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THE ROLE OF SOFTWARE AND MODERN INFORMATION TECHNOLOGIES IN AUDIT PLANNING

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Abstract: As a result of the rapid development of information technologies, the process of digital transformation in the audit sector is gaining momentum. Paperless audits are expected to become widespread in the coming years, as many organizations strive to fully digitize document management. At the same time, advanced software tools are being developed that allow auditors to work online. As a result of such changes, auditors are forced to use online audit systems as their main tool and collect evidence from electronic sources. This article analyzes the current impact of technology on audit processes and highlights future directions related to it. In particular, a brief analysis of how information technologies have affected the stages of audit planning, verification and documentation is provided.

Keywords: Information Technology, Audit, Planning, Documentation, Risk, Software, Knowledge Management, Risk Management.

Annotatsiya: Axborot texnologiyalarining jadal rivojlanishi natijasida audit sohasida raqamli transformatsiya jarayoni kuchaymoqda. Yaqin yillarda qog'ozsiz auditlar keng tarqalishi kutilmoqda, chunki ko'plab tashkilotlar hujjat aylanishini to'liq raqamlashtirish sari intilmoqda. Shu bilan birga, auditorlarga onlayn rejimda ishlash imkonini beruvchi ilg'or dasturiy vositalar ishlab chiqilmoqda. Bunday o'zgarishlar natijasida auditorlar asosiy ish quroli sifatida onlayn audit tizimlaridan foydalanishga majbur bo'ladi hamda dalillarni elektron manbalar orqali to'plashadi. Mazkur maqola texnologiyaning audit jarayonlariga hozirgi ta'sirini tahlil qiladi va u bilan bog'liq kelajakdagi yo'nalishlarni yoritadi. Ayniqsa, axborot texnologiyalarining auditni rejalashtirish, tekshirish va hujjatlashtirish bosqichlariga qanday ta'sir qilgani haqida muxtasar tahlil taqdim etiladi.

Kalit so'zlar: Axborot texnologiyalari, Audit, Rejalashtirish, Hujjatlashtirish, Risk, Dasturiy ta'minot, Bilimlarni boshqarish, Xatarlarni boshqarish.

Аннотация: В результате быстрого развития информационных технологий процесс цифровой трансформации в сфере аудита набирает обороты. Ожидается, что безбумажные аудиты получат широкое распространение в ближайшие годы, поскольку многие организации стремятся полностью оцифровать документооборот. В то же время

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разрабатываются передовые программные средства, позволяющие аудиторам работать в режиме онлайн. В результате таких изменений аудиторы вынуждены использовать системы онлайн-аудита в качестве своего основного инструмента и собирать доказательства из электронных источников. В данной статье анализируется текущее влияние технологий на процессы аудита и выделяются будущие направления, связанные с ним. В частности, приводится краткий анализ того, как информационные технологии повлияли на этапы планирования аудита, проверки и документирования.

Ключевые слова: Информационные технологии, Аудит, Планирование, Документация, Риск, Программное обеспечение, Управление знаниями, Управление рисками.

Introduction

In recent years, the rapid advancement of information and communication technologies has profoundly reshaped the landscape of auditing. Traditional auditing methods are steadily being replaced by emerging systems rooted in digital innovation. Technological breakthroughs—including electronic documentation, remote auditing, real-time transaction processing, and online data sharing—are driving transformative changes in auditing practices.

As highlighted in the reports by prominent audit organizations such as KPMG and AICPA, the widespread adoption of enterprise systems like SAP, Oracle, and other ERP platforms has led to audit processes being conducted within increasingly integrated and automated environments.[1] This transition not only streamlines audit procedures but also enhances efficiency, precision, and real-time responsiveness.

Uzbekistan has likewise undertaken significant state-led initiatives aimed at advancing the digitalization of audit activities. Notably, Presidential Decree No. 3946, issued on September 19, 2018, mandated the Ministry of Finance to develop the "Audit" software suite, designed to facilitate electronic collaboration between audit firms and professional associations of auditors. The platform introduced specialized web portals, including dedicated dashboards for audit organizations and professional associations. These developments marked a significant milestone in enhancing transparency, fostering digital information exchange with government entities, and embedding digital governance tools into national audit infrastructure.[2]

Digital transformation demands a redefined auditor skillset—beyond technical proficiency, auditors must now evaluate complex technological risks, ensure system interoperability, and derive insights from vast datasets. One of the most significant aspects of this transformation is the shift from paper-based audit processes to fully digital, automated audit systems. Whereas auditors traditionally relied on manual document review and physical evidence, contemporary audit work increasingly involves electronic records and digital footprints.

Among the most critical stages in the audit process is planning. It is during this stage that the auditor defines the scope of the engagement, identifies key risks, and develops

[1] KPMG. (2024, July 24). The Role of Internal Audit Along the Journey Towards SAP S/4HANA.

