INTERNATIONAL JOURNAL OF ACADEMIC RESEARCH IN ACCOUNTING, FINANCE AND MANAGEMENT SCIENCES

OPEN ACCESS JOURNAL

Vol 16, Issue 4, (2026) E-ISSN: 2225-8329

From the Adoption of Digital Technology to Career Change E-invoicing, Accounting Skills, and Emerging Technologies in Romania

Andreea Grigorescu (Stanescu)[1], Ivona Rapan[2], Anamaria - Catalina Radu[2*], Ana-Maria Severin[2], Nicolae Soare[1], Daniel-Andrei Balica[1]

[1]Romanian Academy, School of Advanced Studies of the Romanian Academy, Doctoral School of Economic Studies, National Institute for Economic Research ''Costin C. Kirițescu'', Institute of National Economy, Bucharest, Romania, [2]Institute of National Economy, Romanian Academy, Bucharest, Romania

*Corresponding Author Email: anamaria_radu15@yahoo.com

DOI Link: http://dx.doi.org/10.6007/IJARAFMS/v16-i4/28640

Published Online: 08 November 2026

Abstract

Accounting practice and the abilities required of accounting professionals are evolving due to the increasing usage of innovative technology. Data analytics and process automation are changing how accounting and financial data are gathered, handled, and utilized. Because of this, digital skills are becoming more and more crucial in a field that is directly linked to technology advancement. While lowering the possibility of human error, digitalization also speeds up and simplifies many accounting tasks. Technologies impacting this industry include automation, blockchain, cloud computing, artificial intelligence (AI), and data analytics. Each makes a unique contribution to the evolution of accounting operations. Blockchain's secure and traceable records can increase financial information's dependability and transparency. Businesses can handle massive amounts of data and make better use of financial data while making decisions thanks to data analytics. Another significant aspect of this shift is electronic invoicing, which modifies the handling and processing of accounting papers. Accounting professionals must also meet new standards as a result of its utilization, especially when dealing with digital systems and structured data. Thus, e-invoicing can increase organizational effectiveness and foster the growth of new professional skills.

Keywords: Digital Transformation, Emerging Technologies, Professional Competencies, Artificial Intelligence, E-Invoicing

Introduction

Emerging disruptive technologies that increase productivity, accuracy, and accountability are driving the digital transformation of accounting. It entails incorporating digital technologies into several facets of corporate operations, resulting in significant adjustments to how businesses function (Bose et al., 2022; Zaman et al., 2021). Due to growing digitalization and

technology breakthroughs, the accounting profession is currently undergoing a major transition. Accounting operations are becoming more efficient as a result of technologies like blockchain, cloud computing, and artificial intelligence (AI) (Eyo-Udo et al., 2025; Odonkor et al., 2024). These technologies can drastically cut down on the time and effort needed by accounting experts by automating routine accounting operations like data entry, invoice processing, and reconciliation. For instance, AI-based solutions can swiftly handle high transaction volumes while lowering the possibility of human error, improving accounting procedures. This enables accountants to concentrate on more strategic tasks, such as customer relationship management, financial analysis, and advisory services (Painoli, 2026). Another significant use of AI in accounting is machine learning. In order to improve regulatory compliance and the identification of anomalies that can point to fraud or mistakes, machine learning algorithms can examine past data and find trends (Sampaio & Silva, 2025).

Additionally, accountants can glean valuable insights from massive information using sophisticated data analytics techniques. These tools can help identify trends, forecast financial results, and provide valuable recommendations to clients (Obodai et al., 2025). Digital transformation also brings changes to the careers of accounting professionals. Traditional tasks, such as data entry and document processing, are increasingly supported by digital systems. As a result, accountants need to develop new skills and adapt to different professional responsibilities. Their work may include more financial analysis, data verification, and advisory activities. In Romania, these changes are particularly relevant because accounting professionals must also adapt to digital tax reporting systems. Therefore, digitalization affects not only accounting processes but also the skills needed for future career development.

Table 1 presents the main applications of emerging disruptive technologies in accounting. These include artificial intelligence, blockchain, cloud computing, automation, big data, and data analytics. Artificial intelligence enables large volumes of data to be processed quickly and accurately. One of its important applications in accounting is supporting compliance and risk management in financial reporting (Iyelolu et al., 2024).

Table 1
The use of emerging disruptive technologies within the accounting profession

Technology	Use	Benefits
Artificial intelligence (AI)	▪ enhances predictive analysis ▪ AI algorithms can be applied to financial planning, forecasting, and budgeting (Aminu et al., 2024)	▪ enables businesses to automate regular financial reporting processes ▪ reduces the possibility of human error
Blockchain	▪ automating audit procedures, decreasing the time and expenses related to conventional techniques	▪ reduces the possibility of inconsistencies by guaranteeing that all parties involved have access to the same information

Cloud computing	▪ companies can access their financial information anytime, anywhere	▪ increased flexibility and collaboration ▪ more efficient storage and management of financial information at the organization level ▪ organizations can respond quickly to changes in their financial positions (Oyeniran et al., 2024)
Automation	▪ removes tedious manual processes like data entry and report creation	▪ boosts production and efficiency within the company ▪ aids companies in upholding openness and accountability
Big Data and Data analytics	▪ gathers, organizes, and evaluates an extensive amount of financial data	▪ Big data and data analytics give businesses a better understanding of their financial performance

