

UDC 657:004.9

DOI: <https://doi.org/10.32782/2415-8801/2024-3.14>

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CONTROL AUTOMATION: IMPACT ON CONTROL SYSTEM SOURCES AND TOOLS

The article examines the issue of automation of control systems in the conditions of modern digital transformation. The research aims to help understand the new opportunities and challenges associated with the automation of control, as well as to suggest ways to minimize risks and increase the reliability of systems, which are key elements for ensuring the financial and operational stability of economic entities. The importance of automation of routine processes, control, due to the need for prompt and accurate management of large volumes of data is highlighted. The importance of automation in the fight against the cyber threat, which is growing against the background of an increase in the number of attacks on information systems, is emphasized separately. The importance of taking into account the specifics of each economic entity and the industry in which it works is substantiated, as different types of threats arise depending on this. The challenges associated with the implementation of automated systems are outlined, especially regarding protecting data from unauthorized access and cyber threats. It was determined that automated control systems allow to increase the speed and accuracy of information verification, minimize the risks of human errors and abuses, and ensure the integration of data from different sources. The study emphasizes the key aspects of the implementation of such systems in the context of ensuring transparency and reliability of operations of business entities, as well as risk management. Identification of the role of automation in financial stability and compliance with international auditing standards is one of the main features of the article.

Keywords: control, automation, information technology, finance, reporting, business entities.

АВТОМАТИЗАЦІЯ КОНТРОЛЮ: ВПЛИВ НА ДЖЕРЕЛА ТА ІНСТРУМЕНТИ СИСТЕМИ КОНТРОЛЮ

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У статті досліджено питання автоматизації систем контролю в умовах сучасної цифрової трансформації. Дослідження має на меті допомогти зрозуміти нові можливості й виклики, пов'язані з автоматизацією контролю, а також запропонувати шляхи мінімізації ризиків і підвищення надійності систем, що є ключовими елементами для забезпечення фінансової та операційної стабільності суб'єктів господарювання. Висвітлено важливість автоматизації рутинних процесів, зокрема контролю, у зв'язку з необхідністю оперативного й точного управління великими обсягами даних. Так, застосування сучасних комп'ютерних систем для цілей контролю і комп'ютеризація загалом уможлиблює виконання різних процесів у прискореному, режимному вигляді. Щодо контролю, то це проявляється як автоматичне формування його результатів, генерування звітів, виявлення відхилень з допомогою відповідного програмного забезпечення. Окремо підкреслюється значення автоматизації у боротьбі з кіберзагрозами, що зростає на фоні збільшення кількості атак на інформаційні системи. Обґрунтовано важливість врахування специфіки кожного суб'єкта господарювання та галузі, в якій він здійснює свою діяльність, оскільки в залежності від цього виникають різні типи загроз. Окреслюються виклики, пов'язані із впровадженням автоматизованих систем, особливо щодо захисту даних від несанкціонованого доступу та кіберзагроз. Визначено, що автоматизовані системи контролю дозволяють підвищити швидкість і точність перевірки інформації, мінімізують ризики людських помилок й зловживань, а також забезпечують інтеграцію даних з різних джерел. У дослідженні наголошується на ключових аспектах впровадження таких систем у контексті забезпечення прозорості та надійності операцій суб'єктів господарювання, а також управління ризиками. Так, однією з переваг таких систем є можливість інтеграції даних з різних джерел, що дозволяє забезпечити комплексний підхід до управління та прийняття рішень. Ідентифікація ролі

автоматизації у фінансовій стабільності та дотриманні міжнародних стандартів аудиту є однією з головних особливостей статті.

Ключові слова: контроль, автоматизація, інформаційні технології, фінанси, звітність, суб'єкти господарювання.

Statement of the problem. In today's rapid development of IT and total digitalization, business entities have a need for prompt and effective management of large volumes of data, which requires automation of routine processes, including control. Thus, automated control systems allow to increase the accuracy and speed of information verification, reduce the risks of human errors and abuses, and ensure the integration of data from different sources.

In the conditions of globalization and growing competition, business entities must ensure maximum transparency and reliability of their operations. Automation of control contributes to the improvement of the quality of management decisions, as it allows monitoring of deviations from established standards in real time. This is especially relevant in the context of ensuring financial stability, compliance with international audit standards and risk management.

