

## Mechanisms of achieving sustainable micrologistics system functioning

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**Abstract.** At the current stage of development of the world and Ukrainian economy, which is characterized by a high level of instability of economic processes, the development of a scientific basis for preventing a negative impact on the sustainable functioning of micrologistics systems becomes an urgent task. The purpose of the study was to generalize the factors influencing the sustainable functioning of the micrologistic system and mechanisms to prevent the instability of its functioning in the future. The main research methods were: bibliometric analysis, generalization, analysis and synthesis. It was established that the sustainable functioning of the micrologistic system is the preservation and improvement of the main indicators of economic, organizational, managerial, production, logistic, technical and financial activities using a systematic approach to the management of the logistics system and under the influence of macroenvironmental factors. The system of factors for assessing the sustainability of the functioning of the micrologistics system is typified by such types of sustainability as managerial, production, market, financial and economic, innovative, investment, personnel, ecological ones. The value of the work consists in determining the factors of the internal environment that depend on the strategy of the logistics system itself; they include: management, financial, personnel, marketing, technological, innovation and logistics factors. In order to prevent the instability of the functioning of micrologistics systems, it is proposed to carry out a general comprehensive diagnosis of the entire system, namely the analysis of all business processes, the analysis of the main financial and economic performance indicators, the determination of negative factors and indicators and their sources of occurrence. The results of the research can be implemented in the activities of micrologistics systems, namely manufacturing enterprises, trading companies, logistics centres and companies engaged in logistics activities

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### INTRODUCTION

Micrologistics systems in Ukraine from 2019 to 2023 work under the influence of negative factors, such as the pandemic, the war, and are constantly at risk of being in a difficult situation and losing their economic stability, so they very often need the development of a new micro-level management system focused on sustainable development and overcoming crisis phenomena. Since micrologistics systems are subjects of economic relations, the stable functioning of individual branches of the economy, regions and countries as a whole depends on their stable functioning. The relevance of the selected issues is due to the need to create modern conditions for the stable

functioning of enterprises and companies for their development as part of meso- and macrologistics systems. The investigated problem is complex and multifaceted, which requires a more in-depth analysis, the formulation of proposals for an effective management system for the economic sustainability of micrologistics systems. The question of achieving sustainable functioning of micrologistics systems has not been studied sufficiently and requires further research.

N.G. Kalyuzhna & A.S. Sheremet (2022) studied the problems of the logistics systems of Ukraine. It is substantiated that the use of the proposed country logistics risk

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index will help enterprises and logistics companies to operate in the international market in order to maintain their competitive positions. The authors investigated only the logistics component, not taking into account other areas of activity of micrologistics systems and the influence of negative factors of the external environment. Researchers T. Kolodzieva *et al.* (2022) investigated the problems of logistics service as a component of the functional field of logistics: it is established that improving the quality of logistics service requires its assessment to identify relevant reserves; the indicators of the operation of logistics systems in terms of efficiency and return for consumers are determined. The study is of practical interest, but it does not indicate the extent to which indicators of the level of logistics service affect the sustainable functioning of logistics systems. It is also not determined what level of logistics service is the minimum for a micrologistics system and can be an indicator of the critical state of its competitiveness in the market.

L. Kurbatska *et al.* (2021) concluded that the main directions for improving the logistics system of enterprises will be the principles of the system approach, which are developed in the integration and clear interplay of all elements of the logistics systems. It is determined in the work that with the help of the method of synthesis of the logistics system, it is possible to adjust the goal, tasks and models of making and implementing management decisions in a timely manner. The author did not investigate the influence of internal factors on the sustainable functioning of the system, but this is a circle of factors that the company can independently control and look for ways to further optimization. O.A. Lisnichuk & T.A. Nesterchuk (2018) within the framework of the study summarized the external and internal factors that influence the financial stability of the enterprise. The author has developed a methodical approach to assessing the financial stability of modern enterprises, but the role of other economic factors that may affect the sustainable functioning of enterprises in Ukraine is not defined. Scientists O. Levkovich & Yu. Kalashnikova (2021) investigated the essence of the financial stability of the enterprise, determined the main factors influencing it and substantiated the indicators of the assessment of financial stability of the enterprise. However, the authors did not systematize and designate any possible indicators for assessing the stability of the functioning of enterprises. O.Yu. Kravets & O.V. Trifonova (2019) studied the features of the functioning of micro-, meso- and macrologistic systems. The authors developed the classification of micrologistic systems, identified their functional areas and main indicators of activity.

