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The Evolution of Accounting Practices in the Context of Sustainability and Social Impact, Considering Trends in Financial Analysis

A Evolução das Práticas de Contabilidade no Contexto da Sustentabilidade e do Impacto Social, Considerando as Tendências na Análise Financeira

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ABSTRACT

With the entry into force of the EU Directive on corporate sustainability reporting, public companies must disclose non-financial information, integrating ESG (environmental, social, governance) indicators into accounting and reporting. This requires adapting systems to ESG principles, classifying related costs, and ensuring transparency. The study analyzes EU directives, ESRS, and the NFRD (2014–2024), using comparative and structural methods. Results show the emergence of sustainable accounting, combining financial and non-financial reporting. ESG costs are grouped into environmental, social, and governance categories, enabling measurement of contributions to sustainability goals. Findings highlight the link between CSR and accounting trends, as well as the practical impact of EU regulations on sustainable reporting.

Keywords: Sustainable accounting and development; ESG reporting and costs; Corporate social responsibility; Innovation; Artificial intelligence.

JEL classification: M41; Q56; M14.

RESUMO

Com a entrada em vigor da Diretiva da UE sobre relatórios de sustentabilidade empresarial, as empresas públicas devem divulgar informações não financeiras, integrando indicadores ESG (ambientais, sociais e de governação) na contabilidade e nos relatórios. Isto exige a adaptação dos sistemas aos princípios ESG, a classificação dos custos associados e a garantia de transparência. O estudo analisa as diretivas da UE, os ESRS e a NFRD (2014-2024), utilizando métodos comparativos e estruturais. Os resultados evidenciam o surgimento da contabilidade sustentável, que combina relatórios financeiros e não financeiros. Os custos ESG são agrupados em categorias ambientais, sociais e de governação, permitindo medir os contributos para os objetivos de sustentabilidade. As conclusões destacam a ligação entre a responsabilidade social das empresas (RSE) e as tendências contabilísticas, bem como o impacto prático das regulamentações da UE nos relatórios sustentáveis.

1. INTRODUCTION

In today's world of globalization and rapid development of the digital economy, accounting is undergoing significant changes. Traditional financial reporting models are increasingly being supplemented by non-financial indicators that reflect sustainable development, corporate social responsibility, and environmental and social principles of business conduct. Under the influence of international initiatives such as the UN Sustainable Development Goals (SDGs) and the EU Non-Financial Reporting Directive, companies are forced to adapt their accounting systems to new stakeholder demands.

The relevance of the study is determined by the need to rethink the role of accounting information in the context of sustainable development, as well as the growing demand for integrated, transparent, and technologically adapted financial reporting. In addition, the rapid digitization of accounting processes and the introduction of artificial intelligence for processing accounting data and analytical platforms are shaping new approaches to the organization of accounting activities.

Despite significant scientific interest in CSR, non-financial reporting, and digital innovation, questions remain about how to reconcile these trends with factors such as regulatory and legal frameworks, institutional regulation, sustainable development and CSR policies, innovation, and their impact on accounting.

The purpose of this study is to systematize current trends in accounting related to the obligation of public companies to disclose non-financial information in accordance with new EU regulatory requirements during 2014–2024.

2. LITERATURE REVIEW

In academic discourse, several main areas of research have emerged on contemporary trends in accounting related to the growing role of sustainable development, CSR, and innovation in financial reporting. Among the priority areas for 2010-2020, researchers highlight: sustainability reporting, corporate social responsibility, and disclosure (Vysochan et al., 2021). In contrast, Diwan and Sreeraman (2024), based on a bibliometric analysis, identify the following scientific thematic discourses: non-financial reporting standards; the impact of ESG on financial performance; the role of digital technologies in financial reporting and accounting; institutional interaction in the formation of global reporting standards. Botchway and Bradley (2023) point to a significant increase in scientific interest in the social component of the concept of sustainable development: impact on communities, inclusiveness, ethical management, etc. The works of Scarpellini (2022), Sisaye (2021), and Abeysekera (2022) deserve special attention, as they contain proposals for methods of assessing the social and environmental impact of business on social justice, sustainable development, and human rights.

