

DIGITALIZATION OF ACCOUNTING: RISKS AND BENEFITS

CIOCA IONELA CORNELIA

PH. D PROFESSOR, 1 DECEMBRIE 1918 UNIVERSITY OF ALBA IULIA, ROMÂNIA

e-mail: cioca.ionela@uab.ro

Abstract

The purpose of this article is to show what are the effects of digitalization on accounting, seen through the prism of favorable and implicitly unfavorable aspects. The case study presents information implemented on the digitalization side by the entity Antibiotice S.A., an entity listed on the Bucharest Stock Exchange. Digital transformation represents one of the most important structural changes in the contemporary accounting field. Theoretical analysis, together with the research conducted, shows that digitalization is not just a consequence of evolution, but a complex process that fundamentally redefines the way in which accounting information is collected, processed and analyzed. The analyzed digital tools - ERP, cloud solutions, artificial intelligence, e-Invoice, SAF-T and other mandatory electronic systems - have demonstrated the ability to reduce errors, accelerate processes and strengthen the transparency of reporting. The scientific approach is based on information from the national specialized literature, as well as from the practical documentation carried out through the presented case study. In developing the paper, I opted to combine quantitative research with qualitative research in order to obtain the expected results. Following the research undertaken, the research instruments belong to the two categories of methods, namely: review of specialized literature, comparison, descriptive analysis, case study method, data interpretation.

Keywords: digitalization, accounting, accounting profession, ERP systems

1.Introduction

Digitalization significantly contributes to improving the qualitative characteristics of accounting information, as real-time access to data, automation of flows and standardization of reporting increase the relevance, faithful representation, comparability, verifiability, understandability and timeliness of financial - accounting information.

The major changes brought about by digitalization in our economy are forcing users of accounting information to reconsider the way accounting data is created, analyzed and used. In this new economic environment, accounting is moving beyond the constraints of a simple administrative role and is developing into a complex knowledge management system. Supported by technologies such as automation, artificial intelligence and the ever-increasing volume of data, accounting information has transformed from a simple reporting tool into an essential system for supporting business decision-making.

This context is gaining increased relevance at the national level, given that the implementation of mandatory real-time reporting systems has generated a profound change in the way accounting reporting is organized and operated. Currently, the integration of ERP systems, accounting software, with government platforms, such as Virtual Private Space (SPV) and REGES Online, plays an essential role in the organization and conduct of accounting activity. This direct integration between the applications used by entities and the digital infrastructure of public authorities has significantly changed the way in which financial information is collected, processed and reported.

The integration of these systems not only has the role of simplifying the process of compliance with legislative requirements, including through the use of dedicated modules such as RO e-Factura, but also contributes concretely to increasing the quality of accounting information. By automatically transmitting data, reducing manual intervention and allowing for rapid

verification of information, essential characteristics such as relevance, accuracy and verifiability of financial information are considered.

2.Digitalization of accounting – concept and evolution

Accounting is a relatively old field, which emerged in antiquity to meet the needs of the market with the advent of numbers and the development of trade. Today, accounting is a fundamental pillar of any organization and a profession practiced worldwide. Initially, with a pen and paper, then with the help of a computer, and currently there are a lot of specialized programs in this field.

The development of technology in recent years has radically changed the way entities manage financial information. In the past, accounting was largely based on bureaucracy, manual operations and repeated checks, consuming a lot of time. Currently, it is carried out in digital environments, characterized by automation, interconnection and real-time reporting. An accounting software is no longer just an efficient tool but has become an essential component of modern accounting.

The digital transformation of accounting has led to a significant change in the relationship between users of accounting information and the process of generating it. If in the traditional model the information was accessed periodically, now it is available almost instantly, in an integrated digital format.

The specialized literature shows that “digitalization has led to an increase in the volume of financial data, which makes their management more difficult and complex than before” [1]. This reality directly influences the expectations of users, who demand not only correct data, but also structured, filtered and easy-to-interpret information.

For internal users, digitalization fundamentally changes the way of accessing accounting information. The integration of information systems allows for the automatic generation of reports and the permanent updating of financial indicators.

It is emphasized that “synthesizing and presenting accounting data and information has never been easier; digitalization is the ideal solution in presenting relevant, verifiable, reliable, transparent and accessible information in real time” [2].

