teens and teens face multiple sexual health risks, this is often accompanied by low awareness of contraception and additional risks (*Pringle, et al., 2017*). It is worth adding that early pregnancy, in general, remains a problem in many regions of the world, often associated with increased morbidity and mortality. Therefore, the author believes that targeted awareness of healthy sexual behaviour and contraceptive use will help reduce these risks and reduce the incidence of sexually transmitted diseases (*Farley & Kim-Spoon, 2014; Pringle, et al., 2017*). A targeted and competent application of cognitive behavioural factors for the implementation of ecological sex education plays a central role in the formation of healthy sexual self-regulation among young people. This will positively promote healthy sexual development for young people and reduce risks. Therefore, in our opinion, cognitive behavioural factors that influence the formation of healthy sexual self-regulation in adolescence play a crucial role in the development of psychosexual attitudes and behavioural strategies in adolescence that form healthy sexual self-regulation.

Conclusion

The formation of healthy sexual self-regulation is one of the most significant aspects of young people's psychosocial development, mainly from adolescence to a young age. Sexuality, as part of personal identity, is caused by the interdependence of biological, psychological, and socio-cultural factors. It affects a person's overall well-being, social adaptation, and emotional well-being.

Self-regulation of sexual behaviour is crucial for maintaining the physical and mental health of young people. It helps young men and women control their emotions, think critically and make informed decisions in difficult situations, in particular regarding sexual behaviour. Research shows that low levels of self-regulation are one of the crucial factors contributing to risky sexual behaviour, which can lead to sexually transmitted infections, unplanned pregnancies, and emotional trauma. This indicates the need for active development of self-control skills, especially in the context of healthy sexual attitude formation.

Biological, cognitive, emotional, and social aspects have a significant impact on forming sexual self-regulation. Puberty changes, cognitive processes, socialisation, and changes in personal identity determine the formation of sexual behaviour. These factors require a comprehensive approach so that young people can better understand their sexuality and make responsible decisions about their intimate lives.

Cognitive behavioural approaches are highly effective in shaping sexual self-regulation, as they help correct misconceptions about sexuality, reduce anxiety, and promote confidence in relationships. Cognitive behavioural interventions can increase self-control, prevent risky behaviour and provide emotional stability.

Social, cultural and gender dimensions also play a significant role in shaping sexual self-regulation. Men and women perceive sexuality and sexual behaviour differently, which often depends on gender stereotypes and social expectations. For example, research shows that women show higher levels of self-control in sexual matters, while men are more likely to engage

in risky behaviour. Considering gender differences and the impact of social stereotypes allows us to develop programmes that will promote responsible attitudes towards sexuality among both men and women.

Thus, forming healthy sexual self-regulation is a complex process that requires the integration of cognitive, behavioural, and emotional aspects. Psycho-corrective programmes and educational initiatives based on cognitive behavioural techniques can effectively help young people develop the necessary skills to make responsible decisions in sexual behaviour, avoid risky practices, and reduce the likelihood of undesirable consequences such as illness, pregnancy, or emotional trauma.

Conflict of interest

The author declares that there is no conflict of interest.



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Cyber terrorism: History of Ukraine and current trends ^[8]

Abstract: This article aims to determine the essence and legislative framework of Ukraine's cyber security decision-making, like research prospects for improving cyber security and countering cyber terrorism. The main research methods used in the article are induction, synthesis, comparison, and generalisation. The essence of the "cyber security" concept, its features, and its legislative basis have been studied. The critical legislative acts of Ukraine, which consider provisions on cyber security and information protection, have been identified. The features of introducing international cyber security norms into Ukraine's legislation are characterised. An assessment of the progress achieved by Ukraine in fulfilling its international obligations in cyber security is provided, and further steps to implement global standards and best practices into Ukrainian legislation are determined. The level of awareness of the Ukrainian authorities regarding the NIS Directive and the level of reflection of its provisions in the country's laws and cyber security systems are characterised. The provisions of the Constitution of Ukraine, which protect information and the specifics of its disclosure, have been determined. The main points of the Ukrainian history of cyber security and its impact on it during the period of anti-terrorist operations and full-scale invasion have been identified. The peculiarities of Ukraine's cooperation with the EU and NATO in combating cyberterrorism are characterised by the effectiveness of the cyber police and other structural units created to protect cyberspace and counter hacker attacks.

Keywords: terrorism, cyber terrorism, cyberspace, information technologies, national security of Ukraine, information space, international norms of cyber security.



Introduction

Over the past few years, Ukraine has become one of the leaders in the number of cyberattacks of varying severity. The increase in the number of cyber-terrorist attacks is an urgent problem for our country today. It requires effectively developing tools and measures to combat them, including at the legislative level. The legal framework for cyber security in Ukraine consists of international obligations and domestic legislation. The Budapest Convention and the Directive on Network and Information Security (NIS) are noteworthy globally. Domestic legislation is stipulated by Ukraine not only as a signatory to international agreements and treaties but also as an obligation they should keep in mind if they continue to demonstrate their readiness to join the European Union. Specific issues and problematic aspects of cyberterrorism and cyber security have been considered in the works of the following figures: I.A. Bilan, V.G. Drozd, O.Y. Drozd, D.V. Zhuravlev, Y.I. Kohut, S.V. Petkov, etc. However, despite numerous scientific papers on this topic, the problems that form a practical approach to assessing cyber security and its likely impact due to the rapid development of information technology remain unresolved and, therefore, require further study and research. The article aims to define the essence and legislative framework for regulating cyber security in Ukraine and study the prospects for improving cyber security and countering cyberterrorism in the country.

According to the purpose of this article, the following tasks need to be addressed:

- study the essence of the "cyber security" concept of its features and legislative framework;

- identify the key legislative acts of Ukraine that address the provisions on cyber security and information protection;
- characterise the peculiarities of the implementation of international cyber security norms into Ukrainian legislation;
- identify the provisions of the Constitution of Ukraine providing for the protection of information and peculiarities of its disclosure;
- identify the main points of Ukrainian cyber security history.

The following research methods were used in this scientific article:

- induction to study the essence of the “cyber security” concept, its features, and legislative framework;
- identification of critical legislative acts of Ukraine that address the provisions on cyber security and information protection;
- synthesis method to study the peculiarities of implementing international cyber security norms into Ukrainian legislation;
- identification of the provisions of the Constitution of Ukraine providing for the protection of information and the peculiarities of its disclosure;
- comparison to identify the main points.

The results of the study

It is worth noting that positive developments have been made in cyber security. Thus, several regulatory acts are devoted to the issue of cyber security in Ukraine, in particular:

- On Security Services in Ukraine, Law No. 2229-XII, dated March 25, 1992;
- On Operational and Investigative Activities, Law No. 2135-XII, dated February 18, 1992;
- On the State Service for Special Communications and Information Protection of Ukraine, Law No. 3475-IV, dated February 23, 2006;
- On the Organisational and Legal Framework for Combating Organised Crime, Law No. 3341-XIII, dated June 30, 1993;
- The Criminal Code of Ukraine dated April 05, 2001.

In addition, the following legislative acts address cyber security and information protection issues (*Table 1*).

In 2005, Ukraine ratified the Budapest Convention, the only legally binding international instrument on cyber security, which establishes a standard criminal policy to protect against cybercrime by adopting relevant national laws and promoting international cooperation. However, not all of its provisions have been integrated into national legislation, and their full implementation will require further significant changes to the criminal procedure code. In 2016, the European Parliament adopted the NIS Directive, the first part of the EU’s single law on cyber security. As Ukraine is not a member of the EU, the NIS Directive is not binding on our country, but it does provide good practice recommendations. Some of its provisions are voluntarily implemented in Ukrainian legislation, but others are ignored. In recent years, Ukraine has adopted several acts that regulate cyber security issues and constitute the country’s legal framework in cyber security. In 2016, for example, to support the previous point, Ukraine’s

National Cyber Security Strategy set security goals and priorities for up to 2020. This law defines critical timelines, delineates responsibilities between cyber security agencies, and sets out the principles of full regulation of critical infrastructure (CI) protection and public-private partnerships. While adopting the cyber security law was a positive step, significant efforts are still needed to fully implement all aspects of it. Most importantly, within the timeframe established by law, the government has not yet adopted bylaws on cyber security, including those regulating the protection and audit of cyber security facilities. As a result, many of the law's provisions remain vague and do not specify the necessary procedures.

Ukraine has signed several international treaties, committing itself to ensuring security in cyberspace. These international obligations have become the basis for further legal regulation of cyber security issues. By signing these agreements, Ukraine promised to adhere to specific standards and enshrine them in its legislation.

It is worth noting that the Constitution of Ukraine reflects the main provisions protecting information and the specifics of its disclosure, such as defining security and defence requirements (*Table 2*).

It is worth noting that the National Security and Defence Council is a coordinating body for national security and defence under the President of Ukraine. The President personally forms the composition of the National Security and Defence Council. The activities of the National Security and Defence Council of Ukraine are determined by the Law "On the National Security and Defence Council," which provides the legal framework for cyber security in Ukraine.

According to the Military Security Strategy of Ukraine, dated March 25, 2021, the Comprehensive Defence of Ukraine is a set of measures, the main content of which is preventive measures and sustainable resistance to invaders on land, at sea, and in Ukraine's airspace, counterattacks in cyberspace, and imposing one's will in the information space.

At the state level, the Russian Federation remains Ukraine's military adversary, conducting an armed attack against Ukraine, occupying the country's territories, and systematically using military, political, economic, informational, psychological, space, cyber, and other means. This threatens the independence, national sovereignty, and territorial integrity of Ukraine.

The development of cyber security and cyber defence capabilities as part of the preparation and implementation of Ukraine's comprehensive defence is essential in the event of emergencies, mass terrorist acts that cause loss of life, or destruction of vital infrastructure. As part of its international relations, Ukraine participates in various global initiatives. It has cyber security cooperation agreements with other countries and international organisations that help exchange information and coordinate actions in the event of cyber threats (*Figure 1*).

It is worth noting that these international treaties, agreements, and initiatives will help Ukraine jointly combat cyber threats and strengthen cyber security and international cooperation in countering cyberspace threats.

It is also worth noting that Ukraine is the only country legislating the cyberterrorism concept, defining it as terrorist activities performed in or using cyberspace (*On the Main Principles..., 2017*). However, this definition is very general and does not allow for an accurate and complete description of the actions that fall under this concept. In other words, to develop a set of practical measures to combat cyberterrorism, it is necessary to determine the list of

crimes that can be considered cyberterrorism and assess the degree of criminal liability for committing such crimes.

