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IT Implementation Challenges in Accounting and Auditing

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Abstract: *The application of information technologies in the business of modern organizations is taken for granted today. The sustainability of an organization without the implementation of information technologies in almost all business functions of that organization is not possible. An information system designed in this way is subject to frequent errors and data loss, so permanent internal and external monitoring is necessary. Consequently, a completely new profession is developing, which is the auditing of information systems. The audit of information systems is complicated, and the field of its action is much wider than the audit of financial statements. The domain of information systems audit is both accounting and non-accounting information systems. This paper deals with defining the subject and role of information system audit.*

1. INTRODUCTION

Information technologies are expanding, and their application in the business operations of modern organizations is now taken for granted. The operations of an organization cannot be imagined without the implementation of information technologies in almost all its business functions. However, both the implementation and maintenance of information technologies within an organization require significant financial investment as well as expertise. The risk of integrating information technologies within the organization is significant, both during the setup of information systems in business and throughout the ongoing operations of the organization that rely on these systems. The risk is even greater when considering that information systems function based on the use of data and information that are easily manipulated and prone to fraud and abuse. For this reason, the management and maintenance of information systems require educated and professional staff, who must continually improve and adapt in line with the development of the information systems.

An information system set up in this way is subject to frequent errors and data loss, so constant internal and external monitoring is necessary. In this sense, a completely new profession is developing, which is the auditing of information systems. It is no longer enough to simply audit the company's financial reports; a process is also required to collect and evaluate evidence to assess the success of information systems—specifically, whether the system functions to ensure data integrity and achieve the organization's defined goals. Additionally, the audit of information systems determines whether these systems operate in the interest of preserving the organization's assets and ensuring the efficient use of resources.

Therefore, the audit of information systems is highly complex, and its scope is much broader than that of auditing financial reports. The domain of information systems audit encompasses both accounting

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and non-accounting information systems. This work defines the subject and role of information systems audit and, in addition to the introduction and conclusion, consists of three main sections. First, the concepts of technology and information technology, along with the stages of development of IT in accounting and auditing, are examined in detail. The purpose, role, and types of information systems audits are then discussed. Finally, the characteristics of the profession of information systems auditor, as well as the skills and qualifications required of auditors, are examined in detail.

2. DEFINITION OF TECHNOLOGY AND IT IMPLEMENTATION PHASES IN ACCOUNTING AND AUDITING

2.1. Definition of technology

Contemporary business conditions dictate new trends that imply the necessity of implementing technology in business. In order for the company to remain competitive in the "market game" and to remain efficient both in the function of organization and in the function of management and development, it must use IT as a tool in defining and achieving business goals.

The term "technology" is used today for many everyday activities that do not have a clear definition. The original definition of technology is that it is a comprehensive science of the intertwining of technique, economy and society, which was given in 1777 by J.G. Bachmann (Ropohl, 1979). Kukoleča gave several definitions of technology, and one of them led to the wide use of this term in different contexts, because it determines technology as any work process of physical and mental work in the economy and outside it (Kukoleča, 1986).

In any case, technology is defined as a science, and as such, it coordinates with other sciences, including social sciences (Šarić & Čatić, 1998). For this paper, the relationship between technology and economic science is important as an important social science, so the emphasis will be on the relationship between technology and, above all, accounting and auditing.

2.2. Stages of Technology Development in Accounting and Auditing

2.2.1. Phase 1: A System Based on Paper Documents

Traditional accounting does not imply the use of technology to perform the accounting function. Tasks were performed manually, and on paper, and the accounting function was not integrated with other functions in the organization, so there was no adequate data flow. For an interested employee to get some data that is important to him, he would have to go directly to the premises where the accounting function is physically located. Data were stored in computers, but financial reporting was insufficiently developed.

