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THE LATEST APPROACHES AND TECHNOLOGIES TO INCREASE THE COMPETITIVENESS OF AVIATION ENTERPRISES IN MODERN CONDITIONS

Olga Karpun, Valeriya Yakovenko. *"The latest approaches and technologies to increase the competitiveness of aviation enterprises in modern conditions".* The article discusses the essence of the concept of enterprise competitiveness management, encompassing all enterprise management processes, such as production, sale of products, provision of services, and others. It has been identified that the spectrum of existing research on scientific approaches to competitiveness management requires some structuring and refinement, taking into account the latest trends and the specifics of the activities of aviation enterprises in modern conditions.

A unique perspective on structuring scientific approaches to managing the competitiveness of aviation enterprises has been proposed, according to which the discussed approaches are categorized depending on the object, target parameters, scientific directions, innovative technologies, and combined objects. The advantage of such structuring lies in a better understanding of the specifics of existing approaches and the identification of innovative scientific approaches to enterprise competitiveness management that require further research.

Special attention has been paid to the study of key aspects and specifics of the logistic approach, which involves finding a compromise and balance of interests and responsibilities, consistency and coordination of actions, subordination of partial to general, and measuring the results of activities not only from the perspective of resource savings but also the magnitude of losses caused by irrational actions of chain participants. The logistic approach to managing the competitiveness of aviation enterprises lies in the implementation of the supply chain management concept, aimed at effectively servicing demand and creating additional value for consumers, and realizes a customer-oriented approach to competitiveness management.

Direct tools of the logistic approach that can be effective in managing aviation logistic processes have been identified in the article, such as ESG technologies, CALS technologies, Agile approach, IoT, Blockchain, Artificial Intelligence, robotic systems. The advantages of these tools and their application areas are indicated.

Thus, the use of various approaches and technologies will enable aviation enterprises to find optimal solutions to enhance their competitiveness in modern conditions.

Keywords: competitiveness, aviation enterprises, competitiveness management, scientific approaches to competitiveness management, logistic approach, latest technologies

Ольга Карпунь, Валерія Яковенко. *«Новітні підходи та технології для підвищення конкурентоспроможності авіатранспортних підприємств в сучасних умовах».* У статті розглянуто сутність поняття управління конкурентоспроможністю підприємств, що включає всі процеси управління підприємством, такі як виробництво і реалізація продукції, надання послуг та інші. Було визначено, що спектр наявних досліджень щодо наукових підходів до управління конкурентоспроможністю потребує певної структуризації та доопрацювання з рахуванням новітніх тенденцій та специфіки діяльності авіатранспортних підприємств в сучасних умовах.

Був запропонований власний погляд на структурування наукових підходів до управління конкурентоспроможністю авіатранспортних підприємств, згідно з яким розглянуті підходи поділяються залежно від об'єкту, цільових параметрів, наукових напрямів, новітніх технологій, поєднаних об'єктів. Перевагою такого структурування стало краще розуміння специфіки існуючих підходів, а також визначення новітніх наукових підходів до управління конкурентоспроможністю підприємств, які потребують подальшого дослідження.

Особлива увага була приділена дослідженню ключових аспектів та специфіки логістичного підходу, котрий передбачає знаходження компромісу й балансу інтересів і відповідальності, узгодженості і координації дій, підпорядкування часткового загальному й вимір результатів діяльності не тільки з позицій економії ресурсів, але й величини втрат, викликаних нераціональними діями учасників ланцюгу. Логістичний підхід до управління конкурентоспроможністю авіатранспортних підприємств полягає в втіленні концепції управління ланцюгами поставок, що має своєю метою ефективне обслуговування попиту і створення додаткової цінності для споживачів і реалізує клієнтоорієнтований підхід до управління конкурентоспроможністю.

В роботі визначено безпосередні інструменти логістичного підходу, які можуть бути ефективними в управлінні авіатранспортними логістичними процесами, такі як ESG-технології, CALS-технології, Agile-підхід, IoT, Blockchain, Штучний інтелект, роботизовані системи. Зазначено переваги даних інструментів та сфери їх застосування.