The Ukrainian history of cyber security and its impact is best viewed from 2014, when the Russian invasion of Ukraine began. Thus, the chronology of cyber-terrorist attacks is as follows:

- on February 4, 2014, an anonymous hacker from the “Cyberberkut” group posted on YouTube a telephone conversation between the US Ambassador to Ukraine and the US Assistant Secretary of State, which contained derisive comments about the EU;
- on March 5, 2014, a recording of a telephone conversation between the foreign ministers of Estonia and the EU was posted on the Internet, which suggests that Ukrainian opposition forces were behind the sniper shooting on Maidan. This was the point of view actively promoted by Russian propaganda at the time;
- in March 2014, from the beginning of the occupation of Crimea, the Russian secret service blocked communication between Ukrainian MPs and SBU units in Crimea by attacking IP phones;
- on May 21-25, 2014, during the presidential elections, DoS attacks and hacking of the CEC website took place, resulting in the publication of fake results on the website. Despite reports of the hacking, these data were reported on Channel One news in Russia as the actual results of the elections in Ukraine;
- on June 2014, malicious cyber-espionage software was detected on the servers of private companies in Ukraine and NATO countries, and analysis showed that the software was developed in Russia;
- since 2014, the radar intelligence of terrorists fighting in Donbas has been hacking into the database on the location of telephone networks and Wi-Fi and obtaining data on the location of Ukrainian troops;
- on October 2015, a private investigation revealed that Russian cyber-espionage targeted data obtained during the investigation of the MH17 disaster by the authorities of the Netherlands, Malaysia, Australia, Belgium, and Ukraine;
- on December 2015, a Trojan horse previously used by Russian hackers disconnected about 30 substations of Prykarpattiaoblenergo, leaving more than 200,000 residents of Ivano-Frankivsk region without electricity for 1-5 hours. At the same time, Kyivoblenergo and Chernivtsioblenergo were attacked;
- on December 6, 2016, there was a hacker attack on the internal communication network of the Ministry of Finance, the State Treasury, and the Pension Fund, which resulted in the disabling of several computers and the destruction of significant databases, which delayed the payment of hundreds of millions of hryvnias from the budget;
- in December 2016, Ukrainian hackers ordered by an unidentified person from St Petersburg carried out a DOS attack on the website of Ukrzaliznytsia, which resulted in its work being wholly blocked for a day. According to the minister in charge, the attack was aimed at stealing data on passenger traffic;
- in the same December 2016, a cyber-attack on the Pivnichna substation of Ukrenergo resulted in a malfunction in the control system, which caused a power outage in the

Northern District of the Right Bank of Kyiv and adjacent areas of the region for more than 1 hour;

- on June 27, 2017, a large-scale hacker attack was performed using a programme called Petya. This malware interrupted and blocked the work of Boryspil airport, Ukrtelecom, the Chernobyl nuclear power plant, Ukrzaliznytsia, the Cabinet of Ministers, and several media outlets. SBU claims Russian special services were involved in the terrorist attack (*Largest cyberattacks...*, 2014).

First of all, the events of 2014 severely shook the state of cyber security in Ukraine. Thus, to protect Ukraine's cyberspace, on 05.10.2015, the Cyber Police was established as part of the criminal police structure of the State Police, which, according to the laws of Ukraine, ensures the implementation of the state policy in combatting cybercrime, organises and performs operational and investigative activities. This agency aims to ensure Ukraine's cyber security in the information space and to respond immediately to cyber threats, cybercrime, and their most serious form, cyberterrorism. In addition, the unit's mandate includes international cooperation to neutralise transnational criminal groups in this area. Thus, in 2018, the work of the cyber police of Ukraine exposed more than 800 people involved in committing crimes in the field of advanced information technology. During the full-scale invasion, these units were most effective in revealing the attackers who transmitted data on the location of the Armed Forces and various critical infrastructure facilities (*Official website...*, 2024).

A significant step for Ukraine in countering cyber-terrorist attacks and ensuring cyber security was the signing by the President of Ukraine of the Decree "On the Strategy of Cyber Security of Ukraine." The document stipulates that modern information and communication technologies can be used to commit terrorist acts, particularly by disrupting the regular operation of automated process control systems at infrastructure facilities. Politically motivated activities in cyberspace are becoming increasingly common in the form of attacks on government and personal websites on the Internet. The purpose of Ukraine's cyber security strategy is to create conditions for the safe functioning of cyberspace and its use for the benefit of individuals, society, and the state. The national cyber security system is based on the Ministry of Defence of Ukraine, the State Service for Special Communications and Information Protection of Ukraine, the Security Service of Ukraine, the State Police of Ukraine, the National Bank of Ukraine, and intelligence services. The Strategy envisages a set of measures, priorities, and directions to ensure cyber security in Ukraine, in particular, to develop cyberspace and promote the development of the relevant EU and NATO countries; to increase the digital literacy of citizens and the culture of safe behaviour in cyberspace; to develop international cooperation and support global initiatives in the field of cyber security (*The President approved...*, 2016).

It is important to note that on 1 July 2015, the State Centre for Cyber Defence and Counteraction to Cyber Threats (SCCT) began its work. It was established by the State Service for Special Communications and Information Protection of Ukraine based on the State Centre for the Protection of Information and Telecommunication Systems of the State Telecommunications Service (*The State Center...*, 2015) and is envisaged by the Law of Ukraine «On Protection of Information in Information and Telecommunication Systems» of July 05, 1994. The Centre performs the following tasks:

- ensuring the functioning of the Ukrainian computer emergency response team CERT-UA;
- providing state information in information and communication systems of state institutions;
- professional expertise in integrated systems and means of information protection in state institutions, as well as software and hardware in information protection of Ukraine in the European information space in connection with Ukraine's integration with the EU.

In the context of European integration, it is significant to note that one of the elements of cooperation is ensuring an adequate level of personal data protection and state information security. According to the highest European and international standards, Ukraine has automatically complied with the terms of the Association and ensured all possible security measures to protect information and counteract all possible cyberattacks (*Ministry of Foreign Affairs of Ukraine, n.d.*). In addition, in 2017, Ukraine signed a cooperation agreement with Europol. The agreement aims to establish cooperation between Ukraine and Europol to support Ukraine and the European Union member states in preventing and eradicating organised crime, terrorism, and other forms of international crime (*Agreement between Ukraine..., 2017*). Therefore, today, the Ukrainian authorities are trying to implement the norms set out in the agreement into the national security system to continue its integration into the European information space and to be able to withstand cyberattacks, the outcome of which is quite unpredictable, as can be seen from the latest cyberattacks that have taken place since February 2022, one of the largest of which was a cyberattack on the Kyivstar mobile network.

Conclusion

Thus, in the current era, Ukraine is deeply cognisant of the perils associated with cybercrime and cyberterrorism, acknowledging these as grave manifestations that carry far-reaching, transnational consequences. Even though numerous measures have been implemented, the nation remains exposed to substantial risks from potential cyberterrorist assaults. As a result, a clear and pressing necessity exists, recognised at the highest levels of government, to confront and effectively counteract the menace posed by cyberterrorism. At this critical moment, the overarching goals centred around fortifying cyber security infrastructures stand out as indispensable. The situation has deteriorated to a point of crisis, presenting dangers not solely to the sovereignty of individual countries but also to imperil the broader landscape of regional security. Hence, it becomes essential for Ukraine to forge a tight-knit alliance with the European Union (EU), aiming to erect a formidable coordination entity. This coalition would not merely concentrate on the legal dimensions involved. Still, it would also prioritise the creation and execution of sophisticated technical security strategies, all geared towards thwarting cyberterrorism across the region. This expanded collaboration signifies a pivotal shift towards a more integrated and comprehensive approach to cyber security. By leveraging the collective expertise and resources of Ukraine and the EU, this initiative aims to bolster defensive capabilities against the evolving threats of cybercrime and cyberterrorism. Through the establishment of this coordination group, the focus extends beyond mere reactionary measures, emphasising proactive strategies that anticipate and mitigate potential cyber threats. This collaborative endeavour underscores the importance of international cooperation in

safeguarding against cyber aggression, highlighting the shared responsibility in maintaining cyber security and regional stability amidst an increasingly digital world.

Conflict of interest

The author declares that there is no conflict of interest.



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Appendix

Table 1. Legislative Acts of Ukraine that address cybersecurity and information protection issues

Name of the legislative act	Acceptance date	Key points of cybersecurity in the legislative act
The Law of Ukraine “On Information” (1992)	dated October 02, 1992	The law defines the legal framework for the dissemination of information in Ukraine. It guarantees citizens the right to receive, disseminate and search for information and establishes transparency and openness in relations between the state and society. The law also regulates the protection of personal data, including the need to ensure confidentiality and security of processing. It establishes liability for information dissemination and

		data protection rules violations, including administrative and criminal sanctions.
The Law of Ukraine “On Protection of Information in Information and Telecommunication Systems” (1994)	dated July 05, 1994	The Law establishes the legal and organisational framework for protecting information in information and communication systems. Its primary purpose is to ensure the confidentiality, integrity and availability of information in these systems. The law defines the rights and obligations of subjects of information relations and establishes requirements for information protection, including cryptographic protection measures, access control, and technical and organisational measures. In addition, the law establishes procedures for organising information protection in government agencies, enterprises, institutions and organisations, regardless of ownership. An essential part of the law is the definition of liability for violating information protection rules, including administrative and criminal sanctions.
The Law of Ukraine “On State Secret” (1994)	dated January 21, 1994	The law establishes the legal basis for protecting information that has the status of a state secret. The primary purpose of this law is to ensure the confidentiality and inviolability of information constituting a state secret, i.e., information to which access is restricted and which may harm national interests, national security or other essential areas. The main aspects of the law include the definition and classification of information as a state secret and the establishment of procedures for its identification, registration, use, storage and disclosure. The law also establishes liability for non-compliance with the requirements for protecting state secrets and procedures for disclosing and investigating violations.
The Law of Ukraine “On the Basic Principles of Cybersecurity in Ukraine” (2017)	dated October 05, 2017	The Law establishes the general principles, goals and organisational framework for ensuring cybersecurity in Ukraine. It defines the responsibilities of state institutions, operators of critical information infrastructure and users of information and communication systems.
The Law of Ukraine “On Protection of Personal Data” (2010)	dated June 01, 2010	The law establishes rules for collecting, storing and processing personal data, which are essential for ensuring the confidentiality and security of information in cyberspace.
The Law of Ukraine “On National Security” (2018)	dated June 21, 2018	The Law establishes that the state policy in national security and defence includes military, foreign policy, national, economic, information, environmental protection, security of vital infrastructure, and cyber security in Ukraine.
Resolution of Cabinet of Ministers of Ukraine “On Approval of the General Requirements for Cybersecurity of Critical Infrastructure Facilities” (2019)	dated June 19, 2019	It is worth noting that this resolution establishes specific standards and requirements for protecting facilities considered significant for the state’s functioning. These requirements include mandatory measures to monitor, detect, and respond to cyber threats, ensure data and infrastructure backup, and improve the skills of cybersecurity personnel. This

		resolution is essential for guaranteeing critical facilities' resilience to cyber-attacks.
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Source: compiled by the author based on the references.