However, the above studies did not fully generalize the factors of internal and external influence on the stable sustainable functioning of enterprises. The purpose of the study was a theoretical generalization of the factors of influence on the sustainable development of the micrologistics system and the mechanisms that can contribute to preventing this influence in the future. The tasks of the study were to generalize the essence of the concept stability of micrologistics system functioning, methods of its evaluation, and determination of factors that have a greater influence on the stability and performance of micrologistics systems.

## ● MATERIALS AND METHODS

The scientific research includes the study of the mechanisms of sustainable functioning of micrologistic systems. The basis of the methodological approach in this work is a combination of the dialectical method of cognition, the systemic approach, bibliometric analysis, generalization, analysis, observation, and synthesis. The application of the dialectical method of cognition made it possible to study different scientific points of view regarding approaches to the sustainability of the functioning of micrologistics systems. The use of a systemic approach allows considering objects as systems, namely micrologistics systems from the point of view of their place in the structure of the macrologistics chain, on the one hand, and the existence of their functional internal subsystems, on the other hand. All these factors create a general impact on the productivity of enterprises and the sustainability of their functioning. With the help of bibliometric analysis, an analysis of modern scientific publications was carried out according to the research direction, namely, in relation to the problems of establishing the sustainability of the functioning of economic systems at the micro level. Based on the analysis of literary sources and the generalization of trends in the development of modern logistics systems, a definition of the concept of sustainability of the functioning is proposed. To generalize the factors influencing the sustainability of the micrologistics system functioning of micrologistics systems and factors for assessing the sustainability of the functioning of the micrologistics system, methods of analysis and synthesis were used.

The research was based on the use of the methodology of analysis of theoretical approaches and practical aspects of the implementation of various types of information and communication technologies, which was achieved through the use of methods: generalization – to formulate the basis of the concept of sustainability of the micrologistics system functioning; analysis – to learn about the influence of internal and external factors on the performance of micrologistics systems, to summarize the influence and form of assessment of factors of various groups of enterprise sustainability, as well as to determine the trends of their influence on the sustainability of the micrologistics system functioning. The methods of generalization and synthesis made it possible to combine the system of factors for assessing the stability of functioning and management of micrologistics systems, which consists of such types of sustainability as economic, market management, production, personnel, investment, innovation, environmental logistics, technical, financial and is constantly under the influence macroenvironmental factors. The use of the generalization method made it possible to typify the system of factors for assessing the stability of the functioning of the micrologistics system according to such types of stability as managerial, production, market, financial and economic, innovative, investment, personnel, and environmental. To form conclusions and proposals for increasing the stability of the functioning of micrologistics systems, the method of synthesis was used. It allowed to combine the opinions of different authors and draw conclusions based on their own observations regarding the improvement of the stability of the functioning of micrologistics systems.

## ● RESULTS AND DISCUSSION

### Determination of indicators for assessing the stability of micrologistics system functioning

At the beginning, it is necessary to determine what a logistics system is in general and a micrologistics system in particular. The term “logistics system” has a slightly different definition in modern scientific works of economists. Consider the most well-known of these definitions. The logistics system includes the integration of logistics elements within the framework of a certain economic system to optimize the processes of material flows (Krykavskiy & Chornopyska, 2009). The logistics system is a multi-level system that includes material and technical, organizational and economic, social – psychological and legal subsystems. The activity of logistics systems is based on such principles as flexibility, adaptability, compatibility and interconnection of all its links, etc. The subsystems that make up the logistics system integrated into the management process of an industrial enterprise have direct and feedback links with the external environment (Zhovtyi, 2016). The logistics system is considered as: a set of its constituent functional elements; an adaptive system with feedback; as an ordered structure; a set of material and related flows; unification of logistics operations; a set of enterprises, their structural subdivisions; a management system or an organizational-management coordination mechanism, etc. (Boldyreva, 2014). The logistics system is presented as a universal optimal set of management of the corresponding moving and stationary flows due to the optimal ratio of costs and results. The micrologistics system functions within the industrial complex to ensure the proper efficiency of both individual divisions and facilities as a whole (Tserkovna, 2019).

