

DIGITAL TOOLS FOR ANALYSIS OF FINANCIAL STATEMENTS OF JOINT-STOCK COMPANIES

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Abstract: *The article examines the role and significance of digital tools in the analysis of financial statements of joint-stock companies within the context of the global digital transformation of the economy. In modern conditions, characterized by rapid technological development and increasing volumes of financial data, the application of digital technologies becomes a crucial factor in improving the efficiency and quality of financial analysis.*

The aim of the study is to identify the key digital instruments used in financial analysis and to assess their impact on the effectiveness of managerial decision-making and the overall performance of enterprises. The research methodology is based on general scientific methods, including analysis, synthesis, comparison, and generalization, as well as a systematic approach to evaluating the transformation of financial analysis under digitalization.

The study explores the main directions of financial statement analysis, including liquidity, solvency, financial stability, and profitability, and highlights the role of digital tools in enhancing these analytical processes. Particular attention is paid to the use of spreadsheet software, business intelligence systems, and programming tools for processing large volumes of financial data and generating analytical insights.

The findings demonstrate that the integration of digital technologies significantly improves the accuracy, speed, and depth of financial analysis, reduces the risk of human error, and enables real-time data processing. Moreover, digital tools contribute to increasing the transparency and accessibility of financial information, which is especially important for joint-stock companies due to their obligation to ensure accountability to shareholders and investors.

Key words: *financial analysis, digital transformation, digital tools, financial statements, business intelligence systems, big data analytics, predictive analytics, financial forecasting, managerial decision-making, joint-stock companies, financial transparency*

JEL: G32, M41

Introduction

In the context of the intensification of global digital transformation processes, the role of information and communication technologies in enterprise management systems is becoming increasingly significant. Digitalization is rapidly reshaping the economic environment, influencing not only business models but also approaches to data processing, analysis, and decision-making. As a result, traditional methods of financial analysis are undergoing substantial transformation, integrating advanced digital solutions that enhance analytical capabilities.

The growing complexity of economic processes and the increasing volume of financial data necessitate the use of modern digital tools that enable efficient data processing, storage, and analysis.

In this regard, financial analysis is no longer limited to standard calculation procedures but is evolving into a dynamic and technologically driven process that supports strategic management decisions.

This issue is particularly relevant for joint-stock companies, whose operational activities are characterized by complex organizational structures, diversified business operations, and significant financial flows. In addition, such companies face increased requirements for transparency, accountability, and information disclosure to shareholders, investors, and other stakeholders. Under these conditions, financial reporting serves as a key source of information for assessing the financial condition, performance results, and future development prospects of enterprises.

The analysis of financial statements plays a crucial role in ensuring effective enterprise management. It enables the evaluation of essential financial indicators, such as liquidity, solvency, financial stability, and profitability, which collectively determine the level of financial sustainability and operational efficiency. These indicators form the basis for both internal management decisions and external assessments by investors and analysts.

At the same time, the traditional approaches to financial analysis are increasingly being complemented and enhanced by digital technologies. The use of modern digital tools, including spreadsheet software, business intelligence systems, and data analytics platforms, allows for the automation of analytical procedures, integration of diverse data sources, and real-time monitoring of financial performance.

Furthermore, digitalization contributes to improving the quality of financial analysis by enabling deeper insights, advanced forecasting, and more accurate identification of financial risks and opportunities. It also enhances the visualization of analytical results, making financial information more accessible and understandable for stakeholders.

Therefore, the study of digital tools in financial statement analysis is of particular scientific and practical importance. It allows for the identification of current trends in the development of financial analytics and provides a foundation for improving enterprise management in the digital economy.

Basic content

Financial statement analysis represents a fundamental component of the enterprise management system, ensuring the formation of an objective and comprehensive evaluation of financial performance. It serves as an essential instrument for supporting both strategic and operational decision-making processes.