Table 2. Provisions of the Constitution of Ukraine that provide for the protection of information and peculiarities of its disclosure

Article of the Constitution of Ukraine	Its provisions on data protection
Article 17	says that information security protection is one of the most significant functions of the state and is the business of the entire Ukrainian people.
Article 18	requires that Ukraine's foreign policy activities aim to ensure national interests and security by maintaining peaceful and mutually beneficial cooperation with members of the international community according to generally accepted principles and norms of international law.
Article 106	stipulates that the President plays a significant role in ensuring national security, including cybersecurity, in particular as the chairman of the National Security and Defence Council, which is responsible for national security and defence and which submits proposals to the Parliament on the appointment and dismissal of the head of the Security Service of Ukraine.

Source: compiled by the author based on the reference (*Constitution..., 1996*)

1. Council of Europe Convention on Cybercrime.
 - Ukraine is a signatory to this Convention and has committed to cooperate with other parties in the fight against cybercrime and cybersecurity.
2. European Union Cybersecurity Strategy.
 - Ukraine cooperates with the European Union within the framework of its cybersecurity strategy to share experiences and jointly respond to cyber threats.
3. The UN Cybern norms.
 - Ukraine participates in the UN initiative to develop international norms and rules in cyberspace to ensure international cybersecurity and stability.
4. Joint NATO and Ukraine Cyber Security Strategy.
 - Ukraine cooperates with NATO in the field of cybersecurity to strengthen its defence capabilities and protect critical information infrastructure.
5. Confidence building in OSCE cyberspace.
 - Ukraine engages in dialogue and cooperation within the OSCE to build confidence and security in cyberspace.
6. The International Code of Cyber Research.
 - Ukraine may participate in the development and maintenance of international norms and rules for cyber research to ensure the stability and security of cyberspace. Ukraine may participate in the development and maintenance of international norms and rules for cyber research.
7. International initiatives in the field of cyber defence.
 - Ukraine can participate in various cyber defence initiatives and programmes initiated by various international organisations and partners.

Figure 1. International treaties and agreements of Ukraine in cyber security
Source: compiled by the author based on the references (*Bilan, 2023; Petkov, 2022*)

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Psychological features of the beginnings of emotional intelligence, personality type and psycho-emotional states of students under martial law ^[9]

Abstract: Under martial law, the psychological burden on students increases significantly. Students face many stressors. Distance learning has become an integral part of the educational process. This significantly affected the psychoemotional state of students, as they face isolation, increased levels of anxiety and frustration due to limited social contact and altered learning routines. Psychoemotional states affect not only mental health but also students' academic performance. The study aims to research the psychoemotional states of students under martial law during Distance Learning in higher education institutions, taking into account their extraversion or introversion and their level of emotional intelligence. The study object is the psychoemotional state of students in higher education institutions during distance learning under martial law. The study subject is the relationship between the personality type (extraversion, introversion), the level of emotional intelligence and psychoemotional states (anxiety, frustration, aggressiveness, rigidity) of students in the conditions of distance learning under martial law – study base students of Mukachevo State University. The sample consisted of 120 people. These are students of various courses who study remotely and voluntarily consent to participate in our study. To achieve this goal, psychodiagnostic methods were used: “self-assessment of states of anxiety, frustration, aggressiveness and rigidity” (an adapted version of the G. Eysenck test), a method for studying the emotional intelligence of J.M. Stine; method of identifying typological features of K. Jung's personality. Mathematical and static data processing and correlation analysis were used to analyse the results obtained. Based on the results obtained using K. Jung's method, the main typological features of students' personalities are determined. In the selected typological groups (according to the process of K. Jung), according to J.M. Stine's test, it was diagnosed with emotional intelligence levels. A generalisation of the results obtained using the “self-assessment of mental states” (an adapted version of the G. Eysenck test) allows us to state that extroverts show increased anxiety and frustration. They need additional measures to develop emotional stability. Introverts show better stress tolerance with low levels of anxiety and aggressiveness, but a small part may be prone to frustration. Ambiverts are the most stable group, with low levels of anxiety and frustration, showing flexibility in their behaviour. Empirical results allow us to draw the following conclusions. Extroversion dominates among students, which indicates the majority's desire for active social interaction even under martial law. At the same time, a significant percentage of introverts indicate the existence of a group of students who, during a crisis, choose internal work on their emotional state and independent adaptation. A few ambiverts confirm the tendency to have well-defined personality types (extroverts or introverts) rather than a balance between them. Under martial law, each typological group shows its unique responses to stress. Correlation analysis revealed interesting patterns: emotional intelligence plays a crucial role in regulating states of anxiety and frustration. A higher level of emotional intelligence contributes to better control over these states. Aggressiveness was not associated with emotional intelligence, indicating different formation mechanisms. Rigidity also does not correlate with emotional intelligence, suggesting its independence from emotional regulation processes. The results can serve as a basis for developing psychological support strategies with a focus on developing emotional intelligence to reduce anxiety and frustration. At the same time, it is significant to consider other factors to effectively manage aggression and rigidity in extreme conditions, such as war.

Keywords: martial law conditions, distance learning, psychoemotional states of students, extraversion, introversion, ambivertism, emotional intelligence.



Психологічні особливості зав'язків емоційного інтелекту, типу особистості та психоемоційними станами студентів в умовах воєнного стану

Анотація: В умовах воєнного стану значно зростає психологічне навантаження на студентів. Студенти стикаються з багатьма стресовими факторами. В умовах сучасних викликів – воєнних дій дистанційне навчання стало невід'ємною частиною освітнього процесу. Це суттєво вплинуло на психоемоційний стан студентів, оскільки вони стикаються з ізоляцією, підвищеним рівнем тривожності та фрустрації через обмежений соціальний контакт та змінену навчальну рутину. Психоемоційні стани впливають не тільки на психічне здоров'я, але і на успішність студентів. Мета дослідження: вивчити психоемоційні стани студентів в умовах воєнного стану під час дистанційного навчання у закладах вищої освіти, враховуючи їхню екстраверсію або інтроверсію та рівень емоційного інтелекту. Об'єкт дослідження: психоемоційний стан студентів у закладах вищої освіти під час дистанційного навчання в умовах воєнного стану. Предмет дослідження: взаємозв'язок між типом особистості (екстраверсія, інтроверсія), рівнем емоційного інтелекту та психоемоційними станами (тривожність, фрустрація, агресивність, ригідність) студентів в умовах дистанційного навчання в умовах воєнного стану. База дослідження студенти Мукачівського державного університету. Вибірка складала 120 осіб. Це студенти різних курсів, які навчаються дистанційно та дали свою добровільну згоду на участь у нашому дослідженні. Для реалізації поставленої мети використано психодіагностичні методики: «Самооцінка станів тривожності, фрустрації, агресивності та ригідності» (адаптований варіант тесту Г. Айзенка); методика дослідження емоційного інтелекту Дж. Стайн; Методика виявлення типологічних особливостей особистості К. Юнга. Для аналізу отриманих результатів використано методи математично-статичної обробки даних, кореляційний аналіз. На підставі отриманих результатів за методикою К. Юнга визначено основні типологічні особливості особистості студентів. У виокремлених типологічних групах (відповідно до методики К. Юнга) за тестом Дж. Стайн діагностовано рівні емоційного інтелекту. Узагальнення отриманих результатів за методикою «Самооцінка психічних станів» (адаптований варіант тесту Г. Айзенка) дозволяє констатувати, що екстраверти виявляють підвищену тривожність і фрустрацію. Вони потребують додаткових заходів для розвитку емоційної стійкості. Інтроверти демонструють кращу стресостійкість із низькими рівнями тривожності та агресивності, проте незначна частина може бути схильна до фрустрації. Амбіверти є найбільш стабільною групою з низькими показниками тривожності та фрустрації, демонструючи гнучкість у своїй поведінці. Емпіричні результати дозволяють зробити наступні висновки. Серед студентів домінує екстравертованість, що свідчить про прагнення більшості до активної соціальної взаємодії навіть в умовах воєнного стану. Водночас, значний відсоток інтровертів вказує на існування групи студентів, які під час кризи обирають внутрішню роботу над своїм емоційним станом та самостійну адаптацію. Невелика кількість амбівертів підтверджує тенденцію до наявності чітко виражених типів особистості (екстравертів чи інтровертів), а не балансу між ними. В умовах воєнного стану кожна типологічна група проявляє свої унікальні реакції на стрес. Кореляційний аналіз виявив цікаві закономірності: емоційний інтелект відіграє ключову роль у регуляції станів тривоги та фрустрації. Вищий рівень емоційного інтелекту сприяє кращому контролю над цими станами. Агресивність не виявила зв'язку з емоційним інтелектом, що вказує на різні механізми їх формування. Ригідність також не має кореляції з емоційним інтелектом, що свідчить про її незалежність від процесів емоційної регуляції. Отримані результати можуть стати основою для розробки стратегій психологічної підтримки, з акцентом на розвиток емоційного інтелекту для зниження рівня тривоги та фрустрації. Одночасно важливо враховувати інші фактори, щоб ефективно управляти агресією та ригідністю в екстремальних умовах, таких як війна.

Ключові слова: умови воєнного стану, дистанційне навчання, психоемоційні стани студентів, екстраверсія, інтроверсія, амбівертність, емоційний інтелект.



Introduction

Under martial law, the psychological burden on various categories of the population, particularly young people and students, increases significantly. Students often face many stressful factors: uncertainty about the future, threats to the safety of life, problems in learning and social adaptation. Psychoemotional states such as anxiety, frustration, aggression, and rigidity can significantly affect students' mental health and academic performance. The study of emotional intelligence and its impact on these conditions is significant for developing interventions to improve the psychological well-being of young people in crisis conditions.

In the context of modern challenges – war, distance learning has become an integral part of the educational process. This significantly affected the psychoemotional state of students, as they face isolation, increased levels of anxiety and frustration due to limited social contact and altered learning routines. Studying how these changes affect students with different temperaments, especially extroverts and introverts, is exciting. The study will help identify how different personality types experience new learning environments and their impact on emotional intelligence, which is significant for developing effective supportive strategies for students.

Many studies have examined the psychoemotional states of young people in crises. In particular, studies conducted during the COVID-19 pandemic have shown an increase in levels of anxiety and frustration among students due to social isolation and learning in an environment of uncertainty (*Savitsky et al., 2020*). Martial law poses additional challenges, as students face an immediate threat to their lives and well-being, which can further increase negative emotional responses (*Bekhruz, 2023*).

Emotional intelligence, the ability to recognise, understand, and manage one's emotions and those of others, is a significant tool for coping with stress and regulating emotional states. Studies show that a higher level of emotional intelligence reduces the likelihood of developing anxiety and depressive symptoms and helps one better adapt to crises (*Salovey & Mayer, 1989-1990*). However, some studies show that emotional intelligence is not always associated with aggression or rigidity, as individual characteristics and social context may drive these traits.

