

# Accounting System in Terms of Modern Information Technology



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**Abstract:** *Economic entities taking diverse managerial decisions rely primarily on enterprise information system data, including accounting. The purpose of this article is to examine the issues of generating reliable and useful information in Russian accounting and reporting during the use of advanced technologies of accounting process automation, and to justify the possible ways of their solutions. Scientific developments in the field of modern information technologies, accounting and reporting have served as a methodological and theoretical basis of the work conducted by the authors. The methods of generalization, analysis, synthesis, detailing, and grouping have become the special methods of research and analysis. The obtained results have allowed to explain the problems to be solved: the qualification level of experts, ethical and moral component in the accounting profession, the unreliability and inadequacy of accounting information, loss of accounting data due to possible hacking of cloud servers, etc.*

**Index Terms:** *information technologies, accounting, automation, typical programs, cloud technologies, creative approach, risks, adequacy, moral and ethical qualities, loss of accounting information, insurance.*

## I. INTRODUCTION

The effectiveness and promptness of managing business processes at the enterprise are determined not only by the professional skills of managers and their practical experience but also by the level of computerization of accounting processes. The requirements to the accounting and reporting information from managerial personnel are as follows:

- Using a sound methodological basis for calculating planned and accounting indicators;
- The continuity of registration in the accounting of all the facts of economic life and business processes, due to the circulation of capital;
- The reliability and accuracy of information generated in

accounting and financial reporting;

- The efficiency of generating data for management decisions and reporting them to the interested users; and
- The effectiveness of accounting arrangement within the business entity, observance of the cost-benefit ratio in the development and operation of the accounting process.

In the context of accounting automation, a certain sequence of accounting actions (stages) takes place, enabling a streamlined registration process, allowing to obtain adequate and timely accounting and reporting data for their use in the information system of the enterprise and the managerial decision making. Such stages are strictly regulated operations performed by a man through the wide application of software products and hardware for complex automation of accounting and reporting, starting from the creation of a primary accounting document and control over the generation of information about the facts of economic life and till the preparation of the financial reporting and economic analysis of the main company performance indicators. General procedure for the generation of accounting and reporting information, regardless of the automation level as a basic feature of the accounting process has allowed scientists to explore different aspects of the accounting issues: the significance of information technology for accounting [1-3], criteria for the selection of automation equipment and software products [4, 5], measurement of the effectiveness of automated accounting systems [5], changes in the financial statements [6-10] and the manner of its preparation in the use of various information systems [9], [11], transformation of the content of financial and management accounting when using relevant accounting information automation technologies, methods of accounting of individual items in automating the generation of accounting information [12], the arrangement of accounting in its automation [13], etc. The aim of this study was the rationale for possible solutions for individual organizational, methodological and ethical issues in generating accounting and reporting information, arising from the use of modern means of computerization of accounting procedures, their software and advanced technological solutions that other scientists had not highlighted. For this purpose, a theoretical analysis of technological support for generating data in the accounting system was performed, and the practical experience of the authors of the article, as well as the results of development activities conducted by scientists, on selected issues arising from the use of modern software products, were used.

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### II. MATERIALS AND METHODS

Accounting automation used in modern enterprises can be of two types:

- 1) based on the use of typical software systems with subsequent adaptation to specific business conditions and information needs of users of accounting and reporting data; and
- 2) based on the development of an information system based on an individual selection of software for automation of accounting and its designing within the entity.

The second option is more costly and difficult to implement, but it is more adapted to the implementation of the strategic and tactical objectives of the economic entity and taking into account the specificity of its management. In such circumstances, the following fundamental problems should be solved:

- The range of experts' functions performed automatically and manually has to be substantiated, and on this basis, the number of automated workplaces for accountants with the establishment of specific types of work has to be determined;
- The information technology architecture of the accounting system has to be developed;
- The option of integrating the accounting information subsystem with other enterprise information subsystems (an independent accounting subsystem; an accounting subsystem included in a common (integrated) information system; an information subsystem as part of a corporate information system) has to be defined; and
- The planned budget for the creation of such a system and the time set for its formation and implementation have to be observed.