Source: author

AI is transforming business operations and is also expected to influence e-invoicing. AI-based e-invoicing systems can analyze and extract relevant information from invoices to predict payment behavior and optimize payment timing (Bignami, 2022). Through machine learning algorithms, these systems can improve the efficiency, accuracy, and productivity of electronic invoicing by processing large volumes of invoices (Malladhi, 2023). Furthermore, AI can help detect and prevent potential fraud, making invoicing processes more resilient to errors and irregularities. By identifying patterns and detecting anomalies, AI-based systems can identify potentially fraudulent invoices, inconsistencies in amounts, or irregularities in customer data (Agu et al., 2024). Blockchain enables organizations to record financial transactions securely and transparently. The use of this technology can improve the reliability of financial information and strengthen accounting processes at the organizational level (Adam & Fazekas, 2021). Cloud computing supports real-time financial reporting and access to updated financial information. One of its key benefits is improved data security, helping organizations protect financial information against security breaches and data loss (Shivarajappa, 2024). Automated systems can monitor transactions and flag anomalies, supporting compliance with regulatory requirements and internal controls. This can also reduce the risk of fraud and financial misreporting (Chukwuani & Egiyi, 2020). Large amounts of financial data are gathered, processed, and analyzed as part of big data and data analytics. Businesses are able to measure important performance indicators, spot patterns, and assess the success of their financial goals with the use of sophisticated data analytics tools (Abhishek et al., 2025).

Electronic invoicing (e-invoicing)

Electronic invoicing, or "e-invoicing," is a crucial element in the digitalization of the accounting industry. It is situated in the nexus of sustainable development and digitalization, and it helps to streamline economic operations through electronic management, ongoing data flow monitoring, quicker processing times, and tax compliance (Tiwari et al., 2023). One important effect of electronic invoicing is the need for professional training among non-IT personnel working in financial, accounting, administrative, and managerial roles. Understanding digital processes and the interoperability of electronic reporting systems and standards are necessary for the successful deployment and usage of e-invoicing systems (Bernauer & Kornau, 2024). Organizational productivity represents another effect. The implementation of disruptive technologies, such as process automation, can reduce human

error and improve transaction traceability. In this way, administrative costs can be reduced, while fiscal transparency can be enhanced and the shadow economy mitigated (Veselá & Radiměřský, 2014). A third effect of e-invoicing relates to innovation and the ability of companies to integrate financial data into complex decision-making processes. By standardizing and structuring invoice data digitally, e-invoicing can support financial analysis, forecasting, and planning. The development of electronic invoicing is also associated with the level of digitalization among enterprises and with investments in R&D and information technologies (Qi & Che Azmi, 2021). An invoice that is sent, received, and issued in a structured electronic format is called an electronic invoice. This format allows the transmission, reception, and processing of invoices to be automated through business information systems and dedicated technologies (European Parliament, 2014). The literature highlights several potential economic, societal, and environmental benefits of electronic invoicing compared with traditional invoicing. These include greater efficiency, simpler processes, lower paper consumption, and reduced CO2 emissions (Hagsten & Falk, 2020; Moretto & Caniato, 2021; Tiwari et al., 2023). E-invoices can be handled and processed more efficiently than paper invoices and can provide faster delivery, shorter payment delays, and greater security by reducing administrative errors (Bellon et al., 2022). Electronic invoicing can also facilitate supply chain financing by supporting faster, more innovative, and lower-cost solutions (Zhao et al., 2024; Marak & Pillai, 2021). In the public sector, e-invoicing can contribute to tax compliance and improve tax collection (Olaleye et al., 2023).

Research Methodology

By connecting the theoretical framework with European statistical data on company digitalization, this study aims to investigate the effects of developing technologies on accounting. The analysis is on the application of big data analytics, cloud computing services, and artificial intelligence (AI) based on the availability of similar data. Furthermore, e-invoicing is analyzed as a real-world implementation of accounting digitalization, with special focus on how the Romanian e-invoicing system affects accounting professionals' work. Based on data from Eurostat and the European Commission's official platform for Digital Decade/DESI indicators, as well as a review of the literature on the digitalization of the accounting profession, the study is exploratory in nature. The theoretical section examines the influence of emerging technologies on accounting. The empirical section uses several statistical indicators to illustrate the extent of digitalization in this field. Big data analytics, cloud computing services, and artificial intelligence are all included in the Eurostat metrics. The Digital Decade (DESI) indicator, which measures businesses that send e-invoices appropriate for automated processing, serves as the foundation for the e-invoicing research. The indicators were selected to compare European Union Member States across several dimensions of digital transformation: advanced technologies, digital infrastructure, data analytics, and the operational digitalization of financial and accounting documents. The analysis assesses Romania’s position relative to the European Union average and compares it with Member States reporting high indicator values, as well as with countries showing similar or lower values. The results and the differences from the European average are expressed in percentage points. This approach helps identify trends and gaps that are relevant to understanding the implications of digital transformation for professional accounting competencies.

