

PECULIARITIES OF IMPLEMENTATION OF MODERN COMPUTER TECHNOLOGIES IN ECONOMIC ANALYSIS

Setting the problem. In the current economic conditions the desire to improve the efficiency and effectiveness of enterprise management systems has caused the necessity of the development and application of modern information computer technologies for economic analysis.

For optimal organization and economic analysis in the conditions of computer technology application it is essential to make the right choice of the procedure for its computerization, which is primarily due to the specificity of enterprises of various economic activities, their forms of ownership, a variety of tasks in the economic analysis, the solution of which is aimed at efficient management of the entity in the market conditions, which, in their turn, are characterized by rapid change of environmental factors, uncertainty and risk.

The analysis of recent research and publications. The issues of peculiarities of the analytical procedure computerization, the impact of information technology application in the processing of economic information are covered in the research works of M.I. Bakanov, F.F. Butynets, S.V. Ivahnenkova, I.D. Lazaryshyna, V.B.Lieberman, L.M. Kindratska, E.V. Mnykha, O.V. Oleinyk, V.K. Savchuk, G.N.Sokolova, T.M. Kovalchuk, M.G. Chumachenko, A.D. Sheremeta etc.

In particular, the authors have studied [4] the first line of economic analysis computerization as a part of management system of a certain entity in terms of the information, software, organizational and technical support of analytical works; systematization of software products in terms of small, medium and large enterprises; the definition of functional modules of economic analysis computerization.

The analysis of works in the economic analysis computerization allows to determine that the authors do not reveal the features and possibilities of economic analysis in the present conditions. Nowadays, there are no single methodological principles of organization and technology to carry out analytical work using information and computer technologies that determines the relevance of the chosen direction of research.

Setting the objective. The aim of the paper is to study the peculiarities of the application for automating the analytical procedures of modern computer technology and to substantiate the necessity of organization and technology improvement to carry out analytical works using information and computer technologies by means of modern software economic analysis application.

To achieve this goal in the paper we need to solve the following tasks: to consider the theoretical and practical aspects of modern computer technology application in the practice of economic analysis; to determine the features of the information base of economic analysis formation in the modern economic environment; to analyze the possibilities of modern means of economic analysis computerization; to substantiate the necessity of organization and technology improvement to carry out analytical works using information and computer technologies; to determine the perspectives for further research in this area.

The object of the study is the organization and methods for carrying out economic analysis of enterprises in terms of information technology application.

The subject of the study is the computerization of the economic analysis of the company based on modern software.

The main material of research. The result of the transition of society into the information era is a total computerization of business activities, including the improvement of information support of the enterprise management system, which has two vectors of development:

- 1) improving the tools for searching, collecting, saving and disseminating information – the computerization of accounting and reporting system;
- 2) improving the process of perception, processing and creation of information, that is increasing intellectual potential of society, including the creation of artificial intelligence – the computerization, intellectualization of economic analysis, etc. [1, p. 57].

It should be noted that the widespread use of computer technology contributes not only to the increase and improvement of methodological level of economic analysis, but also to the creation of its optimal organizational model.

Carrying out the economic analysis in the use of information technology is the result of the overall rapid development of science related not only to the improvement of the computer equipment and means of communications, but also to the development of methodological and methodical approaches to the analysis, which include new possibilities.

The use of modern computer technology for automation of analytical procedures assumes:

- 1) providing the analysis of influence on the object under study of a wide range of internal and external factors, thereby increasing the degree of scientific validity of administrative decisions based on the results of the analysis;
- 2) increasing the accuracy and reliability of the obtained results of the financial analysis;

3) creating opportunities for carrying out comprehensive analytical studies associated with rapid processing of large volumes of incoming analytical data;

4) increasing the consistency of economic analysis, that is conditioned by the necessity of a clear definition and formalization of analytical tasks to solve them automatically.

In the study of peculiarities of modern computer technology application in the practice of economic analysis we will consider the historical features of their development (Table 1):