[2] PQ-3946-сон 19.09.2018. O‘zbekiston Respublikasida auditorlik faoliyatini yanada rivojlantirish chora-tadbirlari to‘g‘risida. https://lex.uz/ru/docs/-3914502

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appropriate audit procedures. Information technology has emerged as a powerful tool in ensuring that this phase is conducted effectively and with precision.

Modern software solutions enable auditors to conduct deep analyses of internal control systems, identify and assess risk factors, and design targeted responses. Audit programs powered by specialized algorithms—such as ACL, IDEA, and other advanced tools—allow auditors to generate risk maps and detailed test plans based on input data.

Furthermore, with the help of digital tools, auditors can evaluate a client's entire business strategy and operational cycle—from production to sales—anticipating potential issues and uncertainties. This structured approach enhances the accuracy of the audit plan and reduces the likelihood of ambiguities during the engagement.

According to the 2023 KPMG framework, the planning stage should no longer be limited to financial indicators but should instead align with the organization's broader business objectives. In this regard, technology plays a pivotal role by enabling real-time data collection, analysis, and the timely formulation of management insights. Consequently, information technologies provide a strategic foundation at every step of audit planning, significantly boosting overall audit effectiveness.[3]

The central aim of this research is to explore and analyze the role of software and modern information technologies in the audit planning phase. It seeks to uncover how digital tools influence audit efficiency, facilitate risk assessment, and support the design of audit tests.

The relevance of this study lies in the fact that many organizations today operate within digital environments, requiring auditors to acquire new knowledge and competencies. With the aid of technological tools, auditors are now capable of working with real-time data, evaluating the security of complex systems, and making informed decisions based on global best practices. From this perspective, the research holds both practical and theoretical significance.

Literature Review

While technology is increasingly enhancing audit efficiency, it also introduces new risks and challenges. Professional bodies such as the AICPA and CIMA emphasize the importance of modern auditing tools—including remote auditing, Computer-Assisted Audit Techniques (CAATs), and data analytics—as essential components of contemporary audit practice. In response, Statements on Auditing Standards (SASs) have been updated to align with the realities of a digital environment.

The Strategic-Systems Lens (SSL) framework (Bell et al., 1997) calls on auditors to develop a deep understanding of an organization's technological systems and their implications for financial control. Williams and Benson (2025) further stress the importance of maintaining critical thinking skills when working with technological tools, warning against over-reliance on automation.

Dennis (2024) highlights that the successful implementation of new audit technologies requires strong internal communication, ongoing training, and a unified strategic vision. A lack of technological capability remains one of the primary barriers to adoption.

KPMG (2023) underscores the evolving role of auditors in the context of ERP system implementation. Auditors are expected to adapt to complex systems and ensure data integrity while reassessing internal controls and risk frameworks.

Research Methodology

[3] KPMG. (2024, July 24). *The Role of Internal Audit Along the Journey Towards SAP S/4HANA*.

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This study employs a literature review methodology, grounded in authoritative sources from international organizations and academic research, to examine the application of modern technologies in auditing practice.

To analyze the software and technological tools currently used in auditing, several key evaluation criteria were developed. These criteria were used to assess the actual impact, functionality, and effectiveness of each technological tool or platform within the audit planning process.

The selected criteria are as follows:

• Usability: The ease with which auditors can learn and apply the software, including the simplicity of the user interface and the intuitiveness of its features.

• Degree of Integration: The ability of the application to connect with other information systems (e.g., ERP systems, financial software) and support seamless data exchange.

• Risk Assessment Capability: Whether the software enables auditors to identify, describe, and assess internal control weaknesses and potential risks.

• Level of Automation: The extent to which audit tasks such as sampling, analysis, and conclusion-drawing are automated within the tool.

• Monitoring and Control Features: The software's capacity for continuous audit monitoring, real-time analytics, and detection of anomalies or unusual transactions.

• Compliance with Global Standards: The degree to which the application aligns with international auditing standards (ISA, SAS, GAAS) and regulatory requirements.

Based on these criteria, widely used software tools such as CARDmap, Visual Assurance, Risk Control Workbench, ACL, and IDEA were examined in depth. The analysis revealed that many of these tools are not only suited for use by large firms, but can also be effectively adopted by small and medium-sized enterprises.

Analysis and Results

Based on a review of the literature and industry reports, the following key findings were identified:

• Information technologies are becoming deeply integrated into audit processes, fundamentally transforming the role and workflow of auditors. Traditional, manual tasks are now performed through automated systems operating in real time.

