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**CLASSIFICATION OF GLOBAL INFORMATION
INTERNAL AUDIT SUPPORT SYSTEMS**

Abstract. *The creation and functioning of global information systems in economic management fully applies to such an area of economic activity as internal audit of business entities. However, the development of information systems is so rapid that a conventional IS audit is not enough to ensure effective functioning, therefore, the issue of computerization of internal audit is quite relevant and requires the development of an intelligent system to support the internal audit of business. When analyzing research and publications, it was found that the disclosure of the main aspects of the use of computer technologies in conducting audit activities and automation of audit processes was best reflected by such scientists. Although the problem of the need for computerization of the audit undoubtedly meets the requirements of the time and has been studied by a certain circle of scientists, for a significant number of domestic business entities this problem still remains unresolved. An intelligent system can help with audit processes and ensure the accuracy of the results of automation and the application of analytical tools. The development of an intelligent internal audit support system is an important and necessary task, as internal audit plays an important role in ensuring effective management and control of a business entity.*

Keywords: *intelligent audit support system; business entity; global information systems*

Introduction

The creation and functioning of global information systems in the management of the economy fully applies to such a direction of economic activity as the internal audit of economic entities. However, the development of information systems is happening so fast that the usual IT audit is not enough to ensure the effective functioning of the volume, the issue of computerization of internal audit is quite urgent and requires the development of an intelligent system for supporting the internal audit of economic entities. According to the results of previous studies, it should be noted that the audit software market in Ukraine is at the initial stage of development, and the development and application of intelligent support systems for internal audit is particularly important [2; 3; 6].

Objective

The purpose of this work is the classification of global information systems for conducting internal audits of business entities with built-in audit rules and standards, to reduce the risks of deviation from norms and compliance with the requirements of legislation and internal state policy.

**Analysis of recent research
and publications**

Information technology (IT) in internal audit can be classified as a management set of methods and tools for

implementing operations of search, collection, accumulation, registration, processing, transmission and protection of information [2], which are divided into functional and supporting ones by purpose (Fig. 1).

Automated transfer of data (especially big data) from the information system of the business entity to the audit information system is set up by the auditor for further use.

1. **Functional information technologies of internal audit** are always specially developed technologies that are designed to solve unique problems of economic activity of Ukrainian business entities.

Functional information technology in audit is an application software that is a set of hardware and software tools designed to solve audit tasks related to the verification of economic activity and financial statements of business entities. The development of specialized application software for internal audit processes is complicated by the specifics of audit activities. The scope, specificity, nature and volume of data of business entities differ from each other, but the technology for analyzing the processing results obtained by the auditor during the internal audit with the results generated by the system is universal in terms of compliance with the functioning of the information system algorithms.

To process big data, manual, partially automated, and automated technologies are used with the help of application software that automates the internal audit processes of business entities.