No separate statistical indicator was used for automation because the official sources examined did not provide a comparable measure that directly captures the automation of accounting processes across European Union Member States. Automation is therefore included in the conceptual framework due to its role in reducing repetitive tasks, supporting the electronic processing of documents, and streamlining financial and accounting workflows. Similarly, the European statistical sources consulted did not provide a comparable indicator for blockchain adoption by enterprises across EU Member States. Blockchain is therefore addressed within the conceptual framework because of its relevance to transaction traceability, transparency, and the integrity of financial and accounting data. For Romania, the European-level analysis is complemented by the case of RO e-Factura. This allows the study to move from general indicators of digital technology adoption in the business environment to a specific form of accounting digitalization that directly affects tax-related processes and the day-to-day work of accounting professionals. The study has several limitations. The indicators are not accessible for the same reference years, it depends on secondary data, and not all of the technologies taken into consideration have similar statistical data. In particular, the big data indicator refers to 2020, whereas the artificial intelligence and cloud computing indicators refer to 2025. These differences require cautious interpretation, as levels of technology adoption from different years should not be directly compared. The study also examines the possible implications of digitalization for accounting careers in Romania. The analysis focuses on three main aspects: changes in professional tasks, new digital skills, and possible career development opportunities. These aspects are discussed using the existing literature and the available statistical indicators. This approach provides an exploratory perspective on how digital technologies may influence the accounting profession.

Results

This section moves from advanced digital technologies to their practical application in accounting. The first stage examines indicators related to artificial intelligence, cloud computing, and big data analytics, which provide an overview of the level of digital readiness in the business environment. The analysis then focuses on e-invoicing as a practical tool that reflects a concrete operational change in financial and accounting workflows. This sequence allows for a gradual interpretation of how professional competencies are changing, moving from technologies with different levels of adoption among enterprises to digital tools that directly affect accounting activities. For clarity, the figures do not include all European Union Member States. Instead, they present the EU average, Romania, the five countries with the highest values, and a selection of countries considered relevant for comparison. However, the analysis itself considered all Member States for which data were available.

Artificial intelligence applications in businesses

The usage of artificial intelligence (AI) by enterprises is the first indicator examined. The increasing significance of AI in accounting led to the selection of this indicator. However, the current research solely considers the actual adoption level as reported by Eurostat. The indicator does not quantify how AI directly affects accounting. Rather, it displays the degree to which businesses employ at least one AI technology, offering helpful context for evaluating its possible impact on accounting and financial operations.

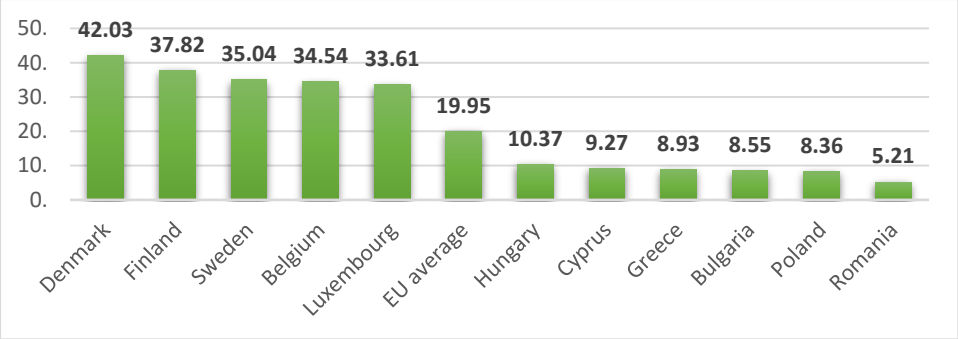


Figure 1. AI utilization within European Union enterprises, 2025 (% of enterprises)
Source: Compiled based on Eurostat data (2026a)

The adoption of artificial intelligence by businesses varies significantly among EU member states, according to Eurostat data. About one in five businesses with ten or more employees used at least one AI technology in 2025, according to the EU average of 19.95%. The highest rates were recorded in Denmark (42.03%), Finland (37.82%), Sweden (35.04%), Belgium (34.54%), and Luxembourg (33.61%). Romania recorded a rate of 5.21%, which was 14.74 percentage points below the EU average. Romania also ranked below countries with relatively low adoption rates, such as Poland (8.36%), Bulgaria (8.55%), Greece (8.93%), Cyprus (9.27%), and Hungary (10.37%). These results indicate that AI adoption among Romanian enterprises remains relatively limited. From the perspective of professional competencies, this does not reduce the importance of AI for accounting professionals, but rather suggests a gradual transition. At this stage, accounting professionals need strong operational digital skills, together with a growing understanding of intelligent systems, data quality verification, and the interpretation of automatically generated results.

Cloud computing and the digital infrastructure of businesses
After examining a technology with a relatively low adoption rate in Romania, the analysis turns to cloud computing services. Because they can facilitate remote work, online applications, document storage, and collaboration between businesses and accounting professionals, these services have wider uses in business digitalization (Dobrescu et al., 2020).

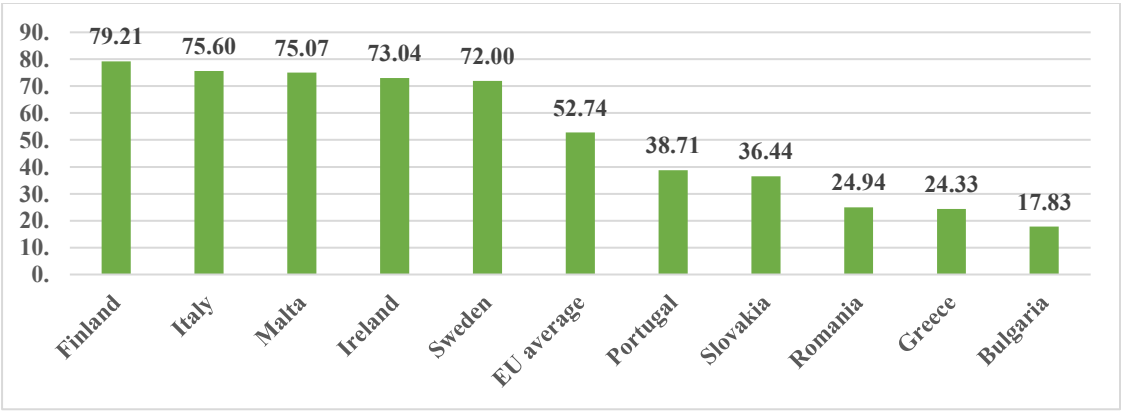


Figure 2. Cloud computing services utilization within European Union enterprises, 2025 (% of enterprises)
Source: Compiled based on Eurostat data (2026b)