In addition, control automation is an important element in the fight against cyber threats and unauthorized access to confidential information. In a world where the number of cyberattacks is constantly increasing, the issue of data security is becoming a key priority for business entities, which makes this topic extremely relevant.

Thus, the study of the impact of automation on the sources and tools of the control system is important for understanding new opportunities and challenges, which in today's conditions have a direct impact on the activities of economic entities, and therefore a critical analysis of this phenomenon is extremely relevant.

Analysis of recent research and publications indicates a significant scientific interest in the issue of control automation among Ukrainian scientists and practitioners. In the conditions of growing digitalization, the research of automation of control processes is becoming a priority direction for many scientists. Yes, the works of F.F. Butynets, O.B. Pugachenko, V.V. Muravskyi, N.M. Khorunzhak, S.V. Ivakhnenkova, H.M. Puriy et al., devoted to the theoretical issues of creation and functioning of IT accounting and control of business entities, contain generalizations and recommendations aimed at solving problematic practical and organizational issues, as well as theoretical justifications for the feasibility of automation in this area. However, key issues related to the impact of automation on sources and tools of the control system remain under-researched. Automation changes approaches to the collection, processing and analysis of information used to control the activities of enterprises and organizations. Traditional data sources, such as financial statements, primary documents and accounting registers, are gradually

being replaced or supplemented by data generated by automated resource management systems, databases and analytical platforms [1; 2].

Setting the task is the development of scientifically based approaches and methods of implementing automated control systems that would ensure the improvement of the effectiveness of the control process, the optimization of the use of resources, and the minimization of risks. As part of the research, the following tasks are expected to be solved:

1. Determine the impact of automation on the sources of the control system.

2. To develop methods of integration of new information technologies with existing control systems.

3. Evaluate the effectiveness of automated control tools at various stages of management processes.

4. Analyze the risks and challenges associated with automation, as well as propose ways to minimize them.

5. Investigate the possibilities of increasing the reliability and security of control systems through automation, including the prevention of cyber threats and protection of confidential information.

Summary of the main research material. In today's conditions of information technology development and digital transformation of business processes, control automation is gaining more and more importance. Control systems, which were previously based mainly on manual processes, have undergone significant changes under the influence of IT. In particular, the automation of control processes allows you to significantly reduce the time of data processing, increase the accuracy and reliability of checks, as well as ensure effective monitoring of the activities of organizations in real time.

Automated control systems include a wide range of tools and IT, from simple spreadsheets to specialized data auditing and monitoring software. The implementation of such systems changes not only the sources of control, but also the very methods, tools and approaches to evaluating processes and results. In addition, automation allows integration of control systems with other business processes, which contributes to the creation of a more comprehensive approach to management.

At the same time, the introduction of automated control systems raises new challenges, about data protection and countering cyber-attacks. Ensuring the security of information systems and compliance with legal requirements are becoming key aspects that must be taken into account when developing and implementing automated solutions.

In a computer (automated) environment, both the source of control and its results are characterized by several features. First, it is a method of storage, namely electronic (databases, spreadsheets, specialized approaches (programs for auditing). The main important characteristic is the ability to store large volumes of data without the need for such facilities as archives for storing paper documents. In addition of this, the protection against unauthorized intrusion and the threat of cyber-attacks is extremely important.

To identify the problems of data protection against hacker attacks, in our opinion, it is necessary, first, to analyze their consequences for business entities. On this basis and in combination with taking into account the requirements for software and the need to develop tasks related to its formation, it is possible to substantiate the directions for implementing improvement processes in relation to cyber protection.

It is necessary to pay attention to aspects such as economic losses arising from cyber-attacks, including loss of confidential data, disruption of operations and reputation. In this context, the identification of vulnerable points in data storage and processing systems allows identifying priority areas for strengthening protection. In our opinion, it is important to take into account the specifics of each business entity and the industry in which it operates, as different types of threats arise depending on this. So, for example, for financial institutions, the protection of transactions and customer data is most relevant, while for manufacturing enterprises, the protection of industrial systems and technologies may be more important. Accordingly, approaches to cyber protection must be adapted to the specific needs of the business entity.