Studies of students' psychoemotional states under martial law remain relevant, as they allow us to understand better what psychological strategies can help young people adapt to extreme living and learning conditions (*Zhigailo & Sholubko, 2022*).

Today, many scientific studies are studying the impact of war on the individual. Ukrainian psychologists play a significant role in these studies. It is significant to highlight such studies:

- influence of value orientations on students' stress tolerance under martial law (*Tymbalyuk & Zhigailo, 2022, p. 135*);
- factors that contribute to overcoming stress caused by war (*Zhigailo & Sholubko, 2022, p. 12*);
- development of students' stress tolerance during the war (*Morož & Safin, 2022, p. 52*);

- psychological features of reducing the negative consequences of war (*Gruzinskaya, 2022, pp. 105-106*);
- mechanisms of stress reduction in students under martial law (*Khomenko-Semenova & Prokhorenko, 2022, p. 133*);
- family support during the War (*Zburba, 2022, p. 105*).

However, not enough studies would comprehensively study the impact of distance learning on students under martial law on their mental health. Personality types respond differently to these conditions, affecting productivity, motivation, and emotional well-being. Studying this issue will help better understand the psychoemotional needs of students of different personality types and develop adaptive psychological support strategies to reduce stress levels and improve learning efficiency.

So, the study aims to research the psychoemotional states of students under martial law during distance learning in higher education institutions, considering their extraversion or introversion and their level of emotional intelligence.

The study object is the psychoemotional state of students in higher education institutions during distance learning under martial law. The study subject is the relationship between the personality type (extraversion, introversion), the level of emotional intelligence, and the psychoemotional states (anxiety, frustration, aggressiveness, rigidity) of students in the conditions of distance learning under martial law.

The study tasks are:

- (1) empirically investigate the relationship between personality type, emotional intelligence and psychoemotional states of students under martial law;
- (2) based on the generalisation of the results, identify the psychological characteristics of each typological group: extroverts, introverts, and ambiverts.

The study is based on students of Mukachevo State University. The sample consisted of 120 people. These are students of various courses who study remotely and voluntarily consent to participate in our study.

To achieve this goal, psychodiagnostic methods were used: “self-assessment of states of anxiety, frustration, aggressiveness and rigidity” (an adapted version of the G. Eysenck test), a method for studying J.M. Stine’s emotional intelligence, and a method for identifying typological features of K. Jung’s personality. Mathematical and static data processing and correlation analysis were used to analyse the results obtained.

The results of the study

Results of diagnostics based on the method of identifying typological features of K. Jung’s personality

This technique made it possible to divide the subjects into three groups: extroverts, introverts, and ambiverts. According to this method, extroverts (outward-looking) are easy-to-communicate individuals who tend to lead and like to be the centre of attention; introverts are inward-looking, low-contact individuals who experience the breakdown of old ties; and ambiverts are a combination of the two previous characteristics.

So, based on the results obtained according to K. Jung’s method, the main typological features of students’ personalities were determined: 61.4% of respondents (74 people) showed

extroverted personality organisation; 35% of respondents (42 people) showed introversion; and 3.4% (4 people) were ambiverts.

Thus, extroversion prevails among students. This shows that most applicants strive for active social interaction even under martial law, and this is their adaptive strategy for reducing stress. The proportion of introverts is also relatively high, indicating a significant group of students who, during a crisis, prefer internal work on their emotional state and independent adaptation. A few ambiverts state that students are likelier to have well-defined personality types (extroverts or introverts) rather than a balance between them. Perhaps this is due to stress, which is deterministic and increases the extremes in behavioural strategies.

Emotional intelligence and psychoemotional states are further studied in these subgroups. Diagnostics were carried out under martial law.

Results of diagnostics for the method of studying the emotional intelligence of J.M. Stine

In the selected typological groups (according to the method of K. Jung), according to the test of J.M. Stine, it is diagnosed with emotional intelligence levels:

- among extroverts, there were 16.1% had a low level, 54.1% of respondents had an average level, 27.1% had a reasonably high level, and 2.7% of respondents had a very high level;
- among introverts, a low level was diagnosed-23.8%; an average level-42.8%; a fairly high level-33.2%;
- among ambiverts, an average level of 50% and 50% with a very high level were noted.

Thus, extroverts generally have an adequate level of emotional intelligence, but some of them require additional attention to improve emotional self-regulation. Introverts have more difficulty with low-level emotional intelligence, but some show a high ability to understand and manage emotions. Ambiverts show the most balanced and high levels of emotional intelligence, making them the most flexible and adaptive group.

Results of diagnostics using the method “self-assessment of mental states” (adapted version of the G. Eysenck test)

This technique allows you to assess maladaptive states (anxiety, frustration, aggression) and personality traits (anxiety, frustration, aggressiveness, and rigidity). The indicators obtained were analysed in the context of selected typological groups using K. Jung’s method.

In the group of extroverts, the presence of indicators was stated:

- on the Anxiety Scale – an average level in 59.5% of respondents, a high level in 35.2%, a low level only in 5.3%;
- on the frustration scale-low level of 8.2%, medium level of 64.7%, high level of 27.1%;
- on the aggressiveness scale-low level of 24.4%, medium level of 56.7% and high level of 18.9%;
- on the rigidity scale level of 27% of respondents, an average level of 64.7%, and a high level of 8.2%.

In the introvert group, the following results were obtained:

- on the anxiety scale, the level of anxiety and anxiety is 61.9%, the average level is 33.4%, and the high level is only 4.7%;
- on the frustration scale level of 47.6%, an average level of 42.8%) and a high level was detected only in 2 subjects (9.6%);

- on the aggressiveness scale: low level at 57.2%, medium level at 28.6%, and high level at 14.2%.

In the ambiverts group, the following results were obtained:

- on the anxiety scale, two people were found to have a low level (100%);
- on the frustration scale, the same result was found to be 100%;
- on the aggressiveness scale, one subject was diagnosed with a low level of aggression and aggressiveness (50%), and another subject had an average level (50%).

The results obtained allow us to generalise and state that extroverts show increased anxiety and frustration. They need additional measures to develop emotional stability. Introverts show better stress tolerance with low levels of anxiety and aggressiveness, but a small portion may be prone to frustration. Ambiverts are the most stable group, with low levels of anxiety and frustration, and they show flexibility in their behaviour.

Discussion

The study results were summed up among 120 first- and second-year students under martial law according to the methods of K. Jung (typological structure of personality), J.M. Stine (level of emotional intelligence) and G. Eysenck's adapted test (self-assessment of anxiety, frustration, aggressiveness and rigidity), it is possible to distinguish the psychological characteristics of each typological group (extroverts, introverts, ambiverts).

Extroverts.

Most extroverts have an average level of emotional intelligence (54.1%), which indicates the ability to regulate emotions effectively. However, a small proportion have low emotional intelligence (16.1%), proving potential difficulties in understanding and expressing emotions.

A significant proportion of extroverts (35.2%) were diagnosed with high levels of anxiety. This indicates an increased vulnerability to stressful situations, such as war. Most have moderate levels of anxiety (59.5%), which indicates moderate levels of anxiety that may be the result of increased social interaction.

Most extroverts (64.7%) show average frustration, indicating the ability to overcome difficulties. However, a significant percentage (27.1%) experience high frustration, indicating a tendency to frustration in war conditions.

Among extroverts, the average level of aggressiveness prevails (56.7%), but almost 19% have a high level. This indicates the growing emotional tension in the conditions of war.

Most extroverts show an average rigidity (64.7%), indicating a moderate ability to adapt to changes.

Thus, it is possible to distinguish the psychological characteristics of extroverts: being socially active, they often show anxiety and aggressiveness in stressful war conditions, but they can maintain social contact to reduce frustration. Students feel the need to interact with their environment, which helps them cope with stress, but high anxiety and frustration require additional psychological support.

Introverts.

Although most introverts have average emotional intelligence (42.8%), a significant proportion (33.2%) show a high level. This indicates their ability to understand and control their

own emotions deeply. At the same time, 23.8% have a low level of emotional intelligence, indicating difficulties in emotional expression.

The majority of introverts have a low level of anxiety (61.9%), meaning they can control their internal state even in stressful conditions. Only 4.7% have a high level of anxiety.

Almost half of introverts (47.6%) have a low frustration level, indicating their resistance to failure. However, a significant proportion (42.8%) show average frustration.

More than half of introverts (57.2%) have a low level of aggressiveness, which indicates a tendency to self-control and maintain calm in stressful conditions.

Thus, we can distinguish the psychological characteristics of introverts: they show high emotional stability and the ability to self-reflect. They are less prone to anxiety and aggressive displays compared to extroverts and are more likely to use internal resources to deal with stress. Introverts have strengths in self-control and the ability to focus on personal goals even in complex environments, which makes them less vulnerable to external stressors.

Ambiverts.

All ambiverts have an average (50%) or very high (50%) level of emotional intelligence, proving their balanced ability to understand and manage emotions under challenging conditions.

All ambiverts have low levels of anxiety and frustration. This indicates their high stress tolerance and ability to cope effectively with challenges.

Half of ambiverts have a low level of aggressiveness, while the other half have an average level, which indicates a flexible response to stressful situations, depending on the circumstances.

Thus, the authors can distinguish the psychological characteristics of ambiverts. They are the most flexible and adaptive group in war conditions and demonstrate a high level of emotional stability and the ability to manage their emotions effectively, which allows them to cope with anxiety and frustration. Ambiverts can switch between social activity and individual adaptation strategies depending on their needs, making them more resistant to external stressors.

Under martial law, each typological group demonstrates specific features of stress responses. Extroverts are more prone to anxiety and aggression, introverts show high emotional stability and control over aggression, and ambiverts show the highest flexibility and adaptability. This indicates the need for individualised approaches to psychological support, considering each group's characteristics.

A correlation analysis was performed to analyse and systematise the study's results.

Correlation analysis allowed us to state that students' educational activity has a pronounced emotional aspect; the emotional sphere forms the cognitive basis, the ability to self-regulate, and a sense of life satisfaction. The results obtained are presented in Table ([Table 1](#)).

Correlation analysis showed exciting results.

Emotional intelligence and anxiety. The found correlation between emotional intelligence and anxiety indicates that students with lower emotional intelligence are more likely to have increased levels of anxiety. This may be because emotional intelligence helps you better understand and regulate your emotions, reducing stress and anxiety responses.

Emotional intelligence and frustration. The correlation with frustration also indicates the importance of emotional self-regulation. Students with higher emotional intelligence can better manage frustration by finding effective ways to overcome difficult situations.

Lack of correlation with aggression. This result indicates that aggressiveness is not as closely related to emotional intelligence as other emotional states. Aggression may have other mechanisms of occurrence that are more related to external factors or personal characteristics that go beyond emotional competence.