Таким чином, використання різноманітних підходів та технологій дасть можливість авіатранспортним підприємствам знайти оптимальне рішення для підвищення своєї конкурентоспроможності в сучасних умовах.

Ключові слова: конкурентоспроможність, авіатранспортні підприємства, управління конкурентоспроможністю, наукові підходи до управління конкурентоспроможністю, логістичний підхід, новітні технології.

Introduction. In today's conditions of globalization and rapid technological development, aviation enterprises are becoming essential participants in the global economic space. Ensuring the competitiveness of these enterprises is an urgent problem that requires a comprehensive and fundamental approach to achieve success in global competition.

The modern aviation sector faces unprecedented challenges and opportunities, linked to changes in climate conditions, growth in passenger traffic, the constant need for safety enhancements, and technological transformation. In this context, the issue of enhancing the competitiveness of aviation enterprises becomes crucial for their sustainable development.

The specificity of the aviation industry, its global nature and relationship with various sectors of the economy make this issue extremely important for research. Given the complex challenges facing aviation enterprises, considering these issues from the point of view of competitiveness opens new horizons for understanding and optimizing their functioning.

Problem statement (formulation of research purposes). In modern conditions, the competitiveness of an enterprise is a set of competitive advantages that provide the enterprise with stable profit regardless of changes in the external conditions of the enterprise [based on 5, 10, 14].

According to some authors [11, 14], speaking of competitiveness as the most important market category that characterizes the state of the enterprise in this particular market in contrast to its competitors, it can be concluded that competitiveness must be managed.

Therefore, the management of the enterprises competitiveness, including the aviation industry, is a complex, continuous process, which is formed on the basis of the implementation of successive actions, regarding the choice of a certain strategy aimed at improving the competitive position of the enterprise [11]. According to scientists, competitiveness management includes all processes of enterprise management, such as

production, sale of products, provision of services, and others.

Conducted thorough studies of scientific approaches to enterprises competitiveness management revealed that the most extensive list of them was given in his work by N.P. Zakharkevich [14] (Table 1).

However, in our opinion, this list requires some structuring and refinement to account for recent trends and the specific nature of aviation enterprises' activities in modern conditions.

That is why the purpose of this article is to research the latest approaches and technologies that will contribute to increasing the competitiveness of aviation enterprises in modern conditions, as well as practical recommendations for their implementation.

The main material and results of the research. So, as it was mentioned, the management of enterprise competitiveness is a purposeful process that involves constant updating and development of the competitive advantages of the enterprise, taking into account the influence of external and internal factors of the operating environment [based on 5].

Based on this, we propose our own vision for structuring scientific approaches to competitiveness management, taking into account recent trends, which will look as follows (Fig. 1).

Table 1. Scientific approaches to competitiveness management

The name of the approach	Content of the approach
1	2
System approach	Study of objects as systems. The essence of competitiveness management is considered as a set of concepts: management organization, management process and information.
Functional approach	Increasing the competitiveness of the organization during the clear distribution of functions among units and their implementation by specific employees.
Process approach	Forms the relationship of all functions of competitiveness management.
Comprehensive approach	Management of the organization's competitiveness by taking into account technological, socio-economic, organizational and psychological aspects of management.

End of table 1

1	2
Innovative approach	The formation of a competitive position due to the development of innovative activities in the field of basic science-intensive branches of the organization.
Global approach	Solving most competitiveness management issues should meet the requirements of systematic, logical, and comprehensive approaches within the global standards.
Situational approach	Considers the application of various methods of competitiveness management, guided by a specific situation.
Structural approach	It consists in determining the importance of priorities among competitiveness factors in order to establish the rationality of the ratio and increase the reasonableness of the resources allocation.
Normative approach	The goal is to establish competitiveness standards.
Marketing approach	Increasing competitive advantages due to consumer orientation (consumer market analysis, analysis of benefits, improvement of service quality, etc.).
Virtual approach	The use of Internet resources, mobile communication and other means of electronic communication in order to form virtual organizational structures for the transfer of information on a global scale without direct contact with customers and partners in modern conditions becomes a competitive advantage.