2.2.2. Phase 2: Initial Technology Based on Personal Computers (PC)

In this phase, data stored in computers that were based on paper documents were transferred to PCs and local network systems. In this way, reports containing only basic information could be printed. Information technologies in accounting and finance were designed so that all data could be archived on one network, where each computer, as part of the network, was either a client or a server. Servers are powerful computers that manage files and provide services to clients, which, on the other hand, are computers and other workstations that users use to run software applications (Glogić et al., 2019).

2.2.3. Phase 3: Electronic Database System

The development of relational databases marked the next phase of technology development and implementation in accounting and auditing. In the most practical sense, a relational database can be understood as a system of interconnected tables, in which the most rational and economical method of recording data is sought (codeBlog, 2020). This means that information from different tables, files, and locations can be integrated, producing much more complex reports that contain the elements necessary for economic analysis. Additionally, there has been an increase in the use of the Internet in organizations, and therefore also in the field of accounting and auditing. Now, the accounting and auditing functions can offer much more meaningful data to managers for decision-making, through the integration and exchange of information across the entire organization, facilitated by relational databases and network architecture (Glogić et al., 2019).

2.2.4. Phase 4: Web-Based Technology

At this stage, technology has already been deeply integrated into all parts of an organization because its positive impact on the efficiency and effectiveness of operations has been repeatedly noticed and proven. Accounting and auditing have embraced business modernization through the implementation of web-based technology. This technology allows users to access information via the Internet from any server using a password. The accounting and auditing functions still store financial data about organizations, but their importance for internal and external stakeholders is increasing, as the reports produced by these functions are now much more detailed and purposeful. For now, most accounting systems are still not in the cloud, but the trend toward cloud implementation in accounting is on the rise.

3. INFORMATION TECHNOLOGY AND AUDIT

As emphasized previously in the text, in the earlier stages of the development of accounting and auditing, the computer was not used as a tool for performing tasks in this area, while today the business of any function, including accounting and auditing, cannot be imagined without modern information technology (Andrić et al., 2011). The expansion of the implementation of information technologies has a strong influence on the development of the auditing profession. Today, the audit of financial statements without the application of information technology is unthinkable. Many factors lead to the necessity of implementing information technologies in the auditing and accounting process: the use of information technologies in the processing of clients' accounting data, the increased number of client transactions, and the large volume of client data that are subject to audit, the geographical distance of audit team members, the manipulation of client data submitted in electronic form, a limited period of time during which it is necessary to realize an increasing number of audit activities, etc. (Trklja et al., 2023). The indirect impact of information technologies on the development of the audit profession is reflected through the development and modernization of the accounting profession, while the direct impact is seen through the modernization of audit software and the necessary tools that provide safer access to the application solutions of audit clients, as well as the possibility of complete downloading, processing, and analysis of all data required for the revision process (Perić et al., 2021). Also, in performing their tasks, auditors rely on a wide range of computer-aided techniques and tools, which results in a significantly increased demand for auditors with adequate IT qualifications (Trklja et al., 2023). Modern audit procedures supported by the IT sector can be used to perform various audit procedures that include testing and processing of accounting information for clients, analytical review of uncertainty identification procedures, etc. (Nazarova et al., 2021). Ultimately, everything listed

should lead to an increase in quality and efficiency and contribute to a reduction in the time spent on audit work, wider coverage and more comprehensive analysis of balance sheet positions, as well as assurance that internal controls are well positioned in business processes and that business risks are effectively managed (Perić et al., 2021). A challenge faced by auditors as a consequence of IT implementation is the different IT environments for different clients. In addition, information technologies develop and therefore change very quickly, while audit clients react to them with more or less success. Furthermore, the quality of accounting processing in different companies using the same software platform may vary depending on the success of the software customization procedure, retraining of personnel, adaptation to changes, etc. (Andrić et al., 2015). Thanks to these innovations and the application of advanced auditing software, auditors can perform more detailed analyses, leading to more precise and reliable conclusions that will give the end users of accounting data a more reliable opinion on financial statements.