The main thematic areas of work identified in the critical review of the literature relate to: concepts, evolution, and the regulatory framework for ESG reporting or non-financial reporting (Erin et al., 2022; Efunniyi et al., 2024); the strategic role of CSR in reporting (Nwachukwu, 2022; Chopra et al., 2024); digitalization, artificial intelligence, and analytics

as innovations in accounting (Bielialov et al., 2023); implementation of sustainable development goals in reporting and related processes to measure companies' impact on their achievement (Sumets et al., 2022); and the role of EU directives, the UN, and professional organizations in institutional support for sustainable accounting (Gavkalova et al., 2022).

2.1. SUSTAINABLE DEVELOPMENT AND NON-FINANCIAL REPORTING

Research by Diwan and Sreeraman (2024) and Pasko et al. (2021) demonstrates the growing importance of non-financial and ESG (ecological, social, governance) reporting as a means of demonstrating business commitments to sustainable development. This can be attributed to the fact that in developed countries, CSR is established as a business obligation to adhere to social standards of entrepreneurship. The study by Turzo et al. (2022) asserts that there has been a significant increase in interest in integrated financial reporting and transparency in measuring non-financial performance indicators of companies. An integrated approach to financial reporting involves harmonizing it with management reporting and summarizing the results of the financial, social, and environmental performance of enterprises. The publications by Abeysekera (2022), Levytska et al. (2022) and Vysochan et al. (2021) systematize approaches to sustainable accounting and highlight the main concepts of sustainable financial reporting. The authors point to the need to introduce ESG indicators into financial reporting to enable their analysis.

2.2. CORPORATE SOCIAL RESPONSIBILITY AND FINANCIAL REPORTING

The studies by Cuomo et al. (2024) and Mohammadi and Saeidi (2022) examine the impact of the adoption of EU Directive 2014/95/EU on non-financial reporting and CSR practices and financial reporting. The establishment of mandatory regulatory requirements for companies to disclose information about their activities in the areas of the environment, social initiatives, human rights, and anti-corruption has had a significant impact on management and, accordingly, reporting. The implementation of the Directive is driven by the need to increase the transparency and accountability of companies and to meet the needs of investors and stakeholders for information on non-financial aspects of companies' operations and results in terms of sustainable practices. This work highlights the importance of accounting for transactions related to the social and environmental activities of firms as an element of the control system.

Research by Manes-Rossi and Nicolo' (2022) shows a shift from formal to substantive disclosure of information and reporting by companies on their achievement of sustainable development goals (SDGs). As a result of analyzing companies' perceptions of SDGs, Botchway and Bradley (2023) found a low level of disclosure of relevant information in companies' reports. Although accounting for relevant data on sustainable practices is beneficial for a number of reasons, the complexity and incomparability of accounting for such transactions limits companies in their rapid transition to sustainable accounting. Other studies, including Akpan and Oluwagbade (2023) and Le et al. (2024), focus on highlighting companies'

reporting practices on sustainable development, corporate social responsibility, the integration of non-financial indicators into reporting, and the management decision-making process. Ethical aspects of business conduct have become an integral part of accounting, as they enhance the reputation and trust of stakeholders in enterprises. The integration of non-financial indicators into the accounting system ensures the adoption of holistic and sustainable business decisions.

2.3. INNOVATIONS IN ACCOUNTING AND FINANCIAL REPORTING

Academic literature also covers the topic of introducing innovations, including artificial intelligence and cloud technologies, into accounting practice. For example, Odonkor et al. (2024) demonstrate the impact of artificial intelligence on accounting and the preparation of high-quality financial statements (relevance, reliability, understandability, comparability, credibility, and timeliness of presentation). Another study by De Silva et al. (2025) highlights the importance of digital knowledge in the processes of integration and sustainable accounting, the growing attention to digital technologies as a factor in ensuring sustainable accounting, and the importance of artificial intelligence, blockchain technology, and big data. These works demonstrate that the transition to new integrated sustainable accounting practices requires the use of innovation, technology, and digital knowledge.

3. METHODOLOGY

The research methodology is based on an analysis of EU legislation on corporate social reporting on sustainable development, which came into force in 2024, and relevant standards. A detailed comparative analysis of the provisions of the EU Directive on corporate reporting on sustainable development and the relevant European Sustainability Reporting Standards (ESRS) was conducted, taking into account the previous requirements of EU Directive 2014/95/EU on non-financial reporting (Non-Financial Reporting Directive, NFRD) to identify changes and innovations in the financial and non-financial reporting of large EU companies and, accordingly, to identify new trends in sustainable accounting.

