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THE ROLE AND ADVANTAGES OF THE DIGITAL ECONOMY IN IMPROVING INTERNAL AUDIT IN ECONOMIC ENTITIES

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A B S T R A C T

This article highlights the significance and benefits of the digital economy in improving internal audit processes within economic entities. It examines the potential of digital technologies to automate internal audit processes, minimize errors, and ensure accurate and timely analysis of financial information. Additionally, the integration of modern tools such as Big Data, cloud technologies, blockchain, and artificial intelligence into internal audit is analyzed, focusing on their ability to enhance transparency, identify risks in advance, and monitor operations effectively. This study demonstrates the role of the digital economy in internal auditing and its positive impact on ensuring the financial stability of organizations.

K E Y W O R D S

Digital economy, internal audit, economic entities, efficiency, Big Data, cloud technologies, blockchain, artificial intelligence, risk management, transparency, automation, financial stability, analytical technologies, financial management, traceability.

Introduction

The implementation of digital technologies today is not only a driver of economic growth but also a key factor in enhancing the efficiency of internal control and audit systems. In Uzbekistan, several Presidential decrees and resolutions adopted to develop the digital economy provide a strong legal foundation for the digital transformation of internal audit.

For example, Presidential Decree No. PF-6079 (October 28, 2019), which approved the Digital Uzbekistan – 2030 program, aims to develop all sectors of the digital economy in the country. This program expands opportunities for implementing digital technologies in enterprises and organizations, including the use of automated and intelligent systems in audit processes.

Additionally, Resolution No. PQ-4699 (April 28, 2020) outlines measures to develop the digital economy and e-commerce. This resolution directly impacts internal audit systems by enabling the use of modern technological infrastructure and supporting digital startups to introduce new tools in audit practices.

These legal documents contribute to the following improvements in internal audit processes:

- **Automation**: Transitioning from manual operations to automated systems in auditing.
- **Enhanced Risk Management**: Utilizing Big Data and artificial intelligence technologies for risk assessment.

• **Electronic Document Flow**: Facilitating the exchange of documents and ensuring their legal validity through digital tools.

As a result, government decrees and resolutions on the digital economy not only improve the transparency of economic activities but also elevate the role and potential of internal audits to a new level.

The efficiency of internal audits in economic entities is a critical factor in ensuring the financial stability of organizations. However, the rapid development of modern digital technologies and the formation of the digital economy necessitate fundamental changes in this field. The digital economy not only enables the automation and acceleration of internal audit processes but also helps reduce errors, increase the transparency of financial operations, and improve risk detection, ultimately enhancing the overall efficiency of organizations.

This study examines the importance and benefits of the digital economy in improving internal audit processes in economic entities. It also analyzes the opportunities provided by artificial intelligence, Big Data, blockchain, and cloud technologies in internal auditing and their impact on the financial condition of entities.

The development of the digital economy creates significant opportunities to enhance the efficiency of internal audit processes within economic entities. As a result, it enables automation of auditing, reduces errors, and ensures the accuracy and timeliness of financial information.

Key Advantages of the Digital Economy in Conducting Internal Audits:

1. **Speed and Efficiency**: Digital technologies accelerate internal audit processes, allowing automatic analysis of financial data and saving auditors significant time.
2. **Error Reduction**: Digital tools minimize human errors. Automated systems process data with a single entry, reducing the likelihood of mistakes.
3. **Transparency and Traceability**: Systems based on electronic documentation and databases make it easier to track and monitor financial data. Auditors can analyze all financial operations in real-time and identify potential risks in advance.
4. **Risk Management**: Digital technologies enhance the ability to identify and manage risks in internal audits. By analyzing large datasets, systematic and unconventional risk factors can be detected, enabling the implementation of appropriate measures.
5. **Decision Support**: Analytical software and artificial intelligence tools provide detailed financial data analysis, allowing managers to make accurate and timely decisions.