3.1. Purpose and Roles of IS Audits

The penetration of information technologies into all aspects of business has fundamentally changed the definition of goals and their execution. In addition to the previously listed consequences of the application of modern technology on the development of the accounting function and auditing, a new field of action is emerging within the auditing profession itself, which is IS auditing. Namely, the process of implementing information technologies in business is complicated, both in terms of implementation and financial investments, which are extensive and risky. Furthermore, once an information system is implemented, it requires continuous adaptation and upgrading in line with the further development of modern technology. The electronic data used by the information system are vulnerable to manipulation and abuse. Also, the volume of tasks that can be realized by the information system is constantly growing, so the costs and risks associated with them are simultaneously higher. All of this simultaneously requires personnel changes in terms of management, which is still not sufficiently qualified to manage information systems. In the final instance, everything above indicates that it is necessary to control and monitor information systems in the organization, which is precisely what information systems audit deals with.

IS audit is a process of gathering and independent, professional assessment of evidence, which checks the effectiveness of actions and assesses the quality of IS companies (Todorovic & Ljubisavljevic, n.d.). An IS audit is an assessment of the information technologies, practices and operations that ensure the integrity of the information subject. Such an assessment implies an assessment of the effectiveness, efficiency and cost-effectiveness of computer-aided practices (Trklja et al., 2023).

3.2. Audit Types

From the previous definitions, we can conclude that IS auditing involves not only auditing accounting systems but also non-accounting information systems. In this sense, there are differences between traditional audits and IS audits, which will be discussed in more detail later.

3.2.1. An Audit Created in the Context of a Traditional Audit

An audit is defined as a systematic process, carried out by an independent and competent auditor, who collects and evaluates sufficient and relevant evidence about business transactions and their consequences in order to examine how the condition, ownership, valuation and disclosure of those actions are shown in the accounting and the level of compliance reporting those changes with accounting standards. The established results are communicated to interested users in the form of

an audit report (Ljutić., 2005). Audit can be seen as external and internal. The term external audit refers to the audit of financial statements. The goal of auditing financial statements is to communicate to interested users an independent opinion on the compliance of financial statements with established criteria. That communication is formalized through the *Auditor's Report*. Therefore, the audit includes the reporting phase, where the auditor communicates their opinion to interested users, as well as the evidence-gathering phase, where evidence is collected and evaluated to form an opinion (Stanišić, 2018). External auditing is performed by separate, independent firms, while internal auditing is part of the organization itself. Namely, internal audit is a systematic process of collecting and evaluating evidence about the internal control systems set up in the organizations in question. The goal of internal control is to examine and detect potential problems in the procedures and systems of internal controls and provide proposals for their elimination on time.

The development of modern information systems has had an irreparable impact on any type of business, so audit as a business function and profession has changed. Information technologies have become an integral and inseparable part of the audit process. On the other hand, information systems themselves, due to their presence and importance for modern business, require their own audit, which implies the development of audit in the context of the audit of information systems themselves.

3.2.2. Revision of Information Systems in the Scope of Revision of the Information Systems Themselves

In the previous part of the paper, it was emphasized that in the third phase of development and implementation of techniques and technology in accounting and auditing, the automation of the accounting process as the basic task of the computer occurred. In this regard, the audit of electronic data processing primarily focused on hardware and software. Today, IS auditing is viewed much more widely, considering the general networking, the application of IT not only in data manipulation but also in decision-making and management based on information created by IS (Todorovic & Ljubisavljevic, n.d.). Audit of information systems includes those internal controls that depend on the processing of information systems and includes general controls (entity, system, business process application level), business process application controls (input, processing, output, master file, interface and data management controls), and user controls (controls performed by people who are in an interactive relationship with information systems) (Stanišić, 2014). The control function focuses on process control, where the emphasis is on deviations from the rules and the responsibility for non-compliance with certain standards or values (Malešević & Vranković, 2007).