The article uses structural and logical analysis and grouping methods to systematize, generalize, and classify ESG costs of enterprises within the framework of sustainable accounting. The grouping of costs made it possible to form classes of costs according to their environmental, social, and managerial nature and their economic essence. When forming expense classes, the peculiarities of the national (Ukrainian) chart of accounts (in particular, accounts of classes 1, 2, 4, 6, and 9) were taken into account, which ensures the practical application of this classification for the needs of the enterprise.

4. RESULTS AND DISCUSSION

4.1. THE TRANSFORMATION OF ACCOUNTING UNDER THE INFLUENCE OF THE CONCEPT OF SUSTAINABLE DEVELOPMENT

The inclusion of environmental, social, and ethical aspects in corporate reporting has become a new requirement for large companies, especially in developed countries. In today's business environment, the concept of sustainable development has become crucial for strategic management and has accordingly influenced the development of sustainable accounting and reporting concepts for companies. Accounting is no longer limited to financial indicators. Non-financial metrics, including environmental, social, and management parameters, have been integrated into the accounting system of companies in connection with the obligation to report on the social and environmental performance of large public companies. Table 1 shows the classification of expenses according to their economic nature, analytical accounting accounts, and types of expenses.

Environmental expenses are related to the accounting of companies' expenses for reducing the negative impact of their operations on the environment, including: expenses for disposal, recycling of waste using innovative methods, wastewater treatment, and environmental certification. The structure of environmental costs also includes investments in green technologies, including the purchase of energy-efficient equipment and solar power stations.

The structure of social costs includes transactions related to the company's social initiatives, compliance with social standards of business conduct, staff development and training, and occupational safety. Expenditures on anti-corruption measures and related management actions are related to the needs of public companies to ensure transparency, ethical behavior of personnel, and the development of corporate ethics.

As a result of stricter requirements for mandatory disclosure of information on social, environmental, and management activities, there is a need to move towards comprehensive, integrated sustainable accounting and integrated financial and non-financial reporting. At the national and international levels, this provides an understanding of the contribution of large businesses to the achievement of the SDGs.

Accounting for new types of expenses for social, environmental, and management activities (initiatives, projects, programs, strategies) allows for the formation of integrated financial and non-financial reporting that fully discloses information about companies' achievements within the concepts of sustainable development and CSR. However, adapting the accounting system to the needs of enterprises in measuring the effectiveness of sustainable development and CSR implementation remains a problem. Adaptation requires the use of new accounting tools, technologies for integrated reporting, and the introduction of analytical sub-accounts for transaction accounting. The investment, time, and human costs of these innovations in practice serve as a barrier to the rapid transition to sustainable accounting. At the same time, accounting for ESG costs facilitates the measurement of the effectiveness of social, environmental, and management measures, projects, and programs, including quantitative assessments of companies' contributions and roles in achieving sustainable development.

Given the growth in national spending on environmental protection by residents in EU countries during 2018–2023, accounting for these costs is extremely important for firms.

These expenditures also include investments in environmental protection activities, which are estimated at €354.68 billion in 2023 in all EU member states, or 2.1% of EU GDP. For comparison, in 2020, the amount of expenditure was €294.9 billion (Eurostat, n.d. b). The largest amounts of expenditure were recorded in Germany (€80.3 billion), France (€50.0 billion), and Italy (€47.0 billion). Estimates of the corporate sector's contribution to environmental protection expenditure amounted to 52% of total expenditure by various institutional sectors (Eurostat, n.d. a).

Sustainable accounting costs affect the financial results of large companies. Current profits decrease due to the classification of ESG expenses as current period expenses, which leads to a decrease in accounting profits, especially during the implementation phase of the CSRD (Corporate Sustainability Reporting Directive), adopted in 2022 by the EU Directive on corporate reporting on sustainable development. The document will gradually come into force from 2024 and was adopted with the aim of standardizing, expanding, and making mandatory reporting on environmental, social, and governance aspects of business. Large EU companies and foreign companies operating in the European market with a turnover of more than €150 million must report on sustainable development in accordance with the ESRS and conduct audits of their reporting with digital submission.