Scientific approaches to competitiveness management, which were not taken into account before, are highlighted in green in the figure. In our opinion, existing trends in the market require consideration and implementation of the specified scientific approaches in the activities of aviation enterprises.

The conducted studies revealed that according to the resource approach, the level of competitiveness of aviation enterprises is determined by analyzing the available resources and the efficiency of their use [10].

Under the reproducible approach, attention is focused on the constant reproduction of the goods production to meet the needs of a specific market with the lowest total costs per unit of useful effect compared to the best similar product in this market [4].

Further studies showed that the target approach allows considering the analysis of the level of aviation enterprises competitiveness as a process of determining estimates that reflect the economic results of the enterprise in comparison with the corresponding target indicators of competitors [10].

At the same time, the qualitative approach is based on the study of the

products competitiveness of aviation enterprises, which affects its overall competitiveness [10].

The essence of the competency approach is the development and practical application of competency models of employees, their selection, assessment and training in accordance with these models. At the same time, the competence model can be considered as a complete set of competence and behavior indicators necessary for an employee to successfully perform his functions, which are manifested in the appropriate situations and time, for a specific organization with its individual goals and corporate culture [9].

The main goal of competitiveness management of aviation enterprises within the competence approach is the realization of competencies in technological, managerial, operational and other types of competitive advantages [1, 2]. The competence approach as a personnel management tool provides a clear definition of the professional and behavioral requirements that are imposed on the employee depending on his management level, profession, position and tasks performed.