In the context of the digital economy, the main directions for improving internal audit processes are as follows:

1. **Utilizing Big Data Technologies**: Analyzing large volumes of data helps make internal auditing more effective. This raises the question: What exactly is Big Data? It encompasses methods and tools used for collecting, storing, processing, and analyzing large volumes of data. These tools include:

- **Hadoop**: An open-source platform widely used for storing and processing large volumes of data. The core components of Hadoop are HDFS (Hadoop Distributed File System) and MapReduce, which allow large-scale data to be processed in parallel.
- **Spark**: A platform used for high-speed data processing, enabling real-time analysis of large volumes of data. The main advantages of Spark are its speed and ability to work with diverse data types.

- **NoSQL Databases**: Databases such as MongoDB, Cassandra, and HBase are designed to work with unstructured data, unlike traditional SQL (Structured Query Language) databases. They are efficient for handling large datasets and performing various analytical tasks.
- **Data Lake**: A storage repository designed to hold structured and unstructured data in large quantities. It allows for storing data for later analysis and processing, giving the ability to store data in its full size and conduct in-depth analysis in the future.
- **Data Analytics Tools**: Programming languages such as R and Python, along with visualization tools like Tableau and Power BI, are widely used for analyzing Big Data. These tools make it possible to interpret large datasets through intuitive and engaging graphics.

Internal audit processes often require analyzing large volumes of data. Traditional methods are often inefficient for handling such data due to its size, complexity, and speed. Big Data technologies address these issues, making internal audits more efficient, faster, and reliable.

How Big Data helps in internal audit processes:

1. **Analyzing large volumes of data**: In internal audits, transactions, financial reports, contracts, and other data are analyzed. With Big Data technologies, millions of records can be processed in an instant, enabling auditors to draw significant conclusions quickly and effectively.
2. **Detecting irregular activities**: Big Data allows quick identification of inconsistencies or unusual patterns in data. For example, it can help detect fraudulent financial transactions or suspicious activities.
3. **Real-time monitoring**: In traditional audits, issues are only analyzed after the fact, once data is collected. Big Data, however, enables real-time tracking of data, allowing auditors to identify potential risks ahead of time.
4. **Improving the accuracy of analysis**: Big Data technologies help combine diverse data from various sources and draw accurate conclusions. This enhances the reliability and integrity of the audit process.
5. **Automating processes**: Big Data algorithms and artificial intelligence automate many time-consuming audit tasks, allowing auditors to focus on more critical analytical work.

Benefits of Big Data technologies in internal auditing:

- **Speed and efficiency**: What would take days or weeks in traditional analysis can be completed in a matter of hours using Big Data.
- **Proactive risk detection**: Instead of identifying potential issues during the audit process, Big Data enables the detection of risks before they occur.
- **Flexibility**: Cloud technologies and Big Data systems provide auditors with access to data from anywhere.
- **Resource savings**: The need for additional human resources or equipment for audits is significantly reduced.

Practical examples:

1. **Financial audits**: Banks use Big Data to analyze millions of transactions conducted daily. The ability to detect suspicious transactions in real time improves risk management.

2. **Improving internal control efficiency**: With Big Data, the efficiency of internal control systems within companies is continuously monitored, identifying weaknesses and improving them.
3. **Fraud prevention**: Big Data algorithms help detect hidden patterns of illegal activity within data, aiding in the prevention of fraud.

Conclusion

Using Big Data technologies in internal audits is taking audit processes to a new level. These technologies allow auditors to quickly analyze large, complex datasets, identify risks, and improve efficiency. As a result, internal audits become not just about detecting errors, but also strategic tools that enhance organizational stability.

2. Using Cloud Services:

Cloud services allow auditors to work remotely by storing data on cloud platforms.
Internal auditing often requires analyzing large volumes of data and accessing that data securely and conveniently. Cloud services offer the following benefits:

- **Ease of data storage and sharing**: Cloud services enable auditors to access data from any location and device, facilitating remote work or collaboration across multiple teams.
- **Resource savings**: Using cloud services reduces the need for traditional servers, helping companies save on IT infrastructure costs.
- **Security and data protection**: Modern cloud services use encryption and other advanced technologies to ensure data security. For internal audits, this is crucial to maintain data confidentiality and integrity.
- **Real-time analysis**: Cloud technologies allow auditors to analyze data in real-time and draw conclusions immediately. This helps identify errors more quickly and take timely actions.