Rigidity and emotional intelligence ($r = 0$). This value suggests that emotional intelligence and rigidity are statistically independent. Rigidity reflects a person's tendency to think inflexibly or behave inflexibly. Since emotional intelligence is more associated with adaptive behaviour in response to emotions, and rigidity is associated with cognitive circuits and attitudes, these two indicators can act independently.

Thus, emotional intelligence plays a significant role in regulating conditions such as anxiety and frustration. A high level of emotional intelligence helps you better control these states. Aggressiveness does not show a connection with emotional intelligence, which may indicate different mechanisms of their formation. Rigidity is unrelated to emotional intelligence, indicating its independence from emotional regulation. These results can help develop psychological support strategies by focusing on developing emotional intelligence to reduce anxiety and frustration while considering other factors to manage aggression and rigidity.

Conclusion

Empirical results allow us to draw the following conclusions. Extroversion dominates among students, which indicates the majority's desire for active social interaction even under martial law. This can be seen as their adaptive strategy to reduce stress. At the same time, a significant percentage of introverts indicate the existence of a group of students who, during a crisis, choose internal work on their emotional state and independent adaptation. A few ambiverts confirm the tendency to have well-defined personality types (extroverts or introverts) rather than a balance between them. This can be explained by war-related stressors that contribute to the aggravation of extreme behavioural strategies.

Extroverted students generally show average emotional intelligence, but some need additional support to improve their emotional self-regulation skills. Introverts are more likely to face difficulties at this level, but some show a high ability to understand and control emotions. Ambiverts show the most balanced and high levels of emotional intelligence, making them the most flexible and adaptive group.

Extroverted students show increased levels of anxiety and frustration. Introverts generally show better stress tolerance with low levels of anxiety and aggressiveness, although a small portion may be prone to frustration. Ambiverts are the most stable group, with low levels of anxiety and frustration, which indicates their flexibility in behaviour.

Summarising the study's results, we can distinguish the psychological characteristics of each typological group (extroverts, introverts, ambiverts). Extroverts, being socially active, often show anxiety and aggressiveness in the stressful conditions of war. However, they maintain social contacts to reduce their frustration and need to interact with their environment, which helps them cope with stress. Despite this, high levels of anxiety and frustration require additional psychological support.

Introverts show high emotional stability and the ability to self-reflect and are less likely to show anxiety and aggression. They are likely to use their internal resources to deal with stress,

which allows them to maintain self-control and focus on personal goals even under challenging circumstances.

Ambiverts are the most flexible and adaptive group in war conditions. They show a high level of emotional stability and the ability to manage their emotions effectively, which helps them successfully cope with anxiety and frustration. They skilfully switch between social activity and individual adaptation strategies depending on the situation.

Under martial law, each typological group shows its unique responses to stress: extroverts are more likely to be anxious and aggressive, and introverts show high emotional stability and the ability to control aggression. In contrast, ambiverts show the most excellent flexibility and adaptability.

Correlation analysis revealed interesting patterns: emotional intelligence plays a crucial role in regulating states of anxiety and frustration. A higher level of emotional intelligence contributes to better control over these states. Aggressiveness was not associated with emotional intelligence, indicating different formation mechanisms. Rigidity also does not correlate with emotional intelligence, indicating its independence from the emotional regulation processes.

The results can serve as a basis for developing psychological support strategies, focusing on developing emotional intelligence to reduce anxiety and frustration. At the same time, it is significant to consider other factors to effectively manage aggression and rigidity in extreme conditions, such as war.

Conflict of interest

The authors declare that there is no conflict of interest.



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Appendix



Table 1. Results of correlation analysis

Mental States	Emotional Intelligence
Anxiety	$r = 0,545$
Frustration	$r = 0,479$
Aggression	$r = - 0,199$
Rigidity	$r = 0$

Theoretical aspects of studying perfectionism in the process of professional training ^[10]

Abstract: The article discusses the concept of perfectionism in various aspects of human activity, which is of great interest to both foreign and domestic scholars. This interest can be explained by the high pace of life, social changes, growing competition, the cult of rationality and the desire for perfection that prevails in modern society. Modern psychologists interpret the term “perfectionism” as an individual’s desire to improve himself or herself and achieve perfection in all areas of activity. Perfectionism manifests in setting excessively high performance standards, accompanying this practice with critical self-evaluations and anxiety about the judgements of others. In the context of professional activities, it can contribute to success and lead to burnout and reduced productivity. Research on this topic helps to understand how perfectionistic tendencies shape personality and professional strategies, like their impact on mental health. Perfectionism has a significant effect on the efficiency and effectiveness of professional activities. Most researchers believe it hurts professional performance, leading to decreased productivity, chronic fatigue, self-dissatisfaction, procrastination, burnout syndrome, and fear of failure. However, some scholars point to positive aspects of perfectionism that contribute to personal development. Prospects for further research focus on an empirical analysis of the impact of perfectionism on professional activities, which may help to identify new ways to support mental health and work performance.

Keywords: perfectionism, normal perfectionism, destructive perfectionism, perfective personality, professional identification.



Introduction

Modernity is characterised by complex and contradictory realities that affect the development of a young democratic Ukraine and global changes in all spheres of its life. These factors form a social order for the professional training of future specialists in socio-economic professions, emphasising the need to create a personally mature and professionally competent specialist. Constant work on self-improvement requires considerable energy and high requirements for motivational and dispositional factors of future specialists’ behaviour. In this regard, developing perfectionist attitudes in students is becoming a significant area of psychological and pedagogical research on future professional and personal growth.

The study aims to analyse the existing approaches to studying personal perfectionism in professional training.

For a long time, perfectionism has been studied by many scientists such as D. Burns, N. Garanyan, O. Loza, J. Ashby, R. Slaney and D. Johnson, M. Smith, D. Saklofsky, H. Stober, S. Sherry, R. Frost, P. Marten, K. Lahart, R. Rosember, P. Hewitt and G. Flett, R. Hill, T. Hulsman, R. Furr, J. Kibler, B. Wickent, K. Kennedy (*Grisenko & Smoliarova, 2012; Diachenko et al., 2020; Zakharenko, 2021; Karamushka et al., 2018; Kononenko & Kononenko, 2017; Kuzina, 2018*), etc. However, the available research leaves the question of the role of perfectionism in professional training.

Material and results

The term “perfectionism” came to European languages from the Latin “perfectus”, i.e., absolute perfection. In psychological science, perfectionism is interpreted as the belief that improvement, both of oneself and others, is the goal for which a person should strive.

In psychological science, perfectionism is viewed as a desire for self-improvement, a personality trait. At the everyday level, perfectionism is understood as an excessive desire for perfection, a person’s high demands on himself or herself and everyone around him or her. We can find the following synonyms for the term “perfectionism”: “perfect”, “complete”, “flawless”, “ideal”, “unsurpassed”, “exemplary”, etc. Sometimes perfectionism is called the “excellent student syndrome” because of the desire to do everything with “excellent” marks.

K. Horney, who made the first scientific theoretical studies in this area, believed that in striving to get as close as possible to the “true ideal”, a person is born with a “healthy” goal and values of life are formed. At the same time, the researcher warned that one should distinguish between the concepts of a “true ideal” and a “neurotically idealised self-image”. A. Adler, in his concepts, considers the “striving for perfection” or “striving for superiority”, which, in our opinion, is the basis of perfectionism (Loza, 2015).

M. Hollender was among the first to define perfectionism as “the everyday practice of demanding a higher quality of performance than the circumstances require”. The scientist assigned this character trait a leading role in overcoming depression and various psychological diseases (Kononenko, 2016; Kuzina, 2018). D. Burns performed an in-depth analysis of the concept. They defined perfectionism as a particular “network of cognitions” that includes expectations, interpretations of events, and assessments of oneself and others. According to his description, individuals suffering from perfectionism “tend to set unrealistically high standards, strive for impossible goals, and define their value solely in terms of achievement and productivity” (Loza, 2015).

According to A. Pakht, perfectionism is a widespread and complicated problem associated with many psychological and physical disorders (alcoholism, personality disorders, neuroses, depression, etc.). It has clinical, psychological, sociological, socio-psychological, and cultural significance (Loza, 2015).

O. Loza was among the Ukrainian researchers who made the first attempts to classify all the theories of perfectionism, identifying three approaches to defining this phenomenon: as a desire for self-improvement (self-improvement motive), as an attitude (setting), as a personality trait (Loza, 2015).

L. Karamushka and T. Hruby consider it appropriate to distinguish between two main groups regarding the perfectionism construct. Namely, perfectionism with a positive orientation is characterised by a constructive desire to achieve positive self-esteem; a person enjoys the work he or she does, strives for self-development and improvement of results, considering his or her capabilities, while remaining able to accept the fact that there is a limit to his or her perfection. Negative perfectionism arises from an incorrect ratio of “perfectionist” tendencies and their disproportionate development, which causes no result to seem perfect enough to a person. It is characterised by irrational thinking, a tendency to self-criticism, self-blame and blaming others, procrastination, and maladaptive coping strategies (Karamushka et al., 2018).

A. Zakharenko, depending on the level of perfectionism, distinguishes the following types of perfectionist personalities: hyper-perfectionists – excessively perfect, set too high goals and are not satisfied with the results obtained; constructive perfectionists – formulate achievable goals, can adjust them depending on the situation, allowing for the possibility of both success and failure; destructive perfectionists – have polarised thinking and an undemanding system of standards that levels the likelihood of achieving it, and any result is recognised as imperfect; hypo-perfectionists – with very weakly expressed perfectionist claims, are light-hearted about work and mistakes, but tolerant of themselves and others, fully satisfied with themselves, have high self-esteem and a positive perception of life (*Zakharenko, 2021*).

Different studies in the psychological literature reflect different understandings of the definition of perfectionism. We understand perfectionism as a personality trait that manifests itself in daily practice as a requirement for oneself to perform activities at a higher level of quality than required by the circumstances.

Thus, perfectionism undoubtedly forms a certain rhythm in a modern person's life, determining their social activity's style, quality, and speed. It serves as the basis for success and professional self-realisation, positively impacting productivity in the professional sphere. This is manifested in increased activity in achieving socially approved goals, conscientiousness, flexibility in behaviour and a high level of self-regulation.

Professional perfectionism can be defined as an individual's desire for excellence, setting high personal standards and trying to achieve results that meet the highest moral, ethical and intellectual standards. This approach promotes personal development and improves the overall quality of professional performance, creating the conditions for achieving significant career success.

In our opinion, it is crucial to focus on the study of professional perfectionism in the context of professional identification, focusing on its positive aspects, such as an active desire for achievement, high personal performance standards, organisation, and efficiency.

