UDC 005.311:658.15
JEL Classification: G32

Kirdina Olena, Steshenko Olena

FINANCIAL ADMINISTRATION OF THE ENTERPRISE BASED ON ANALYTICAL METHODS, DECISION-MAKING MODELS, AND CONTROL

Ukrainian State University of Railway Transport, Kharkiv, Ukraine

The article examines the theoretical, methodological, and applied foundations for improving enterprise financial administration through the integration of analytical and control instruments with modern forecasting methods and digital technologies. It is substantiated that, under conditions of high economic dynamism, globalization, and digitalization, traditional approaches to financial management do not ensure the necessary speed, accuracy, and comprehensiveness of decision-making, which necessitates the formation of an integrated system of financial administration. The essence of analytical aspects is revealed as a set of methods for collecting, processing, and interpreting financial information using economic-mathematical models, statistical methods, financial ratios, and scenario modeling. Control aspects are defined as systematic supervision over the compliance of financial activities with established standards and policies, ensuring timely detection of deviations and risk minimization. Special attention is given to scenario modeling as an effective tool for assessing the impact of external and internal factors on financial outcomes. An algorithm for scenario modeling has been developed, transforming this instrument into a continuously operating management loop that enables the financial department to function in real time. A practical calculation model is presented using the example of LLC "Soniachnyi Khlib," which demonstrates the influence of external factors (such as raw material price increases) and internal factors (such as intensified marketing activities) on net profit, profitability, and asset utilization efficiency. The calculations confirm that scenario modeling, combined with financial ratios, provides not only a quantitative assessment of deviations but also a qualitative interpretation of them. Six key directions for enhancing the effectiveness of financial administration are systematized: integration of analytics and control, application of modern forecasting models, digitalization of processes, strengthening internal audit, comprehensive use of financial ratios, and the implementation of artificial intelligence and machine learning. Particular emphasis is placed on the need to improve the scientific and practical training of specialists as a foundation for implementing these instruments. It is concluded that effective financial administration is achieved through the systematic integration of analytics, control, and digital technologies, enabling the transition from reactive to proactive management, thereby ensuring the sustainability, transparency, and competitiveness of the enterprise under conditions of economic instability.

Keywords: financial administration, analytics, control, scenario modeling, managerial decision-making.

DOI: 10.32434/2415-3974-2026-23-1-6-15

Introduction and Problem Statement

A modern enterprise operates in a highly dynamic economic environment characterized by fluctuations in financial indicators, market instability, and increasing demands for transparency in financial activities. Enterprises face complex financial challenges that require not only operational control but also comprehensive analytical support for managerial decision-making.

In the context of globalization and digitalization, traditional methods of financial administration often do not ensure the required speed, accuracy, and comprehensiveness of decision-making. The integration of analytical, control, and digital instruments allows for the creation of a financial administration system that simultaneously provides monitoring, forecasting, risk assessment, and prompt response to deviations.

The relevance of the topic is determined by the need for enterprises to develop a system capable of ensuring a high level of transparency in financial operations, optimizing costs, managing resources effectively, and reducing risks associated with financial transactions.

The practical significance of the results lies in enabling enterprises to evaluate liquidity, profitability, capital structure, and the efficiency of resource management, while control mechanisms ensure compliance with standards and policies, timely identification of deviations, and risk minimization. The integration of analytics and control allows enterprises to adapt to market changes, optimize expenditures, and increase profitability, which confirms the relevance and the prospective value of the research.

Analysis of Recent Studies and Publications Addressing the Problem and Referenced by the Author

A review of contemporary scientific literature indicates active development of research in the areas of financial administration, analytics, and control. A significant contribution to the advancement of theoretical principles and practical proposals for control-analytical support of managerial decision-making and the use of digital technologies in management processes has been made by researchers such as W. Anggrainib, I. Basantsov, M. Bormotova, S. Byelov, Ch. Liu, T. Mashoshyna, G. Nawanirc, O. Okfalisaa, S. Saktiotod, S. Teslia, A. Tkachenko, O. Troinikova, K.Y. Wong, M. Yeromina, V. Zdir, O. Zorina, and E. Zubareva [1–8], among others.

International studies demonstrate the use of financial models to assess enterprise liquidity, profitability, and capitalization. These works emphasize the role of information technologies in improving forecast accuracy, automating analytical procedures, and optimizing control processes. Recent publications focus on the digitalization of financial administration, the integration of business intelligence systems, and the automation of control procedures through artificial intelligence and machine learning algorithms.

The analysis of the literature indicates that modern approaches to financial administration are based on the combination of classical analytical methods with digital platforms and forecasting tools.