The adoption rate of cloud computing services is higher than that of artificial intelligence, according to Eurostat data. The average for the European Union in 2025 was 52.74%, which indicates that over half of businesses with ten or more employees used paid cloud services online. The highest rates were recorded in Finland (79.21%), Italy (75.60%), Malta (75.07%), Ireland (73.04%), and Sweden (72.00%). Romania recorded a rate of 29.44%, which was 23.30 percentage points below the EU average. However, unlike the artificial intelligence indicator, Romania did not rank last among the selected countries, recording higher values than Greece (24.33%) and Bulgaria (17.83%). For the accounting profession, cloud computing has direct practical relevance, as it facilitates access to online accounting applications, collaboration with clients, document storage, and information management in digital environments. Romania's position below the EU average indicates a gap in the adoption of cloud services, but also suggests greater scope for further development than in technologies with much lower adoption rates, such as artificial intelligence.

Big data analysis as a dimension of analytical skills

The application of big data analytics by businesses is the subject of the third analysis component. This statistic is important because it links data digitalization to enterprises' capacity to use massive amounts of data for monitoring, analysis, and decision-making. The available Eurostat data for this statistic, in contrast to the preceding indicators, pertains to 2020. Because of this, the outcomes are shown in the table below and serve as a standard for comparison. The cloud computing and artificial intelligence metrics, which are based on 2025, are not directly compared to them throughout time.

Table 2

Big data analytics utilization in European Union enterprises, 2020 (% of enterprises)

EU Member State	Big Data (%)	Analytical Category
Malta	28,71	Countries with high values
Netherlands	25,91	Countries with high values
Denmark	23,71	Countries with high values
Ireland	22,44	Countries with high values
Belgium	21,95	Countries with high values
EU average	12,74	European benchmark
Bulgaria	5,68	Countries with low values relative to the EU average
Slovenia	5,15	Countries with low values relative to the EU average
Slovakia	4,56	Countries with low values relative to the EU average
Cyprus	2,73	Countries with low values relative to the EU average
Romania	4,28	Country analyzed

Source: Analysis based on Eurostat data (2024)

According to Table 2, the average percentage of businesses in the European Union using big data analytics in 2020 was 12.74%. The highest values were recorded in Malta (28.71%), the Netherlands (25.91%), Denmark (23.71%), Ireland (22.44%), and Belgium (21.95%). Romania recorded a rate of 4.28%, which was 8.46 percentage points below the EU average. Low

adoption rates were also recorded in Cyprus (2.73%), Slovakia (4.56%), Slovenia (5.15%), and Bulgaria (5.68%). These results indicate a limited use of big data analytics among Romanian enterprises and suggest that the integration of data into advanced analytical and decision-making processes remains at an early stage. For accounting professionals, big data analytics is particularly relevant because it supports a shift from information processing toward data interpretation, trend identification, risk assessment, and managerial decision-making. Romania's low adoption rate therefore highlights the need to gradually develop analytical competencies alongside operational digital skills.

Automation and blockchain in relation to available data

To complement the analysis of indicators for which comparable statistical data are available, automation and blockchain are included as additional dimensions of digital transformation. This approach is consistent with academic literature while avoiding conclusions that extend beyond the available statistical evidence. The application of artificial intelligence and the development of digital systems that can process, verify, and correlate vast amounts of data can be linked to the automation of accounting procedures (Stoica (Răpan) et al., 2022). According to the research, using blockchain technology in conjunction with artificial intelligence may have an impact on accounting and auditing by enhancing verifiability, transparency, and the use of data in expert decision-making. According to Han et al. (2023), blockchain properties including record integrity, data exchange, verification, and consensus can assist in increasing trust in accounting procedures. Blockchain is not included in the main statistical analysis because, unlike artificial intelligence, cloud computing, and big data analytics, no comparable Eurostat indicator was identified to measure its use by enterprises across EU Member States. As a result, blockchain is not regarded as a distinct statistical indication but rather as a conceptual aspect of the digital transition in accounting. The application of blockchain technology in accounting and auditing presents both opportunities and difficulties, according to recent research. These challenges include regulation, the accounting treatment of digital assets, the auditing of transactions conducted in decentralized environments, and the adaptation of professional skills. Georgiou et al. (2024) examine these issues through a systematic literature review and emphasize the need for further research on the application of blockchain in accounting and auditing. From the perspective of professional competencies, automation and blockchain highlight the need for skills that extend beyond the use of basic IT tools. Accounting professionals need to understand digital workflows, verify data integrity, interpret automatically generated results, and exercise professional judgment in an environment where technology supports, but does not replace, human responsibility.