This change produces three major effects: Increasing the frequency of use of accounting information; Reducing the time between recording operations and their analysis; and Increasing management’s dependence on information systems.

For external users, digitalization has a direct impact on the way accounting information is transmitted and verified. The implementation of digital reporting and the use of digital standards (such as XBRL- eXtensible Business Reporting Language) contribute to increasing the efficiency of the reporting process. According to studies, “XBRL allows users to define and transmit financial information in a standardized and structured way, which improves the efficiency and accuracy of the reporting process” [2]. By using these technologies, information can be automatically compared, the risk of misinterpretations is reduced and transparency is increased. At the same time, tax authorities benefit from direct access to structured data, which changes the traditional relationship between taxpayers and state institutions.

Digitalization introduces a new dimension in the assessment of accounting information: cybersecurity. It is mentioned that “cybersecurity has become a significant concern in the digital age”, and companies must protect their data against cyber-attacks. For users, information protection becomes an integral part of their perception of its quality. Accurate information, but vulnerable to attacks, can affect trust in the entity.

Digitalization not only changes the way accounting information is processed but also redefines the relationship between users and it. The increase in data volume, automation, reporting standardization and IT risks determine the emergence of additional requirements regarding the organization, security and management of accounting information.

Thus, users of accounting information in the digital age require fast and permanent access to data, standardization, protection against IT risks and transparency in the transmission of information.

Overall, it can be said that digitalization acts as a catalyst for the modernization of the accounting profession, generating a more transparent, faster and easier to analyze information environment. The efficiency of this transformation depends, however, on:

- The level of cybersecurity ensured;
- The efficiency of internal controls integrated into digital processes;
- The ability of systems to communicate with each other;
- The ability of professionals to use and interpret automatically generated data;
- The degree of compliance with international reporting standards.

The general conclusion is that digitalization has a profound positive impact on the quality of accounting information and on the accounting profession, provided that the associated risks are properly managed. In its mature and controlled form, digitalization not only optimizes internal processes, but also contributes to a more transparent, secure and more aligned financial environment with the requirements of the modern digital economy.

We can easily say that the future of accounting is moving towards automation, advanced analytics and information integration, and the role of the accountant is evolving from operating data to interpreting it, assessing risks and providing strategic decision-making support. Therefore, digitalization does not replace the accounting profession but transforms it and amplifies its importance in a fundamental way.

3. Definition and role of ERP systems in the accounting environment

A relevant technology in the process of digitalizing accounting is ERP (Enterprise Resource Planning) integrated information systems. These systems are complex software platforms that allow the unified management of the main organizational processes within an entity, including financial and accounting activities. Through ERP systems, information generated in different departments of the organization is centralized in a common database, which facilitates rapid access to data and improves the information flow between the different structures of the entity.

The digitalization of accounting has generated a profound transformation in the way in which economic entities carry out their financial activities, and ERP systems have become the foundation of this process. These information platforms integrate financial, accounting, operational and administrative processes into a single system, eliminating information fragmentation and contributing to increasing the quality of financial reporting.

The specialized literature offers a series of clear definitions of the ERP concept. In the paper Accounting in the Era of the Digital Economy, ERP is described as “a single IT platform, used for the monitoring, control and integral management of all activities, processes and operations of a company” [2]. This definition emphasizes the system's ability to centralize dispersed information flows, facilitating a unified and coherent picture of the entity.

In international literature, the idea of integration is reinforced by the statement that an ERP system “meets the needs of integrated solutions by eliminating old, incompatible systems, reducing data redundancy and maintenance costs” [3]. This perspective highlights the fact that ERP is not only a technical tool, but also a strategic element in the reorganization of internal processes.

One of the most important benefits of ERP is the automation of accounting processes. Studies show that “accounting professionals are less involved in manual data processing, the activities being automated, which minimizes human errors” [4].

This automation allows accountants to shift their focus from repetitive tasks to analysis, interpretation and decision support. In addition, ERP systems allow data entry through “dedicated interfaces, validation, processing and export of data both in raw form and in the form of accounting reports”, which directly contributes to increasing accounting quality. Another major advantage is

inter-departmental collaboration. In the same volume, the authors state that “an ERP system significantly improves interdepartmental collaboration and the speed of data transfer using a single common database”. Thus, the accounting module is connected to those of production, human resources, supply or sales, allowing for rapid data circulation and eliminating duplication or inconsistencies. ERPs can be implemented locally (on premises) or in the cloud. The specialized literature mentions that “on-premises local ERP solutions are installed locally on the business’s servers, while cloud ERP solutions allow access via the internet and reduce the need for their own infrastructure”. These differences are relevant because the implementation model influences internal control, security, and operating costs [2].