According to the institutional approach, logistics systems are divided into: macro-, meso-, and micrologistics systems. Achieving sustainable functioning is a priority area of research in the modern conditions of existence of logistics systems. The research of many scientists does not fully reflect all spectrums of logistics activities due to

the variability of external and internal factors influencing the functioning of logistics systems, the need for constant analysis and synthesis in order to improve the performance of micrologistics systems. Micrologistics systems are separate links of supply chains (Tserkovna, 2019; Gandia & Parmentier, 2020). Not only the results of their work depend on the stable functioning of micrologistics systems, but also the stable functioning of meso- and macrologistics systems as a whole. The concept of sustainability of the micrologistics system functioning is multifaceted. The essence of sustainability is determined by the effective supply, distribution, and use of material, financial, and informational resources in the process of managing the logistics activities of micrologistics systems (Melnikova, 2017; Khvishtun & Kovalchuk, 2018; Kalyuzhna & Sheremet, 2022).

Based on the synthesis of literary sources, the existing varieties of system sustainability are summarized and it is proposed to use a systematic approach and the principle of integration for them. The definition proposed by the author of this study has the following interpretation: “sustainable functioning of the micrologistics system is the preservation and improvement of the main indicators of economic, organizational, management, production, logistics, technical and financial activities under the condition of the existence of a systematic approach to the management of the logistics system and under the influence of macroenvironmental factors”.

The concept of sustainability of the functioning of micrologistics systems is expressed in the balance of all economic indicators of micrologistics system activity (Busse & Wallenburg, 2011; Boldyreva, 2014; Zhovtyi, 2016). They must adapt to the factors of variability in the external environment and have a flexible management structure inside. The stable operation of the micrologistics system is primarily ensured by the internal management structure and the quality of its management by top managers. Table 1 shows the system of factors (indicators) for assessing the stability of its operation.

**Table 1.** System of factors for assessing the stability of the operation of the micrologistics system

Type of sustainability	Factors	Characteristics of the micrologistic system functioning factor	
		non sustainable	sustainable
Management	The share of management personnel in the total number of personnel of the system	High	Optimal
	Timeliness and efficiency of decision-making	Untimely	Timely
	Performance	Low	High
	Use of modern methods of exchanging information flows	None	Present
	Clear distribution of powers and responsibilities	None	Present
Production	Volume of production	Low	High
	Productivity	Low	High
	Capital-labour ratio	Low	High
	The duration of the production cycle	Increased	Decreased
Market	Market share	Low	High
	Entering new markets	None	Present
	Sales level	Low	High
	Product range	Narrow	Varied
	Image on the market	Negative	Positive

Table 1, Continued

Type of sustainability	Factors	Characteristics of the micrologistic system functioning factor	
		non sustainable	sustainable
Financial and economic	Gross profit	Low	High
	Cost level	Low	High
	Solvency	Low	High
	Profitability	Reduced	High
	Capitalization	Decreases	Increases
Innovative	Strive to implement innovations	Low	High
	Rate of profitability of innovative projects	Low	High
	Number of innovative products	Small	Large
	The share of innovative technologies implemented in the analysed period	Small	Large
	Discounted income from the implementation of innovative projects	Low	High
Investment	Enterprise value	Decreases	Increases
	Inflow of investments	Decreases	Increases
	The difference between inflows and outflows of funds	Negative	Positive
Personnel	The number of personnel	Changing	Optimal
	Salary level	Decreases	Increases
	Level of social protection	Low	High
Ecological	Use of energy-saving technologies	Slow	Present
	Amount of waste	Large	Small
	Negative impact on the natural environment	Significant	Insignificant
	Implementation of recycling	Slow	Present

Source: created by the author

The methods that can be used to assess the sustainability of micrologistics system functioning include: the comparison method, the normative method, the method of developing a system of indicators, horizontal analysis, the method of the sum of points, the method of absolute (relative, average) indicators of systems (Zimon, 2015; Ali *et al.*, 2022) In the functioning of the micrologistics system, it is necessary to constantly analyse the factors that affect it and their dynamics. Depending on the scale of the logistics system of the enterprise, the life cycle of existence, sales markets, competition, external and internal influencing factors, it is necessary to monitor these factors. A significant influence on this process is the presence of an effective logistics management system.

The systemic instability of the functioning of the micrologistics system is associated with the negative operation of the subsystems, the lack of an effective management system, the imbalance in the performance of the main functions, the lack of optimal information exchange, the unsatisfactory use of modern technologies and innovations, which in turn will lead to the deterioration of the stability of the system's existence. Deterioration of the stability of the functioning of the micrologistics system is caused by the influence of factors of the external and internal environment. Each individual logistics system has its own industry specifics, infrastructure and individual characteristics. L. Kurbatska *et al.* (2021) suggests using the following components to ensure the principles of sustainable development of logistics systems: economic (direction of development: commercially sustainable, financially sustainable,

organizationally sustainable, production-technically sustainable and innovatively sustainable); social (direction of development: personnel-sustainable and income-sustainable); ecological (direction of development: resource-sustainable and environmentally-sustainable). Improving the strategic directions of enterprise activity requires stable development and functioning of the enterprise, increasing the efficiency of management functions.