T. Grubi notes that the analysis of scientific sources by both foreign and domestic scholars has revealed the positive impact of perfectionism on the productivity of an individual's professional activity. The main aspects are as follows:

- the key to success and professional self-realisation;
- the dominance of the motivation to avoid failure;
- conscientiousness and constructive striving for achievement;
- high results in various areas of professional activity;
- altruistic social attitudes;
- activity in achieving socially approved goals;
- increased self-respect, self-confidence and positive self-esteem;
- self-efficacy and self-actualisation;
- effective learning strategies and good academic performance (e.g., for postgraduate teachers);
- development of adaptive coping strategies;
- positive interpersonal qualities;

- high level of responsibility (including external and internal control over the performance of own activities);
- flexibility in behaviour, developed ability to model the conditions of own activities, like a high level of general self-regulation (*Gruby, 2016*).

Perfectionism is a powerful motivator for professional development, as it encourages professionals to set high standards and strive to achieve the best results in their work. This desire can increase their productivity by enabling them to learn new skills, improve their existing knowledge and search for innovative approaches to performing tasks. In addition, perfectionism promotes a thorough analysis of one's achievements and mistakes, allowing professionals to understand their strengths and weaknesses better. However, perfectionism can also pose challenges and risks for a future professional, as it can lead to psychological stress, overwork and overload, and negatively affect the self-esteem of professional skills, motivation and attitude toward mistakes and own achievements (*Gruby, 2016; Karamushka et al., 2018; Zakharenko, 2021*).

The psychological factors of professional perfectionism are constant dissatisfaction with oneself and achievements, a "stupor" in activities where there is no confidence in the high quality of performance, and competitive relationships with others through constant comparison of oneself. Perfectionistic traits in professionals' future manifest in the desire to meet high standards of professional activity, functional efficiency, and continuous personal and professional self-improvement.

One aspect of perfectionism in professional training is self-judgement and fear. This is manifested in a critical attitude to one's achievements and failures, which can lead to a constant feeling of dissatisfaction. Fear of making mistakes or being judged negatively by others can interfere with practical learning and professional development by blocking creativity and initiative. Thus, it is significant to identify these aspects of perfectionism to find a healthy balance between striving for excellence and accepting one's shortcomings.

Thus, the role of perfectionism in the professional training process of future specialists affects motivation, self-esteem and attitude towards the future profession. The significance of self-acceptance, flexibility and awareness of one's values are highlighted as crucial strategies for overcoming perfectionistic tendencies and forming a professional identity. These elements help to create a healthier approach to professional development, allowing professionals to focus on growth and learning rather than just achieving perfection. Thus, balancing the pursuit of excellence and self-acceptance becomes an important aspect that supports psychological well-being and professional effectiveness, contributing to a successful career.

Conclusions

Thus, the analysis of different views on the problem of perfectionism has shown that there is currently no single, generally accepted answer to the question of its phenomenological nature since perfectionism is a complex and multidimensional phenomenon. Studies by foreign and domestic authors reveal this construct's positive and negative aspects.

Perfectionism is characterised by pursuing high standards, impeccability, and achievements in all areas of life. It can be viewed as a special style of thinking, emotional reaction, and behaviour focused on achieving excessively high expectations. It manifests in a constant desire

for perfection, a critical attitude to one's results, and perfectionistic demands on oneself and others. This formulation is generally accepted and widely used in the psychological literature.

Studies have also shown that perfectionism can significantly impact professional motivation, self-esteem, and attitudes towards the future profession. Self-acceptance, flexibility, and awareness of one's values are highlighted as key strategies for overcoming perfectionistic tendencies and forming a professional identity, emphasising the importance of psychological well-being in professional activities.

Conflict of interest

The authors declare that there is no conflict of interest.



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Vasyl V. Leta ^[22]

Statistical analysis of water quality indicators in the Tisa River's transboundary section ^[11]

Abstract: In today's conditions, when river basin systems are undergoing anthropogenic transformation and considering the multifactorial impact of economic activity on the environment, there is a need for a comprehensive analysis of surface water quality. Since river waters are closely connected with the catchment area, they serve as indicators of the geo-environmental state of the entire basin system. When selecting the research object – a transboundary section of the Tisa in Zakarpattia Oblast (Dilove – Tyachiv) – not only natural factors that shape river water quality but also various anthropogenic pressures were considered. The Tisa basin in the Rakhiv district is of great ecological, economic and transboundary significance. The study aims to assess the water quality of Tisa's transboundary section from Dilove to Tyachiv. The objectives are to substantiate the scientific basis for environmental studies of surface waters, analyse the hydrochemical parameters of water quality in the transboundary section of the Tisa, based on the stock materials of the Tisa Basin's water resources management, determine the quality of river waters in the section of the Tisa, using the methodology for assessing water quality by a complex indicator – the hydrochemical water pollution index; identifying natural and anthropogenic factors that affect the physical and chemical indicators of water quality; developing recommendations for improving water quality within the study area. The study applies a systematic approach to analysing the water quality of the Tisa, which aims to optimise nature management and increase the effectiveness of water protection measures. General scientific methods, such as retrospective analysis, systematic and structural approach, and evaluation methods, like special methods, such as mathematical and statistical analysis, semi-stationary observations, and cartographic studies, were used. The main tool used in the study is the methodology for assessing water quality based on the hydrochemical water pollution index.

Keywords: hydrochemical indicators, anthropogenic impact, water quality, water monitoring, transboundary section of the Tisa River.



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Статистичний аналіз показників якості вод транскордонної ділянки річки Тиса

Анотація: У сучасних умовах, коли річково-басейнові системи зазнають антропогенної трансформації та з урахуванням багатофакторного впливу господарської діяльності на навколишнє природне середовище, постає необхідність комплексного аналізу якості поверхневих вод. Оскільки річкові води тісно пов'язані з водозбірною територією, вони слугують індикаторами геоecологічного стану всієї басейнової системи. При виборі об'єкта дослідження – транскордонна ділянка річки Тиса в Закарпатській області (с. Ділове – м. Тячів), враховано не лише природні фактори, що формують якість річкових вод, але й різноманітні антропогенні навантаження. Басейн річки Тиса в Рахівському районі має велике екологічне, господарське і транскордонне значення. Метою дослідження є визначення оцінки якості вод транскордонної ділянки річки Тиса від с. Ділове до м. Тячів. Завданнями є: обґрунтування наукових основ екологічних досліджень поверхневих вод; аналіз гідрохімічних параметрів якості вод на транскордонній ділянці р. Тиса, спираючись на фондові матеріали Басейнового управління водними ресурсами річки Тиса; визначення якості річкових вод ділянки р. Тиса, використовуючи

методику оцінки якості вод за комплексним показником – гідрохімічним індексом забрудненості вод; виявлення природних і антропогенних чинників, що впливають на фізико-хімічні показники якості вод; розробка рекомендацій для покращення якості вод у межах досліджуваної ділянки. У дослідженні застосовано системний підхід до аналізу якості вод річки Тиса, що має на меті оптимізацію природокористування та підвищення ефективності водоохоронних заходів. Використані загальнонаукові методи, такі як ретроспективний аналіз, системно-структурний підхід та методи оцінювання, а також спеціальні методи, зокрема математико-статистичний аналіз, напівстаціонарні спостереження та картографічні дослідження. Основним інструментом у дослідженні є методика оцінки якості вод на основі гідрохімічного індексу забрудненості вод.

Ключові слова: гідрохімічні показники, антропогенний вплив, якість вод, моніторинг вод, транскордонна ділянка річки Тиса.



Abbreviations:

*BOC*₅ is five-day biochemical oxygen consumption

COC is chemical oxygen consumption

HWP is hydrochemical water pollution

MPC is maximum permissible concentrations

Tisa or Tysa, or Tisza are similar names of the river of Central and Eastern Europe

Introduction

The territory's mountainous natural conditions have unique features that affect the formation and dynamics of hydrological and physicochemical parameters of water resources. These parameters are subject to changes under various anthropogenic factors, such as deforestation, intensive land use, and industrial and agricultural waste pollution, directly affecting surface water quality. Such a diverse impact of natural and human factors requires a comprehensive and detailed study since the effectiveness of water resources management depends on it (*Dubis, 1994*).

In particular, for the transboundary Basin of the Tisa, where water resources are of great economic and environmental significance, it is significant to ensure an effective water quality monitoring system (*Khilchevsky et al., 2023; Leta, 2017*). This will allow the timely detection of negative changes in hydrological conditions and the chemical composition of water to minimise the impact of harmful factors on the ecosystem. Such a study will help improve existing monitoring methods, such as contributing to the development of an optimal environmental management strategy that considers the ecological sustainability of the region and ensures the rational use of water resources within the basin.

This study aims to assess water quality in the transboundary section of the Tisa extending from the village of Dilove to the city of Tyachev. Several tasks were set to achieve this goal. First, a scientific justification of environmental studies of surface waters was performed. Secondly, the analysis of hydrochemical parameters of water quality in the specified section of the Tisa was performed using stock materials for the basin management of Tisa's water resources. The next step was to determine water quality using a complex indicator – the *HWP*

index. Special attention was paid to identifying natural and anthropogenic factors that affect water's physical and chemical characteristics. In conclusion, recommendations were developed to improve the water quality within the studied section of the Tisa.

Water quality assessment methodology

The study uses a comprehensive, systematic approach to analysing Tisa's water quality, aiming to optimise nature management and improve the efficiency of water protection measures in the region. The main focus is on integrating various methodological approaches to obtain a comprehensive assessment of the state of water resources and develop practical recommendations for their protection (Obodovsky, 2001).

General scientific methods such as retrospective analysis, system-structural approach, and assessment methods are used to in-depth analyse changes in water quality over time and structure data. Special methods include mathematical and statistical analysis, which allows the identification of relationships between different indicators, semi-stationary observations to assess the dynamics of water quality, and cartographic studies, visualising spatial aspects of the problem.

The key tool in the study is the method of water quality assessment based on the *HWP* index, allowing quantifying the water pollution level based on the integration of many physical and chemical indicators. This approach ensures the objectivity of the assessment and forms the scientific basis for making managerial decisions on water resources' protection (Lerchak et al., 2013).

The *HWP* index is a water quality assessment method, considering parameters such as dissolved oxygen content, *BOC*₅, chemical oxygen consumption, concentrations of ammonium ions, nitrite ions, and petroleum products (Snezhko, 2001). The obtained values of these indicators are compared with the *MPC* for waters used in fisheries (*MPC*_f), after which the arithmetic mean is calculated.

$$HWP = \frac{1}{6} \sum_{i=1}^6 \frac{C_i}{MPC_i}, \quad (1.1)$$

where:

C_i is concentration of the *i*-th indicator;

MPC_i is maximum permissible concentration for the *i*-th indicator.

Indicators of *BOC*₅ and dissolved oxygen content (*O*₂) are calculated according to the relevant standards, depending on their values. The resulting *HWP* value is compared with ranges corresponding to some water quality classes, based on which the level of its contamination is determined (Table 1).