Through the application of analytical procedures, it becomes possible to identify key development trends, assess financial risks, and determine potential areas for improving operational efficiency. For joint-stock companies, such analysis acquires particular importance due to the necessity of ensuring transparency, minimizing information asymmetry, and maintaining investor confidence.

The principal directions of financial analysis encompass liquidity assessment, solvency evaluation, financial stability analysis, and profitability measurement. The integrated application of these analytical dimensions enables a holistic evaluation of the enterprise's financial condition and facilitates the formulation of substantiated managerial decisions [1].

The evolution of digital technologies has led to a substantial transformation of traditional approaches to financial analysis. Modern digital tools significantly enhance analytical capabilities by enabling the automation of calculations, integration of heterogeneous data sources, and real-time processing of financial information.

The analysis of financial statement is an important component of the management decision-making process, as it enables an assessment of the business's performance in terms of resource allocation and financial stability. Through analytical processes, it is possible to identify key trends in the business's development, assess risks and identify potential opportunities for improving operational efficiency [2].

Traditional methods of economic analysis are being gradually supplemented by modern digital technologies, which enable the automated processing of large quantities of data and improve the accuracy of analytical assessments. A wide range of digital tools are now commonly used in financial analysis to integrate financial data and optimise analytical processes.

The most commonly used digital tools in financial analysis are table processors, in particular Microsoft Excel and Google Sheets. These tools provide extensive functionality for the automated calculation of financial indicators, significantly reducing the time required for data processing and minimizing the risk of human error. They enable the creation of structured analytical tables, dynamic reports, and dashboards that facilitate a comprehensive assessment of a company's financial position. In addition, spreadsheet software supports the development of complex financial models, including budgeting models, investment appraisal models, and scenario analysis. Through the use of built-in functions, formulas, and data analysis tools, analysts can perform sensitivity analysis, evaluate different financial scenarios, and forecast future business performance under varying assumptions.

Another important advantage of these tools is their ability to integrate data from multiple sources, ensuring consistency and accuracy in financial analysis. Google Sheets, in particular, enhances collaboration by allowing multiple users to work simultaneously on the same document in real time, which is especially valuable for team-based analytical processes.

An increasingly important role in modern financial statement analysis is played by business intelligence (BI) systems, such as Microsoft Power BI, Tableau, and Qlik Sense. These digital solutions represent a qualitatively new stage in the development of financial analytics, as they transform traditional static reporting into dynamic, interactive analytical environments.

The application of BI systems enables the integration of data from multiple internal and external sources, ensuring the creation of a unified analytical space for processing financial information. Through advanced data modeling and visualization tools, these platforms facilitate the development of interactive dashboards that allow users to monitor key financial indicators in real time, identify hidden patterns, and detect deviations from planned performance.