Advantages of using cloud services:

- **Quick adaptability and scalability**: Cloud services can quickly scale up or down to meet business needs, helping businesses manage workloads efficiently.
- **Cost reduction**: Instead of purchasing full infrastructure, businesses or users only pay for the resources they use.
- **Reliable and secure storage**: Cloud services usually offer high levels of security and reliable storage, as data can be stored across multiple servers.
- **Automatic updates and maintenance**: Cloud providers automatically update software and provide technical maintenance, minimizing service interruptions.

Cloud services provide a convenient platform to enhance the efficiency of internal audit processes by centralizing, securely storing, and analyzing data. Cloud technologies help save time and resources while enabling the automation of audit processes. However, it’s essential to implement specific protocols and policies in cloud environments to ensure data security.
The use of cloud services ensures that internal auditing is organized on the basis of new technologies, significantly increasing its efficiency and accuracy.

3. Blockchain Technologies:

Blockchain technologies can improve the transparency of financial operations and ensure the immutability of data.

Blockchain is a decentralized, secure, and immutable data chain technology that ensures continuous recording of transactions and other data. Blockchain operates without centralized servers and allows data to be stored securely and reliably, as it is validated through multiple nodes (networks).

Key features of blockchain technologies: a) **Decentralization**: There is no central control in the blockchain network. All participants have equal rights and contribute to confirming transactions. This makes the network more secure against central attacks and breaches.

b) **Immutability**: Once data is entered into the blockchain, it cannot be altered or deleted. Every transaction or record is permanently stored in a block, preventing any changes or reversals.

c) Transparency and Traceability: Each transaction is recorded in an open network and can be viewed by all participants. Therefore, blockchain enhances transparency and prevents fraud or falsification in the system.

d) Security: Blockchain transactions are protected by cryptographic algorithms (methods for encoding data to keep it confidential and secure). Each block is coded with a unique cryptographic hash, linking it to the next block and helping store the data securely within the network.

4. Artificial Intelligence and Machine Learning: These technologies are useful for identifying problems in advance and suggesting automated solutions.

The application of blockchain technology in internal audit processes creates new approaches to ensure the integrity and transparency of financial and operational data. This decentralized system stores an immutable digital record of each transaction and operation, significantly simplifying and enhancing audit processes.

Key advantages of blockchain include:

- **Automated Verification**: Eliminates the need for manual checks of financial transactions and operations. Transactions are automatically verified in real time through the blockchain system.
- **Prevention of Errors**: Human error, data manipulation, and subjective decision-making are almost entirely eliminated.
- **Increased Efficiency**: Blockchain technology reduces the time and resources spent by internal auditors, allowing them to focus more on strategic tasks.

A new professional field emerging from blockchain technology is that of the **blockchain auditor**. This role includes:

- Analyzing transactions in the blockchain system and assessing their relevance to business activities.
- Verifying the security and efficiency of new digital platforms built on blockchain.
- Auditing smart contracts to detect fraud risks.

In this way, blockchain technology advances audit processes from traditional approaches to innovative, digital management systems. This shift not only improves the efficiency of internal audits but also creates new professional paths, which is strategically important in a digital economy.

Artificial Intelligence (AI) is the process of giving computers or software human-like intelligence.

Machine Learning (ML), a subset of AI, involves systems and algorithms that independently learn from large amounts of data to improve decision-making.

In internal audits, AI plays a significant role in speeding up processes, improving efficiency, and identifying errors. Internal audit processes often require examining and analyzing large datasets, and AI technologies provide valuable assistance in this area.

Figure 2. Main Directions in Improving Internal Audit Processes in the Digital Economy

Overall, the digital economy greatly helps optimize and enhance the security of internal audit processes, ultimately contributing to the financial stability of entities. The rapid development of the digital economy brings internal audit systems to a new level in business entities, offering extensive opportunities to improve their effectiveness. With modern technologies, audit processes are not only carried out quickly and accurately but also help detect risks early, reduce errors, and ensure operational transparency. Innovative tools like cloud services, big data analytics, and blockchain enhance the reliability of internal audits, making them remote and continuously monitored.

Thus, the digital economy not only improves internal audit as a control system but also elevates it as a strategic element of financial management within organizations. Ultimately, this plays a crucial role in ensuring the financial stability and overall efficiency of organizations.

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