Identification of Unresolved Aspects of the Overall Problem Addressed by This Article

Despite technological advancements, traditional methods of optimization, financial analysis, and control procedures remain fundamental for establishing a reliable financial management system. The integration of analytics and control represents a key direction for development, ensuring increased transparency, risk reduction, and improved effectiveness of managerial decision-making under current conditions of economic instability.

The purpose of the article

The aim of the article is to develop the theoretical and methodological foundations and to propose scientific and practical recommendations for enhancing the effectiveness of enterprise financial administration through the integration of analytical and control mechanisms with the use of modern modeling and forecasting methods, digital technologies, and scenario analysis tools. This approach is intended to ensure the resilience, transparency, and adaptability of financial resource management in conditions of economic instability.

Presentation of the Main Material

Financial administration is considered as a set of processes for managing cash flows, capital, expenses, and revenues of an enterprise, which ensure the stability of its financial position and sustainable functioning under a changing economic environment. Analytical aspects involve the systematic collection, processing, and interpretation of financial information, allowing for the identification of enterprise development trends, evaluation of resource utilization efficiency, and forecasting of potential development scenarios. To achieve this, modern economic-mathematical models, statistical methods, optimization models, and financial ratios are applied, providing a comprehensive assessment of the enterprise's financial condition. Control aspects imply systematic supervision over the compliance of financial activities with established standards, policies, and strategies, ensuring timely detection of deviations, risk minimization, and prevention of financial misconduct.

Particular attention is paid to the integration of analytical and control functions within a unified financial administration system. This approach allows

for simultaneous monitoring of financial indicators and forecasting of outcomes, enhancing the accuracy of managerial decisions and reducing the likelihood of errors. Analytical methods include correlation and regression analysis, factor analysis, variance analysis, and other statistical tools that enable the evaluation of relationships among financial indicators, identification of key performance determinants, and forecasting of future financial flows. The use of optimization models, such as linear and nonlinear programming, allows for the determination of effective strategies for resource allocation, expense planning, and formation of financial reserves, which is particularly relevant during periods of economic instability or crisis.

Scenario modeling is one of the most effective tools for assessing the impact of various external and internal factors on an enterprise's financial results. It provides the possibility to test alternative strategies and make decisions based on quantitative assessments of risks and potential revenues. The use of financial ratios and indices in combination with analytical methods allows for the formation of a comprehensive system for performance control, ensuring not only the identification of deviations but also their explanation and the forecasting of consequences.

The proposed scenario modeling algorithm (Fig.) structures this process into a logical sequence of stages – from the identification of influencing factors to the monitoring of results, making it a universal tool for strategic planning. This approach allows an enterprise not only to prepare for possible changes in market conditions but also to adjust its chosen course in a timely manner, thereby increasing its resilience in the long term.

It enables the finance department not only to record past events but also to operate in "real-time" mode, specifically to:

– quickly calculate the consequences of market changes;

– test administrative ideas;

– ensure business resilience to adverse factors.

A systematic example of a scenario modeling calculation is presented using the activities of LLC "Soniachnyi Khlib." The material is structured into logical blocks: first, the input hypotheses; then the calculations; and finally, analytical conclusions for each scenario and an overall summary.

Before constructing any forecasts, it is essential to clearly define which factors are being studied and which quantitative hypotheses are embedded in the calculations. For this purpose, it is appropriate to select one external and one internal influential factor (Table 1)

Table 1

Assumptions (Input Conditions for Modeling)

Factor Type	Scenario	Assumption (What Has Changed?)	Quantitative Measure
Base	Current State	Financial indicators of the reporting period	Revenue = UAH 1,000,000
External	Scenario A (Negative)	Increase in the prices of key raw materials (flour) due to inflation/poor harvest	Cost of materials rises by 20% for relevant components
Internal	Scenario B (Active)	Managerial decision to intensify marketing to increase sales	Marketing expenses +30%, Revenue +10%

Source: developed by the authors

Having defined the scenario conditions, the next step is to design them directly in the form of a financial performance report. The purpose of this stage is to determine how a change in a single expense item (cost of goods sold or selling expenses) affects the final net profit (Table 2).

