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## Modern automated system for the financial and economic analysis and management of enterprise activity

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**Abstract.** The present article explores the significance of a financial analysis for financial managers in the contemporary context of economic development. It focuses on automated systems for financial, economic, and managerial analysis of economic activity within an entity. Special attention in this context is given to the tools of automated financial and economic analysis. This system serves as a professional instrument for conducting comprehensive financial, economic, and managerial analysis of an enterprise's operations. The main objective of the program is to improve the process of financial analysis within a business entity.

To carry out managerial and financial-economic analysis, specialized software is used, enabling full automation of these processes. The program allows for performing periodic monitoring and financial analysis of an accounting entity. This includes analysis to constitute balance estimations, to model the development of a financial situation, to constitute analytical notes, to develop programs of sanitation, and to develop the company's development strategy.

**Key words:** financial analysis, economic analysis, information, program, system.

### Introduction

The ability to analyze a company's operational, financial, and economic activities, plan and forecast its future development, and draw conclusions based on the obtained data is one of the key requirements for a modern financial manager. In the context of global economic transformations and digitalization of business processes, the role of financial and economic analysis in ensuring the stability and competitiveness of enterprises is steadily increasing. Enterprises of all sizes face the challenge of adapting to rapidly changing market conditions, characterized by heightened competition, volatility of financial flows, and the constant emergence of new technological tools. Under these circumstances, the ability to conduct timely

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and comprehensive financial analysis becomes a decisive factor in effective management. The problematic situation lies in the fact that while classical methods of analysis remain relevant, they are increasingly insufficient for the needs of modern business entities. The lack of unified automated solutions for financial and economic analysis at the enterprise level creates difficulties in decision-making, especially in areas related to forecasting, risk management, and strategic planning. This makes the development and implementation of modern automated systems in financial and economic management a highly topical area of research.

The object of this study is the system of financial and economic analysis of enterprise activity, while the subject is the use of automated software tools for managerial and analytical decision-making. The main aim of the research is to substantiate the importance of introducing automated systems into the practice of enterprise management and to demonstrate their effectiveness in enhancing the quality of financial and economic analysis. The objectives of the study include: identifying the current state of methodological approaches to financial analysis; examining the possibilities of specialized software such as Project Expert, Audit Expert, and FinEkAnaliz; evaluating their strengths and limitations; and determining the prospects for their application in educational and practical activities. The working hypothesis assumes that the introduction of automated systems into financial and economic analysis significantly improves the efficiency of managerial decisions, reduces the probability of errors in financial forecasting, and contributes to the sustainable development of enterprises.

**Problem Statement.** The views of the proposed scholars are substantiated by the opinions of researchers such as V.V. Kovalev and O.N. Volkov. They argue that “the analysis of a company’s financial and economic activities at the microeconomic level, that is, at the level of economic entities, serves as the foundation for decision-making” [1].

According to the scholar N.I. Usik, the following key functions related to the analysis and study of a company’s financial and economic activities: control, accounting, incentive, organizational, and indicative functions [2].

N.A. Faidushenko provides a comprehensive definition of a company’s financial activities and outlines methods for studying its financial condition and financial results. According to him, these financial outcomes are shaped by both commercial and financial performance. These outcomes are characterized by a system of techno-economic and financial indicators that form part of the company’s economic information system [3].

**Objectives.** Russian and domestic economists have repeatedly proven that “the analysis of a company’s economic activities is a crucial element of the production management system, an important tool for identifying internal reserves, and a foundation for developing scientific-economic plans and managerial decisions” [4].

As is well known, the general objective of analyzing an organization’s balance sheet is to identify and disclose information about the company’s financial condition and its development prospects, which is essential for financial statement users in making informed decisions [5].

**Historical Background.** The issue of the continuous functioning of expanded reproduction is not always a pressing concern for many domestic companies, banks, and industries. On one hand, there is the challenge of avoiding losses and bankruptcy; on the other, the expansion of reproduction is only possible through profit growth and innovation. These factors form the financial foundation for self-financing and ensure the company’s sustainable presence in the market [6].

## **Literature review**

In recent years, the publication of academic literature in Russia has focused on financial analysis and modeling. These publications have utilized various computer programs in their analyses.

Liang H.F. emphasizes the role of modern technology in cost accounting of industrial enterprises, highlighting informatization as a key factor in improving cost control and management efficiency [7]. The study proves that automated systems significantly enhance decision-making processes and ensure higher accuracy in activity-based costing applications. Zheng H. analyzes the transformation of enterprise financial management models in the era of big data. The author notes that intelligent financial systems enable automation of auditing procedures, improve compliance and transparency, but face challenges related to data quality and system integration [8].