The information base for this study was a variety of sources that provided a comprehensive and objective understanding of the quality of water resources. In particular, we used the reporting materials of the Boris Sreznevsky Central Geophysical Observatory, which contain significant hydrometeorological data. In addition, the materials on the basin management of Tisa's water resources played a significant role, providing information on the condition of Tisa Basin's water resources and the results of monitoring the water quality of the transboundary section of the river.

Materials from periodicals covering topical issues of ecology and water resources, like domestic scientists' scientific works, allowed us to consider modern approaches and experience in studying of water geosystems, added to the official reporting. A significant element of the information base was the results of our field studies conducted for a detailed study of physical and chemical indicators of water quality. These data provided a real picture of the state of water resources within the study area and made drawing reasonable conclusions and recommendations possible.

The results of the study

Natural conditions for forming the ecological state of Tisa's surface waters

The study area includes the entire Rakhiv district and most of the Tyachiv District of Ukraine's Transcarpathian region. The complex morphometry of the territory includes the mountain ranges of Chernogora and Svidovets, like part of the Marmaros Massif, Yasinyansk and Solotvyno basins. The complexity of the mountainous terrain of the territory also affects the density of the river network, represented by the Chernaya Tisa and Belaya Tisa, the confluence of which near the town of Rakhov (at an altitude of 460 m above sea level) gives rise to the Tisa. There are also numerous tributaries of the Tisa, the largest of which are the Kosovskaya, the Shopurka, Apshitsa, Teresva, etc. The dismemberment of the topography decreases from the sources of the Chernaya Tisa downstream. The study area is approximately 3,420 sq. km, and the length of the Tisa section from Rakhov to Tyachev is 80 km, of which approximately 60 km is the state border between Ukraine and Romania.

The map showing the location of water monitoring points in the upper reaches of the Tisa was developed using ArcGIS 10.4.1 software and appropriate tools (*Figure 1*).

The climatic conditions of the studied territory are formed mainly under the influence of topography since this is one of the highest areas in Ukraine, except for its southwestern part. The mountain ranges of Svidovets, Chernogora, Rakhiv and Marmaros mountains serve as natural barriers that prevent the penetration of various air masses. This affects the level of moisture, which, in turn, regulates watercourses, particularly flood and low-water regimes, like the level of groundwater and the processes of erosion and mudflows. Thus, the climate of this area is characterised by high humidity, which is significant for developing local ecosystems.

Air masses entering the territory of the Tisa catchment area within Transcarpathia have different origins: temperate, arctic, and tropical. They determine key climatic characteristics such as temperature, humidity, and precipitation. However, their movement is limited by narrow river valleys and mountain ranges, which contribute to specific air circulation. The exception is heights of more than 1200 meters, where the terrain has less influence on the movement of air masses.

The Tisa Basin's temperature regime is related to the height of the terrain. In the valley, the average annual temperatures range from +5°C to +7°C, while at higher elevations, they drop to +3°C. the coldest month is January, with a temperature from -5°C to -6°C, and the warmest is June, with an average temperature from +15°C to +16°C, while it is about +11°C at higher elevations. This temperature pattern gives the region a temperate continental climate, where the difference between winter and summer temperatures remains insignificant.

The annual humidity in this area is approximately 80%, contributing to the moistening of forests and affecting the vegetation cover. The moisture coefficient varies between 1.32 and 1.43, and the amount of precipitation per year varies depending on altitude. In the Lowlands, it falls from 900 to 1,400 mm, and altitude areas are more than 1,600 mm high. This distribution of precipitation significantly affects water resources and flood phenomena, which are most pronounced in spring and summer, when up to 53% of the annual precipitation rate falls. During this period, rivers become full-flowing, especially during snowmelt, increasing the water table.

Snow cover in the mountains is formed in early November and lasts about five months. The highest snow heights are observed in late January and early February. In high-altitude areas (800-1,000 m), the snow height reaches 150-200 cm, while valleys range from 70-80 cm. Snowmelt and rainwater significantly impact the chemical composition of watercourses, increasing the content of oxygen, iron, manganese, zinc and lead washed out of soils and rocks. In addition, agricultural runoff in the valleys adds nitrogen-containing compounds and phosphates to the water, especially during spring floods.

In the mountainous conditions of the Rakhiv and Tyachiv districts, the river flow of the Tisa and its tributaries is most affected by precipitation, geological features, terrain dismemberment, steep slopes, and the limited ability of catchments to accumulate water. Research shows that the average annual runoff over the past decades has tended to increase.

Changes in rivers' hydrological characteristics, such as water level, flow rate, seasonal and annual flow distribution, and food sources, affect water's chemical composition. Such fluctuations are reflected in water mineralisation, the concentration of basic ions, heavy metals, and biogenic substances.

Like many other Carpathian watercourses, the Tisa has a flood regime. Frequent floods occur due to heavy precipitation during the warm period of the year (from May to October), snowmelt during winter thaws, and spring snowmelt, often accompanied by rain.

Spring floods on the Yew and its tributaries usually begin in late March or early April due to snowmelt and rain. They can occur in several waves, raising the water level by 150-200 cm per day during large floods and 5-15 cm during small ones. According to hydrological data for 1950-2016 at the hydropost in Rakhiv, the maximum water level was recorded on March 5, 2001, and it was 575 cm. In years with a large amount of precipitation, up to 10-14 floods can occur, most of which occur in summer and autumn due to heavy rains. Winter floods are less predictable, but due to thaws, the water level can rise sharply to 2.2 m per day. Summer and autumn downpours and spring floods usually cause the most significant water rises.

The annual flow regime of rivers in part of the Tisa Basin is mainly characterised by floods observed from March to August. However, floods also often occur in autumn and winter, making it difficult to distinguish between seasons and hydrological periods clearly.

The soils of the Rakhovsky district were formed during the Holocene under the influence of biological processes on rocks in conditions of diverse moisture and relief. In mountainous areas, brown-earth soil formation dominates, characterised by high-altitude zoning, a thin layer of soil, and significant erosion processes.

The most common are brown or brown mountain forest soils, which occur up to an altitude of 1500 m and were formed on diluvial fish rocks. Under forest cover, the humus content can reach 10-15%, and on cultivated land – 3-5%.

Sod-brown soils, forming on slopes and river terraces in the Yasinya Basin and the southwest, are similar to brown mountain forest soils but characterised by a higher humus content (up to 5%).

In the subalpine and alpine zones of Svidovets and Montenegro, mountain-meadow-Brown-Earth soils are common, characterised by a high humus content (7-15%).

Thus, it can be argued that the annual flow regime of rivers in the Tisa Basin is characterised by a predominance of floods, which most often occur from spring to summer. However, they can also be observed in autumn and winter, making distinguishing between seasonal hydrological periods difficult. The soil cover of the Rakhovsky and Tyachevsky districts was formed under difficult mountain conditions and varying degrees of moisture for a long time. The dominant type is brown-earth or brown mountain-forest soils, occurring up to an altitude of 1500 m. These soils are formed on fish rocks and contain much humus, especially under Woodlands. Sod-Brown soils are found in basins and river terraces, with a similar composition but higher humus content. Subalpine and alpine zones are dominated by mountain-meadow-Brown soils, also characterised by a high organic matter content. This soil structure affects the region's local ecosystem and water resources.

Anthropogenic factors affecting the ecological condition of Tisa's surface waters

Natural conditions, topography, and historical features of the territory contributed to the development of the economy, which intensively used the limited resources of agricultural land. As the height decreases, the area of hayfields and pastures in the land funds of administrative divisions decreases. The most valuable category of agricultural land is arable land (arable land). The area of arable land depends on natural conditions, such as orography, forest cover, climate, and population. The share of arable land in the Land Fund is growing downstream of the Tisa, which is natural; as the river valleys expand, the number of suitable lands for cultivation increases, the average height of the territory decreases, and the area of hayfields and pastures decreases, while the population increases.

Analysing the ploughing of agricultural land, it can be seen that mountainous terrain plays a key role in determining the specialisation of Agriculture, the nature of land use and the size of areas allocated for arable land, hayfields and pastures. Arable land is often located on the slopes of narrow river valleys and coastal areas, creating risks of organic contamination of surface waters due to the introduction of fertilisers, pesticides and increased solid runoff during floods and floods. Regarding the distribution of protected land, the main factor is the presence of protected areas, nature reserves, natural monuments and other objects of the nature reserve fund within administrative divisions.

When analysing the impact of recreational activities on the water resources of the Tisa within the Rakhiv district, you should also highlight the area of land intended for recreational purposes in various administrative entities (village, town and city councils). Land use in the context of recreation covers small areas. However, this industry's significant natural resource potential explains some differentiation in the distribution of such land.

Managing solid household waste and its disposal in landfills and landfills is problematic. Due to the relief features of the mountainous area, which limit the possibility of placing landfills, many of them are located near rivers, particularly the Tisa. The situation with the landfill in

Rakhov, located on Tisa's left bank, is especially alarming. In some areas, the height of garbage layers reaches ten meters, causing water pollution from household waste, chemicals and other pollutants, especially during floods, when hundreds of waste units per minute enter the river.

A significant aspect of the economy of the Rakhiv and Tyachiv districts is water use, affecting the hydroecological condition of the rivers of the Tisa Basin (*Boyko et al., 2008*). Water intake is performed from municipal wells and the Tisa's surface waters. In urban settlements of the Rakhiv District, 40% of the housing stock is equipped with water supply, including private water supply systems, and in rural areas, this figure is 35.7%. Sewerage covers 30% of residential buildings in urban settlements and 25.6% in rural areas. At the same time, a significant part of the rural population uses water from wells, about 20% of which do not meet environmental standards due to violations of sanitary protection zones.

Among the main pollutants of water resources of the Tisa and its tributaries, water users dominate, including public utilities, mining and woodworking industries, recreational facilities, environmental institutions and educational institutions. The largest volumes of wastewater fall on the woodworking enterprise LLC "Karpaty" in the village of Veliky Bychkov and municipal enterprises "Rakhivvodokanal" and "Rakhivteplo" in the city of Rakhov. The sewer infrastructure of the Rakhovsky district is in unsatisfactory technical condition. Expanding the water supply network in Rakhiv is a highly costly process that has remained unresolved over the past 20 years due to financial difficulties.

The Tisa collects Rakhov's sewage and drainage water, one of the area's leading sources of modern pollution. The treatment facilities of Rakhov and Tyachev, like the water intake system of the village of Bolshoy Bychkov, have been in operation since Soviet times, are not being upgraded, and no longer meet modern needs.

One fundamental cause of water pollution is insufficiently treated or untreated wastewater containing organic substances from municipal, industrial, and agricultural sources, such as livestock complexes and manure storage facilities. These pollutants violate the oxygen balance in the water, which can negatively affect the ecological state of water bodies and the number of aquatic organisms.