Table 2

Calculation of Changes in Revenue and Expense Items by Scenarios (UAH)

Item	Base Scenario	Scenario A (External Risk)	Scenario B (Active Strategy)	Source of Change
Revenue	1,000,000	1,000,000 (no change)	1,100,000	+10% due to marketing
Cost of Goods Sold	(600,000)	(660,000)	(660,000)	A: increase in raw material prices; B: increase in production volumes
Gross Profit	400,000	340,000	440,000	–
Administrative Expenses	(150,000)	(150,000)	(150,000)	Assumed fixed
Selling Expenses	(100,000)	(100,000)	(130,000)	B: +30% for marketing
Net Profit	150,000	90,000	160,000	Final result

Source: developed by the authors

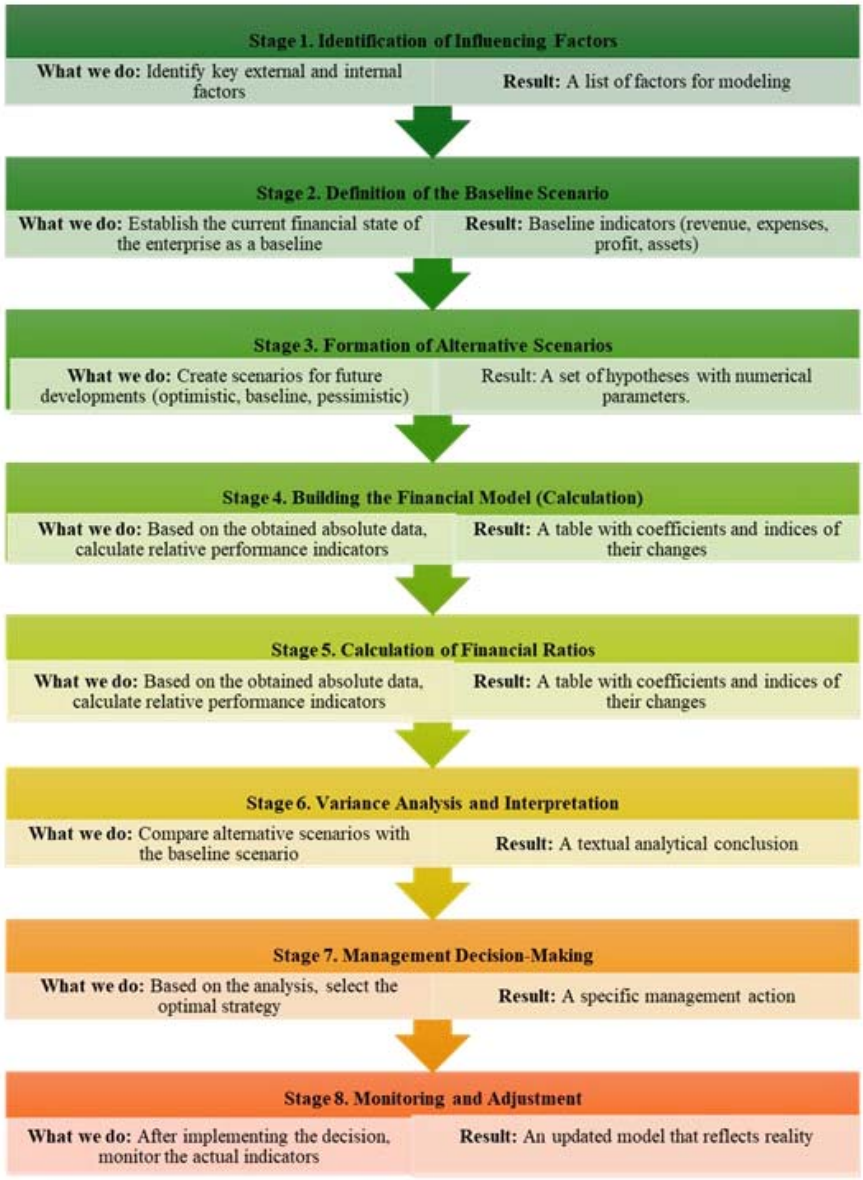

Fig. Algorithm of Scenario Modeling

Source: developed by the authors

However, the absolute profit values do not provide a complete understanding of the situation. After all, UAH 90,000 of profit under Scenario A and UAH 160,000 under Scenario B are obtained under different levels of revenue and expenses. To assess the quality of the enterprise's performance and explain the causes of deviations, it is necessary to calculate relative indicators – financial ratios (Table 3).

Table 3

Dynamics of Financial Ratios by Scenarios

Indicator	Formula	Base Scenario	Scenario A	Scenario B	Change Index (A/Base)	Change Index (B/Base)
Gross Profit Margin, %	Gross Profit / Revenue	40.0	34.0	40.0	0.85 (↓)	1.00
Net Profit Margin, %	Net Profit / Revenue	15.0	9.0	14.5	0.60 (↓↓)	0.97 (↓)
Return on Assets (ROA), %	Net Profit / Assets	18.75	11.25	20.0	0.60 (↓↓)	1.07 (↑)

Source: developed by the authors

Financial administration of the enterprise based on analytical methods, decision-making models, and control