E-invoicing as an applied form of accounting digitalization

The transition from emerging technologies to e-invoicing helps bridge the gap between technological potential and the actual transformation of financial and accounting workflows. E-invoicing is a useful application that directly alters document flows and the processing and verification of accounting information, whereas blockchain, artificial intelligence, and big data analytics represent varying degrees of digital maturity.

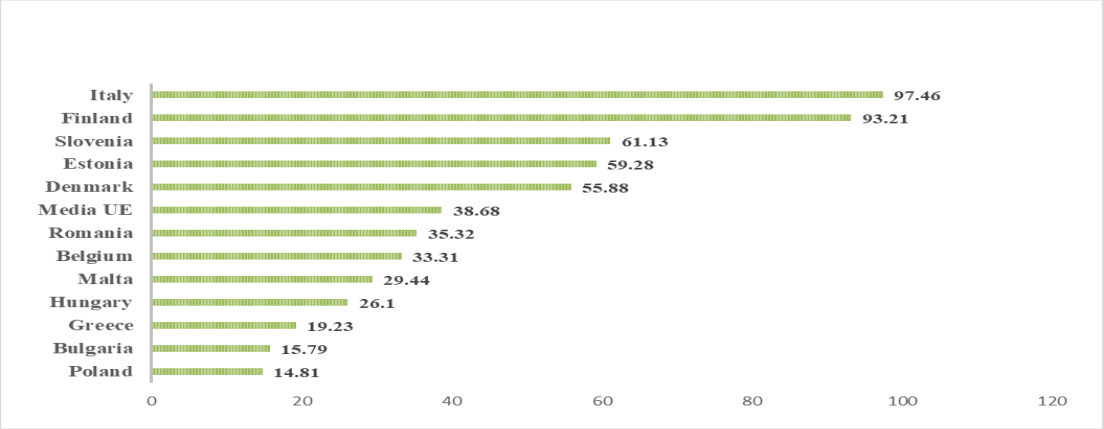


Figure 3. Enterprises sending e-invoices suitable for automated processing in the European Union, 2023 (% of enterprises)
Source: Analysis based on DESI data (2025)

Compared to the previously examined indications, statistical data on enterprises that issue e-invoices that can be processed automatically show a distinct pattern. Romania recorded 35.32% in 2023, which was 3.36 percentage points lower than the EU average of 38.68%. Romania was still below the EU average, although the difference was far lower than it was for big data analytics, cloud computing, and artificial intelligence. The highest values were recorded in Italy (97.46%) and Finland (93.21%), followed by Slovenia (61.13%), Estonia (59.28%), and Denmark (55.88%). At the other end of the spectrum, among the selected countries, Poland (14.81%), Bulgaria (15.79%), and Greece (19.23%) recorded considerably lower values. Romania's proximity to the EU average indicates that, in comparison to the other aspects of digitalization examined in this study, the disparity in e-invoicing adoption is less noticeable. This is especially important from the standpoint of the accounting industry since e-invoicing entails more than just sending papers electronically. It also requires the use of structured data that can be integrated into accounting, IT, and tax-related workflows. The competencies associated with e-invoicing include verifying data accuracy, understanding automated processing requirements, using digital platforms, communicating with clients, and managing errors or discrepancies that may arise in electronic workflows. Compared with the emerging technologies analyzed previously, e-invoicing has a more direct connection with the day-to-day activities of accounting professionals. In this sense, it can be viewed as a bridge between the operational digitalization of accounting processes and the gradual adoption of more advanced technologies.

Romania and RO e-Factura. Applied digitalization and professional skills

The findings show a disconnect between the use of operational digital tools and the adoption of emerging technologies in Romania. Romania's position below the EU average for cloud computing and the low adoption rates for big data analytics and artificial intelligence indicate that Romanian businesses are still using comparatively few cutting-edge technologies. In contrast, Romania is closer to the EU average in terms of e-invoicing, supporting its interpretation as a more established form of accounting digitalization. At the national level, the RO e-Factura system was implemented in several stages. From January 1 to June 30, 2024, economic operators established in Romania were required to submit invoices issued in B2B (business-to-business) transactions through the RO e-Factura system, as well as invoices

issued in transactions with public institutions that were not already subject to the mandatory use of the system, in accordance with Law No. 296/2023. The scope of the system was subsequently extended to invoices issued in transactions between economic operators and final consumers. For these transactions, submission through the RO e-Factura system became mandatory from January 1, 2025, under Government Emergency Ordinance No. 69/2024. These legislative provisions are methodologically different from the Eurostat and Digital Decade/DESI indicators used for the European comparison, but they provide relevant context for understanding the operational development of e-invoicing in Romania.

RO e-Factura represents a practical form of accounting digitalization with direct implications for day-to-day activities. Invoices are submitted in a structured electronic format, while accounting professionals need to monitor their submission, validation, and receipt and verify the accuracy of the information contained in electronic documents. The system can therefore be viewed not only as a tax requirement but also as a mechanism that changes professional practice and the interaction between accountants, clients, and tax authorities. In this context, accounting professionals are increasingly involved in verifying structured data, using digital platforms, interpreting system-generated messages, and managing errors or discrepancies in electronic data flows. E-invoicing therefore contributes to the growing importance of operational digital competencies, together with skills related to control, professional communication, and adaptation to the requirements of digital tax administration. The indicators analyzed reveal an uneven pattern of digitalization. Romania is significantly below the EU average in artificial intelligence and big data analytics and also remains below the average in the use of cloud computing services. In contrast, the gap is considerably smaller for e-invoicing. These findings imply that operational tools like e-invoicing are currently more indicative of Romania's digitization of accounting operations than the broad use of cutting-edge new technology. In this regard, e-invoicing can be seen as a transitional phase between the digitalization of accounting and tax processes and the progressive incorporation of advanced data analytics, blockchain, and artificial intelligence technology.

