

## TRANSFORMING ACCOUNTING IN THE DIGITAL AGE: THE IMPACT OF INFORMATION TECHNOLOGIES ON PROCESSES AND PROFESSIONAL SKILLS

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### **Abstract**

*The paper analyzes the impact of information technologies on accounting systems, highlighting how digitalization has transformed traditional financial data processing and reporting processes. The introduction of computerized systems, such as ERP platforms and cloud-based applications, has led to the automation of accounting activities, increased operational efficiency and improved information accuracy. At the same time, data analysis tools and Business Intelligence solutions enable real-time financial reporting and support strategic decision-making. The research also highlights the challenges associated with digitalization, such as cybersecurity risks, implementation costs and the need for advanced digital skills. Information technologies are redefining the role of accounting, transforming it from an administrative function into a strategic management and analysis tool, essential for organizational performance and sustainability.*

**Keywords:** digital accounting, digital transformation, the digital era,, SAF-T

**Clasificare JEL:** M15, M40, M41

### **1. Introduction**

The integration of information technologies into accounting systems has significantly transformed the field, increasing efficiency, accuracy and decision-making capabilities. The accelerated development of information technologies has led to fundamental transformations in all economic and social areas. In a globalized and technology-based economy, accounting is no longer just a tool for recording transactions, but a complex system of analysis, planning and strategic decision-making support. The implementation of modern technologies has profoundly changed the way data is managed, contributing to increasing the efficiency, accuracy and transparency of accounting processes. In a globalized and dynamic economic environment, organizations must react quickly to market changes, manage increasing volumes of data and provide relevant information in real time. In this context, information technology is no longer just a support tool, but a strategic component of the management system.

The implementation of related strategies requires a high degree of adaptability, to reflect the dynamics of technological advances and their impact in all economic sectors with the aim of stimulating innovation and promoting sustainable growth.[7].

This research aims to analyze the evolution of accounting systems in the digital age, highlighting the impact of modern technologies – such as artificial intelligence, cloud computing, Big Data and ERP systems – on accounting processes and the role of the accounting professional.

The paper also examines the integration of accounting into organizational information systems, highlighting how these platforms contribute to streamlining managerial decisions and ensuring compliance in an increasingly digitalized European framework. Through this analysis, the research aims to highlight the benefits, challenges and future directions of the digitalization of accounting, providing a current perspective on how technological innovation is redefining the functions and skills of the accounting profession in the context of global digital transformation.

## 2. The Evolution of Accounting Systems in The Digital Era

The evolution of accounting systems in the digital age reflects significant transformations driven by technological advances and changing organizational needs. Initially, accounting was based on manual processes that were time-consuming and prone to errors. The advent of digital technology facilitated the transition to automated systems, significantly improving accuracy and efficiency [5].

This transition was facilitated by the advent of microcomputers, relational databases, computer networks, and, more recently, cloud solutions and artificial intelligence. Traditional accounting systems rely on manual data processing, the use of printed documents, and the direct involvement of the accountant at every stage of the process. In contrast, digital accounting systems are characterized by automation, interconnection, and real-time analysis of information (Table 1).

**Table no. 1 Comparative analysis between traditional and digital accounting systems**

| Comparison criterion       | Traditional accounting system          | Digital accounting system                                  |
|----------------------------|----------------------------------------|------------------------------------------------------------|
| Processing Method          | Manual, based on operator input        | Automated, based on algorithms and artificial intelligence |
| Data Accessibility         | Limited, local                         | Global, in real time via cloud                             |
| Operational Costs          | High (time and human resources)        | Reduced, thanks to process automation                      |
| Errors and Corrections     | Frequent, caused by human intervention | Minimal, automatically controlled                          |
| The Role of the Accountant | Operational executor                   | Strategic consultant and financial analyst                 |
| Compliance and Reporting   | Rigid, periodic                        | Dynamic, continuous and transparent                        |

In the early stages, in the 1980s and 1990s, microcomputers and basic accounting programs allowed the automation of repetitive activities, such as registering invoices or generating accounting balances. Representative examples are local applications such as SAGA [22] or WinMENTOR [23], which simplified the processing of financial data in small and medium-sized enterprises. These programs considerably reduced human errors and the time required to prepare accounting reports, offering a first form of digitalization of financial processes. Later, with the development of computer networks and relational databases, accounting systems began to be integrated into more complex computer platforms, known as ERP (Enterprise Resource Planning). These bring together accounting, management, human resources, purchasing and sales functions in a single interface. Practical examples are SAP [24], Oracle Financials [25] or Microsoft Dynamics

365 [26], widely used by international and national companies. Through these solutions, financial data is centralized, analyzed in real time and made available to management for strategic decision-making. A recent stage in the evolution is the migration to cloud solutions. Platforms such as QuickBooks Online [27], Xero [28] or Charisma Cloud [29] allow access to accounting information from anywhere and at any time, favoring collaboration between accountants, managers and auditors. In addition, these solutions offer automatic updates of tax legislation and ensure a high level of data security.