The conducted scenario modeling allowed not only to record the changes in absolute net profit but also to explain the main causes of these changes through the dynamics of financial ratios. As shown in the tables, the implementation of the negative external Scenario A (increase in raw material prices) leads to a 40% decline in net profit. This is explained by a significant decrease in the efficiency of operational activities. As a result, the return on assets (ROA) nearly halves, signaling a potential loss of the business's investment attractiveness. In contrast, the implementation of the active internal Scenario B, despite additional marketing expenses, demonstrates a strategically correct direction for development. Although net profit margin slightly decreased (from 15% to 14.5%) due to higher selling expenses, the net profit amount increased by UAH 10,000. The key achievement of this scenario is the increase in ROA to 20%, indicating a more efficient use of the enterprise's existing assets.

Thus, through the system of scenario modeling and monitoring of financial ratios, management receives a clear quantitative basis for decision-making:

– given the current market conditions, it is advisable to implement Scenario B, as it ensures an increase in total profit and a higher return on assets;

– to minimize risks associated with Scenario A, it is necessary to establish a reserve fund or diversify raw material suppliers, since the decline in profitability under this scenario is substantial.

The presented calculation model demonstrates that scenario modeling is not merely a forecasting tool but a fundamental element of modern financial administration. Its practical value for a financial manager lies in three key aspects:

– transformation of risks into quantitative indicators. Instead of the abstract "raw materials may become more expensive," the financier receives a specific value: "net profit will decrease by 40%, and return on assets will drop to 11.25%." This allows for substantiated expense limits and the creation of reserves;

– ensuring transparency in decision-making. Management sees not only the final financial result but also the chain of changes: how investments in marketing affect the cost structure, how this alters margins, and the eventual outcome. This makes strategic discussions more professional and evidence-based;

– creation of an early warning system. By calculating ratios (gross and net profit margins) for different scenarios, the finance department establishes "red lines" – critical indicator values, reaching which requires immediate intervention and reconsideration of the chosen strategy.

Thus, scenario modeling transforms financial control from a post-factum reporting tool into an instrument of proactive management.

The practical application of methods and models in financial administration enables enterprises to optimize their capital structure, effectively plan investments, control operating costs, as well as assess risks and potential outcomes of management decisions. In the context of globalization and digitalization of the economy, effective financial administration involves not only the application of classical financial analysis models but also the use of modern information technologies, including business intelligence systems, automated financial management platforms, and artificial intelligence tools for real-time forecasting and modeling of financial flows.

Global experience of leading corporations demonstrates that scenario modeling is an effective tool for enhancing the efficiency of financial administration, particularly in conditions of high market volatility and uncertainty.

The two cases below illustrate the practical application of the discussed methods for capital structure optimization, investment planning, cost control, and risk assessment:

– Scenario Modeling in the Energy Sector: Leipziger Stadtwerke (Germany). Leipziger Stadtwerke, a German municipal energy company operating under conditions of high energy price volatility and fluctuating demand, implemented the Board platform to automate financial planning and scenario modeling. As a result, the company reduced financial reporting calculation time from four hours to 40 seconds, enabling it to quickly test various scenarios (e.g., changes in depreciation rules) and instantly assess their impact on financial results. This provided the company with the ability to respond rapidly to unforeseen external shocks, such as sharp increases in energy prices [7];

– Strategic Planning Amid Geopolitical Risks: Microsoft (USA). During its large-scale transition to cloud technologies (Azure), Microsoft Corporation utilized advanced scenario planning to assess geopolitical and regulatory risks. Specifically, scenarios related to different data sovereignty requirements (e.g., GDPR in Europe) and government access to information were modeled. This analysis resulted in the decision to build a network of regional data centers and develop complex compliance certifications, which minimized risks and accelerated the global deployment of Azure. Furthermore, for its AI strategy, Microsoft employs an early warning system that tracks the adoption rate of Copilot, the growth of Azure AI services, and competitors' actions, allowing for timely

strategy adjustments [8].

These examples demonstrate that the integration of modern modeling methods into financial administration enables companies not only to minimize risks but also to gain competitive advantages through increased accuracy and speed of decision-making.

The integration of analytics and control enables high forecasting accuracy and timely managerial decision-making. This allows enterprises to quickly adapt to changing market conditions, identify weaknesses in financial management, and make informed decisions regarding resource allocation, cost optimization, and profitability enhancement. Moreover, the combination of control mechanisms and analytical models facilitates the creation of a risk management system that minimizes the likelihood of financial losses and ensures enterprise stability even during crisis periods.