The findings suggest that digital abilities should be developed gradually from the standpoint of professional competencies. Currently, operational digital competencies—such as the ability to verify structured data, comprehend electronic workflows, use digital platforms, and effectively communicate with clients—should receive special focus. At the same time, more sophisticated skills in data analysis, interpreting automatically generated findings, evaluating technology-related hazards, and using professional judgment in a digital accounting environment will be required of accounting professionals. These developments may also influence career opportunities in the Romanian accounting profession. Accountants who develop digital skills may have more opportunities to work in financial analysis, internal control, and business advisory services. At the same time, professionals who mainly perform repetitive accounting tasks may need additional training. The use of RO e-Factura also requires accountants to understand electronic documents, verify information, and solve technical errors. These activities show how digitalization can change daily responsibilities. However, the available statistical data do not show how many accounting professionals have changed their jobs or career paths.

Discussion

With consequences for process effectiveness, information transparency, and the accuracy of data used in financial reporting, the digitalization of the accounting industry is a significant force behind change in financial and accounting operations. But according to Leonida et al. (2026), the results indicate that this change is not happening in all of the EU's member states or advancing at the same rate in all of the technologies examined. In Romania, the indicators for artificial intelligence, cloud computing, and big data analytics remain below the EU average. These results suggest that the adoption of advanced emerging technologies among Romanian enterprises is still relatively limited and, as a result, their influence on accounting practice remains uneven. In contrast, Romania is positioned closer to the EU average in terms of e-invoicing. This supports the view that accounting digitalization in Romania is currently more visible through operational and mandatory tools such as RO e-Factura. E-invoicing can therefore be understood as a bridge between the current digitalization of tax and accounting workflows and the gradual integration of more advanced technologies, including artificial intelligence, blockchain, and advanced data analytics. By boosting the use of structured data, mandating the monitoring of invoice transmission and validation, facilitating error identification, and stepping up client communication, RO e-Factura is also transforming the daily job of accounting professionals.

The results indicate the necessity of progressive development from the standpoint of professional competencies. At present, operational digital skills, the use of electronic platforms, the verification of structured data, and an understanding of digital tax flows are essential. In the medium term, analytical skills, the ability to interpret automatically generated results, the assessment of technology-related risks, and the responsible use of intelligent systems are likely to become increasingly important. Automation and blockchain are still important aspects of the digital revolution of accounting, but they are only discussed conceptually because comparable statistical indicators are not accessible in Europe, especially when it comes to business use of blockchain. This restriction helps maintain the analysis's methodological rigor and prevents findings that aren't backed up by similar official data. Overall, the digitalization of the accounting profession should be understood as a gradual process in which already implemented tools create the conditions for the adoption of more complex technologies. In Romania, the main challenge lies not only in introducing new technologies, but also in strengthening accounting professionals' ability to work in digital environments, protect data, interpret information, and exercise professional judgment in a changing technological context. Digitalization may gradually change the role of accountants in Romania. Their tasks may shift from routine activities to data analysis, financial control, and advisory services. This change requires new digital and analytical skills. However, further research is needed to understand how these developments affect accounting careers in Romania. The study also has several limitations. It relies on secondary data available at the European level, the indicators refer to different years, and comparable statistical data are not available for all the technologies examined. Future studies could include surveys or interviews with accounting professionals to find out how they evaluate the impact of automation, e-invoicing, and future technologies on their work, as well as add more recent data as they become available.

Conclusions

A key advancement in the financial industry is the digitalization of accounting, which improves accounting information's dependability, efficiency, and transparency. Organizations must invest in the development of professional capabilities and put in place safe and effective digital systems for this shift to be successful. By fostering a climate that is more accountable, transparent, and responsive to stakeholders' information needs, digital transformation is also transforming financial reporting. Organizations can improve their capacity to respond to the increasing complexity of the business environment and promote sustainable development by implementing emerging technology. Technology advancements will have a significant impact on accounting in the future, and businesses who successfully adjust to these developments may be able to acquire a competitive edge. The processing, analysis, and application of financial data are being altered by technologies like artificial intelligence (AI), cloud computing, and data analytics. Therefore, digital transformation can assist accounting professionals respond to increasingly complex information and regulatory obligations while supporting more fast and accurate financial reporting. Data protection is especially crucial when financial information becomes more digitized. To safeguard sensitive financial data, organizations must implement the proper security procedures. The risk of data breaches and unauthorized access can be significantly decreased with the use of encryption, access controls, and secure cloud architecture.

