



USE OF MODERN TECHNOLOGIES IN THE FINANCIAL ANALYSIS OF THE ENTERPRISE

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Article history:	Abstract:
Received: 17 th August 2022 Accepted: 17 th September 2022 Published: 21 st October 2022	In the world of communication, with the increase in data volumes and the emergence of such concepts as "blockchain", "big data", etc., organizations face the difficult task of integrating modern technologies into their activities. The author considers information technologies and concepts that allow not only to increase the speed of performing and accounting for many operations, but also to conduct financial analysis based not only on traditional retrospective sources of information, but also on accurate forecasts made using simulation modeling and machine learning technologies.
Keywords: financial analysis, information technology, blockchain, OLAP, simulation, machine learning.	

1. INTRODUCTION

In the conditions of constant improvement of information technologies, there are more and more opportunities for conducting an effective, fast and reliable financial analysis of the enterprise's activities - both for monitoring financial performance and for the rapid implementation of competitive benchmarking in order to assess the competitiveness of the organization and the efficiency of the use of financial resources. Thanks to modern information technologies, it is possible to make a financial analysis of an enterprise and its competitors in a shorter time and with less labor costs.

Financial statements have been and still remain the documentary and information base for the analysis of the economic activities of the organization. Having correctly analyzed the information contained in the financial statements, the enterprise can make a number of management decisions that are important for further development, and external users with both direct and indirect financial interest can assess the financial stability and investment attractiveness of the enterprise. However, despite the greater formalization of financial (external) analysis compared to managerial (internal) analysis, financial analysis in the future will have to undergo a number of changes under the influence of rapidly developing modern technologies that change the usual way not only in the field of economics and finance, but also in almost all spheres of society.

2. THE USE OF MODERN TECHNOLOGIES IN THE FINANCIAL ANALYSIS OF AN ENTERPRISE

What technologies are already influencing the mechanisms for conducting financial analysis and providing the enterprise and external stakeholders with the opportunity to carry out faster and more detailed analysis of its financial activities? Until quite recently, concepts such as "blockchain" (Russian blockchain), "big data" (Russian big data), "machine learning" (Russian machine learning) have already firmly entered many areas of human activity. . To date, they are already actively used as effective tools for accounting, analysis and forecasting of the economic activity of the organization. What exactly are these technologies and what are the prospects for their development as tools for accounting, planning and analysis?

Blockchain is a "end-to-end" technology of distributed resources that can be effectively applied in many areas of the economy and management, including at the state level. This technology is a decentralized registry or list of all transactions in a single-layer network [1]. Being a distributed, tamper-proof database, blockchain technology not only eliminates unnecessary intermediaries, reduces costs and increases the speed of financial transactions and their analysis, it also provides greater transparency for many business processes. This, in turn, allows you to analyze data and make changes to the company's strategy almost online, and the transparency of accounting allows external users to see the true picture of the company's economic activities. In turn, the blockchain can simplify the procedure for collecting and analyzing data from external subjects (performers) of analysis, for example, audit companies, tax services or statistical offices. However, according to the head of the Federal Tax Service M. Mishustin, it is still risky to actively apply this technology in the activities of the tax service, since from the point of view of the technology maturity cycle proposed by the Gartner research and consulting company (Eng. Hype Cycle), which reflects at what stage of the life cycle a new technology, the blockchain has passed the peak of inflated expectations, but has not yet reached the level of implementation productivity [2].

However, the "Big Four" of the largest audit companies in the world are already testing a blockchain platform for analyzing the financial statements of companies, which in the future will reduce the work of verifying the authenticity of documentation from a month and a half to a couple of days [3].

Due to the enormous growth in the volume of information, the emergence of "big data" - structured and unstructured data of huge volumes [4]; Due to the complexity of conducting financial analysis of a large enterprise "manually" or using traditional programs that are not designed to analyze and process such volumes of data, IT companies are developing more and more "smart" programs using advanced information technologies. To predict the consequences of considering financial and investment strategies and find optimal business decisions, many organizations use simulation software. An example of such software is the analytical system "Project Expert", which allows you to create a business plan and think through all possible options for developing a business without actually investing money, decide on a financial strategy and evaluate its effectiveness [5]. Thanks to simulation technologies, an enterprise can also provide potential investors or creditors with the necessary reporting to justify the feasibility of investment participation or a loan for business development. Simulation systems allow you to analyze the business model and make adjustments to actions, which is significantly different from the analysis based on historical data.

To carry out a more streamlined financial analysis, enterprises use financial analysis automation systems (AFS), such as Audit Expert 4, FinEkAnalysis 2018, INEC-Analyst, 1C-Rarus: Financial Analysis 1.1. and many others.

A certain proportion of API automation systems is based on the technology of interactive analytical data processing OLAP (English Online Analytical Processing). In Russia, one of the software products using OLAP technology is INTALEV: Corporate Analytics. The OLAP technology allows both multidimensional analysis based on arrays of retrospective data, as well as simulation and forecasting, as well as solving problems of data mining, called "data mining" (Russian "data mining") [6]. Data mining means finding certain patterns and relationships of business processes based on available data [7].

Data mining (Russian data mining, data mining, data mining) is a collective name used to refer to a set of methods for detecting previously unknown, non-trivial, practically useful and accessible knowledge in data, necessary for making decisions in various fields of human activity. The term was introduced by Grigory Pyatetsky-Shapiro in 1989.