#### Generalization of influencing factors on the stability of the functioning of the micrologistics system

The effectiveness of micrologistics systems in most cases depends on the implemented modern corporate information systems that allow experts to manage functional subsystems, business processes and adjust them in real time and space. At the same time, the main indicators are indicators of the reliability and importance of information related to integrated flows. For successful management of financial stability, a clear understanding of one of the main components of its provision is considered necessary, namely, stable solvency, having a large part of equity capital as a source of financing. This approach ensures that the enterprise does not attract financial flows from the outside and does not depend on creditors (Levkovich & Kalashnikova, 2021). The factors of the external environment that affect the stability of the micrologistics system functioning include: market, political, technological and financial ones. It is impossible to influence these factors, but they must be taken into account in order to prevent risks. The external factors that form the financial stability of the enterprise

and are vital for the stable functioning of the enterprise are determined by: economic performance indicators, solvent consumer demand, the economic, social and political situation in the country (Lisnichuk & Nesterchuk, 2018).

Factors of the internal environment depend on the strategy of operation of the logistics system itself, they include managerial, financial, personnel, marketing, technological, innovative and logistical factors (Table 2).

**Table 2.** Internal environmental factors that influence sustainability of the micrologistics system functioning

Management factors
Changing of owners and heads of divisions Irrational management system Duplication of management functions Lack of cross-functional connections Failure to use a systematic approach
Financial factors
Insolvency Imbalance in the time and volumes of inflow and outflow of funds Deficit of working capital Large volumes of loans Financial obligations to investors and creditors
Personnel factors
Low qualification of employees Lack of training programs, internships and additional education of employees Low motivation of personnel to improve the results of the logistics system Lack of material and moral encouragement of employees
Marketing factors
Lack of marketing strategy Insufficient studying of the needs of the market and its segmentation Lack of interconnection of marketing with supply, production, warehousing, transportation, etc.
Technological factors
Depreciation of fixed assets Incomplete loading of production facilities and infrastructure High energy intensity of production
Innovation factors
Lack of research and development Absence of innovations Insufficient usage of modern innovative technologies
Logistics factors
Underdeveloped logistics infrastructure Wear and tear of vehicles and warehouses Absence of a single control centre for flow processes Lack of qualified personnel performing logistics operations Failure to use modern information technologies and software products for managing information flows in logistics systems Large logistics costs

**Source:** created by the author

There is a need to form methodical regulations regarding the construction of a system of indicators for analysing and evaluating the level of development of enterprises. This can be, in particular: measuring the key indicators of the logistics system of an industrial enterprise; performing a comprehensive assessment of the efficiency of logistics management based on the criteria entered into the system; monitoring of negative phenomena during management decision-making in the logistics sphere (Martynova & Sharko, 2020).

In order to prevent the instability of micrologistics system functioning and analyse violations, it is necessary to carry out the following actions: financial diagnostics with the identification of processes and violations in the functional and financial sphere, forecasting possible insolvency; analysis of the risk management system associated with the functioning of micrologistics systems; management accounting, in order to determine the places that most add problems and violations of stability of functioning;

operational control in various functional areas of logistics activity; control and monitoring of key performance indicators of micrologistics systems. It is necessary to monitor and analyse the indicators and factors that cause disruptions in the work of micrologistics systems, affect its efficiency, effectiveness and profitability; they should be identified and eliminated in a timely manner. In addition, logistics managers should constantly work to determine the factors influencing the sustainable functioning of micrologistics systems in order to strengthen their positions on the market and further develop the system.

It is important to prevent the instability of the functioning of micrologistics systems by conducting a general comprehensive diagnosis of the entire system, namely the analysis of all business processes, the analysis of the main financial and economic performance indicators, the determination of negative factors and indicators and their sources of occurrence. On the basis of studies of the current state of the enterprise, carried out by specialists of



these enterprises, it is necessary to formulate directions for reengineering business processes; to eliminate “bottlenecks” and carry out measures that will contribute to improving the stability of the functioning of micrologistics systems. An important factor in increasing the effectiveness and efficiency of work is the interest of the staff in achieving a synergistic effect. This can be achieved only in teamwork, cross-functional integration and effective management of the system as a whole.