Also, an important element is the compliance of cyber security measures with international standards and regulatory requirements, which are constantly changing and supplemented by new data protection rules such as GDPR or national cyber security laws. Software development should provide for the possibility of constant updating and integration with new requirements, as well as ensure the reliability of systems even in the face of the increasing complexity of cyber-attacks.

Returning to the sources of control, it is worth noting that an important feature of it and its results in the conditions of digitalization is the automation of the processes of their formation. The use of modern computer systems for control in general makes it possible to perform various processes in an accelerated, regular. As for control, it manifests itself as automatic formation of its results, generation of reports, detection of deviations with the help of appropriate software.

In this regard, we note that from the point of view of control, it does not matter in what way its source is

formed (manual, mechanized, automated or any other way), however, when it is processed, it is much easier to detect discrepancies or shortcomings, precisely when the software was used. In this case, there is no need for the so-called manual recalculation of control data. Accordingly, slightly different data processing tools will be used in the computer system.

E.A. Karpenko, O.V. Karpenko, A.I. Milka and others, researching the problems of the development of accounting, analysis and auditing in IT conditions, note that they affect not only the form of data representation, but also their recovery, transparency, speed of formation and even content (according to the format demanded by management) [3, p. 332].

That is, automation manifests itself in the sources of control in a specific way (Fig. 1).

The use of access systems has an equally specific influence on the approach to documenting control results, as well as on its sources. Data access control allows you to limit access and use of important information to be authorized users only. On the other hand, one of the components that is directly related to the issue of access is an electronic digital signature. In order to recognize this or that document as a legal evidence base signature must be present. At the same time, this opportunity appeared thanks to the recognition by many Laws of Ukraine [4–6, etc.] of the electronic form of documents and their equating to the forms concluded in writing.

This feature certainly affects the sources of control information and its results, as it recognizes their legitimacy. In addition, thanks to the development of the access system, high quality and accuracy of, for example, financial reporting is achieved, since there are specific responsible persons who form it, and no one has the right to make changes after them. Accuracy is known to be extremely important to external users (whether they are potential investors or controllers).

Thus, the use of data access keys simultaneously contributes to increasing user confidence in the reported data.

Modern researchers [7, p. 9] indicate a significant need to use questionnaires (questionnaires) for fraud detection purposes. It is advisable to conduct such surveys among responsible persons. This is an effective method, which, thanks to the control of access keys, enables quick identification of problems and provides appropriate opportunities for their resolution. In addition, due to compliance with approved regulatory norms, including international ones, the protection system serves as an effective indicator for external controllers, as a guarantee of the quality, transparency and accuracy of information.

Another feature of control information sources in the digital economy is the ability to track changes made by users. For the controller, this is an opportunity