Levytskyi V. outlines modern problems of strategic analysis, stressing its impact on the effectiveness of enterprise management and development [9]. The research demonstrates that without integrated analytical systems, strategic decision-making remains fragmented and less efficient. Nurlkasheva N.S., Zhanuzakova O.Zh. propose a system of scientific approaches in economic analysis, combining control, organizational, and indicative methods. Their work highlights the importance of methodological diversity for comprehensive enterprise diagnostics [10].

Kairkenov A.B. focuses on the assessment of enterprise development prospects and financial condition, noting that accurate analysis is a prerequisite for long-term sustainability, particularly under conditions of economic uncertainty [11]. Kryuchkova I.V., Smorodina E.P., Belyantseva O.M. discuss mechanisms of sustainable development of industrial enterprises through the digitalization of financial and economic subsystems. Their findings underline digital transformation as a driver of economic resilience [12].

Yesymkhanova Z.K., Daulet Khanova Zh.D., Alpysbaev K.S. examine the scope of financial engineering in Kazakhstan, showing that its application is expanding with digitalization trends and reinforcing the innovation potential of national enterprises [13].

However, one of the main drawbacks of this program is its high cost, which makes it more accessible to large corporate structures rather than small enterprises. Additionally, individual users cannot install the software independently at their workplaces. Today, the Internet demonstrates that users can access various services without leaving their workplaces or making financial investments. This article discusses FinEkAnaliz, a well-known Russian financial and economic analysis software.

## **Methodology**

During this study, various methods were used to provide a comprehensive analysis of the enterprise. The main focus was on economic, content-methodological, and comprehensive statistical and analytical analysis of economic activity, which was used to reveal the relevance of the topic and achieve its goals.

Financial analysis in a company is conducted using various methods for studying economic phenomena. Each method has its strengths and weaknesses, as well as specific objectives and functions. The primary source of information for conducting such an analysis is the company's financial (accounting) statements. In addition, the method of scientific literature analysis and

content analysis of financial documents and strategic plans was used. This research helped to identify the general patterns of enterprise management and the specific features characteristic of financial and economic analysis.

## Results and discussion

One of the key innovations is the introduction and widespread adoption of automated financial analysis programs in the practical activities of enterprises.

Currently, numerous specialized software programs are available for analyzing the financial performance of economic entities. These programs differ in terms of their management decision-making capabilities and the volume of accounting and analytical data they process [9].

Both the Project Expert and FinEkAnaliz programs are designed to develop students' practical skills. At Shakarim University of Semey, these programs are actively used in lectures and practical sessions for courses such as Financial Management, Project Analysis, Investment Financing and Lending, Business Planning, Investment Analysis, Project Management, and Project Expert – Enterprise Financial Modeling System.

However, when comparing the ease of learning these programs, FinEkAnaliz stands out as simpler to use and more cost-effective in terms of purchase, installation, and training. This makes it an accessible option for aspiring entrepreneurs, university students, and college learners.

One of its key advantages is its ease of integration into the educational process. Additionally, this program is highly demanded by undergraduate and graduate students specializing in economics, particularly for writing coursework and final dissertations.

The practical application of this program has demonstrated students' interest in the aforementioned courses while also improving the quality of diploma projects, master's dissertations, and overall academic performance.

FinEkAnaliz is a professional automated system for conducting a comprehensive financial and economic analysis of a business entity.

The primary objective of this program is to enhance the financial analysis of business operations.

Financial analysis in FinEkAnaliz offers a package for automating management and financial-economic analysis within an enterprise. Using this program, businesses can assess their financial condition and conduct periodic monitoring. Specifically, it enables express analysis, preparation of forecasted balance sheets, modeling financial condition trends, compiling analytical reports, and developing corporate growth strategies and recovery programs.

To illustrate its application, let us analyze the financial condition and solvency of JSC "X" for the years 2022-2023 using the automated system FinEkAnaliz-2016, Version 8.0.165.

A company's solvency is an external indicator of its financial stability and reflects the extent to which its current assets are secured by long-term sources of funding. It is determined by the organization's ability to meet its financial obligations on time using available cash resources.

Table 1. Data for Analysis, 2023-2024 y.