Table 1

Basic Development Stages of Economic Analysis Automation

Sstage	Brief description
The first stage (1874-1917)	<i>the stage of elementary calculation inventions</i> (such as comptometer, machines for adding and subtracting), is characterized by the beginning of implementation of automated systems in the activities of entities
The second stage (1917-1945)	<i>the stage of mechanization of collecting and processing of accounting information</i> is characterized by the creation of machine computing stations using keyboard and perforation computers
The third stage (1945-1950)	<i>theoretical and methodological stage</i> is characterized by the creation of theoretical concepts and methods of carrying out the accounting, analysis and planning process
The fourth stage (50's – 60's of the XX-th century)	<i>practical stage</i> , there was an information support of enterprise management; calculating machines were actively implemented into the system of bookkeeping (machines with manual input of initial data and machine with automatic input of initial data or calculating and perforating machines), primarily at large industrial plants where calculating centers were set up that are immediately separated into independent functional element, the main function of which serves as information support to the process of production and management; on the basis of developing the main areas of accounting mechanization, as well as previous theoretical studies computers were created that were more compact, cheaper and therefore more accessible to users; the development of universal (high-speed electronic calculating machine "Strela") and specialized computers found their practical use
The fifth stage (60's – 70's of the XX-th century)	<i>the stage of the beginning of accounting automation</i> is characterized by the formation of economic analysis complex subsystems that involved the implementation of complex business analysis, the technique of which was developed by the specialists of the Moscow State University named after M.V. Lomonosov
The sixth stage (80's of the XX-th century)	<i>the stage of a single direction of economic analysis separation - analysis of the activity efficiency by using computers</i> ; within a comprehensive economic analysis the following main areas of integrated automation of analytical calculations were identified: organization and use of automated data bank for solving complex tasks of economic analysis; integration of the processes of forming and processing analytical information; creation and use of software packages in the analysis of economic activity.
The seventh stage (90's of the XX-th century)	<i>the stage of the first analytical program development</i> is characterized by the creation of systems that can operate in the environment of local area networks (LAN), the emergence of software (the developers - the corporation "Galaxy", "Sail", "Infosoft", "INEC", "Pro-Invest Consulting" "IT"and others), special attention in these products was paid to calculating financial ratios and their evaluation.
The present stage (from 1998 and till today)	<i>the sstage of improving the analytical capabilities of the software</i> is characterized by the expansion and detailed elaboration of analytical programs

Thus, carrying out the economic analysis of enterprises using information technologies is the result of a general rapid development of science related not only to the improvement of the computer technology and means of communication, but also to the development of methodological and methodical approaches to analyze, which included new opportunities.

It should be noted that, despite some achievements, the researchers emphasize the lack of high level automation of the analytical work in view of the requirements of effective enterprise management in the market economy. In particular, Professor G.N. Sokolova indicates the absence of qualitative breakthrough of new analytical programs and the underlying cause of this situation she sees in the absence of new developments in the methods of economic analysis, which on the one hand, take into account the functioning specificity of enterprises in the market economy, and on the other hand are the most appropriate for the possibility of analytical work in the computer environment [6, p. 40].

It should be noted that the development of organizational and methodological aspects of economic analysis in terms of modern computer technology application is one of the most promising areas of economic analysis development, as it provides the expansion of the analytical research limits.

Methods of economic analysis based on the modern computer technology application should meet the requirements of complexity, consistency, promptness, progressiveness, dynamics, accuracy of the investigated object cognition, trends and regularities of its change and development.

Let's consider the basic approaches to the computerization of economic analysis [5]:

1. With the help of comprehensive program module for automation of enterprise management. The developers of software products, including the company "Intelligence Service", corporations "Sail", "Galaxy" and others offer comprehensive programs for automation of enterprise management on the market, where the problems of automating an economic analysis and accounting, marketing, logistics, audit, etc. as well are solved. That is, within the computer programs the formalization of individual, strictly unregulated, complex, multi-level methods of financial management, including methods of rapid economic analysis and financial condition of the enterprise is available.

2. Using a separate program for economic analysis automation. The list of software products that provide only economic analysis automation is growing every year and their functionality, caused by the

needs of entities in a professional assessment of economic activity for selecting optimal methods of enterprise management in complex and dynamic conditions of market environment extend. Software products presented on the market provide the possibility of a comprehensive performing both retrospective and predictive economic analysis. Moreover, the results of the above types of economic analysis are complementary.

3. With the help of the complex of calculation tables made in Microsoft Excel, which allows the system to integrate any method of economic analysis and implement their own method of economic analysis based on the developed original system of evaluation indicators. It is suitable for small businesses, since it corresponds to the commercial demands that are applied to Microsoft Excel, including the cost of the software and the cost of its implementation and maintenance.

4. Using the complex of computer programs for carrying out economic analysis in the implementation of control activities. They are aimed at the analysis of the financial condition of the company, the development of strategic and tactical solutions of the enterprise management, provide directly conducting the financial analysis by different methods and calculate a large number of economic indicators, can prepare and analyze business plans.

It should be noted that the approaches to the computerization of economic analysis within a single entity and implementation of analytical studies as a separate activity are different, due to the influence of the following factors: the amount of the company activity; the availability of financial resources for the implementation of a computerized system of economic analysis, qualified personnel [3, p.62]; the presence and type of accounting computerization at the company, the amount of analytical work.

Also during the economic analysis at the enterprise we should consider: the peculiarities of organizational form of economic analysis selected by the entity (centralized, decentralized, or mixed); the use of the complex "AWP of analytics" as one of the organizational forms of economic analysis in terms of computerization, which allows to carry out automatically a set of analytical calculations based on the input information, which provides the efficiency in decision -making.