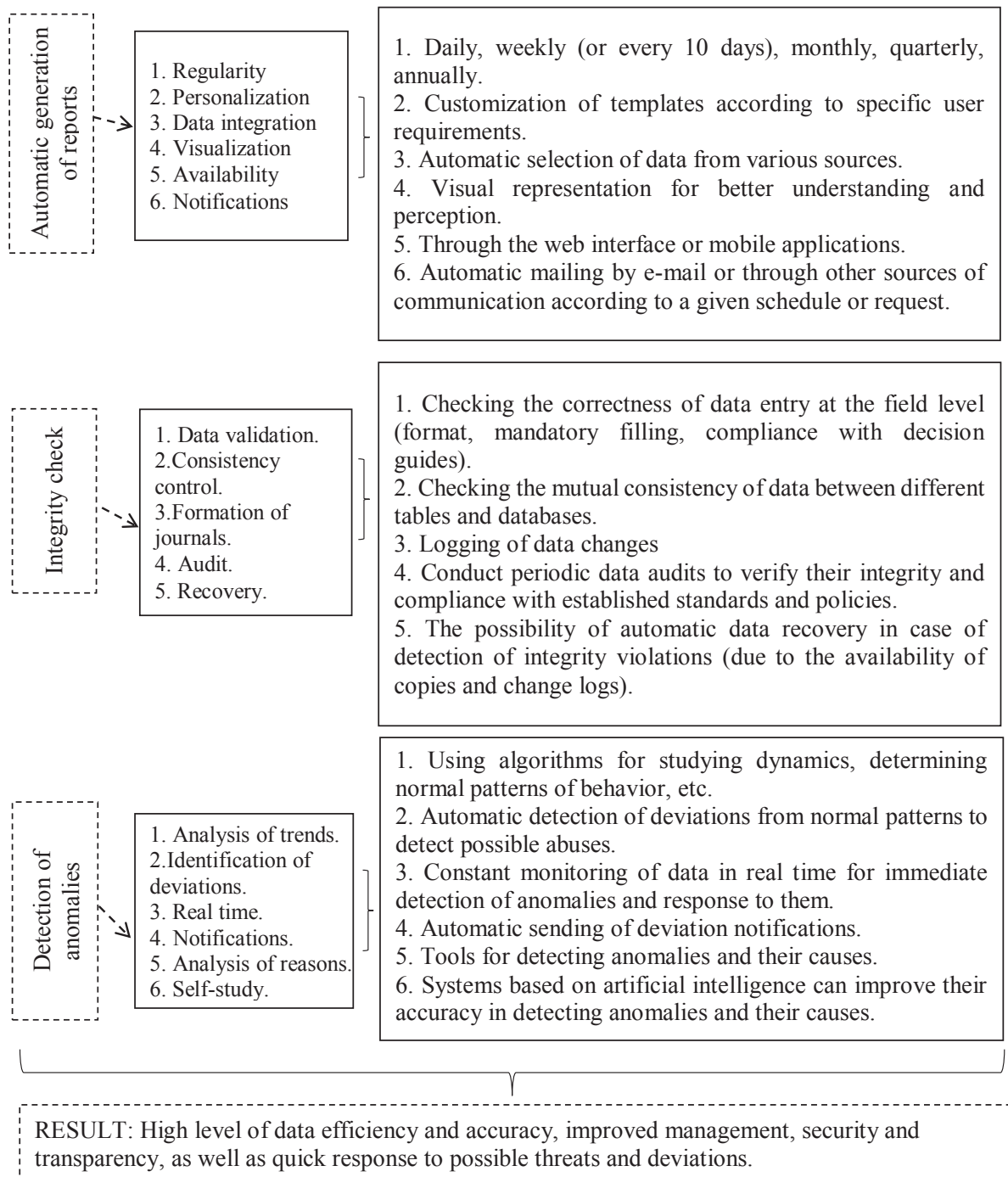


Figure 1. Essential features of automation and its impact on sources and the control system

Source: author's generalization

to clearly identify the person guilty of abuse. At the same time, a complex solution related to the protection system and such tracking in a computerized system is a rather important tool for control, which is implemented thanks to the automatic formation of relevant logs, in which all actions performed by users are recorded.

In the digital economy, not only the sources of control are subject to change, but also its tools and

methods. Modern computerization during control (both external and internal) of accounting and reporting, thanks to innovative tools, significantly increases the accuracy, efficiency, effectiveness and transparency of the control process [8, p. 77].

The main such tools are:

- robotics and automation;
- big data analytics, artificial intelligence and machine learning;

- blockchain;
- cloud computing;
- analytics in real time;
- internet of things;
- digital platforms and dashboards;
- risk management systems;
- cyber security and others.

In general, from one point of view or another, most of the elements from the above list will be revealed by us in further scientific research.

Conclusions from the study. Automation of control is a critically important tool for ensuring the transparency, reliability and security of operations of economic entities, contributing to the improvement of the quality of management decisions and the minimization of risks. Automatization as an integral part of modern control systems ensures high efficiency, accuracy and transparency. The introduction of automated control systems enables business entities to react more quickly to changes and minimize risks. One of the key advantages of such systems is the ability to integrate data from various

sources, which allows for a comprehensive approach to management and decision-making.

Control automation also contributes to the fight against cyber threats, as it involves the use of modern data protection and access control tools. It significantly increases the level of security of information systems, which becomes an important advantage in the conditions of the growing number of cyber-attacks. However, new challenges arise with this, the need to comply with international standards and legislative requirements in the field of data protection.

Further research in this field should be focused on solving the problem of adapting automated control systems to different sectors of the economy, taking into account the specifics of each sector, to ensure maximum efficiency and safety, as well as on the development of hybrid control models. They combine automated tools with elements of manual supervision to solve specific tasks where automation may be limited. Such research will help increase the efficiency of automated control systems and ensure their adaptation to the new challenges of the digital age.

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