Indicator Name	Notation	2023	2024	Change
1. Cash and short-term financial investments	ALA	244878	2000816	1755938

2. Cash, short-term financial investments, short-term receivables, and other current assets	ALA+DZ	292074	2580901	2288827
3. Total current assets	IOA	4339567	8319296	3979729
4. Total assets	IIA	7645112	12511307	4866195
5. Short-term liabilities	IIKO	4361646	5170721	809075
6. Total liabilities	IIKO+IIDO	5477767	5984265	506498

Note: Compiled by the authors [12]

The assessment of solvency is based on the analysis of the liquidity of an organization's current assets, which directly depends on their ability to be converted into cash. The higher the liquidity of these assets, the greater the organization's ability to meet its short-term financial obligations on time.

Table 2. Assessment of Current Solvency, 2023-2024 y.

Indicator Name	Optimal Value	2023	2024	Change
1. Absolute liquidity ratio (L2) (cash reserve norm)	0.20 - 0.25	0.056	0.387	0.331
2. Quick liquidity ratio (L3) ("critical evaluation")	0.7 - 1.0	0.067	0.499	0.432
3. Current liquidity ratio (L4) (debt coverage ratio)	> 2	0.995	1.609	0.614

Note: Compiled by the authors [13]

The absolute liquidity ratio (L2) reflects the company's ability to cover its short-term liabilities using cash and cash equivalents in the immediate term. As of 01.01.2021, the company's ability to meet its short-term obligations with liquid assets has slightly improved. However, the level remains insufficient to ensure full financial stability.

The quick liquidity ratio (L3) indicates what portion of short-term liabilities can be quickly covered by funds in various accounts, short-term securities, and incoming receivables. As of 01.01.2021, this ratio was also insufficient. However, its positive trend, along with the high level of liquid assets, suggests that the company's solvency is within a stable range.

The current liquidity ratio (L4) measures the extent to which current assets can cover current liabilities. As of 01.01.2021, this ratio remained below the recommended level, meaning the company would not be able to fully offset losses incurred from liquidating all current assets. However, compared to 01.01.2023, there was a slight improvement in the company's solvency.

The overall liquidity ratio (L1) shows what proportion of the company's total liabilities can be covered by its total current assets. During the analyzed period, the company's overall liquidity level increased but did not yet reach the optimal value. This indicator is crucial as it determines whether the company will have sufficient working capital to continue operations after settling its debts.

The capital maneuverability ratio (L5) measures what portion of working capital remains tied up in production inventories and long-term receivables. In 2023, this ratio increased, signaling an improvement in the company's balance sheet structure and overall financial flexibility.

Table 3. Additional Solvency Indicators, 2023-2024 y.

Indicator Name	Optimal Value	2023	2024	Change
1. Overall liquidity ratio (L1)	2.0 - 2.5	0.792	1.39	0.598
2. Working capital maneuverability ratio (L5)	-	-183.319	1.823	185.142
3. Share of current assets in total assets (L6)	=> 0.5	0.568	0.665	0.097
4. Provision of working capital with own funds (L7)	=> 0.1	-0.262	0.281	0.543
5. Solvency recovery ratio (L8)	=> 1.0	0.746	0.958	x
6. Solvency loss ratio (L9)	=> 1.0	x	x	x

Note: Compiled by the authors [12]

The share of working capital in total assets (L6) is used to analyze whether a company operates within a specific industry sector. At Company "X", this ratio increased over the analyzed period, reaching a high level, which is significant for the company's operations.

The coefficient of working capital provision with own funds (L7) reflects the availability of internal working capital to ensure financial stability. During the analysis period, the company's ability to cover working capital needs with its own funds improved. Consequently, this indicator reached a high level for the company, indicating a relative strengthening of financial stability.

However, given the financial conditions that have developed over the past six months, Company "X" does not currently have realistic opportunities to restore its solvency in the short term.

Table 4. Calculation of Factor Influence on the Change in the Current Liquidity Ratio

Substitutions	Factors					Current Liquidity Ratio	Factor Impact
	Inventories	Accounts Receivable	Financial Investments	Cash Assets	Short-term liabilities		
1. Base Values	4047493	47196	0	244878	4194985	1.941	x
3. Effect of Inventory Changes	5738395	47196	0	244878	4194985	2.344	0.403
3. Effect of Accounts Receivable Changes	5738395	580085	0	244878	4194985	2.471	0.127

4. Effect of Financial Investments Changes	5738395	580085	0	244878	4194985	2.471	0
5. Effect of Cash Assets Changes	5738395	580085	0	2000816	4194985	2.874	0.403
6. Effect of Short-term Liabilities Changes	5738395	580085	0	2000816	4503059	2.677	-0.197

Note: Compiled by the authors [12]

Thus, the cumulative impact of all factors is - 0.736.