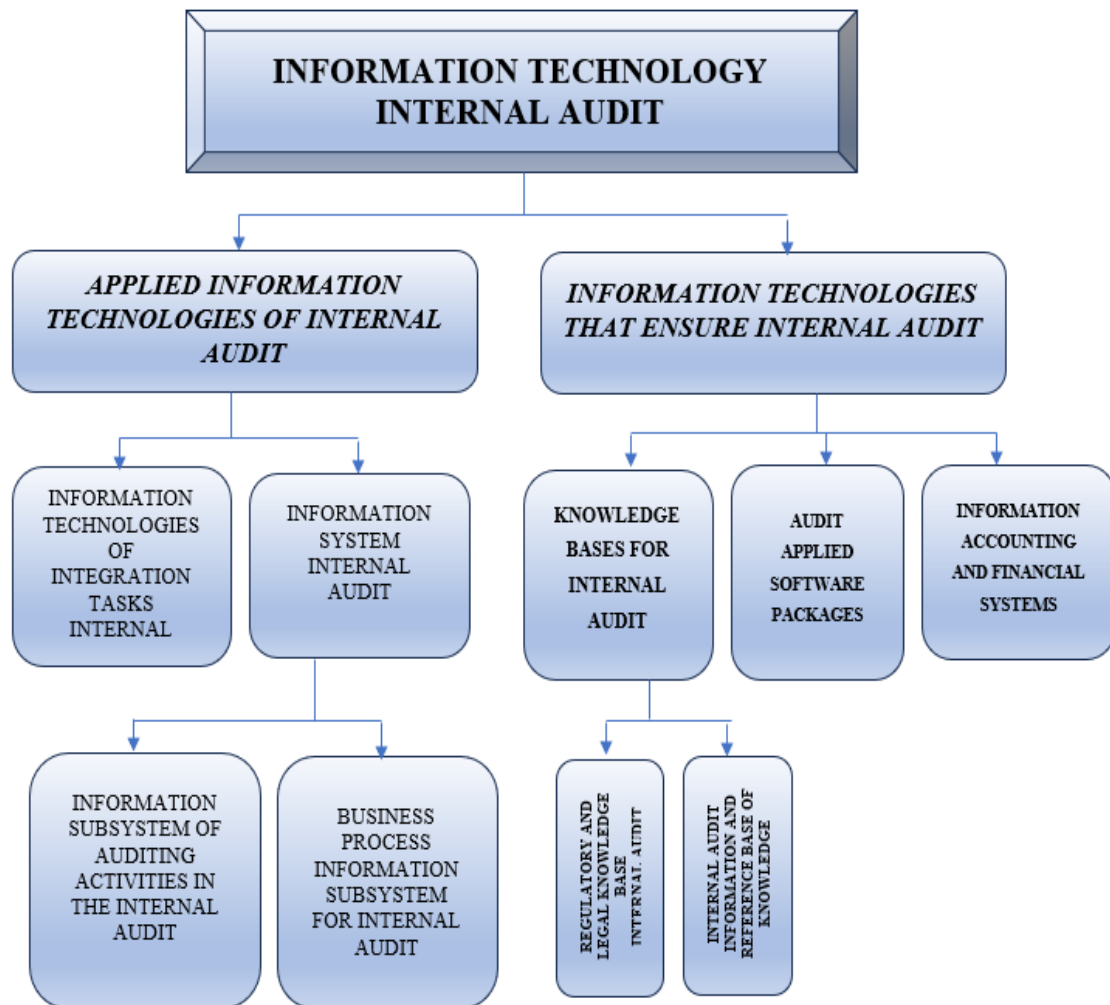


Figure 1 – Classification of internal audit information technologies

The most popular application software are software products such as 1C: Enterprise 8.3, Parus, Galaktika, BestPRO and others. In addition, manufacturers customize and modify software tools, develop accounting information systems depending on the specifics of business entities [1 – 7].

Today, a variety of software tools are popular, with the help of which comprehensive automation of audit checks is performed. But all the same, auditors are looking for tools capable of automating the verification procedure in accordance with the needs and characteristics of the business entity. According to the degree of coverage of audit tasks, which are solved during the verification process, software products of individual audit procedures can be distinguished among functional information technologies. Functional information technologies are designed to solve individual, most time-consuming audit tasks, designed to ensure the rational use of audit time by reducing the routine component of auditors' activities, and are of intermediate importance in the transition from the use of

various security technologies to the technologies of complex internal audit automation. Among this group of technologies can be distinguished:

1) Systems of automation of audit vibro statistical research – to ensure reliability and efficiency of audit vibro statistical research:

- the Vibor 01 program is designed to determine the size of the sample population when conducting a qualitative sample study;

- the Ernst & Young program, called E&Y Microstar, is designed to determine the sample size based on information about the size of the general population, the margin of error, the specified level of audit risk and the level of materiality [3]. Materiality is a characteristic of accounting information that determines its ability to influence the decisions of users of financial statements.

2) File and database research systems. This type of technology includes systems designed to automate the processes of searching, grouping, analyzing and selecting data from databases of the client's information systems. An example of such a software product is the Audit Command Language (ACL) program, which provides –

access to the content of data files of the business entity's information system, regardless of the type of software used by the business entity in keeping records or its configuration; - search, selection, sorting and grouping of transactions, their analysis for logic, authorization, legality, and the presence of mandatory elements. The complexity of using such software is associated with the need for the auditor to master information about the structure of data storage in the client's database and master the skills of building queries in the database environment.