One of the tasks of ensuring the stability of the functioning of micrologistics systems is the generalization of the entire spectrum of problems, threats and risks that arise in the process of functioning of logistics systems. The operating conditions of micrologistics systems in Ukraine starting from 2022 cannot properly ensure economic stability due to the negative influence of external factors. The list of threats and their generalization enables management staff to take these factors into account and try to change the strategy and tactics of management decision-making in a timely manner. In order to maximally avoid a negative impact on the stability of micrologistics system operation, it is necessary to have: a clearly defined mission and strategy of the logistics system; flexible planning system; creative approaches to management decision-making, especially in conditions of uncertainty; flexible marketing policy; adequate reaction to the appearance of competitors; established system of cross-functional relations, intergroup and interpersonal relations in the team; a clear innovation strategy and its implementation policy; modern approaches to the organization of production and sales; system of budgeting and planning of financial flows; risk neutralization mechanisms; reservation system.

The main stages of the management process during the functioning of micrologistics systems, which will avoid the loss of stability, are: planning the main indicators of micrologistics system activity, carrying out a comprehensive analysis of the economic state; determination of reserves for increasing the stability of functioning, development of reference indicators, research of risk-oriented strategies of functioning, control and correction of tactical and operational tasks, evaluation of the effectiveness of measures. In order to prevent the instability of micrologistics system functioning, it is necessary to carry out a general comprehensive diagnosis of the entire system, namely the analysis of all business processes, the analysis of the main financial and economic performance indicators, the determination of negative factors and indicators and their sources of occurrence. A systematic approach to consideration of factors affecting the sustainability of micrologistics systems and the development of measures that will prevent it from being lost in the conditions of activity is an indicator of adequate logistics management.

The author of the study proposed the use of a systemic approach to the identification, assessment and optimization of factors influencing the sustainable functioning of micrologistics systems with the subsequent obtaining of a synergistic effect. R. Gandia & G. Parmentier (2020), N. Reznik *et al.* (2021), A. Ali *et al.* (2022) and other researchers considered individual components of the functional activity of micrologistics systems without taking into account integrative properties and the use of a system approach. E. Krykavskiy *et al.* (2019) investigated the essence of

micrologistics systems, their relationship with macro- and meso-logistics systems, but indicators of the sustainability of logistics systems were not determined. Logistics service and its influence on the results of the company's work were reflected in the studies of many scientists – T. Kolodizieva *et al.* (2022), H. Balouei Jamkhaneh *et al.* (2022) and A. Ali *et al.* (2022). The impact of the level of logistics customer service on the performance and competitiveness of the enterprise cannot be reduced, however, for most enterprises, especially manufacturing ones, the service is an additional accompanying type of activity. The service only helps to retain or interest customers, so it should be considered in connection with other functional areas of the enterprise. In this article, it is proposed not to separate the logistics service, but to consider it together with other spheres of activity of micrologistics systems (purchasing, production, sales), which in the process of their integration can show the actual impact on the performance of the enterprise.

L.A. Tavasszy (2020) and L. Kurbatska *et al.* (2021) investigate that with the help of various methods of synthesis of the logistics system, it is possible to timely adjust the goal, tasks and models of making and implementing management decisions. But precisely those management decisions that most affect the stability of functioning of micrologistics systems remain undefined and ungrouped. Scientists N. Reznik *et al.* (2022) consider the essence of logistics and investigate the factors that affect the quality of logistics transportation from the point of view of the impact on the result of logistics activity. The timeliness of transportation and transportation costs are of significant importance in the logistics activities of micrologistics systems, but it is necessary to consider the total costs from all functional areas of activity, to determine ways to optimize costs using a systemic approach and factors affecting the performance of micrologistics systems as a whole. In their work L. Martynova & V. Sharko (2020) studied indicators and estimates of logistics technologies of an industrial enterprise. But the ranking of technology in the article was not carried out: their use can affect the stability of the operation of the logistics system. I. Troshani *et al.* (2018) investigate the experience of European countries and means of optimizing accounting and cost accounting of enterprises. However, the work does not specify how exactly it is necessary to keep records of logistics costs, at the expense of which it is possible to investigate the state of logistics activity of the micrologistics system. The study of M. Tu (2018) is interesting, where the researcher determines the factors that affect the implementation of micrologistics systems and management in logistics supply chains (Internet of things) using qualitative and quantitative methods. A mixed-methods approach provides a better understanding of the incentives that influence companies' decisions to adopt the Internet of things and how these technologies can affect the performance of micrologistics systems.