To understand financial patterns, spot possibilities, and evaluate possible risks, modern accounting professionals also require data analytics expertise. This calls for a solid grasp of data analysis and technology. Additionally, accountants are increasingly employed in cross-functional teams, contributing their financial knowledge to more general company choices. This partnership facilitates the incorporation of financial data into corporate decision-making. To adapt to technological change, accounting professionals need to engage in continuous professional development and keep their knowledge and skills up to date, particularly in areas such as artificial intelligence, data analytics, and machine learning. Overall, digitalization is reshaping accounting through greater automation, improved access to financial information, and new approaches to data processing and analysis. At the organizational level, these developments can contribute to more efficient financial reporting and greater confidence in the information provided to stakeholders. In Romania, digital transformation may also create new opportunities for accounting professionals. The growing use of electronic invoicing and other digital systems increases the importance of digital and analytical skills. Accountants may need to move from traditional administrative activities towards more analytical and advisory roles. However, this study is based on secondary statistical data and does not directly examine individual career changes. Future research should include surveys and interviews with Romanian accounting professionals. Such research could identify changes in daily tasks, training needs, job responsibilities, and career opportunities. It could also provide a clearer understanding of how digital technologies influence the future of the accounting profession in Romania.

References

Abhishek, M., Umesh, S., & Junliang, L. (2025). Big data analytics role in shaping the work of accounting function and accounting professionals. Journal of Accounting & Organizational Change, 21(7), 272–306. https://doi.org/10.1108/JAOC-08-2024-0255

Adam, I., & Fazekas, M. (2021). Are emerging technologies helping win the fight against corruption? A review of the state of evidence. Information Economics and Policy, 57, 100950. https://doi.org/10.1016/j.infoecopol.2021.100950

Agu, E. E., Obiki-Osafiele, A. N., & Chiekezie, N. R. (2024). Enhancing decision-making processes in financial institutions through business analytics tools and techniques. World Journal of Engineering and Technology Research, 3(1), 19–28.

Aminu, M., Akinsanya, A., Oyedokun, O., & Tosin, O. (2024). A review of advanced cyber threat detection techniques in critical infrastructure: Evolution, current state, and future directions. IRE Journals, 8(1), 74–87.

Bellon, M., Dabla-Norris, E., Khalid, S., & Lima, F. (2022). Digitalization to improve tax compliance: Evidence from VAT e-invoicing in Peru. Journal of Public Economics, 210, 104661. https://doi.org/10.1016/j.jpubeco.2022.104661

Bernauer, V. S., & Kornau, A. (2024). E-voice in the digitalised workplace: Insights from an alternative organisation. Human Resource Management Journal, 34(2), 369–385. https://doi.org/10.1111/1748-8583.12460

Bignami, F. (2022). Artificial intelligence accountability of public administration. The American Journal of Comparative Law, 70(Supplement_1), i312–i346. https://doi.org/10.1093/ajcl/avac012

Bose, S., Dey, S. K., & Bhattacharjee, S. (2022). Big data, data analytics and artificial intelligence in accounting: An overview. In S. Akter & S. F. Wamba (Eds.), Handbook of big data research methods (pp. 32–51). Edward Elgar Publishing.

Chukwuani, V. N., & Egiyi, M. A. (2020). Automation of accounting processes: Impact of artificial intelligence. International Journal of Research and Innovation in Social Science, 4(8), 444–449.

DESI. (2025). e-Invoices, all enterprises (10 persons employed or more), 2024. European Commission, Digital Decade DESI. https://digital-decade-desi.digital-strategy.ec.europa.eu/datasets/desi/charts/desi-indicators?indicator=desi_einv&indicatorGroup=desi2023-3&breakdown=ent_all_xfin&period=desi_2024&unit=pc_ent&country=AT,BE,BG,HR,CY,CZ,DK,EE,EU,FI,FR,DE,EL,HU,IE,IT,LV,LT,LU,MT,NL,PL,PT,RO,SK,SI,ES,SE

Dobrescu, A.-I., Radu, A.-C., Zaman, G., Stoica, I., & Răpan, F. (2020). Cloud computing usage in SMEs: An empirical study based on SMEs employees' perceptions. Sustainability, 12(12), 4960. https://doi.org/10.3390/su12124960

European Parliament. (2014). Directive 2014/55/EU of the European Parliament and of the Council of 16 April 2014 on electronic invoicing in public procurement. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32014L0055

Eurostat. (2024). Big data analysis by size class of enterprise. https://ec.europa.eu/eurostat/en/web/main/search/-/search/dataset?text=isoc_eb_bd

Eurostat. (2026a). Artificial intelligence by size class of enterprise. http://ec.europa.eu/eurostat/databrowser/view/isoc_eb_ai__custom_21382817/default/table

Eurostat. (2026b). Cloud computing services by size class of enterprise. https://ec.europa.eu/eurostat/databrowser/view/isoc_cicce_use__custom_21383309/default/table

Eyo-Udo, N., Apeh, C., Bristol-Alagbariya, B., Udeh, C., & Ewim, P.-M. (2025). The evolution of blockchain technology in accounting: A review of its implications for transparency and accountability. Account and Financial Management Journal, 10(1). https://doi.org/10.47191/afmj/v10i1.04

Georgiou, I., Sapuric, S., Lois, P., & Thrassou, A. (2024). Blockchain for accounting and auditing—Accounting and auditing for cryptocurrencies: A systematic literature review and future research directions. Journal of Risk and Financial Management, 17(7), 276. https://doi.org/10.3390/jrfm17070276

Government Emergency Ordinance No. 69 of June 21, 2024, amending and supplementing certain legislative acts in the field of managing and implementing the national system for RO e-Factura and electronic fiscal cash registers, as well as other tax measures. (2024). Official Gazette of Romania, Part I, No. 582, June 21, 2024. https://legislatie.just.ro/public/DetaliiDocument/284213

Hagsten, E., & Falk, M. T. (2020). Use and intensity of electronic invoices in firms: The example of Sweden. Journal of Cleaner Production, 262, 121291. https://doi.org/10.1016/j.jclepro.2020.121291

Han, H., Shiwakoti, R. K., Jarvis, R., Mordi, C., & Botchie, D. (2023). Accounting and auditing with blockchain technology and artificial intelligence: A literature review. International Journal of Accounting Information Systems, 48, 100598. https://doi.org/10.1016/j.accinf.2022.100598

Iyelolu, T. V., Agu, E. E., Idemudia, C., & Ijomah, T. I. (2024). Leveraging artificial intelligence for personalized marketing campaigns to improve conversion rates. International Journal of Engineering Research and Development, 20(8), 253–270.