3) Information systems for comprehensive automation of audit activities are designed to ensure the solution of the main tasks of auditing financial statements and other types of audits. Let's consider the characteristics of various programs that claim to be called comprehensive audit automation systems. Information systems for comprehensive audit automation constitute a certain operating environment that provides a comprehensive solution to the most labor-intensive tasks faced by the auditor at the main stages of the financial statement audit. We have to state that there are no domestic software products on the market capable of automating the audit process.

At the moment, versions of such outdated software systems as: "AuditXP", "Complex Audit", "IT Audit: Auditor" [4]. Information systems for comprehensive automation of audit activities at the current level of information technology makes it possible to talk about the need to create systems aimed at comprehensive automation of audit activities in general. These systems create an intelligent information environment within the audit community that can meet the information needs for managing the internal audit activities of a business entity.

2. The second group is the supporting information technologies of the audit, which includes software tools that can be used to meet the general information needs of the auditor in the audit process.

Supporting information technology is the main tool of auditors, especially in internal audit, when a significant amount of traditional paper data has been accumulated that requires manual input into complex automation systems, and moreover, will require intellectual support for decision-making based on the results of internal audit.

Regulatory reference and information retrieval systems. Such systems act as powerful expert and analytical assistants for daily work with legal information to support the auditor's decision-making in the course of the audit. The following groups of information technologies should be distinguished among regulatory and reference systems and information retrieval systems:

- computer systems of regulatory and legal support for the auditor, which provide him with up-to-

date information, such as: "Garant" and "Consultant Plus" (used in Ukraine from 1998 to the present) [electronic resource];

- information and reference systems provide the auditor with the necessary additional information for the preparation and planning of the audit, and the business entity at the decision-making stage. This includes general-purpose software and electronic office tools, specialized information-analytical and statistical systems (software systems "FinAnalytic" and "Sales Expert"),

- information systems for recording the audit [electronic resource];

- information search systems that provide wide opportunities to search for information in open sources on the Internet; - databases of the business entity for comparative analysis of performance indicators.

Presenting main material

General principles and approaches to an internal audit support system that can be used in different organizations. Internal audit support systems (IAS) are software tools or solutions designed to facilitate and optimize the internal audit process in an organization. The main objectives of such systems are to ensure efficiency, improve accuracy and reduce risks associated with internal control processes.

Systems can automate the process of data collection, analysis, deviation detection, monitoring, and reporting. This reduces manual labor and increases efficiency. The system models can use analytical methods and technologies to identify anomalies and problems in the organization's data, generate detailed reports from the collected data that simplify decision-making and improve the follow-up of auditors' recommendations.

Each entity can choose and maintain an internal audit support system according to its needs, size and complexity. When choosing a model, factors such as IT infrastructure, budget, security requirements and other factors affecting the organization should be taken into account.

Additionally, the IAS monitors and tracks internal audit to ensure that audit engagements are completed, workflow is controlled, and problems are identified in a timely manner. The system generates reports and dashboards that help management more easily understand the results of internal audit and make decisions based on them. IAS models can vary significantly in terms of needs and characteristics. They contribute to the efficiency and quality of internal audit and help organizations manage risk and ensure compliance with standards and policies. If there are specific models or systems about which there is more information that may be useful (Fig. 2).

Support Systems Reviewing some common models of internal audit support systems that have been used by 2022. These can be various software products, methodologies and tools that help to conduct an effective internal audit. IAMS (Internal Audit Management Systems): These are audit software solutions that provide tools for planning, executing, tracking and documenting the entire audit process. They may include functionality for creating audit plans, assigning audits, creating audit programs, gathering evidence, identifying deviations, and reporting.

Computer-Assisted Audit Tools (CAATs): These are software tools that help automate the audit process and allow auditors to analyze large amounts of data.