M. Faccio *et al.* (2018) investigate in their work the interrelationship of logistics operations in macro- and micrologistics systems, determine the impact of the most important logistics systems on the overall productivity of enterprises; and in the work of A. Zając *et al.* (2023) they investigate the peculiarities of influence of the financial component of sustainability on the functioning of the energy complex enterprises. Microeconomic factors that de-

termine the financial security of energy enterprises, including internal and external factors that affect the functioning of these entities, have been identified. D.V. Sedikov (2019), L.A. Tavasszy (2020), N.G. Kalyuzhna & A.S. Sheremet (2022) consider the problems of functioning of micrologistics systems from the point of view of the current state of development of the country's economy in the conditions in which they function, or under the influence of global economic processes. In our opinion, it is necessary to group the factors that affect the stability of operation of all micrologistics systems, that is, to standardize the list of factors that, under the conditions of operation, will be indicators and factors that should always be paid attention to in the process of analysing the state of micrologistics systems and development prospects. In addition to that, the internal factors of influence on the sustainable functioning of the logistics system in the course of their functioning remained undefined. The author H. ElMaraghy (2019) did not define the role of economic factors on the sustainable functioning of logistics systems. Instead, this article summarizes the factors of influence of smart logistics on the logistics system functioning. In this study, the author developed and generalized a system of factors and indicators for assessing the sustainability of the functioning of the micrologistics system, which had not been done before. This system is universal for various sectors of the economy and can be used by any micrologistics system.

In the process of research, it was found that most authors have the same opinion that sustainability is the most important indicator of enterprise activity, but each of them differently evaluates the factors of internal and external influence on it and the degree of their importance. The issues to which the article is devoted have been studied by many scientists from different perspectives of the functioning of enterprise subsystems and from different spheres of influence, external and internal, micro- and macroeconomic relations. The most widespread topic of research is devoted to the economic and financial stability of the functioning of enterprises. This article differs from the existing ones in that it takes into account a systemic approach, includes the logistics component, as a weighted element of the component of economic stability specifically for micrologistics systems.

## ● CONCLUSION

The current operating conditions of micrologistics systems in Ukraine cannot properly ensure economic stability due to the negative influence of external factors, but it is necessary to constantly look for solutions that will minimize the influence of these factors and increase the positive dynamics of their development and functioning. The

## ● REFERENCES

- [1] Ali, A.H., Gruchmann, T., & Melkonyan, A. (2022). Assessing the impact of sustainable logistics service quality on the relationship quality: Survey-based evidence in Egypt. *Cleaner Logistics and Supply Chain*, 4, article number 100036. doi: 10.1016/j.clscn.2022.100036.
- [2] Balouei Jamkhaneh, H., Shahin, R., & Tortorella, G.L. (2022). Analysis of Logistics 4.0 service quality and its sustainability enabler scenarios in emerging economy. *Cleaner Logistics and Supply Chain*, 4, article number 100053. doi: 10.1016/j.clscn.2022.100053.
- [3] Boldyreva, L.M. (2014). [Formation of logistics systems as a direction of improving economic development](#). *Scientific Bulletin of Kherson State University*, 7(1), 172-175.

sustainability of micrologistics system functioning is its ability to function under the influence of external factors, to achieve the goal, to perform tasks and duties based on the effective formation, distribution and use of material, financial, information and personnel resources. Preservation and improvement of the main indicators of economic, organizational, management, production, logistics, technical and financial activities under the condition of the existence of a systematic approach to the management of the logistics system and under the influence of macro-environmental factors is the basis for the successful functioning of enterprises.

The work typifies the system of factors for assessing the sustainability of micrologistics system functioning according to such types of sustainability as managerial, production, market, financial and economic, innovative, investment, personnel, environmental ones. It is recommended to consider all factors from the point of view of their integrative properties in order to obtain a synergistic effect. The stability of the functioning of micrologistics systems determines their competitive positions on the market, creates conditions for the effective execution of business processes. At the same time, it is necessary to take into account the entire spectrum of both external and internal factors that directly affect the stability of the functioning of micrologistics systems. In most cases, it is not possible to influence factors of the external environment, such as macroeconomic, legal, and industry factors, but it is possible to minimize the risks and consequences of their negative impact. On the contrary, special attention should be paid to internal factors, using a systematic approach to managing the main performance indicators of micrologistics systems. The dynamics of changes occurring in the economy of Ukraine since 2019, the increase of negative factors affecting the stability of the functioning of all systems require using of a balanced, complex and systematic approach to the management of micrologistics systems. It is recommended that all factors that affect the stability of micrologistics system functioning should be considered, analysed and optimize taking into account their integrative properties in order to obtain a synergistic effect. The conducted research indicates the expediency of further analysis of factors and trends of positive and negative influence on the sustainable functioning of micrologistics system.