• According to data from AICPA and Accountancy, auditors are increasingly relying on the quality of internal control systems when collecting electronic evidence, necessitating the use of modern software tools.[4][5]

• Leading firms such as KPMG and Deloitte have emphasized the importance of ERP systems, remote auditing technologies, risk-based approaches, and the process audit concept in their practices.[6]

• Local firms are also investing in technology, albeit with limited budgets and resources. Nevertheless, they are actively adopting tools such as electronic working papers, remote access systems, and internet-based resources.

These findings suggest that technological tools are not merely simplifying audit tasks but are evolving into strategic assets that redefine the nature of the auditing profession.

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[4] AICPA & CIMA. (n.d.). *AICPA SASs - Currently Effective*.

[5] Accountancy. (2025, January 25). *Computer-Assisted Audit Techniques (CAATs): Enhancing Efficiency and Accuracy in Modern Auditing*.

[6] KPMG. (2023). *ERP tizimlarining auditorlik faoliyatidagi roli*.

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Advanced information technologies and specialized software tools are being widely applied across all stages of the audit process, especially during planning and execution. These tools not only improve efficiency but also minimize errors and mitigate risks.

The most prominent tools used in modern audit environments include:

• ACL (Audit Command Language): This application enables auditors to analyze large databases, identify exceptions, stratify transactions, generate confirmations, and conduct automated audit tests. It reduces the need for substantive testing while enhancing the accuracy of audit outcomes.

• IDEA (Interactive Data Extraction and Analysis): Offering functionalities similar to ACL, IDEA excels at detecting fraud, examining transactions in depth, and performing statistical analysis. It allows auditors to automatically analyze 100% of data sets, revealing significant anomalies.

• CAATs (Computer-Assisted Audit Techniques): This approach relies on software-based analysis, verification, and testing. CAATs facilitate comprehensive control over financial data through complete coverage.

These technologies are vital for automating audit procedures, enabling real-time monitoring, detecting anomalies, and producing evidence-based conclusions. They have become essential in audit environments characterized by vast amounts of electronic data.

Many companies have adopted risk-based audit approaches and invested in custom or commercial tools to better understand the impact of internal and external risks on audits. For example, PwC's "Risk Control Workbench" provides clients with guidance to strengthen internal controls and mitigate risks. Deloitte's "Visual Assurance" supports management in ensuring compliance and managing oversight. Table 1 presents an overview of risk management software tools currently used by major firms.

Table 1
Examples of Software Tools for Risk Management[7]

Software Package	Description
Horizon (J.P. Morgan and Ernst & Young LLP)	This web-based application supports risk assessment and management within operational areas, especially in investment banking. It helps leadership visualize projected risks, allowing them to make more informed and strategic decisions.
CARDmap (MCS and KPMG)	A user-centric software that enables organizations to visually map operational processes. Each segment is represented by a digital "card," showing risk exposure. It helps detect, measure, and interpret risks while offering a real-time perspective of an organization's risk status.
Visual Assurance (Deloitte & Touche LLP)	A platform tailored for monitoring corporate compliance and internal control standards in accordance with international regulations. It helps internal audit teams within client firms achieve better alignment with governance

[7] Table 1 information compiled from materials by J.P. Morgan and Ernst & Young LLP, MCS and KPMG, Deloitte & Touche LLP, and PricewaterhouseCoopers LLP.

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	requirements and enhances credibility.
Risk Control Workbench (PricewaterhouseCoopers LLP)	A comprehensive system for managing organizational risk and internal control processes. It supports the identification, evaluation, and documentation of risks, assists in designing effective response strategies, and optimizes control systems by identifying redundancies.
Facilitated Assessment (PricewaterhouseCoopers LLP)	This solution promotes teamwork by collecting and consolidating feedback from both employees and management regarding risk and control decisions. It enables joint analysis and helps formulate collective strategies, improving implementation outcomes and strengthening institutional trust.

Modern information technology integration into audit processes has also had a significant impact on internal control and risk management practices. While traditional approaches relied heavily on professional judgment and documentary evidence, today's methods utilize systematic, real-time, and automated software support.

PwC's Risk Control Workbench serves as a leading example. It consolidates data on risks and controls into a single system, allowing users to map risks, evaluate them, plan mitigation strategies, and assess the effectiveness of existing control structures. It also enhances resource efficiency by identifying redundant or ineffective control procedures.

Another advanced tool, the Facilitated Control Assessment, fosters collaboration between employees and management on risk and control issues. Through anonymous feedback collection, it gathers diverse opinions across organizational levels to inform collective decision-making. This participatory approach improves implementation success and reinforces institutional trust.

These tools enable auditors to not only assess existing control systems but to monitor them continuously, optimize their design, and redesign them if necessary. As a result, risks and vulnerabilities can be identified and addressed proactively—before they materialize.

Globally, the use of audit technologies is rapidly expanding. Major international firms—KPMG, Deloitte, PwC, and EY—have already fully integrated digital tools into their practices. They employ remote auditing, cloud-based platforms, big data analytics, and real-time monitoring systems to automate each phase of the audit cycle.