CAATs help identify irregularities, analyze financial transactions, and identify risks. Audit Dashboards and Reporting: These tools provide audiences with graphical reporting and interactive dashboards to monitor audit activity, results and progress of audit engagements. Audit Methodology: There are many audit methodologies that provide guidance and standards for conducting internal audits. The most well-known among them is The Institute of Internal Auditors (IIA), which publishes a series of Standards for the Professional Practice of Internal Auditing (International Professional Practices Framework, IPPF).

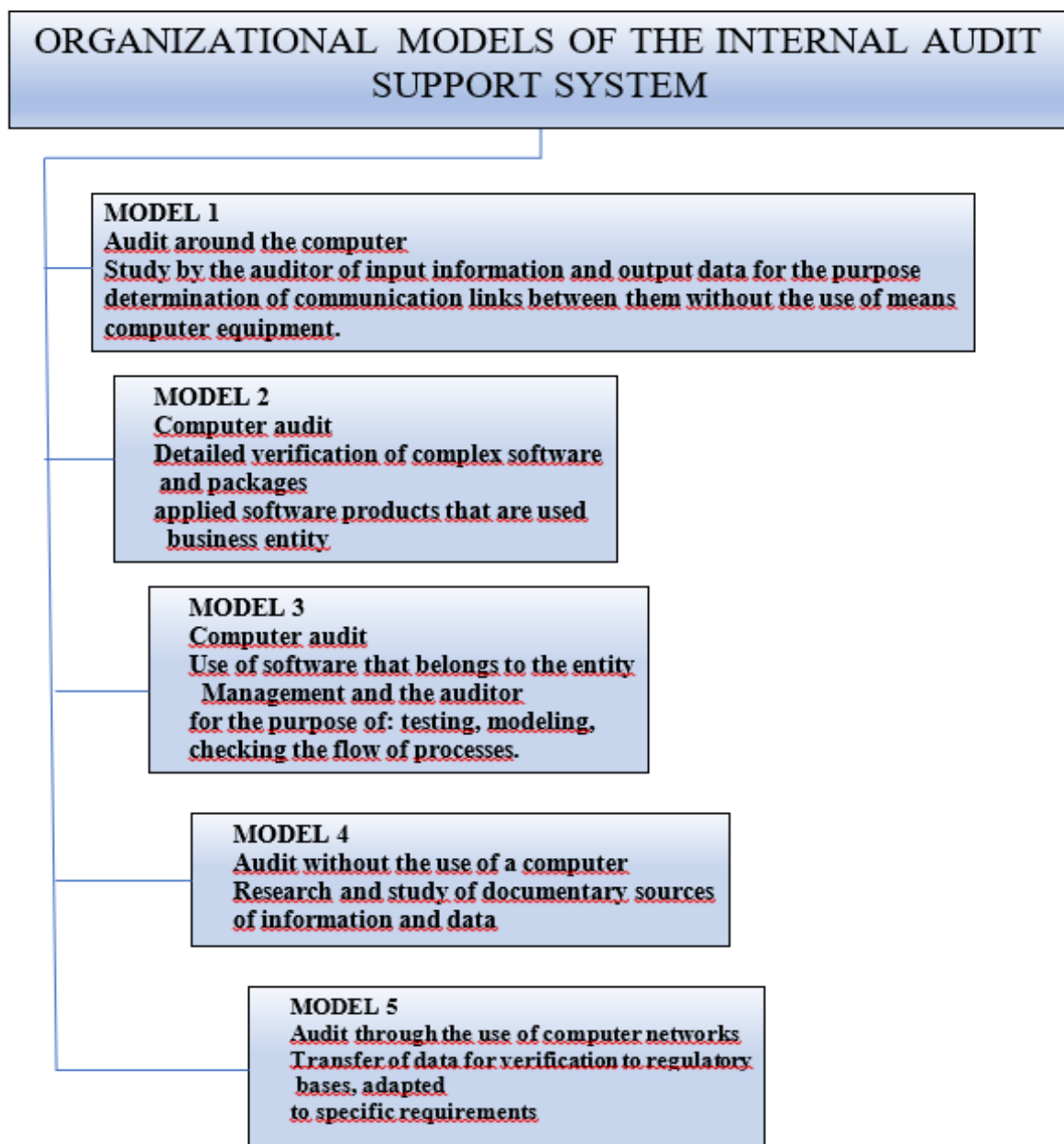


Figure 2 – Organizational Models of Internal Audit

RPA (Robotic Process Automation): the use of RPA to automate routine audit tasks, data collection and analysis, allowing auditors to focus on more complex aspects of the audit. COSO (Committee of Sponsoring Organizations of the Treadway Commission): COSO is one of the most well-known models of internal process control and effectiveness systems. COSO defines key components of internal control, such as control environment, risk assessment, control activities, information and communication, and view.

ISO 19011: This is an international standard that provides guidance on management system audits, including internal audits. It provides a common approach to planning, performing and reporting on audits. Industry-specific regulations and standards: Certain industries or sectors have their own regulations and standards that are relevant to internal audit requirements. For example, financial institutions may follow Basel standards for risk management. Maturity models: There are maturity models, such as the Capability Maturity Model Integration (CMMI), that help in assessing and improving internal audit processes.

These models and tools can be used in combination or separately, depending on the needs of the organization and the specifics of its internal audit processes. The above tools facilitate the work of the audience, provide greater accuracy and efficiency, and help identify risks and identify opportunities for deficiencies in the management and control system. For more information

on new models of internal audit support systems, please refer to organizations that specialize in the development of audit tools and resources.

In today's world, internal audit systems can use cybersecurity and data analytics tools to detect anomalies, detect fraud, and manage risks. Artificial intelligence and machine learning technologies.