According to the analysis results of the practical business scope of domestic enterprises we can assert that in the current economic conditions there is a steady upward trend in the number and expanding the functionality of software products that actually provide computerization of analytical procedures.

The practice research of computer technology application in analytical work showed insufficiently high level of automation of analytical work and confirmed that analysts do not use the available features of the software. At 78.18 % of companies analytical software is not used at all, at 9.09% of companies a spreadsheet editor Microsoft Excel is used, at 1.82 % of companies a program "Analyst" is used and at 10.91 % of companies other analytical applications are used. This is due to the high cost of funds and a lack of interest of the owners in the results of the economic analysis, as well as the impossibility of selecting the order of its computerization, which does not increase the effectiveness of analytical work [2, p. 39].

Types of software products, which are used in modern conditions for computerization of economic analysis, are classified in Fig. 1.

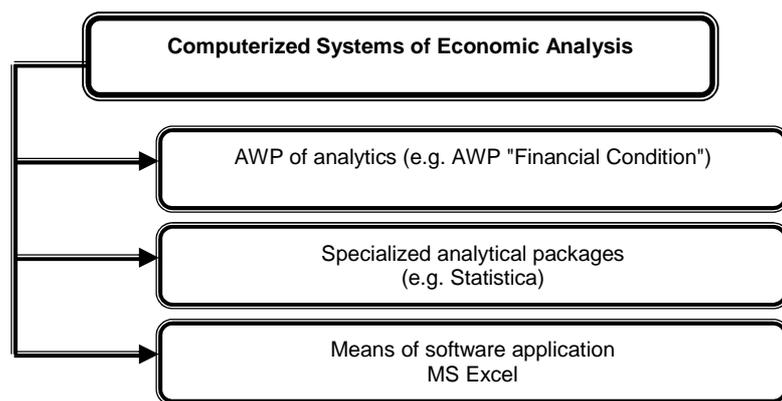


Figure 1. Software used for computerization of economic analysis

Source: own elaboration

Today, the domestic software market of economic analysis is under development. It should also be noted that the actual companies of different economic activities are active initiators of global and adaptive software development.

Thus, the complexity of solving the problems of economic analysis in terms of computer technology application is primarily defined by the types and diversity of its tasks and problems, as well as features of its organizational methods. For a clear statement of the above requirements, consider current software environment for the implementation of economic analysis.

In particular, the study of domestic and foreign markets of computer software shows that most

developers are guided to create a universal complex of enterprise systems, where much attention is paid to analytical procedures: e.g.: "Galaxy", "Navision Attain". It should be noted that it is the versatility of software that makes it possible to adapt them to the peculiarities of enterprise economic activity. The basic condition to develop the aforementioned computer programs is to link them with the programs of accounting computerization, since accounting data are the basis of the information base of economic analysis and, therefore, the development of the mentioned software without accounting programs is totally inappropriate.

It should be noted that today the positive aspect is that the Ukrainian software market of economic analysis is characterized first of all by gradual replacement of foreign programs with domestic products. The modern market of computer technology to perform analytical studies that help businesses implement effective management is under development.

The market of information systems for business extends the offer of programs that help businesses implement effective management. In Ukraine and Russia for a whole decade, the basis of software product market for economic analysis is production of companies "Pro-Invest", "LANIT" and "INEC", a common feature of which is to focus on solving the tasks of economic analysis [8, p. 411].

The use of software in analytical practice by Ukrainian enterprises has provided a substantial assistance to analysts in the implementation of economic analysis of enterprises in terms of computer technology application. However, a necessary condition for their use at present is the need for revision and appropriate adaptation to the needs and peculiarities of a particular company.

The basic requirements to be met by analytical programs [7, p. 71]: the ability to analyze and assess individual indicators of production and financial condition of the object, the company by different methods and identify trends of its change; the economic analysis of individual objects of the study, including new predictions based on the obtained results; the ability to compare performance indicators of domestic and foreign companies of a certain industry; the possibility of simultaneous use of a large number of parameters, including to the analysis various factors both of account and outside account nature; tabular and graphical presentation of information; the possibility of ranking the results according to needs of different user groups.

Thus, the use of computer analytical programs requires scientifically based methods of economic analysis, which today are imperfect that in its turn is caused by the lack of standardized methods of calculating the performance indicators of the company.

Conclusions and further research. The conducted research of organization and technology of economic analysis in terms of computer technology application has provided the obtaining such results and making conclusions.