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## ● CONFLICT OF INTEREST

None.

- [4] Busse, C., & Wallenburg, C.M. (2011). Innovation management of logistics service providers: Foundations, review, and research agenda. *International Journal of Physical Distribution & Logistics Management*, 41, 187-218. doi: [10.1108/09600031111118558](https://doi.org/10.1108/09600031111118558).
- [5] ElMaraghy, H. (2019). Smart changeable manufacturing systems. *Procedia Manufacturing*, 28, 3-9. doi: [10.1016/j.promfg.2018.12.002](https://doi.org/10.1016/j.promfg.2018.12.002).
- [6] Faccio, M., Gamberi, M., Bortolini, M., & Pilati, F. (2018). Macro and micro-logistic aspects in defining the parts-feeding policy in mixed-model assembly systems. *International Journal of Services and Operations Management*, 31(4), 433-462. doi: [10.1504/IJSOM.2018.096166](https://doi.org/10.1504/IJSOM.2018.096166).
- [7] Gandia, R., & Parmentier, G. (2020). Managing open innovation through digital boundary control: The case of multi-sided platforms in the collaborative economy. *Journal of Innovation Economics & Management*, 32(2), 159-180. doi: [10.3917/jie.032.0159](https://doi.org/10.3917/jie.032.0159).
- [8] Kalyuzhna, N.G., & Sheremet, A.S. (2022). Logistics system of Ukraine: Current problems and priorities of recovery. *Biznesinform*, 4, 90-96. doi: [10.32983/2222-4459-2022-4-90-96](https://doi.org/10.32983/2222-4459-2022-4-90-96).
- [9] Khvishtun, N.V., & Kovalchuk, O.V. (2018). [The essence of the logistic concept in economic research](#). *Economic sciences. Economics and Management series*, 15(58), 270-278.
- [10] Kolodizieva, T., Zhelezniakova, E., Melnykova, K., Pysmak, V., & Kolodiziev, O. (2022). Assessment of logistics service quality based on the application of fuzzy methods modeling. *Problems and Perspectives in Management*, 20(3), 552-576. doi: [10.21511/ppm.20\(3\).2022.44](https://doi.org/10.21511/ppm.20(3).2022.44).
- [11] Kravets, O.Yu., & Trifonova, O.V. (2019). Formation of optimal logistics systems in the process of strategic management of sustainable development of the enterprise. *Economic space*, 142, 217-227. doi: [10.30838/P.ES.2224.260219.217.391](https://doi.org/10.30838/P.ES.2224.260219.217.391).
- [12] Krykavskiy, E., Pokhylchenko, O., & Fertch, M. (2019). *Logistics and supply chain management*. Lviv: Publishing House of Lviv Polytechnic.
- [13] Krykavskiy, E.V., & Chornopyska, N.V. (2009). *Logistics systems*. Lviv: Lviv Polytechnic University.
- [14] Kurbatska, L., Kadyrus, I., Savenko, O., & Nechyporenko, K. (2021). Improvement of logistics systems to ensure the principles of sustainable enterprise development. *Agrosvit*, 7(8), 60-66. doi: [10.32702/2306-6792.2021.7-8.60](https://doi.org/10.32702/2306-6792.2021.7-8.60).
- [15] Levkovich, O., & Kalashnikova, Yu. (2021). Financial stability as a prerequisite for the innovative development of the enterprise. *Efficient economy*, 4. doi: [10.32702/2307-2105-2021.4.76](https://doi.org/10.32702/2307-2105-2021.4.76).
- [16] Lisnichuk, O.A., & Nesterchuk, T.A. (2018). [Methodical approaches to assessing financial stability of an enterprise](#). *Economy and Society*, 18, 454-462.
- [17] Martynova, L.B., & Sharko, V.V. (2020). Indicators of assessment of logistics technologies of an industrial enterprise. *Scientific notes of Taurida National V.I. Vernadskyi University. Series: Economy and Management*, 31(70(2)), 222-228. doi: [10.32838/2523-4803/70-2-37](https://doi.org/10.32838/2523-4803/70-2-37).
- [18] Melnikova, K.V. (2017). [Financial stability as a factor of stable development of logistics systems](#). *Electronic professional scientific and practical journal. Market infrastructure*, 8, 75-79.
- [19] Reznik, N., Rudenko, S., & Pilipchuk, K. (2022). Main characteristics of the concept of logistics and supply chain management systems. *Innovation and Sustainability*, 3, 95-102. doi: [10.31649/ins.2022.3.95.102](https://doi.org/10.31649/ins.2022.3.95.102).
- [20] Sedikov, D.V. (2019). Managing of logistics chains of enterprises. *Food Industry Economics*, 11(3), 59-65. doi: [10.15673/ fie.v11i3.1462](https://doi.org/10.15673/fie.v11i3.1462).
- [21] Tavasszy, L.A. (2020). Predicting the effects of logistics innovations on freight systems: Directions for research. *Transport Policy*, 86, 1-6. doi: [10.1016/j.tranpol.2019.11.004](https://doi.org/10.1016/j.tranpol.2019.11.004).
- [22] Troshani, I., Janssen, M., Lymer, A., & Parker, L.D. (2018). Digital transformation of business-to-government reporting: An institutional work perspective. *International Journal of Accounting Information Systems*, 31, 17-36. doi: [10.1016/j.accinf.2018.09.002](https://doi.org/10.1016/j.accinf.2018.09.002).
- [23] Tserkovna, O.V. (2019). Theoretical aspects of logistics activity in the industrial complex of national economy. *Market economy: Modern management theory and practice*, 18(2(42)), 186-198. doi: [10.18524/2413-9998.2019.2\(42\).177159](https://doi.org/10.18524/2413-9998.2019.2(42).177159).
- [24] Tu, M. (2018). An exploratory study of Internet of things (IoT) adoption intention in logistics and supply chain management. *The International Journal of Logistics Management*, 29(1), 131-151. doi: [10.1108/IJLM-11-2016-0274](https://doi.org/10.1108/IJLM-11-2016-0274).
- [25] Zajac, A., Balina, R., & Kowalski, D. (2023). Financial and economic stability of energy sector enterprises as a condition for Poland's energy security – Legal and economic aspects. *Energies*, 16(3), article number 1442. doi: [10.3390/en16031442](https://doi.org/10.3390/en16031442).
- [26] Zhovtyi, M.M. (2016). [Logistics system: Basic approaches to definition and features of its formation in industrial enterprises](#). *Bulletin of the Khmelnytskyi National University*, 5(1), 74-77.
- [27] Zimon, D. (2015). [Impact of the implementation of quality management system on operating cost for small and medium-sized business organizations affiliated to a purchasing group](#). *International Journal for Quality Research*, 9(4), 551-564.