Leonida, I., Soare, N., Răpan, I., Hrab, D.-E., & Radu, A.-C. (2026). Impact of digitalization on the shadow economy and the budget deficit: An exploratory analysis of EU member countries. Economic Computation and Economic Cybernetics Studies and Research, 60(2), 309–323.

Law No. 296 of October 26, 2023, on certain fiscal and budgetary measures to ensure Romania's long-term financial sustainability. (2023). Official Gazette of Romania, Part I, No. 977, October 27, 2023. https://legislatie.just.ro/Public/DetaliiDocument/275745

Malladhi, A. (2023). Artificial intelligence and machine learning in forensic accounting. International Journal of Computer Science and Engineering, 10(7), 6–20. https://doi.org/10.14445/23488387/IJCSE-V10I7P102

Marak, Z. R., & Pillai, D. (2021). Supply chain finance factors: An interpretive structural modeling approach. Central European Management Journal, 29(1), 88–111. https://doi.org/10.7206/cemj.2658-0845.42

Moretto, A., & Caniato, F. (2021). Can supply chain finance help mitigate the financial disruption brought by COVID-19? Journal of Purchasing and Supply Management, 27(4), 100713. https://doi.org/10.1016/j.pursup.2021.100713

Obodai, T., Singh, D., & Oman-Amoako, M. (2025). The role of financial analytics in enhancing public sector accountability in the U.S. EPRA International Journal of Economic and Business Review, 52–60. https://doi.org/10.36713/epra24426

Odonkor, B., Kaggwa, S., Uwaoma, P., Hassan, A., & Farayola, O. (2024). The impact of AI on accounting practices: A review: Exploring how artificial intelligence is transforming

traditional accounting methods and financial reporting. World Journal of Advanced Research and Reviews, 21(1), 172–188. https://doi.org/10.30574/wjarr.2024.21.1.2721

Olaleye, S. A., Sanusi, I. T., Dada, O. A., & Agbo, F. J. (2023). A bibliometric review of global visibility, impact and adoption of electronic invoicing: The past and the future. Heliyon, 9(3), e13726. https://doi.org/10.1016/j.heliyon.2023.e13726

Oyeniran, O. C., Modupe, O. T., Otitola, A. A., Abiona, O. O., Adewusi, A. O., & Oladapo, O. J. (2024). A comprehensive review of leveraging cloud-native technologies for scalability and resilience in software development. International Journal of Science and Research Archive, 11(2), 330–337. https://doi.org/10.30574/ijsra.2024.11.2.0432

Qi, Y., & Che Azmi, A. (2021). Factors affecting electronic invoice adoption and tax compliance process efficiency. Transforming Government: People, Process and Policy, 15(1), 150–168. https://doi.org/10.1108/TG-04-2020-0070

Painoli, G. K. (2026). Digital transformation in accounting: AI, automation, and machine learning. In Recent Trends in Accounting (pp. 78–89). Kripadrishti Publication.

Sampaio, C. A., & Silva, R. (2025). Digital transformation in accounting: An assessment of automation and AI integration. International Journal of Financial Studies, 13(4), 206. https://doi.org/10.3390/ijfs13040206

Shivarajappa, M. (2024). The impact of cloud computing on financial accounting—Evaluating the impact of cloud computing on accounting firms. ShodhKosh: Journal of Visual and Performing Arts, 5(3). https://doi.org/10.29121/shodhkosh.v5.i3.2024.3566

Stoica (Răpan), I., Zaman, G., Suciu, M. C., Purcărea, V. L., Jude, C.-R., Radu, A. V., Catana, A., & Radu, A.-C. (2022). A better integration of industrial robots on Romanian enterprises and labour market. Applied Sciences, 12(12), 6014. https://doi.org/10.3390/app12126014

Tiwari, A., Marak, Z. R., Paul, J., & Deshpande, A. (2023). Determinants of electronic invoicing technology adoption: Toward managing business information system transformation. Journal of Innovation & Knowledge, 8(3), 100366. https://doi.org/10.1016/j.jik.2023.100366

Veselá, L., & Radiměřský, M. (2014). The development of electronic document exchange. Procedia Economics and Finance, 12, 743–751. https://doi.org/10.1016/S2212-5671(14)00401-8

Zaman, G., Radu, A.-C., Stoica, I., & Berghea, F. (2021). New wave of disruptive technologies in the healthcare system. Journal of Economic Computation and Economic Cybernetics Studies and Research, 55(1), 117–133.

Zhao, H., Liu, J., & Zhang, G. (2024). Blockchain-driven operation strategy of financial supply chain under uncertain environment. International Journal of Production Research, 62(8), 2982–3002. https://doi.org/10.1080/00207543.2023.2190816