The use of modern methods and models of financial administration provides not only analytical depth but also control transparency, laying the foundation for improved enterprise management efficiency. Analytical tools allow for forecasting financial flows and evaluating the effectiveness of managerial decisions, while control mechanisms ensure compliance with standards and policies, timely detection of deviations, and prevention of financial risks. This approach forms the basis for strategic financial management, enhances decision-making quality, and promotes enterprise stability.

The conclusions drawn from the conducted analysis confirm that the analytical and control aspects of financial administration are closely interrelated and complementary. The application of modern methods and models allows for improved efficiency in managing financial resources, ensures transparency in accounting and control, optimizes costs, and establishes a comprehensive risk management system. Prospects for further research include the development of integrated information systems that combine analytics, forecasting, and control in real time, as well as the application of machine learning and artificial intelligence algorithms for predicting financial outcomes and automating managerial processes.

Thus, the analytical and control aspects of financial administration, utilizing methods and models, are key elements of modern enterprise management, ensuring the efficiency, transparency, and sustainability of financial activities. The integration of analytics and control, the use of modern modeling and forecasting methods, and the implementation of digital technologies and management systems allow enterprises to adapt to conditions of market instability, optimize resources, and increase profitability. This confirms the high relevance of the topic and the need for its further research.

It is precisely the symbiosis of analytical tools and control procedures that creates the foundation for making informed strategic decisions. Thanks to scenario modeling, the calculation of financial ratios, and the continuous monitoring of key indicators, financial administration ceases to be reactive and acquires a proactive nature. This allows not only for recording current deviations but also for anticipating potential threats and opportunities, transforming the financial department into a value-added center capable not just of accounting for past events, but of shaping the company's future.

Further development of this direction is seen in deepening the methodology of financial modeling, particularly by incorporating behavioral factors and strengthening the role of scenario analysis in conditions of external environmental turbulence. This necessitates the development of adaptive administration models capable of flexibly responding to changes in parameters of both the internal and external environment. It is this approach that allows not only for identifying deviations and explaining their nature but also for forecasting the long-term consequences of decisions made, which collectively forms a comprehensive performance management system for the enterprise.

The scenario modeling algorithm proposed in the study serves as a practical implementation of the described theoretical principles. It structures the financial administration process into a logical sequence of stages – from the identification of influencing factors to the monitoring of results – making it a universal tool for strategic planning. The integration of financial ratio calculation and variance analysis directly into the model's structure transforms it into an effective mechanism for substantiating management decisions based on facts and quantitative data. This approach allows an enterprise not only to prepare for possible changes in market conditions but also to adjust its chosen course in a timely manner, thereby increasing its long-term resilience, which will serve as the foundation for further scientific research in this area.

Based on the conducted research, the following scientific and practical recommendations for improving the financial administration system can be formulated (Table 4).

Table 4

Directions for Enhancing the Efficiency of Financial Administration

Direction	Essence	Purpose of Implementation	Expected Result
Integration of Analytics and Control	Combining data collection and interpretation functions (analytics) with monitoring compliance with standards (control) within a unified system.	Ensure comprehensive financial management and bridge the gap between planning and control.	Process transparency, timely detection of deviations, proactive management.
Modern Analysis and Forecasting Models	Application of economic-mathematical methods: linear/non-linear programming, regression analysis, scenario modeling, cost optimization.	Systematize data, identify patterns, and improve forecast accuracy.	Well-founded decisions, risk minimization, efficient resource allocation.
Digitalization of Administration Processes	Implementation of ERP systems, business intelligence (BI), analytical dashboards, automation of accounting and reporting.	Automate routine operations, accelerate data processing, reduce human factor influence.	Real-time monitoring, rapid report generation, flexible management.
Strengthening Internal Control and Audit	Introduction of risk-oriented approaches, standardization of audit procedures, automation of control functions.	Minimize financial losses, ensure compliance with policies, prevent fraud.	Improved accounting accuracy, timely response to risks, asset protection.
Comprehensive Use of Financial Ratios	Calculation and analysis of liquidity, profitability, stability, and business activity indicators in an interconnected manner.	Assess actual financial condition, compare with standards and industry benchmarks.	Objective problem diagnosis, identification of growth points, strategic planning.
Integration of Artificial Intelligence and ML	Application of machine learning algorithms for cash flow forecasting, anomaly detection, and audit automation.	Process large datasets (Big Data), uncover hidden dependencies, increase forecast accuracy.	Adaptive forecasting, automatic risk detection, optimization of strategies.
Scientific and Practical Training of Specialists	Combination of theoretical knowledge with practical skills in digital environments.	Prepare managers capable of working with modern tools and instruments.	Formation of a competent team able to implement and utilize modern financial administration practices.