During route surveys of the Chernaya Tisa, Belaya Tisa, and Tisa along the Ukrainian-Romanian border, fertilisers, household waste, spontaneous landfills, manure storage facilities, and summer animal sites located in coastal protective zones and floodplains were found to affect water quality.

The impact of agriculture on the quality of water in rivers is mainly due to the following factors:

- the use of organic and mineral fertilisers on cultivated land plots;
- the use of coastal zones and floodplains for agricultural needs;
- the placement of manure storage facilities and summer livestock sites near rivers;
- the discharge of water from fish ponds into rivers;
- the lack of sewage treatment plants and centralised drainage at livestock facilities.

The field of recreation and tourism in the upper reaches of the Tisa has a rich potential due to natural historical and architectural resources. However, unsystematic development of territories suitable for tourist and recreational use, low level of developing transport

infrastructure, poor water supply, lack of regular removal of household waste and the need to create centralised sewage systems, in particular in the Dragobrat Valley hinder the development of the tourism industry.

As a result, we can see that economic activity in the Rakhiv and Tyachiv districts significantly affects the hydrochemical regime of rivers, manifested in an increase in the content of biogenic substances and heavy metals, such as copper, zinc and lead. The anthropogenic impact is manifested through small areas of arable land, which occupy less than 1% of the territory, and a significant decrease in water-intensive industries led to a 20-fold reduction in the volume of water used from 1990 to 2018. The primary pollutants of rivers are municipal enterprises, of which only 10% of wastewater undergoes mechanical and biological treatment. In addition, the widespread spontaneous landfills along rivers, particularly in Rakhov, significantly worsen the water quality. Economic activity in small river basins can potentially transform natural ecosystems into natural economic ones, threatening aquatic ecosystems (*Afanasyev, 2006*). This highlights the significance of conducting studies of rivers used for fishing and recreation to predict hydro-ecological conditions. It is necessary to analyse structural changes and seasonal fluctuations in hydrochemical indicators to improve water management and solve water quality problems.

Hydrochemical regime and water quality assessment of the Tisa section

The study of the hydrochemical regime and water quality assessment of the transboundary section of the Tisa in the Rakhiv district was performed based on data collected by the basin management of Tisa water resources. The analysis of chemical and physicochemical indicators of the composition of surface waters and the corresponding environmental assessment was performed on the materials of monitoring points along the transboundary section of the Tisa – Dilove, Solotvino and Tyachev – according to the results of laboratory tests for 2021 and 2022.

The hydrochemical regime of surface waters of the transboundary section of the Tisa from the village of Dilove to the city of Tyachev within the Rakhiv and Tyachiv districts of the Transcarpathian region is considered based on the available stock materials of the basin management of water resources of the Tisa. Monitoring of the chemical composition of water is carried out monthly to ensure high data quality and the ability to track the intra-annual distribution and regime characteristics of indicators. The hydrological regime also plays a significant role because some chemical indicators (ionic composition, nitrogen-containing compounds, trace elements, and heavy metals) change at different river water content phases.

The selected chemical parameters allow us to analyse the oxygen regime, the content of biogenic substances, and specific pollutants, particularly petroleum products. This, in turn, allows us to analyse both natural conditions for forming water quality and trace anthropogenic factors of influence.

The high content of dissolved oxygen, in the average annual values of the range of 10.9-11.85 mg O₂/dm³, is due to the mountainous nature of the Tisa, and therefore, the rapid turbulent flow, the presence of rapids and a large number of tributaries. High indicators indicate a favourable habitat for living organisms. However, the increase in the average annual values of *BOC₅* and *COC* downstream of the Tisa from the village of Dilove to the city of Tyachev indicates an increasing anthropogenic impact, in particular, due to the discharge of water by

municipal enterprises, private households, tourist and recreational facilities, and industrial enterprises. Thus, the entry of organic substances into surface waters causes a deterioration in water quality, which is reflected in the appendix (*Table 2*).

The high total iron content (0,14–0,27 mg O₂/dm³) corresponds to a multiple of exceeding the maximum permissible norms, even for average annual values. Such indicators are due to both natural conditions (the presence of heavy metals in the geological foundation, soils, and underground waters) and anthropogenic sources (transboundary transfer and runoff from industrial enterprises) (*Skobley et al., 2014; Skoyley et al., 2017*).

Considering the impact of surface runoff from agricultural areas is also significant. In particular, river floodplains are used under arable land in the mountainous part of the study area, which, in the conditions of heavy rains, causes organic contamination of surface waters, including pesticides and nitrogen-containing compounds (N–NH₄⁺).

The low content of petroleum products in surface waters indicates the absence of natural and anthropogenic sources of pollution due to the absence of the mining industry, oil pipelines and oil refining enterprises. Indicators of the content of petroleum products are on the verge of determination (0.01 mg/dm³).

The arithmetic determines the *HWP* index mean excess of the maximum permissible concentrations of some group of indicators. According to the analysed data downstream, a consistent increase in *HWP* values is observed in the transboundary section of the Tisa (*Figure 2*). The calculated indices range from 0.9 to 1.4, which, in turn, corresponds to the second and third water quality classes (clean water and moderately polluted water, respectively). The increase in *HWP* downstream indicates an increasing anthropogenic impact. This is due to an increase in the number of people living in the coastal zone, like an increase in quantitative indicators of anthropogenic impact, particularly recreational facilities within the village of Solotvino. Consistently increased *HWP* values in the city of Tyachev due to a slight increase in the values of *BOC*₅, *COC* and a corresponding decrease in the content of dissolved oxygen indicate the presence of sources of organic contamination of surface waters.

Thus, studies of the hydrochemical regime and water quality of the transboundary section of the Tisa in the Rakhovsky district have shown that surface waters have a high content of dissolved oxygen, contributing to organisms' vital activity. However, there is an increase in anthropogenic impact downstream, manifested in the biochemical and chemical consumption of oxygen, iron content, and organic substances. This is caused by both natural conditions and the activities of the local population, like agricultural and industrial runoff, particularly in the area of Tyachev.

Discussion

The study showed that municipal industrial and private farms significantly degrade Tisa's water quality, confirmed by an increase in *BOC*₅ and *COC* indicators downstream from the village of Dilove to the city of Tyachev.

Changes in the river's water content phases affect the concentration of chemical parameters, particularly ions, nitrogen-containing compounds, and trace elements, which are worth considering during monitoring.

The gradual increase in the downstream water pollution index is associated with more intense anthropogenic impact, especially in coastal areas with high population densities and recreational activities.

The increased iron content in water caused by natural and anthropogenic factors exceeds the maximum permissible standards, although the level of petroleum products remains low.

Agriculture, especially in floodplain lands, contributes to water pollution with pesticides and nitrogen-containing compounds, which are noticeable after heavy rains.

Strengthening cross-border cooperation and developing joint water management strategies for the Tisa are necessary to reduce pollution.

Conclusion

Based on the analysis of chemical and physicochemical parameters of the surface waters of the Tisa in the transboundary area within the Rakhiv and Tyachiv districts, it was found that the mountain nature of the river contributes to a high content of dissolved oxygen, creating favourable conditions for aquatic organisms. However, an increase in BOC_5 and COC downstream indicates an increase in anthropogenic load, which negatively affects the ecological state of the river.

Increased concentrations of iron, nitrogen-containing compounds and organic substances indicate a mixed impact of natural and anthropogenic factors, including wastewater discharge and agricultural activities. At the same time, the low level of petroleum products confirms the absence of significant sources of petrochemical pollution.

Water pollution indices are rising from the village of Dilove to the city of Tyachev, indicating the growing impact of human activities, particularly wastewater discharge and recreational load in coastal areas.

It is necessary to develop and implement a more detailed and frequent programme for monitoring the chemical composition of waters to consider seasonal fluctuations and quickly respond to changes in the river's hydrochemical regime (*Leta et al., 2022*).

Expanding research on the impact of specific sources of pollution, such as municipal runoff, agricultural surface runoff, and recreational facilities, is advisable to develop effective measures to reduce their negative impact.

Strengthening international cooperation in water resources management is a significant step that will improve the ecological state of the Tisa in cross-border areas.

Prospective studies should examine the impact of climate change on the river's hydrochemical regime and predict possible long-term consequences for water quality.

Conflict of interest

The author declares that there is no conflict of interest.



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Appendix

Table 1. Classification of water quality by *HWP*

Water quality class	Water pollution level	HWP range
I	very clean water	$HWP < 0,3$
II	clean water	$0,3 < HWP < 1$
III	moderately polluted water	$1 < HWP < 2,5$
IV	contaminated water	$2,5 < HWP < 4$
V	dirty water	$4 < HWP < 6$
VI	very dirty water	$6 < HWP < 10$
VII	extremely dirty water	$HWP > 10$

Compiled by the author based on materials (*Snezhko, 2001*)

Table 2. Average annual values of chemical indicators of surface water composition of the transboundary section of the Tisa

Year / Item / Indicator		Biochemical oxygen consumption for 5 days, mg O ₂ /dm ³	Oxygen dissolved, mg O ₂ /dm ³	Ammonium nitrogen, mg/dm ³	General iron, mg/dm ³	Chemical oxygen consumption, mg O/dm ³	Petroleum products, mg/dm ³
2021	Dilove	1,71	11,85	0,080	0,17	5,1	0,01
	Solotvino	2,15	11,4	0,090	0,24	5,8	0,01
	Tyachev	2,44	11,3	0,080	0,27	6,6	0,01
2022	Dilove	1,93	11,2	0,086	0,14	6,1	0,01
	Solotvino	2,10	11,0	0,100	0,20	7,5	0,01
	Tyachev	2,30	10,9	0,110	0,21	7,2	0,01

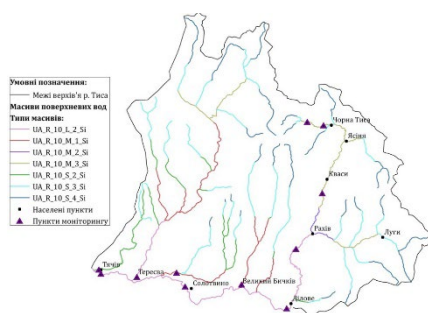


Figure 1. Map layout of water monitoring points within the upper reaches of the Tisa Basin (*Leta et al., 2022*)

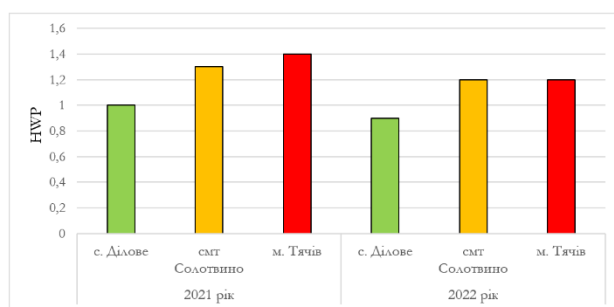


Figure 2. Dynamics of downstream *HWP* values in the transboundary section of the Tisa

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