



ANALYTICAL APPROACHES TO DIGITAL TRANSFORMATION IN CORPORATE FINANCIAL REPORTING (EFFECTIVENESS OF USING ARTIFICIAL INTELLIGENCE, POWER BI AND PYTHON TOOLS IN FINANCIAL ANALYSIS)

Temirova Umriniso Isomiddinovna

Tashkent State University of Economics, Master's student

Temirovaumriniso15@gmail.com

<https://doi.org/10.5281/zenodo.18130105>

ARTICLE INFO

Received: 29th December 2025

Accepted: 30th December 2025

Online: 31th December 2025

KEYWORDS

corporate financial reporting,
financial transformation,
analytical approach, financial
analysis, artificial intelligence,
Machine Learning, NLP,
automation, risk management,
data analysis, financial
forecasting, Power BI,
visualization, Python, Excel,
Python libraries, NumPy,
Pandas, strategic development.

ABSTRACT

This research work is devoted to the study of modern approaches to analyzing corporate financial statements in the context of digital transformation. The study analyzes the role and certain limitations of artificial intelligence algorithms, Python programming tools, and the Power BI visualization platform in making the financial analysis process more efficient. The work examines the capabilities of digital technologies for processing, automating, and forecasting financial data, as well as their advantages in making corporate management decisions quickly and accurately..

Introduction. In the current era of automation and digitization, the role of digital transformation in the analysis of corporate financial statements is becoming more relevant. Traditional “paper or manual” financial analysis methods are being replaced by new and modern programs and tools. It should be noted that financial processes are of fundamental importance for corporations, as they are the main indicator of the financial health and financial condition of the corporation. Therefore, the modernization of digital transformation and analytical approaches in corporate financial statements (the creation of artificial intelligence algorithms, tools such as Power BI and Python) is of great importance. Therefore, the purpose of this study is to study the analytical approaches of digital transformation in corporate financial statements using artificial intelligence, Power BI and Python tools.

Methodology. The study was conducted based on theoretical-practical synthesis and comparative analysis approaches. The methodology included the following three main stages:

1. Theoretical Basis Analysis: The existing scientific literature, international financial publications (e.g. CFO Magazine, Journal of Financial Data Science) and reports of global consulting companies (IBM, Google, OECD, Deloitte, Magnetaba, iFlexion) were analyzed. This analysis, firstly, strengthened the theoretical importance of digital transformation in financial reporting analysis. Second, it served to identify existing experiences and empirical results on the impact of artificial intelligence, Power BI and Python tools on corporate financial analysis;

2. Evaluation of Analytical Software Tools.

Artificial Intelligence (AI) Analysis: The practical application of algorithms such as Machine Learning (ML) (in particular, regression and classification models), Natural Language Processing (NLP) (sentiment analysis of report texts) and Financial Forecasting (financial forecasting) in financial processes was studied.

Python Toolkit Evaluation: Key libraries such as Pandas (for handling large financial datasets), NumPy (for accelerating mathematical calculations), and Scikit-Learn (for building ML models) were evaluated for their speed and accuracy compared to traditional methods.

Power BI Platform: The platform's capabilities for integrating financial data in real-time (real-time monitoring) with various ERP/SQL systems and creating interactive KPI dashboards were studied;

1. **Comparative Analysis and Summary of Results.** The main part of the analysis was focused on comparing traditional (Excel-based) financial analysis methods with modern digital tools. Comparative criteria: data processing speed, error probability, level of automation and accuracy in strategic decision-making. The results obtained (quantitative indicators and qualitative analysis) were summarized, and the main advantages and risks of digital transformation in corporate financial reporting were identified.

Results. Of course, the creation of artificial intelligence posed a number of questions and tasks for people, such as studying its impact for each industry and region around the world. Many experiments have been conducted around the world in this regard, and the following results have been recorded:

- IBM Watson, an artificial intelligence, has reduced the time spent by automating accounting transactions by 90% and annual operating costs by \$600,000;
- AI can reduce technology costs, as companies have reduced their technology costs by 22% last year by using artificial intelligence;
- Also, according to surveys, employees who use artificial intelligence have noted an 80% improvement in daily work productivity (magnetaba.com);
- 90% of financial institutions use artificial intelligence to detect fraud processes;
- 91% of asset managers are using or plan to use artificial intelligence;
- According to forecasts, the corporate value of companies using artificial intelligence is expected to increase by 9%, and knowledge-based industries by 5%.

Also, a number of risks for companies or people as a result of artificial intelligence have been identified (oecd.org):

- First, if we apply artificial intelligence to the analysis or forecasting of financial statements, artificial intelligence requires accurate, complete and continuous information to make accurate and reliable decisions;
- Second, artificial intelligence requires constant training and updating in order to conduct accurate and error-free analysis and forecasting processes. If the model is trained incorrectly, this will lead to errors and shortcomings;
- Third, the costs of integrating artificial intelligence into the activities of a corporation can be high, the integration process can be complex and time-consuming, and it may also require qualified specialists.

Now, let's move on to the advantages of the Power BI visualization platform:

- Power BI allows you to monitor financial indicators in real time;

- Compared to traditional Excel reports, Power BI reduces the likelihood of errors, as the data is automatically updated;
- Using the Power BI “forecast” model, short-term forecasts of sales revenue, operating expenses and cash flow are made;
- In Power BI, you can collect data from ERP, 1C, Excel, SQL and other systems in one place.