Source: developed by the authors

Conclusions

The conducted study confirmed that improving the efficiency of financial administration is achieved not through isolated measures, but through the comprehensive implementation of interconnected tools, in particular:

– firstly, systematic approach as a foundation, where the key factor is the integration of analytics, control, and digital technologies into a unified management loop. Only the combination of these elements allows a transition from reactive management (responding to problems) to proactive management (preventing problems);

– secondly, technology as a catalyst, meaning digitalization and the use of AI are cross-cutting directions that enhance the effectiveness of other tools. They allow for processing data at scales inaccessible to humans and enable complex forecasting models to operate in real time;

– thirdly, human capital as a guarantee of implementation: The presence of modern technologies and methods is ineffective without specialists capable of applying them. Therefore, improving scientific and practical training is a fundamental basis that ensures the practical realization of all other directions.

Thus, the proposed system of measures creates the prerequisites for forming a resilient, transparent, and adaptive financial mechanism capable of ensuring the enterprise's competitiveness under conditions of modern economic instability.

The scientific novelty of the study lies in the enhancement of theoretical and methodological approaches to financial administration by substantiating the need to integrate analytical and control functions into a unified system for managing the enterprise's financial resources. For the first time, the authors propose a comprehensive algorithm of scenario modeling as a continuously operating management loop, which transforms traditional financial control from a post-factum reporting tool into a proactive risk management instrument. The systemic combination of financial ratios, economic-mathematical models, and digital technologies (including elements of artificial intelligence) in strategic and tactical managerial decision-making has also been further developed. Unlike existing approaches that treat analytics and control as separate functions, the proposed model demonstrates their synergistic effect, as confirmed by practical calculations based on an enterprise case study.

Future research prospects in this area include deeper exploration of the implementation of machine learning and artificial intelligence algorithms within financial administration systems for automating cash flow forecasting, anomaly detection, and credit risk assessment. The development of sector-specific scenario analysis models, taking into account the peculiarities of enterprises operating in different economic sectors, is also considered advisable.

REFERENCES

1. Liu, C. (2025). Application of intelligent algorithm in enterprise competitive strategy analysis and prediction. *In Proceedings of the 2025 5th Asia-Pacific Conference on Communications Technology and Computer Science (ACCTCS 2025)*. DOI: https://doi.org/10.1109/ACCTCS66275.2025.00227 [in English].

2. Okfalisa, O., Anggraini, W., Nawanir, G., Saktioto, S., & Wong, K. Y. (2021). Measuring the effects of different factors influencing on the readiness of SMEs towards digitalization: A multiple perspectives design of decision support system. *Decision Science Letters*. DOI: https://doi.org/10.5267/j.dsl.2021.1.002 [in English].

3. Zubareva, E. A., Basantsov, I. V., & Byelov, S. V. (2020). Financial E-control: Modernization of the state financial control system in the conditions of digital economy. *Journal of Automation and Information Sciences*. DOI: https://doi.org/10.1615/JAUTOMATINFSCIEN.V52.I10.50 [in English].

4. Bormotova, M. V., Mashoshyna, T. V., & Troinikova, O. M. (2021). Deiaki aspekty suchasnoho stanu vitchyznianoho finansovoho rynku [Some aspects of the current state of the domestic financial market]. *Ekonomika. Finansy. Pravo – Economics. Finance. Law*, *11*(3), 8–12 [in Ukrainian].

5. Yeromina, M. O., Troinikova, O. M., & Holenishcheva, K. O. (2019). Finansovyi skladnyk vprovadzhennia dyrektyv YeS na ukrainskykh zaliznytsiakh v umovakh vprovadzhennia vysokoshvydkisnoho rukhu [Financial component of implementing EU directives on Ukrainian railways under high-speed development]. *Pryazovskyi ekonomichnyi visnyk – Pryazovskyi Economic Bulletin*, *5*(16), 148–152 [in Ukrainian].

6. Zdir, V. A., Tkachenko, A. A., & Brazilii, N. M. (2024). Rol tsyfrovykh tekhnolohii dlia efektyvnoho finansovo-oblikovoho upravlinnia subiektiv hospodariuvannia [The role of digital technologies for effective financial and accounting management of business entities]. *Problemy suchasnykh transformatsii. Seriia: ekonomika ta upravlinnia – Problems of Modern Transformations. Series: Economics and Management*. Retrieved from https://reicst.com.ua/pmt/article/view/2024-11-09-02 [in Ukrainian].

7. Zorina, O. I., & Fadeienko, V. Yu. (2020). Analiz stanu finansovoi stiikosti bankivskoi systemy Ukrainy yak skladova v zabezpechenni finansovoi bezpeky [Analysis of the financial stability of Ukraine's banking system as a component of financial security]. *Prychornomorski ekonomichni studii – Black Sea Economic Studies*, *50*(2), 24–27 [in Ukrainian].