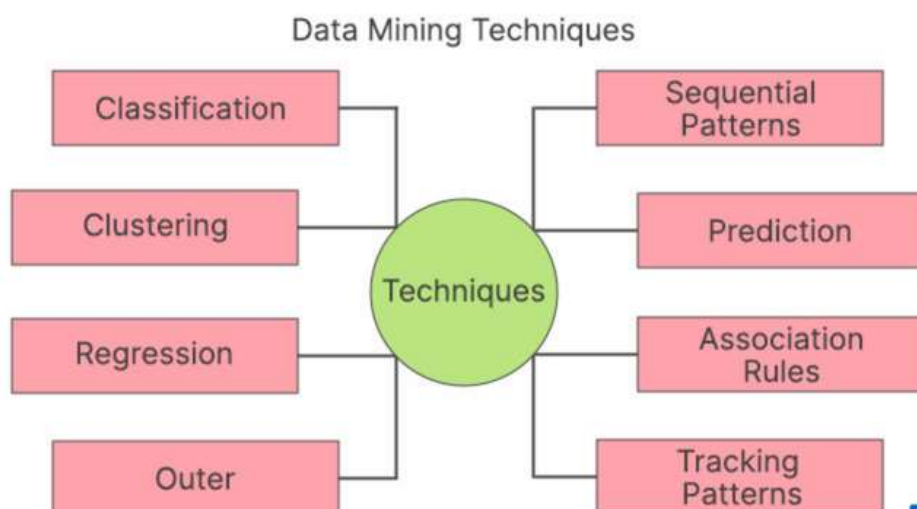


Fig.1.Data mining techniques

The basis of data mining methods are all kinds of classification, modeling and forecasting methods based on the use of decision trees, artificial neural networks, genetic algorithms, evolutionary programming, associative memory, and fuzzy logic. Data mining methods often include statistical methods (descriptive analysis, correlation and regression analysis, factor analysis, analysis of variance, component analysis, discriminant analysis, time series analysis, survival analysis, relationship analysis). Such methods, however, assume some a priori ideas about the analyzed data, which is somewhat at odds with the goals of data mining (discovering previously unknown non-trivial and practically useful knowledge).

One of the most important purposes of data mining methods is to visualize the results of calculations (visualization), which allows the use of data mining tools by people who do not have special mathematical training.[11]

Data mining is closely related to a technology called "machine learning" - machine learning. This technology is based on training neural networks and allows the code to learn from existing data and think through many different scenarios. This allows you to improve the accuracy of forecasts and analyze financial indicators in real time, which is inaccessible to classical financial analysis, one of the main characteristics of which is periodicity. The lack of accounting and analysis of intermediate values of reporting indicators can lead to inaccuracies in the analysis and a distorted forecast [8].

The consulting company PWC in its artificial intelligence laboratory is working on combining the capabilities of machine learning and simulation in order to optimize the testing process and operational event prediction [9].

3. PROSPECTS FOR THE USE OF ARTIFICIAL INTELLIGENCE IN THE FINANCIAL ANALYSIS OF AN ENTERPRISE

Despite the fact that there are many different applications, advanced technologies and methods for storing data and analyzing the business activity of an enterprise on the global and Russian IT markets, many enterprises face a number of serious difficulties with the process of integrating modern IT solutions into their workflow. Companies are experiencing challenges such as:

1. Lack of qualified personnel for the implementation and maintenance of these technologies: the modern education system does not keep pace with the rapid development of technologies and changing business realities, and most employees of enterprises need advanced training to master advanced technologies.

2. Technical complexity and high cost of the technology implementation process itself; as well as a partial, incomplete understanding of the mechanisms of work of modern information technologies by state bodies, which leads to the lack of clear legislation, rules for the use and regulation of some advanced technologies.

3. Lack of trust on the part of the management of companies and employees, caused by the novelty of technologies and a sense of the riskiness of their implementation, as well as a lack of understanding of the mechanisms of their work.

At the beginning of 2018, PwC conducted a survey of members of the boards of directors of Russian companies, which showed that most of the technologies are not implemented in Russian companies. Thus, according to the survey, only 11% of organizations use blockchain and artificial intelligence in their work. According to the survey, 76% of respondents called the lack of qualified personnel the main obstacle to the introduction of modern information technologies [10].

4. CONCLUSIONS

In conclusion, it is worth noting that such advantages of using new technologies in financial accounting and analysis as speed, efficiency, efficiency, accuracy, and many others will soon force all enterprises seeking to remain competitive and profitable to adapt to new market requirements.

Working with AI takes place in several stages. The first and main step - the entrepreneur needs to collect as much information about sales in recent years - such an array of data is called a DataSet. Fortunately, with the introduction of online cash registers, this information is saved automatically, and the system is synchronized with them in just a few clicks, without manual entry. Sometimes you can do with a simple systematization of existing information, although, of course, in some cases you will have to spend more time and effort.

The development of a self-learning algorithm will require finance and time, but the degree of expenditure will be influenced by the business sector. For example, retail chains can use ready-made solutions, rather than create a recommendation algorithm from scratch. One of the functions of such systems is to increase revenue. On average, AI pays for itself after only three months of use, and then begins to generate net profit due to significant cost optimization and increased sales.

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