Financial stability refers to a company's ability to maintain a balance between its assets and liabilities while continuing its operations and development, even under changing internal and external conditions. Additionally, it involves sustaining investment attractiveness and stable solvency while managing potential risks at an acceptable level.

To ensure long-term market stability, a company's capital structure must be flexible, with revenues consistently exceeding expenses

**Table 5. Indicators Determining the Condition of Working Capital**

Indicator Name	2023	2024	Change
1. Coefficient of self-financing	-0.262	0.281	0.543
2. Coefficient of inventory coverage with own funds	-0.364	0.606	0.97
3. Coefficient of maneuverability of own funds	-0.525	0.358	0.883
4. Maneuverability coefficient	-0.347	0.318	0.665
5. Mobility coefficient of total funds	0.568	0.665	0.097
6. Mobility coefficient of working capital	0.056	0.241	0.185
7. Inventory coverage ratio	-0.007	0.818	0.825

Note: Compiled by the authors [12]

During the analyzed period, the coefficient of self-financing increased by 97 points, reaching 60.6%. This indicates that initially, the company was entirely dependent on borrowed funds when forming its working capital. By the end of the period, the company was able to conduct its production activities based on its financial capabilities.

In 2023, the share of funds allocated for debt repayment increased by 9.7 points, reaching 66.5%. This demonstrates the company's ability to settle accounts with creditors and maintain stable operations. Thus, the share of absolute liquid funds directed toward long-term debt repayment, in relation to total funds, grew by 18.5 points, accounting for 24.1% of the total working capital.

As of January 1, 2023, both the inventory coverage ratio and the allocation of own funds for expenses remained below the normal level. However, during the analyzed period, this indicator increased by 81.8%, surpassing the standard level. This improvement in the company's financial position indicates that the company can now cover not only essential inventory and expenses but also their full volume using its own working capital and long-term borrowed funds.

Table 6. Indicators Determining the Condition of Fixed Assets

Indicator Name	2023	2024	Change
Fixed Asset Index	1.525	0.642	-0.883
Coefficient of Real Property Value	0.537	0.567	0.03
Coefficient of Production-Oriented Property	0.841	0.643	-0.198
Coefficient of Long-Term Investment Structure	0.338	0.194	-0.144

Note: Compiled by the authors [13]

In 2023, the company's ability to finance non-current assets from its own funds declined. At the beginning of the period, the company's fixed assets and non-current assets were covered by its own funds, accounting for only 64.2%.

By 2023, fixed assets, capital investments, equipment, production inventories, and construction in progress made up 50% of the company's total assets. However, this indicator decreased by 19.8 points, reaching 64.3%, signaling a decline in favorable conditions for the company's financial performance and production potential.

The share of fixed assets, raw materials, supplies, and construction in progress within the total property value increased by 3 points, reaching 56.7%, indicating improved provision of production resources.

Table 7. Indicators Characterizing Capital Structure

Indicator Name	2023	2024	Change
Autonomy Coefficient (Financial Independence)	0.283	0.522	0.239
Debt Capital Concentration Coefficient	0.717	0.478	-0.239
Capitalization Ratio (Financial Risks)	2.527	0.917	-1.61
Financing Ratio	0.396	1.091	0.695
Ratio of Mobile to Immobile Assets	1.313	1.985	0.672
Stable Financing Ratio	0.429	0.587	0.158

Note: Compiled by the authors [10]

During the analyzed period, the autonomy coefficient significantly increased (by 0.239), reaching 0.522. This growth indicates a rise in financial independence, enhancing the company's ability to meet its obligations and expand opportunities for attracting external financing.



The company's ability to cope with unexpected market conditions has also improved, as confirmed by the assessment of the Debt Capital Concentration Coefficient.

By the end of the reporting period, the company's own funds showed a negative value, indicating a slight decline in financial stability. At the beginning of the period, the capitalization ratio was higher than the ratio of mobile to immobile assets. However, by the end of the analyzed period, the ratio of borrowed to own funds had become more limited compared to the ratio of mobile to immobile assets. This suggests an improvement in financial stability, a conclusion supported by the financing ratio.

The ratio of own and long-term borrowed funds to total assets increased by 15.8 points, reaching 58.7%, which remains below the established benchmark. This indicates that the value of assets financed through stable sources has grown only slightly, while the company remains highly dependent on borrowed funds.