Table 1 – Classification of ESG expenses in sustainable accounting

Classification of expenses	The essence of expenses	Analytical accounting	Types of expenses
Environmental costs (E)	Related to accounting for expenses incurred to reduce the negative impact of enterprises' activities on the environment	91, 92, 949, 47, 23	Waste disposal, wastewater treatment, purchase of carbon credits, environmental certification
Social expenditure (S)	Expenses for ensuring compliance with social standards of business conduct, occupational safety, personnel development, and community relations	92, 94, 949	ESG employee training, equality support, health programs, social initiatives, and projects
Management and anti-corruption expenses (G)	Ensuring transparency, corporate ethics, internal compliance, and control	92, 92.ESG, 94, 949	Conducting audits, creating a code of ethics and internal ethical conduct rules for staff, ESG department expenses
Investments in fixed assets	Capital investments in green technologies	10, 15, 11	Purchase of energy-efficient equipment, installation of solar panels, reconstruction of production facilities
Information and analytical expenses	Costs for collecting, processing, auditing, and publishing ESG data	92, 949, 949. ESG, 66	Outsourcing of non-financial audits, subscription to ESG systems, report development
Reserves and provisions for ESG risks	Creation of provisions for expenses related to future environmental or social obligations	47, 38	Reserves for reclamation, environmental fines, compensation to those affected by negative impacts, damage to production

Source: Authors' own elaboration.

The requirements for disclosure of information on corporate sustainability reporting are set out in the European Sustainability Reporting Standards (ESRS). These are the principles of corporate sustainability reporting in the EU, covering a number of areas: environment, social sphere, corporate governance (ESG) (Figure 1). The main purpose of these standards is to provide users with clear, simple, and logical information on sustainable development. At the same time, the new requirements will provide companies with competitive advantages at the international level: strengthening their reputation among partners, investors, and consumers; attracting investment and other forms of long-term financing; and timely implementation of strategies to reduce negative environmental impact and improve working conditions.

Figure 1 – Directions of European Sustainability Reporting Standards (ESRS)

European Sustainability Reporting Standards (ESRS)

- Thematic areas
- Environment
 - E1 - Climate change
 - E2 - Pollution
 - E3 - Water and marine resources
 - E4 - Biodiversity and ecosystems
 - E5 - Resource use and circular economy
- Social
 - S1 - Own personnel
 - S2 - Employees in the value chain
 - S3 - Affected communities
 - S4 - Consumers and end users
- Corporate governance (ESRS-G group of standards)
- Business conduct
- Comprehensive standards
 - ESRS1 - General requirements
 - ESRS2 - General disclosures
 - Under development: sector-specific standards and standards for SMEs

Unlike the previous EU Directive NFRD (Non-Financial Reporting Directive), the document covers a larger number of companies (about 50,000 companies) in regulated EU markets that are required to conduct audits and implement sustainability reporting standards. Therefore, companies are required to invest in all types of sustainable accounting costs, their accounting, staff training, and other areas of work related to the new requirements.

In addition, sustainable accounting costs also affect financial results by improving reputational capital, which contributes to increased trust from investors, banks, and counterparties. In recent years, CSR practices have become important for companies in terms of reputational risks, and relevant activities allow attracting the most qualified personnel, for whom social aspects are an important criterion for employment.

Improved access to capital through the recording of sustainability accounting costs allows ESG-reporting companies to gain advantages in attracting financing, including green bonds

for investment in green technologies, obtaining preferential loans to cover the costs of green technologies, and creating ESG funds (Skulysh and Fathutdinov, 2022; Riski et al., 2025).

Reduced risk of penalties is another advantage of ESG cost accounting, as compliance with legal requirements minimizes losses due to violations. Increased operational efficiency through energy conservation, recycling, and resource optimization leads to lower production costs in the medium term.

According to empirical research by Manes-Rossi and Nicolo' (2022), companies in the energy sector are transitioning from formal to substantive financial reporting. This indicates the practical implementation of reporting principles in accordance with new requirements for disclosing information on ESG practices.

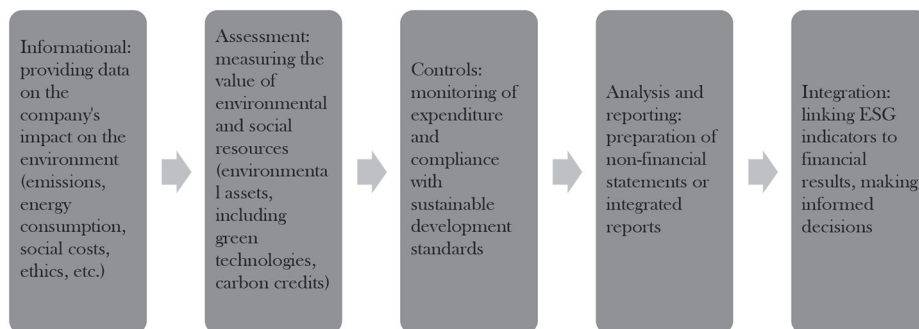
In addition, Cuomo et al. (2024) point to the significant impact of the EU Non-Financial Reporting Directive on the accounting practices of large companies. This directive encourages the disclosure of information on the impact of companies on the environment, human rights, the fight against corruption, etc., necessitating the adaptation of accounting systems and approaches to sustainability requirements.