When developing an information technology architecture for accounting automation, the type of enterprise – large, medium, small – should be taken into account. The scale of economic activity has direct impact on the level of detail of accounting, and, therefore, the totality of the expenditure required for designing, implementing, debugging, and maintaining the relevant software. It is known that in accordance with the accounting rules for small businesses the degree of analytical accounting and reporting information is reduced, the accounting items are consolidated, the degree of information flows' intensity decreases, and consequently, labour intensity of generating information in accounting and reporting is decreased. For the accounting arrangement, the most simple and inexpensive computer technology to generate accounting information is used for small and medium-sized enterprises. At the same time, in accordance with the rules of the Federal Law "On Accounting" [14], individual small enterprises may use simplified accounting methods and simplified accounting (financial) reporting that are typical for small businesses, nonprofit organizations, the entities having the status of participants in a project to conduct research, development, commercialization of their results under the Federal Law "On the Skolkovo Innovation Center" (2010) (2011). Moreover, according to the provisions of paragraph 3 of Article 7 of the Federal law "On accounting", heads of the enterprises, which may apply simplified methods of accounting and reporting by law, as

well as heads of separate medium-sized enterprises can keep accounting records independently [14]. Large enterprises at the stages of computerization of accounting and its transformation and development should focus on the fact that they are in the process of management based on network information technology in terms of its high complexity, the use of extensive and large database, the use of international models for the formation of accounting information along with the norms of national accounting system. In this regard, the varieties of computerized accounting systems are possible, based on the degree of completeness of the functions and the possibilities of their integration. According to the characteristics, the accounting automation programs are divided into the following types, intended for the following purposes:

- 1) To automate individual sections of the accounting work;
- 2) For complex automation of accounting;
- 3) To automate the generation of accounting information in conjunction with individual information systems, such as warehousing, sales, manufacturing, trading, personnel records and others; and
- 4) To fully integrate the accounting into the general information system of the entity. The accounting information system is implemented on the basis of automated workplaces (AWP) of the accountant. They are divided into more and less flexible, and those more flexible are considered to be the most promising ones, depending on the possibilities of transforming general software and its individual components. However, the software market is gradually changing due to the development of the Internet and mobile devices, accelerating the process of obtaining accounting data. Cloud technologies, as the most promising ones, allow modern users to use computing resources available on any mobile device, spending minimal time. Moreover, such access is unrestricted, regardless of the user's territorial jurisdiction, due to the possibilities of information resources' networking, servers, applications, storage devices, etc. Such capabilities enable accounting professionals to work remotely from accounting data centers, contribute to the development of centralized processing of accounting, tax and reporting information, and allow to obtain more reliable and neutral accounting and reporting information. Cloud technologies provide the opportunity to work not only with accounting data, planning documents, regulatory legal acts, methodological developments on relevant issues and to use technology and design documentation, which is typical for the accounting profession, but also to introduce relevant informational resources through individual links for public or restricted use. In addition, in the activities related to the collective implementation of a complex of logically and technologically interconnected and interdependent operations, such work quite often characterizes the implementation of the accountant's functional responsibilities, offers the possibility to reduce the accounting complexity through the joint work of several professionals.

Work in the field of cloud technologies is based on the arrangement and functioning of data centers with fault-tolerant and redundancy systems in which a cloud is generated and works in the continuous mode for ongoing access to its resources through a reliable communication channel with the Internet. A feature of the cloud technologies' operation in the context of accounting activities is the reduction in the cost of generating accounting and reporting data, as the program in which the professionals work is leased rather than sold and debugged. It easily integrates with any service of reference and legal systems. The entity pays the rent for the actual time of working with it; there are no problems of preservation and copying the generated information; and there is no need to update the software resources due to the changes in the regulatory framework of economic activities and accounting. The offline and once customizable workplaces of professionals are organized for the practical work of accounting based on the use of cloud technologies. As a consequence, the versions of the software are constantly updated. The offline workplace arrangement technologies are characterized by the possibility of mixed work, when, as a result of the relevant settings, the program is available either on the user's website or using a web browser. The advantage of the online cloud-based service (Internet-based accounting) is also the ability to work with different services, reducing and adding them, and, consequently, reducing the cost of servicing independent workplaces of professionals, transforming (narrowing or expanding) also the number of users of accounting data and (financial) reporting. In the one-window mode, work is being done on organizing electronic document circulation within the entity, with contractors, other external users, submitting and presenting accounting (financial) and tax reporting, connecting other users to the information pool, holding Internet conferences, meetings and other events. These features allow to flexibly interact with partners, with several professionals inside the entity or in geographically remote locations, to simultaneously analyze production and financial situation, to provide online accounting and reporting data, and to increase the speed and soundness of managerial decision making. To ensure the information security when using cloud services, not only technological devices, methods and protection rules are provided but at the same time the activity log of communication channel users is maintained, which is available for information monitoring and use in a constant mode with recording time parameters, and is not subject to adjustments and transformations. The advantages of cloud technologies allow to constantly expand their use, and according to professionals, cloud servers will soon be among the most promising technologies, since the market for their software is still insignificant, and, according to various estimates, in the modern Russia, only about 15 – 20% of the software products and other services are associated with it. Hence, the development of the cloud technology software market in the near future will have significant impact on the transformation of technology for the generation of accounting and reporting information, significantly increasing the rate of generation of accounting data, increasing the informational possibilities for external and internal users, transforming the work of professionals in the field of accounting in the