The objectives of controlling information and similar technology are essentially no different from controls in other processes or procedures. The primary objective of an IT system audit refers to the observation and evaluation of parts of the system in order to determine whether the system produces timely, accurate, complete and reliable information necessary for business decision-making. When performing audit procedures, and in order to realize the main audit objective, the answer to the main audit question should be sought: Does the auditee's IT system function appropriately, while maintaining the integrity of the data necessary for business decision-making? (Stanimirović & Gajić, 2017). In addition to the main objective, IS audit should enable the realization of a whole range of audit objectives that can be grouped into four areas (Mijić, 2009):

- protection of data and information resources,
- ensuring the truthfulness and objectivity of financial reporting
- ensuring the efficiency and effectiveness of the functioning of information systems i
- ensuring the functioning of the internal control system under the defined rules.

Every IT solution implemented in business has its life cycle that includes certain stages, i.e. phase of detection, reaction and correction. Viewed in this way, there was a need to view IS audit as a separate discipline and profession within informatics.

From the very definition of IS audits, which is aimed at ensuring data security, but also at the processing process itself, as well as the results of that processing, i.e. different information contents, originating from different subsystems of the IS company, are derived from the subject of the IS audit (Davis et al., 2007):

- controls present at the level of the entire organization that represent the basis of the control environment;
- physical facilities and data center;
- network and communication infrastructure that includes devices for working online and with networks;
- operating system;
- middleware or a program that ensures the integration of two independent programs;
- databases, i.e. an application that organizes and provides access to data used by various applications and
- applications or programs used by users to realize various requests.

3.3. Revision of RIS

The accounting function is central to the operations of an organization. All the necessary information that is essential for defining the goals and operations of the company is the output of the work of the accounting function, shown through financial reports. On the other hand, the modern operation of the accounting function cannot be imagined without information support, because accounting in combination with modern information technologies represents a powerful tool for company management and a tool for making decisions based on business data. The accounting information system (RIS) is a crucial part of the organization's information system. In the accounting information system, all the data about the organization's operations that represent inputs are poured, and as an output, quantitative information is obtained that is suitable for analysis and as such a parameter for making business decisions. The accounting information system occupies perhaps the central place in the information system of an organization because it realizes cause and effect connections with other systems (Ilić & Anđelić, 2017).

Standard RSS 33 - Accounting software standard adopted and adopted by the Association of Accountants and Auditors of Serbia in 2003, revised in 2008, regulates the field of accounting software, i.e. accounting information systems (Glogić et al., 2020). According to this Standard, the basic qualitative features of the accounting information system are (Ministarstvo finansija Republike Srbije, n.d.):

- Functionality,
- Reliability,
- Usability
- Efficiency,
- Ease of maintenance,
- Portability.
- The role of RIS, based on the application of IT, includes the following (Todorovic & Ljubisavljevic, n.d.):
- to maintain and strengthen the company's activities - which is an aspect of process management;
- to support the decision-making process and ensure the production of relevant information - which is an aspect of management information;

- to ensure management, procurement control, use of resources - which is an aspect of internal control;
- to enable the fulfillment of legal, social and political obligations and responsibilities, to enable the fulfillment of regulatory requirements - which is an aspect of external control.

An accounting information system audit includes a compliance audit, an operational audit, and an audit of financial statements (Boczko, 2007). Compliance audit in a broader sense refers to the audit of normative compliance, i.e. the creation of opinions and assessments regarding compliance with each type of regulation (laws, standards, procedures, regulations, etc.). Specifically, in the case of the AIS audit, the compliance audit determines compliance with the concrete standard (Radovanović, 2010). An operational audit is a comprehensive activity, which is designed to analyze the organizational structure, internal control systems, the flow of the work process, a broader assessment of creditworthiness and the results of the management's work. An operational audit is an instrument of the company's operations, a management tool, but also its corrector. It measures the degree of achievement of the goals of an organization concerning the planned ones. Operational audit deals with the overall achievement of goals, the effectiveness of business procedures and internal control, the results of individual managers and other non-financial aspects of business (Nerandžić, 2004). Revision of financial statements involves a systematic examination of financial statements, accounting and related business changes to determine compliance with generally accepted accounting principles and legal regulations (Ljubisavljević & Jovković, 2016).