8. Teslia, S.M., Zabara, Yu.V. (2024). Innovatsiini modeli vprovadzhennia ta finansova inkliuziia dlia pisliavoiennoho vidnovlennia Ukrainy [Innovative implementation models and financial inclusion for Ukraine's post-war recovery]. *Investytsii: praktyka ta dosvid – Investments: Practice and Experience*, *23,* 115–121 [in Ukrainian].

Received 20.02.2026.
Revised 25.02.2026.
Accepted 29.04.2026.
Published 30.05.2026.

ФІНАНСОВЕ АДМІНІСТРУВАННЯ ПІДПРИЄМСТВА НА ОСНОВІ АНАЛІТИЧНИХ МЕТОДІВ І МОДЕЛЕЙ ПРИЙНЯТТЯ РІШЕНЬ ТА КОНТРОЛЮ

Кірдіна Олена, Стешенко Олена

У статті досліджено теоретико-методичні та прикладні засади вдосконалення фінансового адміністрування підприємств шляхом інтеграції аналітичних і контрольних інструментів із сучасними методами прогнозування та цифровими технологіями. Обґрунтовано, що в умовах високої динамічності економічного середовища, глобалізації та цифровізації традиційні підходи до управління фінансами не забезпечують необхідної швидкості, точності та комплексності прийняття рішень, що зумовлює потребу у формуванні інтегрованої системи фінансового адміністрування. Розкрито сутність аналітичних аспектів як сукупності методів збору, обробки та інтерпретації фінансової інформації із застосуванням економіко-математичних моделей, статистичних методів, фінансових коефіцієнтів та сценарного моделювання. Визначено контрольні аспекти як систематичний нагляд за відповідністю фінансової діяльності встановленим стандартам і політикам, що забезпе-

Financial administration of the enterprise based on analytical methods, decision-making models, and control

чує своєчасне виявлення відхилень та мінімізацію ризиків. Особливу увагу приділено сценарному моделюванню як ефективному інструменту оцінювання впливу зовнішніх і внутрішніх факторів на фінансові результати. Розроблено алгоритм сценарного моделювання, який перетворює цей інструмент на постійно діючий контур управління, що дозволяє фінансовій службі працювати в режимі реального часу. Наведено практичну модель-розрахунок на прикладі ТОВ «Сонячний хліб», яка демонструє вплив зовнішніх (зростання цін на сировину) та внутрішніх (активізація маркетингу) факторів на чистий прибуток, рентабельність та ефективність використання активів. Розрахунки підтверджують, що сценарне моделювання у поєднанні з фінансовими коефіцієнтами забезпечує не лише кількісну оцінку відхилень, а й їх якісну інтерпретацію. Систематизовано шість ключових напрямів підвищення ефективності фінансового адміністрування: інтеграція аналітики та контролю, застосування сучасних моделей прогнозування, цифровізація процесів, посилення внутрішнього аудиту, комплексне використання фінансових коефіцієнтів, впровадження штучного інтелекту та машинного навчання. Окремо акцентовано на необхідності підвищення науково-практичної підготовки фахівців як базису для реалізації зазначених інструментів. Сформульовано висновок, що ефективне фінансове адміністрування досягається через системну інтеграцію аналітики, контролю та цифрових технологій, що дозволяє перейти від реактивного до проактивного управління, забезпечуючи стійкість, прозорість та конкурентоспроможність підприємства в умовах економічної нестабільності.

Ключові слова: фінансове адміністрування, аналітика, контроль, сценарне моделювання, управлінські рішення.