In addition, the Ukrainian literature on digitalization highlights that ERP “ensures the operability and reliability of information, guaranteeing the achievement of the strategic objectives of the enterprise” [5]. This view confirms the role of ERP as a critical infrastructure for modern decision-making processes.

4. ERP and integration with other technologies – a process towards complete digital reporting

In Romania, the digitalization of taxation has brought SAF-T (D406) reporting to the forefront, and its integration into ERP has become essential. According to the literature, “the integration of SAF-T into an ERP system helps companies improve their tax operations, by simplifying reporting and increasing data quality” [3]. Data such as sales journal, debts, receivables, fixed assets or inventory are extracted directly from ERP modules, processed and exported in the format required by ANAF. This connection reduces the risk of error, decreases reporting time and increases tax compliance.

Implementing an ERP has direct effects on the qualitative characteristics of accounting information. Studies highlight that ERP allows for:

- Increased relevance, because data is updated in real time;
- Faithful representation, by eliminating human errors;
- Verifiability, due to the traceability of operations;
- Timeliness, because information is immediately available;
- Comparability, by standardizing reports.

This is confirmed by the statement “the implementation of ERP systems has a significant impact on the entire organization by providing support in substantiating managerial decisions” [4].

The implementation of ERP solutions in the cloud is based on three fundamentals: Infrastructure as a Service (IaaS), Platform as a Service (PaaS) and Software as a Service (SaaS). Each model provides a different level of control, scalability and functionality for accounting processes. Recent literature highlights the essential role of these architectures in modernizing accounting and increasing the quality of financial reporting.

IaaS represents the basic level of cloud architecture and provides the technical infrastructure necessary to host ERP applications: servers, storage space, networks and security mechanisms.

In the cloud accounting adoption study, “IaaS is the foundation that provides virtualized servers, storage, and secure infrastructure for accounting data”.

The IaaS model includes essential components for the security and stability of an ERP in the cloud, being noted that it “firewalls, encryption protocols, intrusion detection systems and automatic backup mechanisms”, elements that contribute to a significant increase in data protection. In addition to security, IaaS also offers a high level of operational flexibility, as “IaaS allows the adjustment of processing and storage capacity according to the volume of transactions”, thus facilitating the adaptation of the infrastructure to the changing requirements of financial and accounting systems. The relevance of this model for financial reporting is supported by empirical research, which shows that “IaaS has a positive and significant effect on the quality of financial reporting. Overall, IaaS represents the infrastructural foundation that ensures the stable, secure and

continuous operation of ERP systems, providing the necessary technical support for the efficient processing of accounting data.

PaaS is the intermediate layer that allows the development and extension of ERP applications. The platform provides programming tools, APIs, testing environments and integration functions necessary to connect accounting modules with other systems.

The PaaS model plays a central role in the flexibility and adaptability of ERP solutions, being defined in the specialized literature as “the development environment that allows application customization, workflow automation and integration with ERP, payroll or tax systems”. At the same time, the authors emphasize that PaaS ensures communication between systems by facilitating data exchange between different applications of the organization, thus providing an essential technical framework for integrated accounting processes. An essential aspect mentioned in the sources is its ability to stimulate innovation, as “PaaS platforms allow the development of advanced analytical tools, digital audit applications and automated tax solutions”. The practical relevance of this model is confirmed, since PaaS has a positive and significant effect on the quality of financial reporting, which shows its direct contribution to the efficiency, automation and accuracy of financial and accounting flows.

The Software as a Service (SaaS) model represents the level at which users interact directly with financial applications accessed via the Internet, without local installation, being used in current accounting activities such as invoicing, bookkeeping, document management and report generation. According to the literature analyzed, “SaaS is the model that allows the use of accounting applications via the Internet, without the need for local installation or maintenance”, and its usefulness derives from real-time access to financial information, automatic updates and multi-user collaboration. The authors also emphasize that “SaaS improves organizational agility and allows rapid scaling of accounting operations, facilitating rapid adaptation to the requirements of the digital environment. However, results based on real data indicate that the influence of SaaS on the quality of financial reporting remains modest, since “SaaS has a positive, but statistically insignificant effect on the quality of financial reporting”. The authors explain this situation by “low level of use, lack of digital skills and insufficient integration with existing systems. Despite these limitations, SaaS continues to be the most accessible and frequently adopted model in practice, playing an important role in the digitalization and modernization of accounting processes.