Table 8 . Indicators Characterizing the Share of Debt in the Company's Financial Sources

Indicator Name	2023	2024	Change
Long-term Debt Attraction Ratio	0.34	0.111	-0.229
Share of Long-term Debt in Total Borrowed Funds	0.204	0.136	-0.068
Short-term Debt Ratio	0.766	0.752	-0.014
Accounts Payable Ratio	0.026	0.234	0.208
Autonomy Ratio for Inventory and Expense Formation	-0.283	0.374	0.657
Bankruptcy Prediction Ratio	0.019	0.305	0.286

Note: Compiled by the authors [10]

#### Assessment of Debt in the Company's Financial Structure

The evaluation of debt-related indicators in the company's financial structure leads to the following conclusions:

1. The share of long-term debt used for capital investments decreased by 22.9 points, reaching 11.1%.

2. The proportion of short-term liabilities in the company's total external obligations declined by 1.4 points, now standing at 75.2%, while the share of long-term liabilities increased to 13.6%.

3. The level of accounts payable increased by 20.8 points, now making up 23.4% of external obligations.

4. The company's position in the market remains stable.

The analysis results indicate that the company's financial stability and solvency are at an acceptable level. The company demonstrates a high financial potential under the criterion of "Effective Financial Management System," proving that its success is supported by an efficient budgeting system.

Thus, all financial potential indicators for Company X are at a moderate level, which suggests an overall moderate financial capacity. While the company operates successfully, its financial stability remains significantly influenced by external and internal environmental changes.

**Conflict of interest. The authors declare no conflict of interest**

**Dana Akisheva** – approval of the final version of the article for publication; consent to be responsible for all aspects of the work, properly studying and resolving issues related to the reliability of data or the integrity of all parts of the article.

**Aliya Ibrayeva** – collection, analysis and interpretation of work results; writing a text and critically reviewing its content; significant contribution to the concept of work.

**Maral Iskakova** – theoretical substantiation, interpretation of results.

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### **Кәсіпорынның шаруашылық қызметін қаржылық-экономикалық талдаудың қазіргі заманғы автоматтандырылған жүйесі**

**Аңдатпа.** Бұл мақалада қаржылық талдаудың мәні көрсетілген және басқару автоматтандырылған жүйелерде экономиканы дамыту, сондай-ақ қаржы менеджердің қазіргі жағдайда кәсіпорынның шаруашылық қызметінің қаржы-экономикалық талдауы ұсынылған. Бұл бағдарламаның негізгі мақсаты – шаруашылық субъектінің қаржылық талдауды жетілдіру.

Бұл бағытта ерекше назар автоматтандырылған қаржылық-экономикалық талдау құралдарына аударылады. Аталған жүйе – кәсіпорынның шаруашылық қызметіне кешенді қаржылық-экономикалық және басқарушылық талдау жүргізуге арналған кәсіби құрал болып табылады. Бағдарламаның басты мақсаты – шаруашылық субъектінде қаржылық талдау үдерісін жетілдіру. Басқарушылық және қаржылық-экономикалық талдауды жүзеге асыру үшін осы үдерістерді толық автоматтандыруға мүмкіндік беретін арнайы бағдарламалық қамтамасыз ету қолданылады.

Мониторинг және шаруашылық қызметі субъектінің қаржы жағдайына талдау жүргізуге мүмкіндік береді және жылдам талдау жасауға, дамыту бағдарламасы мерзімді қоса алғанда, қаржылық ахуалдың бағдарламаларын әзірлеуге, жасауға талдамалық жазбалар, болжамды теңгеріміне модельдеуге санациялау және компанияның даму стратегиясын жасауға жол береді.

**Түйін сөздер:** қаржылық талдау, экономикалық талдау, ақпарат, бағдарлама, жүйесі.

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### **Современная автоматизированная система финансово-экономического анализа хозяйственной деятельности предприятия**

**Аннотация.** В данной статье представлено значение финансового анализа для финансового менеджера в современных условиях развития экономики, а также сконцентрировано внимание на автоматизированных системах финансово-экономического и управленческого анализа хозяйственной деятельности предприятия. Особое внимание при этом уделяется инструментам автоматизированного финансово-экономического анализа.

Данная система представляет собой профессиональный инструмент для комплексного финансово-экономического и управленческого анализа хозяйственной деятельности предприятия. Основная цель данной программы – совершенствование финансового анализа хозяйствующего субъекта.

Для выполнения управленческого и финансово-экономического анализа используется специализированное программное обеспечение, обеспечивающее комплексную автоматизацию этих процессов. Программа позволяет осуществлять периодический мониторинг и анализ финансового состояния хозяйствующего субъекта, включая и экспресс-анализ, составление прогнозных балансов, моделирование развития финансовой ситуации, составление аналитических записок, разработка программы санации и стратегии развития компании.

**Ключевые слова:** финансовый анализ, экономический анализ, информация, программа, система

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