Firstly, the economic analysis computerization of the enterprise activity on the basis of modern software will allow: to provide information about the analytical research results of enterprise economic activity in tabular and graphical form; to adjust calculation methods and forms for displaying the final result of analysis; to increase systemic analysis that will help eliminate duplication of analytical tasks, as well as a clearer definition of the scope and quality of the information base of economic analysis; to expand the directions of analytical study implementation (the use of computer technology will enable to carry out prompt and situational analysis, as well as multivariate predictive analysis); to conduct comprehensive analytical studies that provide prompt processing large volumes of incoming analytical information; to store and reuse the data and analytical research results.

Secondly, the priority areas of extending the software functionality is a combination of retrospective, operational and predictive analysis in one program based on the optimal set of parameters for enterprises of different economic activities. This will also allow implementing the search module and mobilizing reserves of increasing the efficiency of the business activity in a computer environment.

As the use of computer technology in economic analysis provides two major benefits: a combination of processing the input data with the process of decision-making and the ability to solve analytical tasks directly on the workplace of the analyst, then one of the most promising areas of research in this field is the development of specialized software for the economic analysis computerization of economic activity, which will be characterized by high adaptability to the accounting software and the goals and objectives of the analysis.

References

1. Butko, A.D. (2005), *Teoriia ekonomichnogo analizu* [Theory of Economic Analysis], textbook, KNTEU, Kyiv, Ukraine.
2. Zakharchenko, V. (2004), "Economic analysis of market transformation of local multi-stage industrial", *Aktualni problemy ekonomiky*, no. 6, pp. 3-11.
3. Shkvir, V.D., Zavgorodnii, A.H. and Vysochan, O.S. (2003), *Informatsiini systemy i tekhnologii v obliku* [Information Systems and Technologies in Accounting], Vydavnytstvo Natsionalnogo universytetu Lvivska politekhika, Lviv, Ukraine.
4. Oliinyk, O. and Yevdokymov, V. (2010), "Modern computer technology for analytical work in the management activities of the entity", *Formuvannia rynkovoï ekonomiky*, no. 24, pp. 518-527.
5. Raikovska, I. (2009), "The modular structure of the system of computerization of economic analysis: functional composition", *Problemy teorii ta metodolohii bukhhalterskoho obliku, kontroly i analizu*, Iss. 1 (13),

pp. 1-22.

6. Sokolova, G. (2002), *Informatsionnyye tekhnologii ekonomicheskogo analiza* [Information technology for economic analysis], Ekzamen, Moscow, Russia.

7. Chernysh, S. (2010), *Ekonomichnyi analiz* [Economic Analysis], Tsentr uchbovoi literatury, Kyiv, Ukraine.

8. Yurkivska, L. (2010), "Opportunities software computerization economic analysis of marketing activities of enterprises", *Problemy teorii ta metodolohii bukhhalterskoho obliku, kontroly i analizu*, Iss. 3 (18), pp. 409-412.

Hladchuk O.O. PECULIARITIES OF IMPLEMENTATION OF MODERN COMPUTER TECHNOLOGIES IN ECONOMIC ANALYSIS

Purpose. The purpose of the article is a research of peculiarities of implementation of modern computer technologies in economic analysis and substantiation improving the organization and technology of analytical works.

Methodology of research. Organizational and methodological aspects of automation of analytical procedures, the development of domestic and foreign scholars according to the specified problems are the comments regarding the theoretical and methodological basis of research.

As the main methods of research the principles of a systematic approach were used in this article. Among them are: integrity and structuring (to study the process of automation of economic analysis of the enterprise), methods of theoretical research, including logical and historical methods (research of emergence, formation and development of processes of automation of analytical procedures in chronological order to identify patterns and contradictions), and also general scientific methods of analysis and synthesis (for the separation in the process of applying of modern computer technologies in the economic analysis of such elements that have a decisive influence on all other parties, including its own computer analysis programs in the research of domestic and foreign markets of computer software and the application of computer technologies in analytical work), induction and deduction (in determining the opportunities of computerization of economic analysis on the basis of modern software products and study factors influencing on the approaches to the process of computerization of economic analysis), generalization (to determine the basic requirements for the computer analysis programs, identification of priority directions of expanding functionality of the software of analytical researches and the most promising directions researches in this sphere).

Findings. Possibilities of modern facilities of computerization of economic analysis have been analyzed in the result of research; necessity of improvement of organization and technology of analytical works with the help of information and computer technologies through the use of modern software products of economic analysis has been substantiated; perspectives for further researches in this sphere have been determined.

Originality. Scientific novelty of this research is determining the factors influencing the approaches to the computerization process of economic analysis and their and their taking into account the improvement of organization and technology analytical works with the help of computer technologies through the use of modern software products.

Practical value. The practical significance of obtained results of the research is to substantiate the development of specialized software for the computerization of the economic analysis of economic activity, which will be characterized by high adaptability to accounting software and the aim and objectives of the analysis.

Key words: economic analysis, analytical procedures, computer technologies, computerized systems, software products, computer analysis programs.