Currently, accounting systems are in a phase of advanced digital intelligence, marked by the integration of artificial intelligence (AI) and Big Data analysis. These technologies allow for the complete automation of accounting processes, the identification of errors in real time and the generation of predictive reports. For example, through machine learning algorithms, modern platforms can anticipate cash flows, assess the risks of non-collection or suggest budget optimization measures. A relevant practical example is the implementation of the e-Factura [30] and SAF-T (Standard Audit File for Tax [31]) systems in Romania, which mark a decisive step towards the complete digitalization of tax reporting. These tools allow for the automatic and standardized transmission of accounting data to tax authorities, contributing to reducing bureaucracy and increasing transparency in the relationship between companies and state institutions.

Therefore, the evolution of accounting systems in the digital age is not limited to a simple technological modernization, but involves a reconfiguration of the role of the accounting profession. The modern accountant becomes a strategic analyst and a business partner, capable of interpreting complex data, using advanced IT tools and actively contributing to organizational planning and development. This integration allows for a holistic view of economic activity and facilitates decision-making based on complete and up-to-date information. Digital accounting transforms organizational practices and decision-making [15]. As accounting systems become more technologically advanced, the skills required of accounting professionals are changes, requiring skills in data analysis and IT management [4].

Automation is one of the most important effects of the application of information technologies in accounting [12]; it significantly speeds up routine tasks, allowing for faster financial reporting and analysis [6]. IT enables the automation of routine tasks, reducing the time accountants spend on data entry and report generation [7]. Repetitive activities, such as data entry, transaction recording, tax calculation or standard report generation, are now performed automatically by computer programs. Computerized systems improve accuracy by minimizing human errors in financial data processing [10]. This automation contributes to: reducing human errors and processing time; increasing operational efficiency; allocating human resources to analysis, planning and control activities. For example, accounting programs such as SAP, Oracle Financials, QuickBooks or SAGA can automatically perform accounting entries based on electronic documents, generate balance sheets and management reports instantly, thus ensuring a continuous and coherent workflow.

The accuracy and reliability of accounting information are essential to ensuring the integrity and usefulness of financial statements. Accounting information systems (AIS) play a critical role in improving these attributes by providing structured and secure platforms for managing financial data. These systems are integral to improving the quality of financial reporting, which in turn supports better decision-making and firm performance. Internal controls within AIS are essential to protecting data integrity and preventing unauthorized access, thereby enhancing the reliability of financial information [9]. The perceived usefulness and ease of use of AIS contribute to their effectiveness in improving firm performance by ensuring accurate and reliable financial data [1].

Computerized systems can identify consistency errors, flag duplicate or non-compliant transactions, and generate alerts for suspicious transactions. Also, the use of centralized databases eliminates inconsistencies between accounting modules (for example, between financial and

management accounting), providing a unified and accurate picture of the economic and financial situation. At the same time, digital auditing and electronic traces (audit trail) allow for complete traceability of each transaction, increasing the confidence of internal and external users in accounting information.

The incorporation of new information technologies, especially AI, results in increased efficiency, transparency and analytical capabilities in financial data management [16], improves data processing capabilities, leading to more accurate financial reporting [20]. One of the most important contributions of modern technology is real-time reporting. Through computerized systems and cloud solutions, accounting data can be accessed instantly, regardless of location. Managers can view current financial statements, analyze performance indicators and make strategic decisions without waiting for monthly or quarterly reports. Management support is vital for the successful implementation of AIS, which directly influences the accuracy and reliability of financial reporting [2]. Modern solutions also offer visual analysis tools (dashboards), which present financial information in a graphical, intuitive and easy-to-interpret format. Effective security measures of information systems protect sensitive financial data, thus increasing confidence in the reported information [8]. This transformation determined the transition from retrospective accounting (based on periodic reporting) to proactive accounting, oriented towards forecasting and planning.