It is worth noting that an internal audit support system can be designed to meet the specific needs and requirements of a particular business entity. Therefore, there are many different approaches and combinations of models that can be used to support internal audit, such as artificial intelligence and machine learning technologies to automate audit processes, analyze large amounts of data and provide more accurate results.

Conclusions

The development and implementation of domestic audit software systems, on the one hand, will ensure the solution of the issue of improving the quality of the auditor's work, reducing the likelihood of errors, providing an opportunity for effective planning of audit procedures, etc. On the other hand, with the right approach to choosing a solution for automating the workflow of an audit firm, the process of registering and processing data and documents will be significantly accelerated and facilitated, the company's efficiency will increase, which will lead to a significant reduction in its costs.

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**КЛАСИФІКАЦІЯ ГЛОБАЛЬНИХ ІНФОРМАЦІЙНИХ СИСТЕМ
ПІДТРИМКИ ВНУТРІШНЬОГО АУДИТУ**

Анотація. Створення та функціонування глобальних інформаційних систем в управлінні економікою повною мірою стосується і такого напрямку господарської діяльності, як внутрішній аудит суб'єктів господарювання. Проте розвиток інформаційних систем настільки швидкий, що звичайного аудиту ІБ недостатньо для забезпечення ефективного функціонування, тому питання комп'ютеризації внутрішнього аудиту є доволі актуальним і потребує розроблення інтелектуальної системи підтримки внутрішнього аудиту бізнесу. Під час аналізу досліджень та публікацій визначено, що розкриття основних аспектів використання комп'ютерних технологій у проведенні аудиторської діяльності та автоматизації процесів аудиту найкраще відображено саме такими науковцями. Хоча проблема необхідності комп'ютеризації аудиту, безперечно, відповідає вимогам часу і досліджується певним колом науковців, для значної кількості вітчизняних суб'єктів господарювання ця проблема дотепер залишається невирішеною. Інтелектуальна система може допомогти з процесами аудиту і забезпечити точність результатів автоматизації та застосування аналітичних інструментів. Розробка інтелектуальної системи підтримки внутрішнього аудиту є важливим і необхідним завданням, оскільки внутрішній аудит відіграє важливу роль у забезпеченні ефективного управління та контролю суб'єкта господарювання.

Ключові слова: інтелектуальна система підтримки аудиту; суб'єкт господарювання; глобальні інформаційні системи

Посилання на публікацію

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