FINANCIAL ADMINISTRATION OF THE ENTERPRISE BASED ON ANALYTICAL METHODS, DECISION-MAKING MODELS, AND CONTROL

Kirdina Olena*, *Steshenko Olena

Ukrainian State University of Railway Transport, Kharkiv, Ukraine

***e-mail: lenakirdina@ukr.net**

Kirdina Olena ORCID: **https://orcid.org/0000-0003-0600-7329**

Steshenko Olena ORCID: **http://orcid.org/0000-0001-5117-0585**

The article examines the theoretical, methodological, and applied foundations for improving enterprise financial administration through the integration of analytical and control instruments with modern forecasting methods and digital technologies. It is substantiated that, under conditions of high economic dynamism, globalization, and digitalization, traditional approaches to financial management do not ensure the necessary speed, accuracy, and comprehensiveness of decision-making, which necessitates the formation of an integrated system of financial administration. The essence of analytical aspects is revealed as a set of methods for collecting, processing, and interpreting financial information using economic-mathematical models, statistical methods, financial ratios, and scenario modeling. Control aspects are defined as systematic supervision over the compliance of financial activities with established standards and policies, ensuring timely detection of deviations and risk minimization. Special attention is given to scenario modeling as an effective tool for assessing the impact of external and internal factors on financial outcomes. An algorithm for scenario modeling has been developed, transforming this instrument into a continuously operating management loop that enables the financial department to function in real time. A practical calculation model is presented using the example of LLC "Soniachnyi Khlib," which demonstrates the influence of external factors (such as raw material price increases) and internal factors (such as intensified marketing activities) on net profit, profitability, and asset utilization efficiency. The calculations confirm that scenario modeling, combined with financial ratios, provides not only a quantitative assessment of deviations but also a qualitative interpretation of them. Six key directions for enhancing the effectiveness of financial administration are systematized: integration of analytics and control, application of modern forecasting models, digitalization of processes, strengthening internal audit, comprehensive use of financial ratios, and the implementation of artificial intelligence and machine learning. Particular emphasis is placed on the need to improve the scientific and practical training of specialists as a foundation for implementing these instruments. It is concluded that effective financial administration is achieved through the systematic integration of analytics, control, and digital technologies, enabling the transition from reactive to proactive management, thereby ensuring the sustainability, transparency, and competitiveness of the enterprise under conditions of economic instability.

Keywords: financial administration, analytics, control, scenario modeling, managerial decision-making.

REFERENCES

1. Liu, C. (2025). Application of intelligent algorithm in enterprise competitive strategy analysis and prediction. *In Proceedings of the 2025 5th Asia-Pacific Conference on Communications Technology and Computer Science (ACCTCS 2025)*. DOI: https://doi.org/10.1109/ACCTCS66275.2025.00227 [in English].

2. Okfalisa, O., Anggraini, W., Nawanir, G., Saktioto, S., & Wong, K. Y. (2021). Measuring the effects of different factors influencing on the readiness of SMEs towards digitalization: A multiple perspectives design of decision support system. *Decision Science Letters.* DOI: https://doi.org/10.5267/j.dsl.2021.1.002 [in English].

3. Zubareva, E. A., Basantsov, I. V., & Byelov, S. V. (2020). Financial E-control: Modernization of the state financial control system in the conditions of digital economy. *Journal of Automation and Information Sciences.* DOI: https://doi.org/10.1615/JAUTOMATINFSCIEN.V52.I10.50 [in English].

4. Bormotova, M. V., Mashoshyna, T. V., & Troinikova, O. M. (2021). Deiaki aspekty suchasnoho stanu vitchyznianoho finansovoho rynku [Some aspects of the current state of the domestic financial market]. *Ekonomika. Finansy. Pravo – Economics. Finance. Law*, *11*(3), 8–12 [in Ukrainian].

5. Yeromina, M. O., Troinikova, O. M., & Holenishcheva, K. O. (2019). Finansovyi skladnyk vprovadzhennia dyrektyv YeS na ukrainskykh zaliznytsiakh v umovakh vprovadzhennia vysokoshvydkisnoho rukhu [Financial component of implementing EU directives on Ukrainian railways under high-speed development]. *Pryazovskyi ekonomichnyi visnyk – Pryazovskyi Economic Bulletin*, *5*(16), 148–152 [in Ukrainian].

6. Zdir, V. A., Tkachenko, A. A., & Brazilii, N. M. (2024). Rol tsyfrovykh tekhnolohii dlia efektyvnoho finansovo-oblikovoho upravlinnia subiektiv hospodariuvannia [The role of digital technologies for effective financial and accounting management of business entities]. *Problemy suchasnykh transformatsii. Seriia: ekonomika ta upravlinnia – Problems of Modern Transformations. Series: Economics and Management*. Retrieved from https://reicst.com.ua/pmt/article/view/2024-11-09-02 [in Ukrainian].

7. Zorina, O. I., & Fadeienko, V. Yu. (2020). Analiz stanu finansovoi stiikosti bankivskoi systemy Ukrainy yak skladova v zabezpechenni finansovoi bezpeky [Analysis of the financial stability of Ukraine's banking system as a component of financial security]. *Prychornomorski ekonomichni studii – Black Sea Economic Studies*, *50*(2), 24–27 [in Ukrainian].

8. Teslia, S.M., Zabara, Yu.V. (2024). Innovatsiini modeli vprovadzhennia ta finansova inkliuziia dlia pisliavoiennoho vidnovlennia Ukrainy [Innovative implementation models and financial inclusion for Ukraine's post-war recovery]. *Investytsii: praktyka ta dosvid – Investments: Practice and Experience*, *23,* 115–121 [in Ukrainian].