## Механізми досягнення стійкого функціонування мікрологістичної системи

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**Анотація.** На сучасному етапі розвитку світової та української економіки, який характеризується високим рівнем нестабільності економічних процесів, актуальним завданням стає розробка наукового підґрунтя до недопущення негативного впливу на стійке функціонування мікрологістичних систем. Метою дослідження було узагальнення факторів впливу на стійке функціонування мікрологістичної системи та механізмів недопущення нестійкості її функціонування в майбутньому. Основними методами дослідження були: бібліометричний аналіз, узагальнення, аналіз та синтез. Встановлено, що стійке функціонування мікрологістичної системи – це збереження та поліпшення основних показників економічної, організаційної, управлінської, виробничої, логістичної, технічної та фінансової діяльності, використовуючи системний підхід до управління логістичною системою та під впливом факторів макросередовища. Типізовано систему факторів оцінки стійкості функціонування мікрологістичної системи за такими різновидами стійкості, як управлінська, виробнича, ринкова, фінансово-економічна, інноваційна, інвестиційна, кадрова, екологічна. Цінність роботи полягає у визначенні факторів внутрішнього середовища, які залежать від стратегії функціонування самої логістичної системи, до них відносять: управлінські, фінансові, кадрові, маркетингові, технологічні, інноваційні та логістичні. Задля недопущення нестійкості функціонування мікрологістичних систем запропоновано проведення загальної комплексної діагностики роботи всієї системи, а саме аналіз усіх бізнес-процесів, аналіз основних фінансових та економічних показників роботи, визначення негативних факторів й показників та джерел їх виникнення. Результати дослідження можуть бути впроваджені в діяльність мікрологістичних систем, а саме виробничих підприємств, торгових компаній, логістичних центрів та компаній, які займаються логістичною діяльністю

**Ключові слова:** менеджмент; мікроекономіка; логістика; економіка підприємства; фінанси