Let's list a number of advantages regarding the tools of the Python programming language:

- Python's libraries such as Pandas, NumPy make it easier to work with large datasets;
- Data is processed faster and more accurately in Python than in the traditional Excel method;
- Financial forecasting and “Machine Learning” models in Python: Linear Regression (finding the relationship between profits and costs); ARIMA / SARIMA (forecasting cash flows or revenues); Random Forest / XGBoost (identifying risks, assessing creditworthiness);
- Through Python's NLP tools (NLTK, spaCy): it is possible to evaluate the texts in annual reports by sentiment, identify uncertainties in the risk section;
- Through Python, automatic generation of reports, integration with Excel and SQL, automation of daily / weekly financial monitoring are carried out.

Discussion. So, from the above examples, we can see that artificial intelligence is already taking a major place in the world economy and is driving a number of positive changes. First of all, artificial intelligence has helped automate tasks in many areas, and as a result, it has increased working hours and productivity indicators, and reduced the company's operational and technological costs. Secondly, artificial intelligence speeds up the processes of detecting and verifying financial fraud. The fact that it is being used in financial processes by many financial institutions, companies and corporations is an indication of its penetration into these areas and the trust it has in them. Thirdly, artificial intelligence can help attract investors to the company by creating an investment portfolio, assessing investment risk and developing investment strategies in the investment process.

So, it is clear that artificial intelligence has not only positive but also negative aspects for the activities of the corporation, and its implementation in the analysis of financial statements requires a strategic approach, attention and accuracy. The idea that artificial intelligence will create a big problem for employment has disappeared during the research, because despite the fact that the penetration of artificial intelligence into industries will reduce 85 million jobs, it will create 97 million new jobs, which means that 12 million new jobs will arise due to artificial intelligence. This means that artificial intelligence will create jobs based on mental labor in the labor market, rather than physical labor. We can also see this from the forecasts of a 5% growth in knowledge-based industries. Of course, as artificial intelligence enters the global economy, it may become a key to competitiveness and a necessity of the times.

The use of Power BI in corporate activities also leads to a number of positive results. First, Power BI provides efficiency in visualizing financial data, that is, through it we monitor the financial indicators of the corporation in real time. Since the data is automatically updated, errors such as in traditional programs (Excel) are not allowed, and financial indicators are presented in the form of interactive graphs, which increases the possibilities of

analysis and forecasting. Secondly, as a result of the integration of systems such as ERP, 1C, SQL, corporations ensure interdepartmental continuity and, as a result, accelerate the adoption of management decisions.

Python allows corporations to process complex data. Through Python models such as Linear Regression (finding the relationship between profits and costs), Arima/Sarima (forecasting cash flows or revenues), Random Forest/XGBoost (identifying risks, assessing creditworthiness), a corporation can achieve results such as early detection of financial errors, analysis of asset and liability dynamics, and detection of fraud.

Conclusion. Artificial intelligence can reduce costs in corporate activities, work in real time, and provide analysis and forecast of financial statements without errors and omissions. Power BI can visualize financial indicators and present them in the form of clear and interactive graphs. Python is an effective tool for analyzing and forecasting financial processes. At the same time, their integrated use makes corporate financial statements more effective in the context of digital transformation and supports strategic decisions.

References:

1. <https://www.emerald.com/medar/article-abstract/29/5/1179/278230/The-digital-transformation-of-corporate-reporting?redirectedFrom=fulltext> ;
2. The digital transformation of corporate reporting – a systematic literature review and avenues for future research by Rosa Lombardi; Giustina Secundo;
3. AI in Finance: Challenges, Techniques, and Opportunities by Longbing Cao;
4. “Moliyaviy hisobotning xalqaro standartlarini joriy etishda xorijiy tajriba” Mehmonov S.U, Rizayev H.K;
5. “Raqamli iqtisodiyot sharoitida biznes modellarini o’zgarish tendensiyalari” Gulyamov S.S, Yakubov U.K;
6. <https://www.magnetaba.com/blog/artificial-intelligence-statistics>;
7. [https://www.iflexion.com/artificial-intelligence/facts#:~:text=Recent%20AI%20trends&text=The%20global%20AI%20market%20was,\(Statista\);](https://www.iflexion.com/artificial-intelligence/facts#:~:text=Recent%20AI%20trends&text=The%20global%20AI%20market%20was,(Statista);)
8. <https://www.oecd.org/en/topics/sub-issues/digital-finance/artificial-intelligence-in-finance.html>;
9. <https://cloud.google.com/discover/finance-ai>;
10. <https://www.deloitte.com/ng/en/services/consulting-risk/services/how-artificial-intelligence-is-transforming-the-financial-services-industry.html>;
11. <https://www.ibm.com/think/topics/artificial-intelligence-finance>;
12. <https://corporatefinanceinstitute.com/resources/data-science/python-in-finance/>;
13. <https://www.dfinsolutions.com/knowledge-hub/thought-leadership/knowledge-resources/ai-in-financial-reporting>;
14. <https://www.investopedia.com/terms/f/financial-statements.asp>.