direction of the growth of their creative skills.

### III. RESULTS

The technological analysis of the impact of modern information technologies on the organization and maintenance of accounting records resulted in the following conclusions. The use of modern information technologies contributes to the empowerment of the accounting centralization and increased outsourcing of accounting services but has certain shortcomings due to the remoteness from the place of origin of accounting and other information. Due to this, the reporting information and the results of the economic analysis of accounting (financial) reporting with the aggravation of the formalization of accounting, analytical and control work, complicating the understanding of economic processes at a particular enterprise by specialists may not be complete and reliable enough to make sound management decisions from both internal and external users. According to the authors, reduction of risks of inaccuracy, incompleteness and irrelevance of the accounting and information support of the business can be ensured by a high level of training of professionals in accounting, consistency of work with some enterprises, deepening of knowledge of the specifics of the functioning of a company, its organizational and technological features, taking into account strategic and tactical objectives. Performance of work by specialized outsourcing organizations would not only reduce the customer's expenses for accounting and preparation of financial statements, but, as noted by N.N. Khakhonova and I.N. Bogataya [15], the digital economy technology will enhance the quality of information and strengthen the control over its generation [1, p. 21 – 22]. However, it should also be taken into account that decision making on centralization of the accounting information processing will lead to increased risks of disclosure of trade secrets, and, therefore, business risks. In the midst of building the accounting service based on decentralized approach to fulfilling the responsibilities by professionals, approaching the accountants' jobs to production units (departments, industries, production areas, etc.), the level of skills and competencies of accounting personnel is growing and therefore, monitoring of performance indicators, control over the performance of work increase, and the possibility of operational impact on the processes grows, accompanied by nonproductive losses and lower profits.

On the background of reducing the complexity of obtaining accounting data, their prompt submission to the managers, and increase in the adequacy of management responses, the contradictions between the controlling and controlled systems are reduced. Hence, regardless of the chosen organizational structure of the accounting process at the enterprise, its description in the order of the head on the accounting policy, the application of digital technologies leads to a reduction of the complexity of the work of accounting professionals and the reduction in the number of accounting officers engaged in routine operations with their simultaneous use by large sets of data, prepared using IT technologies.