The Role of Business Intelligence Systems in Financial Analysis

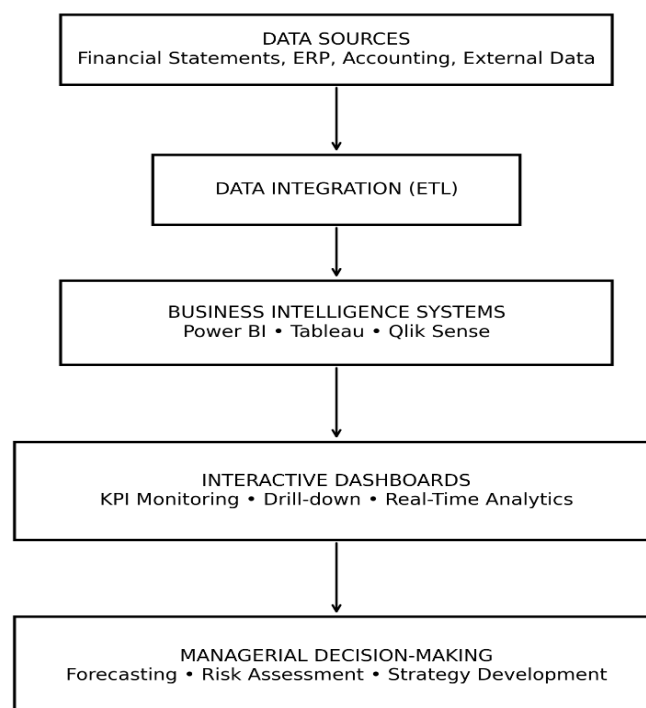


Figure 2. The role of Business Intelligence systems in financial analysis

Source: developed by the author

As illustrated in Figure 2 demonstrates the logical sequence of integrating business intelligence systems into the financial analysis process of joint-stock companies. At the initial stage, financial and operational data are collected from various internal and external sources, including financial statements, accounting systems, ERP platforms, and market data. Subsequently, the collected information undergoes integration and transformation through ETL (Extract, Transform, Load) procedures, ensuring data consistency and analytical readiness.

At the next stage, business intelligence systems such as Power BI, Tableau, and Qlik Sense process the integrated data and transform it into interactive analytical dashboards. These dashboards provide real-time monitoring of key performance indicators, support multidimensional drill-down analysis, and facilitate prompt identification of deviations and trends in financial performance.

Thus, business intelligence systems not only improve the visualization and accessibility of financial data but also form the basis for a new paradigm of data-driven financial management, which enhances the overall efficiency, transparency, and competitiveness of joint-stock companies in the digital economy.

In addition, modern trends involve the use of big data analytics tools. Programming languages such as Python are increasingly utilized in financial analysis due to their flexibility, scalability, and broad range of analytical libraries. These tools support statistical analysis, econometric modeling, forecasting of financial indicators, and the development of predictive algorithms for evaluating future business performance [3].

The application of digital tools in financial analysis and their impact on managerial decision-making are illustrated in Figure 2.