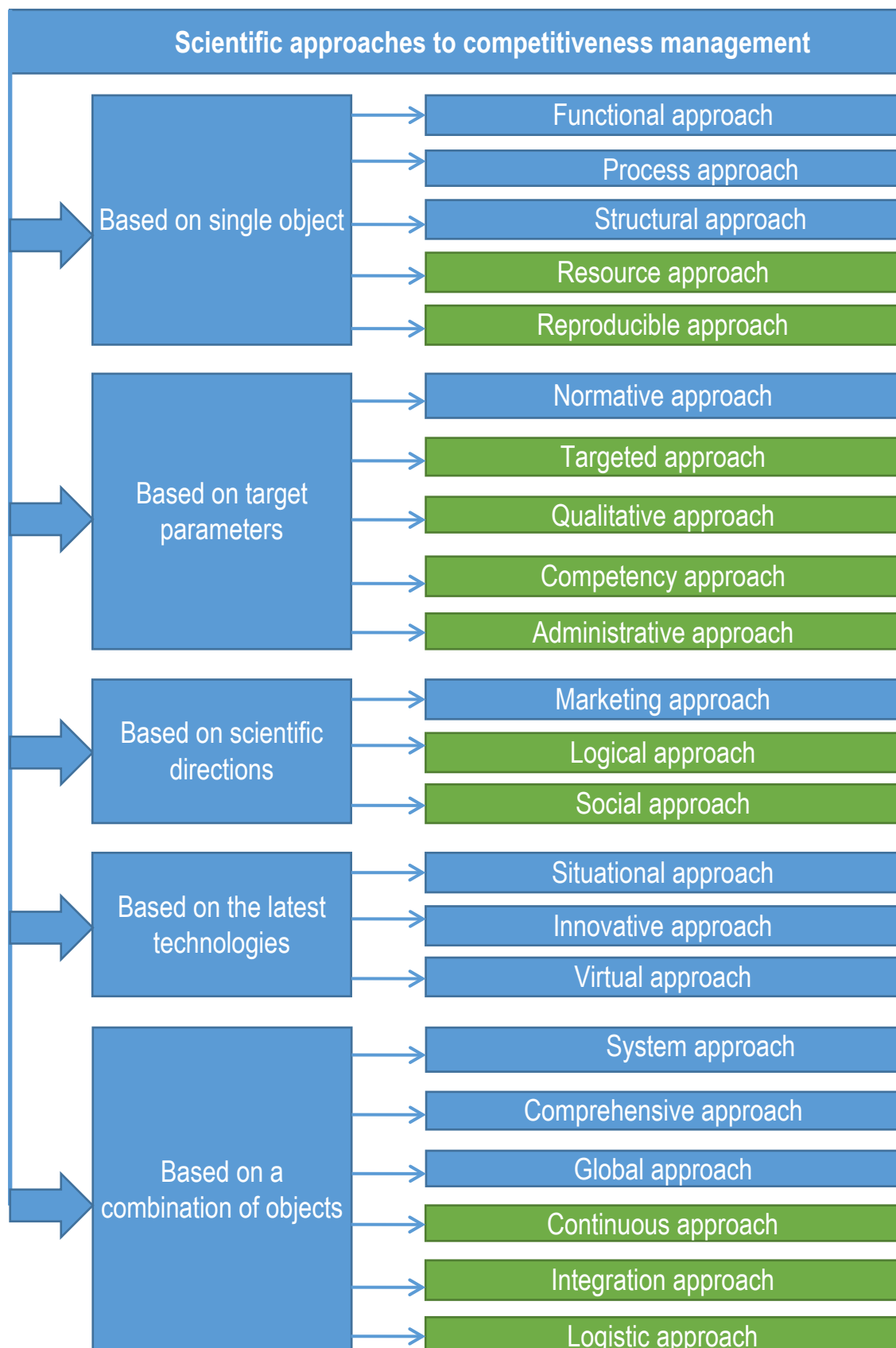


Figure 1 – Structuring of scientific approaches to competitiveness management of aviation enterprises

Source: own development

We consider that the application and successful implementation of the competence approach will increase the pace of innovative development, as well as directly increase the competitiveness of the aviation industry [1].

According to the results of further research, we can confirm that the administrative approach to ensuring the competitiveness of aviation enterprises involves the regulation of functions, rights, obligations, and standards of subsystems in normative acts (orders, standards, instructions, regulations, programs, methodological documentation, etc.) [4].

As for scientific approaches, which are based on scientific directions, a logical approach should be highlighted, which consists in establishing a set of indicators for assessing the competitiveness of the enterprise and their weight coefficients based on logical analysis.

According to the conducted research, the social approach to ensuring the competitiveness of aviation enterprises assumes that the central place in the system is occupied by the personnel (i.e. the workforce), for which all conditions must be created, namely: for the development of personal potential; for full self-realization and self-expression; for professional growth and confidence in the future; ensuring legal protection of personnel at the enterprise; fair wages for work; comfortable relationships in the team; a worthy place of work in the life of a person, etc. [4].

Further studies showed that the continuous approach makes it possible to consider ensuring the competitiveness of aviation enterprises as a continuity of interdependent functions, namely: planning, forecasting, modeling, adjustment, adaptation, information selection, conducting research, etc., which affect the achievement of strategic goals of competitive management and socio-economic development of the aviation enterprise as a whole [4].

As for the integration approach, it is aimed at bringing together and strengthening the relationship between the structural divisions of aviation enterprises for their cooperation and coordinated actions [3, 4].

Logistic approach to competitiveness management of aviation enterprises involves optimizing the management of all resource flows and establishing priorities to find the optimal balance between various activities to enhance the overall system efficiency [8]. This approach entails finding compromises and balancing interests and responsibilities, ensuring consistency and coordination of actions, subordinating partial to general, and measuring the results of activities not only from the perspective of resource savings but also the magnitude of losses caused by irrational actions of chain participants.

The existence of inconsistency in the management of business processes of aviation enterprises highlights the need for implementing an integrated logistic approach to ensure their organizational and economic stability and further increase competitiveness.