The three cloud models contribute complementary to the implementation of ERP in accounting:

- IaaS provides robust, secure and scalable infrastructure.
- PaaS provides personalization, integration and automation.
- SaaS provides the actual applications used by accountants.

The studies provided confirm that IaaS and PaaS have a significant impact on the quality of financial reporting, and SaaS has a positive impact, but dependent on the level of use and digital maturity of the organization. This triple model (IaaS-PaaS-SaaS) constitutes the central architecture through which modern ERPs support the digital transformation of accounting [6].

SAP S/4HANA Cloud Public Edition is a flexible ERP solution with embedded AI to drive productivity and efficiency across your finance, supply chain, HR, and sales business processes.

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- Run with industry best practices through preconfigured processes.
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Verified user reviews, ratings, and insights reveal how SAP Cloud ERP is widely recognized for its proven dedication to customer satisfaction, best-in-class product capabilities, and value [7].

In conclusion, ERP systems represent the core of the digital transformation of accounting. They automate workflows, increase data quality, facilitate internal collaboration and support modernized tax reporting processes. Through their use, accounting goes beyond its traditional role and becomes an advanced information management system, indispensable in a dynamic, digitalized and continuously developing economy.

5. Case study on the digitalization of accounting processes within the entity Antibiotice SA

Antibiotice S.A. is the most important manufacturer of generic medicines with Romanian capital, with a tradition of almost seven decades. The company is listed on the Bucharest Stock Exchange under the symbol ATB, in the Premium category, since April 16, 1997, and entered the BET index of the 20 best performing companies in September 2024. The majority shareholder is the Ministry of Health, with a holding of 53.02%.

Antibiotice is in a broad process of digital transformation of its IT systems, reflecting the transition stage from fragmented systems to a high-performance ERP solution. Bursuc et al. (2020) observe that, in the context of digitalization, “the accounting profession in Romania is a cutting-edge one, and professionals are subject to optimization pressures coming from the increasingly complex requirements of beneficiaries”. It is precisely this pressure that has determined Antibiotice S.A. to initiate the largest digital transformation project in the company's history. In 2023, Antibiotice signed a first contract with IBM Romania Consulting for consulting in order to digitize processes. In 2024, the company signed a new contract with IBM Romania Consulting for the implementation of SAP S/4HANA, one of the most advanced ERP solutions in the world, on the industrial platform in Iași [8].

Prior to initiating the digital transformation process, Antibiotice S.A. operated with sectoral information systems, without an integrated platform that would connect production, inventory, purchasing, sales and accounting data in real time. According to Popovici et. al (2025), “typing and transcription errors are common in manual processes and can have significant consequences, especially in the case of important financial documents, such as invoices, tax returns or financial reports”, a context in which the decision to implement SAP S/4HANA becomes fully justified [9].

As a company listed in the Premium category of the BVB, Antibiotice prepares annual financial statements in accordance with IFRS, filed in the Single European Electronic Format (ESEF/iXBRL). The implementation of SAP S/4HANA aims to centralize all financial data in a single integrated database, allowing real-time access to information regarding the company's financial position and the automatic generation of financial statements. This approach eliminates the need for intermediate manual processing and significantly reduces the duration of the accounting closing cycle, an essential advantage for a company that reports quarterly to the BVB and ASF. By implementing SAP S/4HANA, Antibiotice specifically aims to: real-time monthly accounting closing, by automatically generating accounting notes from the production, inventory and sales modules; automatic calculation of production cost per batch, eliminating manual estimates; automatic reconciliation between physical and accounting stock; SAF-T generation directly from the ERP system, without manual intervention; and financial reporting by business segments, which requires an integrated ERP. Antibiotice published its first Sustainability Statement in 2024, in accordance with the requirements of the CSRD Directive and the European Sustainability Reporting Standards (ESRS). This document includes indicators on CO2 emissions, water consumption, waste management, working conditions and corporate governance, all collected and reported digitally. A significant aspect of the digital transformation at Antibiotice is the integration of the e-Invoice system with the distribution platform: invoices issued to distributors in the 42 countries where the company is present are automatically generated, transmitted and reconciled with accounting records, eliminating the risk of discrepancies between commercial and financial records.