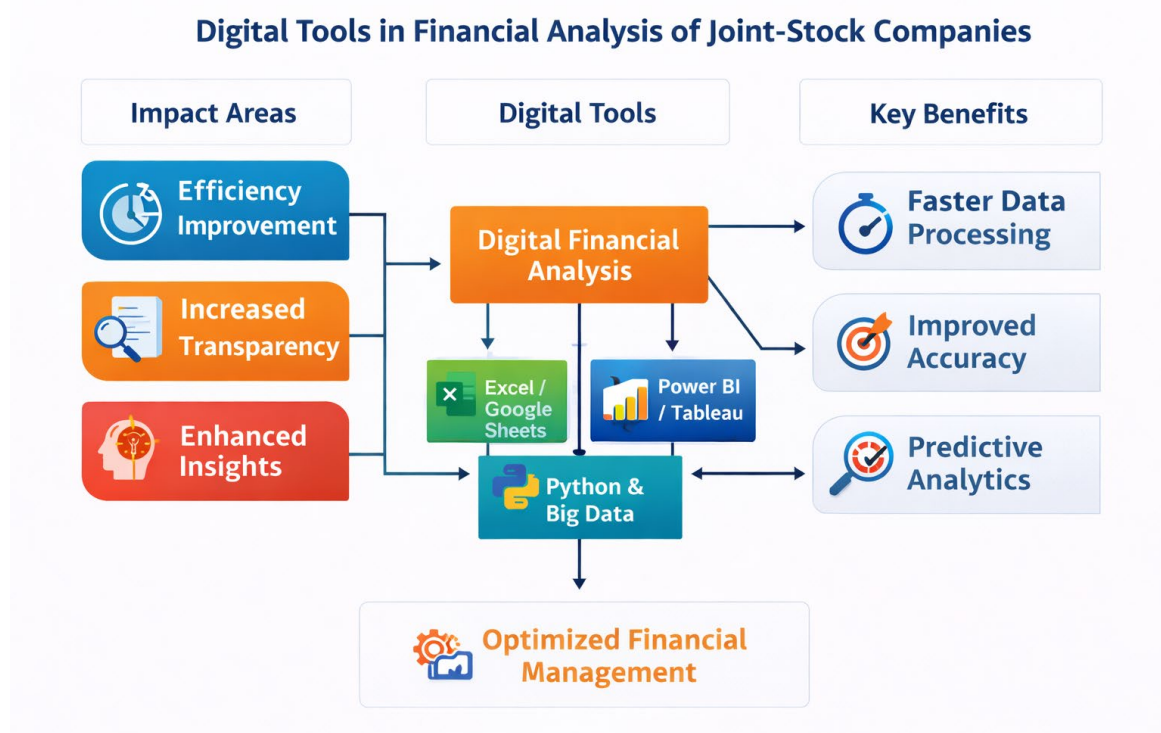


Figure 2. Digital tools in financial analysis of joint-stock companies

Source: developed by the author

The integration of digital technologies into financial analysis processes generates a range of significant advantages that contribute to improving the overall effectiveness of enterprise management.

Firstly, the automation of analytical procedures reduces the probability of human error and ensures a higher level of accuracy in calculations. Secondly, the high speed of data processing allows for the execution of real-time analysis, which is critical in a dynamic business environment.

Additionally, digital tools facilitate the processing of large datasets, enabling the application of Big Data analytics techniques. Enhanced visualization capabilities contribute to a better understanding of financial information and support more effective communication of analytical results to stakeholders. One of the most significant outcomes of the digitalization of financial analysis is the enhancement of transparency and accessibility of financial information. Digital tools ensure the structured presentation and efficient dissemination of financial data, thereby reducing information asymmetry between management and stakeholders.

For joint-stock companies, transparency constitutes a critical determinant of investor confidence and corporate reputation. The availability of accurate, timely, and comprehensible financial information contributes to more informed investment decisions and strengthens the overall governance framework.

Also, digital tools substantially improve the quality and efficiency of managerial decision-making processes. By providing access to real-time analytical data and advanced forecasting models, these tools enable managers to respond promptly to changes in the external environment and to develop well-grounded strategic initiatives.

Despite the substantial benefits associated with the implementation of digital technologies, several challenges and limitations must be taken into account.

Among the primary challenges are the high costs associated with the acquisition and maintenance of digital systems, as well as the necessity for highly qualified personnel capable of effectively utilizing these technologies. Furthermore, issues related to data security and confidentiality represent a critical concern in the context of increasing digitalization.

Another significant challenge involves the integration of new digital solutions with existing information systems, which may require substantial organizational and technical efforts.

Addressing these challenges necessitates the development of comprehensive digital transformation strategies and the implementation of appropriate risk management mechanisms.

Conclusions

The conducted study confirms that digital tools play a pivotal role in enhancing the effectiveness of financial statement analysis in joint-stock companies. The integration of modern digital technologies into analytical processes significantly improves the accuracy, efficiency, and depth of financial analysis, thereby increasing the quality of managerial decision-making and strengthening enterprise competitiveness in the digital economy.

The research demonstrates that the use of spreadsheet software, business intelligence systems, and programming tools enables enterprises to process substantial volumes of financial data, automate analytical procedures, and apply advanced methods of statistical and predictive analysis. In particular, business intelligence platforms improve the visualization and accessibility of financial information, while programming tools provide opportunities for implementing predictive analytics and econometric modeling.

Furthermore, digitalization contributes to increasing the transparency and reliability of financial reporting, which is especially important for joint-stock companies due to their obligations toward shareholders, investors, and other stakeholders. Enhanced transparency reduces information asymmetry, strengthens investor confidence, and improves the overall quality of corporate governance.

At the same time, the effective implementation of digital tools requires enterprises to overcome several challenges, including technological integration issues, cybersecurity risks, implementation costs, and the need for qualified personnel with advanced digital competencies.

Overall, the findings indicate that the adoption of digital analytical technologies should be regarded as a strategic priority for joint-stock companies seeking sustainable development, improved financial management, and long-term competitive advantages in the rapidly evolving digital environment.

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