The logistic approach to managing the competitiveness of aviation enterprises involves implementing the concept of supply chain management, aiming to efficiently serve demand and create additional value for consumers, thus adopting a customer-centric approach to competitiveness management. The goal of the logistic approach is to minimize costs while maintaining a specified level of development [8].

The implementation of the logistic approach can target one or several functional areas of the aviation enterprise and may also have a comprehensive nature. The choice of how to apply the logistic approach depends on the degree of integration of the enterprise's subsystems. The effective functioning of logistic systems should serve as the primary basis for applying the logistic approach [12].

Additionally, it can be argued that the logistic approach to organizing aviation

activities is based on a systemic approach to economic processes aimed at their efficient integration and development of logistic systems and chains. It entails the optimization of flows and processes as a fundamental principle. Key conditions for the creation and development of logistic mechanisms in the aviation sector at all levels include integration, the use of information technologies, and the globalization of economic processes and structures arising from the need to enhance resource utilization efficiency under constraints. One of the major advantages of the logistic approach in managing aviation enterprises is its focus on solving loosely structured problems and finding optimal solutions for them.

For effective management of aviation enterprises and the attainment of competitive advantages in the market, continuous organizational and technical restructuring is imperative. This will enable bridging the gap between the actual

production level and its optimal design, aligning with the achieved levels of knowledge, technology, organization, and management. Such restructuring is impossible without continuous and flexible adaptation of the enterprise to the ever-changing market conditions. It requires the logistics-driven transformation of the economy as a whole and management in particular, which is unattainable without the transformation of the existing management system and the adoption of progressive entrepreneurship management methods based on logistics principles [6].

The implementation of the logistic approach in managing aviation enterprises, as an innovative model of development and management, is a key condition for achieving sustainable competitiveness in the market. Direct instruments of the logistic approach applicable to aviation enterprises are presented in Fig. 2.

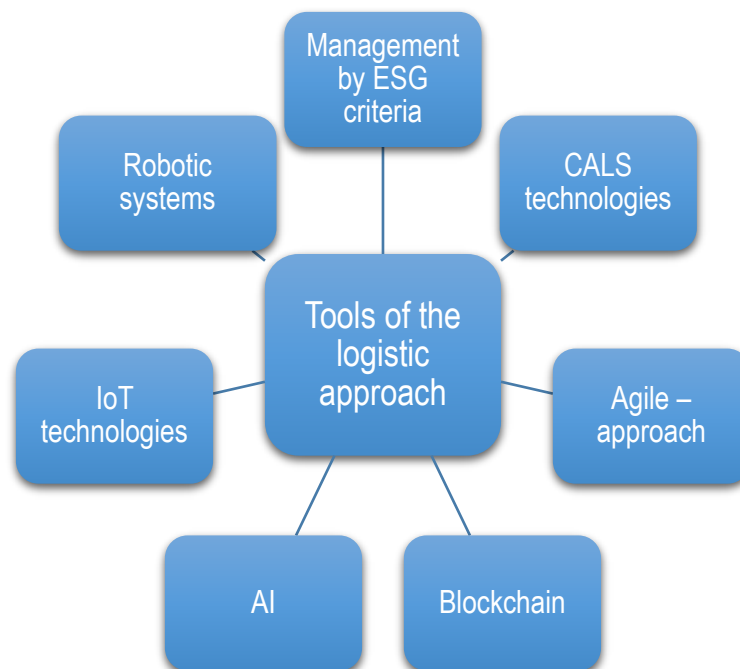


Figure 2 – Tools of the logistic approach to increasing the competitiveness of aviation enterprises

The acronym ESG stands for «environmental, social, and governance» [7]. In a broad sense, it represents sustainable

development of commercial activities built on the following principles:

- responsible environmental stewardship (E – environment);

- high social responsibility (S – social);
- high-quality corporate governance (G – governance).