4. PROFESSION OF AUDITOR OF INFORMATION SYSTEMS

Information technologies undergo continuous development, with constant improvements and upgrades. As the entire business of the organization changes with the development and implementation of modern technology, so too do human resources, and therefore the profession of auditors has been affected by this process. IS auditors are a rare resource. IS auditors must be technical experts with audit knowledge, which they need to continually upgrade and refine.

If the audit is to maintain its place as a central mechanism for ensuring the stability of financial markets, auditors in the IT environment must provide quality audit reports that contain an opinion that increases the credibility of financial statements to an acceptable level. However, auditors must take into account that accounting and control environments, affected by information technologies, also require specific audit approaches (Andrić et al., 2011). The field of information is still insufficiently covered by regulations, so the auditor's role has been expanded to include system testing (Andrić et al., 2015). The exponential increase in the volume of accounting data creates inherent limitations for traditional audits to provide an appropriate level of quality assurance. A large volume of information must be used effectively for the audit engagement to be of high quality. In the modern environment, large and complex data sets are analyzed using robust and predictive software solutions (Vuković et al., 2023). In addition, competence in working with large data sets opens opportunities for auditors to offer new consulting services to the market (Earley, 2015; Richins et al., 2017). Furthermore, data analytics can be used in the area of non-financial data and external data to improve the audit planning process, especially for risk assessment, as well as in areas that require the auditor's subjective judgment, such as valuation issues (Earley, 2015).

Over time, the need to more specifically and seriously regulate the IS audit area also arose. The EDP Auditors Association (EDPAA) was founded in Los Angeles in 1969 and changed its name to the Information Systems Audit and Control Association (ISACA) in 1994. The most important tasks of this association are the development of standards and codes of ethics for IS auditors, the organization of educational seminars, the certification process, the publication of professional publications, and

the organization of conferences, among other activities. It is a global professional organization that unites professionals dealing with issues related to IT management, control, and security (Todorovic & Ljubisavljevic, n.d.). ISACA has also published two groups of standards: 1) standards for auditing information systems (Information Systems Auditing Standards) and 2) standards for professionals who control information systems (Information Systems Control Professionals Standards). IS audit standards define the mandatory requirements for auditing and reporting, and refer to (ISACA, n.d.):

- the minimum level of fulfillment of obligations defined by the ISACA Code of Professional Ethics;
- user expectations from the work of IS professional auditors;
- requirements for holders of the Certified Information Systems Auditor (CISA) certificate, as well as the consequences of non-compliance with standards (investigations and disciplinary procedures).

5. FUTURE RESEARCH AND DIRECTIONS

The development of the audit of information technologies also requires the education of new professional staff, i.e., the development of a new profession—the auditor of information systems. All these innovations are happening very quickly and require constant improvement, harmonization, and monitoring of trends. Information systems auditing, as a new area of business, is still under-researched due to the lack of empirical evidence on the impact of information technology on auditing. Future research in the Republic of Serbia could move in this direction, specifically in analyzing the impact of information technology on the audit profession and the audit process.

6. CONCLUSION

We are witnessing the turbulent changes that are happening in everyday life, including in the fields of business and economic development. The most significant change is the enormous increase in the use of information technologies in business. As already emphasized in the paper, a modern organization cannot perform its business functions without the implementation of information technologies. The process of incorporating information systems into a business requires significant financial expenditures and continuous maintenance. The consequences of applying information technology are noticeable and inevitable. The entire business landscape is shifting toward the use of information systems in all areas of business. There are changes in the process of defining goals, organizing business, and achieving objectives. As drastic changes occur in the operations of all business functions, accounting and auditing transform both their processes and organization. The application of information technologies expands the field of auditing and introduces a new area—auditing information systems. The risk of integrating information technologies is high because, first and foremost, data and information that can be subject to abuse and fraud are manipulated. For this reason, it is necessary to increase the level of both external and internal control, which consequently affects the evolution of the audit process itself and the development of a new profession—auditing information systems.

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