The main benefits identified following the digitalization process in the Antibiotice S.A. entity are: integration of production, inventory and accounting data into a single platform, which eliminates duplication of work and manual transfer errors; automatic generation of SAF-T and tax declarations; faster and more accurate IFRS and ESEF reporting, by eliminating intermediate manual processing; and full traceability of production batch costs, essential for GMP (Good Manufacturing Practices) and FDA (Food and Drug Administration) standards. Risks of the digitalization process were also identified, such as: high SAP S/4HANA implementation costs and the long duration of the project, phased until 2030; the risk of disruption of accounting activity during transition periods between systems; and the need for intensive training of accounting staff for the use of new ERP modules.

6. Conclusions

Technological evolution, combined with the pressure of the European and national legislative framework, has transformed the digitalization of accounting from a strategic option into a condition for the legal functioning of any economic entity. The introduction of the mandatory SAF-T for large taxpayers starting with 2022, the expansion of the e-Invoice system, the implementation of e-Transport and the reporting requirement in ESEF format for listed companies have created a mandatory digital reporting ecosystem, which no longer allows organizations to operate efficiently outside a computerized framework. This evolution does not represent a simple technical modernization, but a structural change in the way the relationship between economic entities, tax authorities and financial markets is mediated through digital information. Traditional accounting, based on physical documents, manual checks and periodic reporting, has given way to a model in which financial data circulates in real time, is automatically validated and is made available to authorities instantly. This transformation has significantly reduced the information gap between taxpayers and tax authorities, with direct implications both for the way tax audits are conducted and for the quality of economic policy decisions based on aggregated data. The impact of digitalization on the quality of financial information One of the most important effects of the digitalization of accounting is the substantial improvement in the quality of reported financial information. The automation of accounting records, the automatic validation of data entered into the system and the real-time generation of financial reports directly contribute to increasing the accuracy, consistency and comparability of information presented to internal and external users. The ESEF/iXBRL format, mandatory for companies listed on stock exchanges in the European Union, is the most concrete expression of this transformation. By digitally labeling each element of the financial statements according to the IFRS taxonomy, financial data automatically becomes comparable between companies from different Member States, without the need for additional manual processing. Investors, financial analysts and regulators can access and process this data automatically, which increases the transparency of financial markets and reduces the costs of comparative analysis. At the same time, the audit trail functionality integrated into modern IT systems ensures complete traceability of each accounting operation, from the primary document to the final financial report. This feature facilitates external auditing, reduces the risk of undetected errors and increases user confidence in the integrity of the financial information presented.

Digitalization does not eliminate the need for accounting expertise, but rather profoundly redefines it. The modern accountant is no longer primarily a data operator, but an interpreter of financial information automatically generated by information systems. He must understand the logic and limitations of the systems he uses, identify configuration errors that can generate incorrect records, and be able to communicate financial conclusions to managers and other categories of users without specialized training.

Antibiotice S.A., with the SAP S/4HANA project phased until 2030, illustrates in turn the scale and complexity of a process of complete digital transformation of accounting for a medium-sized industrial company. This reality suggests that investments in accounting digitalization must

be viewed as long-term strategic investments, not as one-time expenses, and that organizations that allocate constant resources to modernize information systems and train staff will benefit from significant competitive advantages in terms of operational efficiency and the quality of financial reporting.

However, the conclusion drawn from the research highlights that digitalization brings benefits only to the extent that it is implemented in a controlled, secure and standardized ecosystem, comparable to IFRS requirements. In the absence of adequate IT security measures, internal control and continuous verification of systems, the advantages can be counterbalanced by significant risks regarding the integrity and credibility of accounting data. Cyber vulnerabilities, dependence on IT infrastructures, automatic propagation of errors and technological failures can affect the availability, accuracy and veracity of information - fundamental elements in financial reporting.

In conclusion, digitalization has a positive impact on accounting activity, streamlines processes and improves the quality of information, but the benefits depend on the existence of adequate internal control, data security and digital skills of accounting professionals.

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