According to conducted research, it has been determined that the components of ESG criteria enable the expansion of performance indicators for evaluating a company's activity in the market. Business social responsibility, in this regard, refers to a company's responsible approach to its product or service, consumers, employees, and partners; it involves the active social stance of the company, characterized by harmonious coexistence, interaction, and constant dialogue with society, as well as participation in addressing social issues.

The application of ESG criteria may attract investment from those companies whose activities adhere to certain standards of corporate social responsibility, ethical norms, and earn a certain reputational capital in the eyes of consumers and society at large. To attract influential investors, aviation companies need to strive to meet ESG criteria and maintain a balance among all criteria.

CALS technologies (Continuous Acquisition and Life cycle Support) represent an approach to the design and production of high-tech and knowledge-intensive products, involving the use of computer and information technologies at all stages of the product lifecycle. The implementation of CALS technologies in aviation enterprises allows for the automation and optimization of production processes, providing rapid access to current information and reducing decision-making time. Research has shown that CALS technologies contribute to improving teamwork and effective data exchange between departments, which is crucial in high-tech enterprises. They also facilitate the creation of a unified information environment, simplifying analysis and decision-making at all stages of the product lifecycle.

To ensure flexibility in managing the quality of business processes in aviation enterprises, it is advisable to use Agile methodology. This approach allows the enterprise to flexibly respond to changes in

the external and internal environment, which is particularly important for aviation companies that need to quickly adapt to new regulations, technologies, and market conditions. Additionally, the Agile approach enables rapid response to changes in market demands and enhances product quality. This is especially crucial for the aviation sector, where safety and reliability are paramount factors. According to the results of conducted research, the Agile approach contributes to reducing the time from idea development to product launch in the market. Considering the specificity of the aviation industry and using Agile frameworks such as Lean Manufacturing, Six Sigma, Lean Six Sigma, Kanban, TPM, and 5S can optimize production and logistics processes.

The use of IoT (Internet of Things) technologies allows for tracking the movement of goods, controlling temperature and humidity in premises and vehicles, as well as monitoring the condition of vehicles and equipment. The utilization of IoT enables precise and rapid monitoring of logistics processes, reducing the risk of problems and facilitating quick response to them.

Regarding robotic systems, they can be used to automate processes in warehouses and during transportation of goods by air. Implementing robotic systems enables a reduction in the number of people involved in cargo operations, thereby enhancing safety and reducing the risks of problems.

According to research findings, Blockchain technologies ensure accuracy and security in data exchange among participants in the aviation supply chain. The use of Blockchain ensures inaccessibility to malicious actors and provides traceability of each operation in the logistics chain, ensuring security and trust among participants in the logistics process.

Artificial intelligence (AI) can be used to forecast demand for goods, plan routes, and optimize logistics processes involving aviation transport. Utilizing artificial intelligence reduces the number of human errors and enhances the efficiency of logistics

processes, ensuring safety and reducing the risks of problems.

Thus, we see that the discussed tools of the logistic approach to enhancing the competitiveness of aviation enterprises have their specificities and are aimed at improving the efficiency of various areas of aviation enterprises' activities. However, collectively, they are components of the logistic approach and contribute to enhancing the competitiveness of aviation enterprises in modern conditions.

Conclusions. Among the considered modern scientific approaches to enhancing the competitiveness of aviation enterprises in contemporary conditions, the best solution would be the utilization of a systemic, process-oriented, comprehensive, integrated, or logistic approach. These approaches are based on the combination of elements.

Among the mentioned approaches, the use of a logistic approach to managing the

competitiveness of aviation enterprises was proposed. This is because the logistic approach to organizing aviation activities is based on a systemic approach to economic processes, aimed at their efficient integration and development of logistic systems and chains, and it involves the optimization of flows and processes as a fundamental principle. Overall, the logistic approach to managing the competitiveness of aviation enterprises entails the implementation of the supply chain management concept, which is based on efficiently serving demand and creating additional value for consumers through customer orientation.

Within the framework of the logistic approach, it is advisable for aviation enterprises to employ various innovative technologies that would be effective in today's operating conditions of aviation enterprises.

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