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Together with the results of the use of modern IT technologies and increased digitalization of economic activity, the intellectualization of accounting labor will grow, and an increased attention will be paid to the development and implementation of professional judgment in practical accounting. In this regard, the moral and ethical qualities of an accountant will become crucial in his/her work. As V.B. Ivashkevich notes, justifying the direction of the implementation of the truthfulness notion in accounting and auditing, the adherence to moral and ethical standards of conduct is expressed in compliance of the accounting data with the objective reality, which forms economic activity. The scientist rightly points out as follows: "To a large extent this is the personal characteristic of the accountant and auditor, which corresponds to the degree of their responsibility to their conscience" [16, p. 45]. It should be added that the truthfulness in accounting is predicated not only by a degree of responsibility to one's conscience, although, of course, such responsibility is extremely important, but also by the responsibility to society, since accounting is not only one of the branches of economic science. The information formed in it has a serious social meaning. This provokes the interest of the whole society in the generation in the accounting and reporting of reliable information on the activities of Russian entities that are relevant and necessary for future use in objective decision making at different management levels. However, the current situation with confidence in accounting information leaves much to be desired. According to the researchers, "...confidence is a prerequisite for the existence of the profession. Without confidence in the results of the work performed by accountants and auditors, they become useless and unnecessary, like the profession itself" [17, p. 627]. It follows that in the modern Russia the education of members of society with high moral and ethical qualities is of fundamental importance. It was not a coincidence that Ya.V. Sokolov and V.Ya. Sokolov wrote more than ten years ago: "...no accounting without moral" [18, p. 28]. Many modern political and social-economic challenges that arise, also due to the shortcomings of obtaining high-quality accounting information, are the result of the country's transition in the 90s of the twentieth century to the liberal model of social development. The researchers point out as follows: "... the Russian reality, which is characterized by the low ethical nature of the socio-economic system, leads to the fact that an accountant who had studied the code of ethics and understands the need to apply it, in practice, cannot or does not want to comply with its norms " [17, p. 631]. The liberal model of society in the developed Western economies has practically exhausted itself. In Russia, it also does not provide incentives for development, and sometimes it inhibits it, does not correspond to the cultural traditions of the society, its mentality and traditions. Therefore, the transition to a system of economic development, more relevant to the needs of Russian society, where the focus is on educating the members of society with high moral and ethical qualities, would neutralize the effect of negative moral-ethical factors with automated generation of accounting and reporting data and the use of modern computer technology. In this case, the issues of public confidence in accounting information in the accountant's professional judgment will become less relevant,

social costs as well as the risks of obtaining false and unreasonable accounting information will reduce, and the quality of accounting (financial) reporting as a state information resource will increase. Otherwise, the trend of the unreliability of accounting data, the growth of economic turbulence, and unpredictability of its development will increase, and the use of advanced information technologies in accounting will not achieve the desired results [19, 20].

### IV. DISCUSSION

While analyzing the impact of cloud technologies on the development of organizational and methodological characteristics of accounting process in the economic entities, along with those discussed in the article, the other issues should also be considered, which need to be investigated in terms of a wide spread of modern software products. The spread of advanced information technology in accounting will lead to an increase in the maintenance costs due to the mandatory high-speed Internet connection. However, such costs will be offset by the ability to work with significant amounts of data and instantly receive the accounting reports and, therefore, to promptly use such information in the economic process. The distribution of mostly standard software products is one of the major drawbacks of the work of cloud technology contour in the accounting system. Now they have limitations on the possibility of refinement and transformation of typical configurations. Therefore, in enterprises whose economic activities have organizational, technological and production features, the use of cloud technologies in building an accounting system has certain limits. In each case, on the basis of the proposed cloud software product, the professional (chief accountant) should determine the feasibility of its application based on detailed understanding of the specifics of the management, peculiar to the organization and reflected in the accounting. Considering the risks of using cloud technologies for accounting purposes, it is necessary to pay attention to potential risks of loss of accounting data and unauthorized break-ins due to the inability of service providers to cover emerging losses. Currently, the interaction of suppliers of cloud technologies and their users is based only on the subscription fees, while the risks in the provision of such services are not yet insured. The reduction of such risks is facilitated by the intensive work of service providers to enhance the protection of servers and databases maintained. However, in the context of information and communication technologies, there is always a risk of unauthorized access to the accounting information constituting a commercial secret. The development of the Russian insurance market, which allows to recover or minimize the damage caused by hackers' negative actions and loss of accounting information, will enhance cloud technologies distribution in the accountancy profession, and will make it more ergonomic and high-speed. The useful and reliable data generated will allow to increase the efficiency of not only business entities but also the entire domestic economy in order to meet the challenges of GDP growth.



## V. CONCLUSION

It is believed that the individual problems considered in the article arising in the context of expanding modern information technologies in accounting and reporting, and the proposed directions to address them in the practice of entities will allow to reduce the risks of unreliability, usefulness, credibility and relevance of accounting and reporting information from the interested users.

Further research on theoretical issues of emerging risks in the context of improving the accounting automation and transition of accounting processes to the cloud level, and the proposed ways of their reduction will contribute to improving the quality of accounting and reporting information, presenting more adequate information reflecting the financial position, financial performance and the cash flow intensity. As a result, different levels of management will have the opportunity of making more adequate and informed managerial decisions, increase the economic security of the Russian state, there will be greater opportunities to implement the program approved by the decree of the Government of the Russian Federation dated July 28 No. 1632-r "Digital economy of the Russian Federation" [21].

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