In the context of increasing regulatory pressure and growing expectations from investors and consumers, sustainable development is increasingly becoming an integral part of companies' accounting policies, which in turn is transforming the functional purpose of accounting from a control tool to a strategic development tool.

4.2. DEVELOPMENT OF CORPORATE SOCIAL RESPONSIBILITY AND ITS REFLECTION IN ACCOUNTING

Corporate social responsibility has gradually become not only an ethical obligation, but also a strategic tool for companies to influence stakeholder trust, society, reputation, and long-term business sustainability. Therefore, large corporations are integrating relevant concepts into their corporate strategies in conjunction with sustainable development strategies. Its active integration into the accounting system responds to society's demand for transparency, accountability, and ethical business conduct. Mohammadi and Saeidi (2022) note the increasingly close link between CSR and key accounting concepts, particularly in the context of disclosure of information on social expenditure, charity, inclusiveness, and the protection of workers' rights. The accounting system must adapt to the recording of non-financial assets related to social initiatives, which requires a review of both methodological approaches and reporting tools. Le et al. (2024) emphasize that the combination of CSR, environmental innovation, and sustainable development strategies ensures the integration of non-financial elements into management decisions. This confirms the trend towards multifunctional accounting, which covers not only economic but also environmental and social parameters of companies' performance (Figure 2).

Figure 2 – Key functions of accounting in sustainable company development



Source: Authors' own elaboration.

The implementation of EU Directive 2014/95/EU as a regulatory framework for mandatory disclosure of information on CSR policies, their implementation results, and related risks has been a decisive factor influencing the emergence of new trends in accounting. Cuomo et al. (2024) proved that the provisions of EU Directive 2014/95/EU have significantly influenced the improvement of corporate standards and transparency of companies in the EU and contributed to an increase in the amount of non-financial information in company reports.

In summary, the development of CSR is transforming the accounting paradigm from a narrow financial perspective to a comprehensive view of a data collection system that takes into account a wide range of stakeholders and is focused on achieving long-term social value. The EU Directive on Corporate Sustainability Reporting (previously mentioned CSRD), published in December 2022, goes beyond simple CSR requirements, asking companies to consider the value of their business to a society that prioritizes sustainable development. This requires business owners to set sustainable development goals related to decarbonization, carbon emission reduction, the development of environmentally friendly products, the development of circular economy projects, etc. (Koval et al., 2023). Accordingly, companies will need a new, innovative accounting system in which accounting is not just a cost control tool, but a mechanism for reflecting the financial, environmental, and social results of their activities.

CSRD is not just about reporting, it stimulates business and influences a large number of business processes, promoting a more rigorous strategic approach to planning and implementing sustainable practices.

4.3. INNOVATIVE APPROACHES TO REPORTING: DIGITIZATION, ARTIFICIAL INTELLIGENCE, AND BIG DATA

Innovations in the financial sector are radically changing accounting processes, in particular approaches to financial reporting and the processing of accounting data. Among the main trends are the active introduction of artificial intelligence, cloud technologies, big data, and automated accounting systems. Thus, innovations have created numerous opportunities for automating accounting processes using artificial intelligence and have enabled financial analysis through the use of big data. According to Odonkor et al. (2024), the use of artificial intelligence in accounting not only automates routine processes (such as account processing or audit testing), but also provides real-time analytics, improves forecasting accuracy, and enhances risk management. These changes are transforming the role of the accountant from a technical performer to an analyst and strategic business partner. A study by Peng et al. (2023) examines the impact of digitalization on the achievement of sustainable development goals through the improvement of ESG accounting mechanisms. Artificial intelligence technologies enable the processing of complex non-financial information and the identification of environmental and social risks based on data analytics from open sources. De Silva et al. (2025) empirically demonstrate the positive impact of digital technology integration on transparency, business accountability, reliability of reported information, and analytical data. On the other hand, researchers point to risks associated with cyber threats, personal data protection, and reduced personal responsibility of staff in an automated environment. Thus, innovation has not only changed accounting technologies, but also the philosophy of reporting, which should ensure the disclosure of meaningful, accurate, and transparent data based on the principles of reliability, relevance, timeliness, and credibility.