### **3. Integration of Accounting Into Organizational Information Systems**

Accounting no longer operates in isolation, but is integrated with other subsystems of the organization. The digitalization of accounting is facilitated by a set of interconnected tools at European level. Electronic reporting (e-reporting) and electronic invoicing (e-invoicing) are supported by common directives and standards, and databases such as VIES or OSS/IOSS systems allow for the validation and cross-border exchange of tax information. Through ViDA, digital reporting will become a standardized obligation, eliminating the recapitulative statement and facilitating automatic fraud detection. At the same time, the integration of these requirements into modern ERP systems is an essential condition for companies' compliance. ERP platforms such as SAP, Oracle, Microsoft Dynamics or local solutions such as SAGA or Charisma include dedicated modules for e-Invoice and SAF-T, ensuring the automatic generation of tax documents and their secure transmission. The compliance of these systems with EU rules (eIDAS, GDPR, ViDA) is essential for auditability, error reduction and legislative adaptability. ERP systems [32] allow accounting to be connected to inventory management, production, purchasing and human resources, ensuring efficient communication between all components of the enterprise. This integration offers significant benefits: elimination of redundancies and double data recording; information coherence between departments; streamlining the decision-making process through access to complete data.

Also, interconnection with external institutions (banks, ANAF, auditors, trading partners) allows for the electronic transmission of accounting documents and the reduction of bureaucracy. Information and communication technologies have significantly transformed accounting practices, increasing efficiency and excellence in tasks [13]. AIS serve as vital tools for recording and analyzing commercial transactions, ensuring compliance with legal requirements [17]. They facilitate strategic decision-making by providing timely and accurate financial data, which is essential for efficient management [21].

With the development of artificial intelligence and Big Data analysis, accounting systems have acquired a new strategic dimension. Accountants have been repositioned as strategic agents in organizational decision-making due to the integration of ICT [12]. Real-time access to financial data allows for faster and more informed management decisions [18]. They are no longer limited to processing historical data, but actively contribute to the decision-making process. Business Intelligence (BI) applications allow the analysis of large volumes of data and the identification of

financial trends, risks and opportunities. Advanced data analysis capabilities facilitate a deeper perspective on financial performance, helping strategic planning [8]. Strategic adoption of digital technologies is essential for companies to gain a competitive advantage in the evolving accounting landscape [3]. Through machine learning algorithms, systems can even predict cash flows, assess non-collection risks and optimize the organization's budgets.

As traditional accounting practices evolve, the integration of new technologies such as big data, cloud computing, artificial intelligence and blockchain requires rapid adaptation, while maintaining basic accounting principles. Accountants must acquire new skills in information technology, data analysis and business strategy to remain relevant in a digitalized environment [14]. Public-private partnerships are needed to implement sustainable digital literacy programs, requiring the involvement of both regulators and the business environment and financial institutions in inclusive education projects [19]. The digitalization of accounting brings a number of cybersecurity challenges through the risk of unauthorized access to sensitive data that requires the implementation of strict protection measures, requiring improved security protocols and risk management strategies; dependence on technological infrastructure, as system malfunctions can affect the normal flow of accounting activities; the need for continuous professional training to effectively use new technologies, by improving skills and adding value to remain relevant in the evolving technological landscape [11] and significant implementation costs, especially for small and medium-sized enterprises.

#### **4. Conclusions**

The evolution of accounting in the digital age reflects a profound transformation from manual and fragmented processes to an integrated, automated and data-driven ecosystem in real time. The transformations generated by information technologies – such as artificial intelligence, cloud computing, Big Data and ERP systems – have redefined the role of accounting within organizations, transforming it from an operational activity into a strategic function, essential for the decision-making process. The digitalization of accounting systems has led to increased operational efficiency, by automating repetitive tasks and reducing human errors, as well as improving the accuracy and reliability of financial information.

Modern computerized systems allow real-time reporting, providing managers with a complete and updated picture of the organization's economic and financial performance. This contributes to proactive resource management and increased transparency in strategic decision-making. The integration of accounting within the organizational information systems (ERP) has favored information coherence between different departments and a reduction of data redundancy, thus consolidating a unified flow of information at the enterprise level. At the same time, digitalization has facilitated alignment with European reporting and tax compliance standards (e-Invoice, SAF-T, ViDA), strengthening the traceability and auditability of accounting processes.

The development of artificial intelligence and Business Intelligence tools has expanded the role of the accountant towards data analysis and decision-making support, allowing for the identification of trends, risk assessment and anticipation of financial performance. Consequently, the professional skills of accountants must evolve, including solid knowledge in the field of digital technologies and data management. However, the digitalization process also generates a series of significant challenges, such as cybersecurity risks, dependence on technological infrastructure, high implementation costs and the permanent need for professional training. In this context, the success of the transition to digital accounting depends on the ability of organizations to implement sustainable digital transformation strategies that ensure the balance between technological innovation, information security and human competence. In conclusion, the digitalization of accounting is not just a technological modernization, but a fundamental reconfiguration of the accounting paradigm, in which technology becomes a strategic partner of the accounting professional. This evolution offers significant opportunities for efficiency, transparency and

competitiveness, but at the same time requires a continuous adaptation to the new requirements of the digital environment and the ethical and professional challenges associated with it.

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