According to KPMG (2024), the use of corporate information systems is growing by 35% annually.[8] ERP platforms such as SAP R/3, Oracle, and Baan enable auditors to trace every business process step-by-step, evaluate the reliability of internal controls, and establish comprehensive audit trails.

Local firms are gradually adapting to these global trends. As reported by Dennis, small and medium enterprises are increasing their technology investments to 2–9% of their revenues.[9] These investments focus on modern processors, network infrastructure, and staff training. Tools like electronic working papers, remote access software, and digital document circulation are helping these firms adopt high-tech audit approaches.

[8] KPMG. (2024, July 24). The Role of Internal Audit Along the Journey Towards SAP S/4HANA.
[9] Dennis, A. (2024, April 1). Managing Change in Audit Technology Transformation. Journal of Accountancy.

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Some local firms are also expanding their services to include technological consulting. This extends beyond traditional financial audits to assisting businesses in technological transformation, control system design, and risk management. Such services enhance competitiveness and increase market share.

Enterprise Resource Planning (ERP) systems are becoming an indispensable part of modern auditing, particularly in medium and large-scale organizations. The widespread adoption of platforms such as SAP, Oracle, and PeopleSoft presents auditors with both new opportunities and complex challenges.

SAP R/3, for instance, consolidates all business processes onto a unified platform, allowing real-time monitoring, control, and reporting. Through SAP, auditors can track financial transactions from initiation to completion, analyze event sequences, and compare actions against regulatory benchmarks—significantly strengthening audit accuracy and evidentiary support.

Oracle, known for its flexibility and integration capabilities, offers robust control features including firewalls, access levels, passwords, and digital logs. These features are critical in the evaluation of electronic evidence. Additionally, Oracle continuously monitors user activity, transaction flows, and internal compliance.

According to KPMG's forecasts, ERP usage is expected to expand significantly in the next three years, with an average annual growth rate of 30–35%.[10] This growth demands that auditors enhance their technological literacy, develop a deep understanding of information systems, and build competency in conducting audits within system-based environments.

Thus, corporate information systems are no longer merely data sources—they have become essential infrastructures for verifying internal controls, detecting fraud risks, and shaping audit strategies.

Conclusion and Recommendations

Based on a comprehensive review of the literature, practical observations, and analysis of technological tools in audit practice, several key conclusions have emerged. First and foremost, information and communication technologies are being deeply embedded into all critical stages of the audit process—planning, execution, testing, and documentation. Of particular significance is the planning phase, where modern software plays an essential role in risk assessment, internal control analysis, and the design of audit tests.

Information technologies not only enhance the efficiency and accuracy of audits, but also improve fraud and error detection, enable continuous monitoring, facilitate the adoption of international best practices, and reshape the professional role of auditors. Global trends demonstrate that advanced technologies are expanding the scope of audit services and giving rise to new, innovative service offerings.

Local audit firms are also striving to adapt to these transformations. Despite limitations in technical, financial, and human resources, significant opportunities exist to improve audit quality and reliability through the adoption of technological approaches.

In today's digital environment, conducting audits without technological tools is becoming virtually impossible. As organizations digitize their operations, auditors must likewise recognize the use of technology not as an option, but as a necessity. Tools such as electronic documentation, enterprise resource planning (ERP) systems, remote access solutions, and real-time analytics have become integral components of modern audit.

[10] ERP Advisory. KPMG.

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With such technological capabilities, auditors can conduct in-depth analyses of clients' internal operations, identify potential risks in advance, and implement preventive measures before issues arise. Software that enables analysis of entire datasets reduces the need for substantive testing while significantly enhancing audit accuracy and reliability.

Therefore, audit firms should position the use of technology as a strategic priority. No longer merely a support function, technology has become a central force in shaping the audit process itself.

Moreover, the auditing profession is evolving beyond its traditional boundaries, transforming into a multidisciplinary field that integrates strategic, analytical, and technological competencies. Future auditors will be expected to not only verify financial reports, but also analyze business models, assess risks proactively, and offer technological consulting to organizations.

To meet these emerging demands, auditors must gain proficiency in artificial intelligence, big data, automated analytics, and digital control systems. This will enable them to deliver not just reliable reports, but also strategic, high-value recommendations.

Furthermore, future audit practices will need to address pressing ethical issues, information confidentiality, cybersecurity, and the interpretability of AI-generated outcomes. These challenges will require not only technical expertise, but also strategic thinking, responsible decision-making, and adaptive agility.

In conclusion, the auditing profession is rapidly evolving into a technologically integrated, multifunctional, and highly skilled field. In this transformation, technology is not merely a supportive tool, but the primary driver reshaping the very foundations of the profession.

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