4.4. THE STATE AND PROSPECTS OF NON-FINANCIAL REPORTING (ESG REPORTING)

In response to global challenges such as climate change, social inequality, corruption, and loss of trust in business, non-financial reporting has become an important component of modern corporate communication. It provides transparency regarding companies' impact on the environment, society, and governance, which is becoming critically important for investors and society as a whole.

According to the results of a study by Diwan and Sreeraman (2024) and a bibliometric analysis of literature from 2000 to 2020, the authors note a rapid increase in publications on ESG reporting, especially since 2015. This coincides with the adoption of the Sustainable Development Goals within the 2030 Agenda for Sustainable Development. Researchers are focusing most of their attention on integrated reporting, the impact of ESG factors on financial performance, and disclosure standards.

Regulatory policy plays an important role in this process. EU Directive 2014/95/EU introduced mandatory reporting for large companies on CSR and ESG issues. New initiatives, such as CSRD, have not only introduced new requirements for the structure and quality of information, but have also given impetus to the development of new accounting concepts. Cuomo et al. (2024) argue that these changes have forced companies not only to formally

disclose information, but also to integrate non-financial indicators into their reporting and use new data for strategic management purposes. These findings correlate with the results of Pasko et al. (2021) and Vysochan et al. (2021), who, based on a bibliometric analysis, demonstrate a growing scientific interest in non-financial reporting in connection with sustainable development.

Despite significant achievements in the development of sustainable accounting and ESG reporting, there are challenges in this area, such as the lack of global unified standards, insufficient data comparability, and the risks of greenwashing. At the same time, given the active participation of international organizations in the development of standards and the strengthening of ESG reporting requirements, there is a trend towards the gradual formation of an integrated reporting system, which in the coming years will contribute to the creation of global standards for reporting on companies' contributions to the achievement of the SDGs.

Thus, the systematization of accounting trends in connection with the improvement and introduction of new requirements for the disclosure of non-financial reporting demonstrates: a trend towards the need to implement an integrated model of sustainable accounting and integrated reporting that contains financial and non-financial information; a transition from formal disclosure of information on sustainable practices to a more meaningful presentation of social and environmental performance; the need for public companies to classify ESG costs in order to measure their contribution to the achievement of sustainable development goals at the enterprise and national levels.

Based on a review of current trends in accounting, the following promising areas for further research can be identified: development of unified ESG reporting standards; adaptation of accounting and models to the conditions of digital transformation; research on the impact of the new regulatory framework on the sustainable development of companies and their investment attractiveness; integration of machine learning and big data into enterprise audit procedures.

5. CONCLUSIONS

Current trends and changes in accounting demonstrate a clear shift towards integrated sustainable accounting, where financial and non-financial reporting comprehensively reflects the environmental, social, and governance aspects of business operations. The mandatory introduction of ESG reporting reinforces the trend towards more meaningful and standardized disclosure, helping stakeholders better understand the long-term sustainability of companies. This transition requires not only new methodologies for classifying and measuring ESG-related costs, but also the incorporation of sustainability goals into traditional accounting systems.

Such developments drive the transformation of accounting into a more flexible and transparent system. Innovation and artificial intelligence are increasingly seen as essential tools for building adaptive accounting models capable of processing large amounts of financial and non-financial data, detecting risks, and providing real-time analytical insights. In this way, accounting evolves from a purely technical function into a strategic instrument for forming sustainable reports, evaluating corporate responsibility, and supporting

decision-making processes. It becomes central to the assessment, measurement, analysis, and control of environmental and social costs, which play a crucial role for businesses in identifying and demonstrating their contribution to the achievement of the UN Sustainable Development Goals (SDGs).

Looking ahead, the development of unified international reporting standards will become increasingly significant for ensuring comparability and transparency across markets. At the same time, the digital adaptation of accounting systems to the requirements of both financial and non-financial reporting will intensify. This process will involve greater harmonization of ESG reporting practices, the integration of digital platforms, and the use of innovative technologies to simplify disclosure and verification. As a result, sustainable accounting will not only support compliance with regulatory requirements but also enhance the strategic value of corporate reporting in fostering trust, innovation, and long-term competitiveness.

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