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FINANCIAL PERFORMANCE AND ESG SUSTAINABILITY IN THE PHARMACEUTICAL INDUSTRY

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Abstract
The pharmaceutical industry is characterized by high levels of investment in research and development, a strict regulatory framework, and a significant social impact, factors that require a comprehensive approach to organizational performance. In this context, performance can no longer be assessed solely through traditional financial indicators but must be analyzed in an integrated manner that also incorporates non-financial dimensions related to sustainability and corporate governance. The aim of this article is to analyze financial performance and Environmental, Social, and Governanc (ESG) sustainability in the pharmaceutical industry, highlighting how these dimensions are addressed in specialized literature and reflected in corporate reporting practices. The research methodology is based on a qualitative and synthetic documentary analysis of relevant academic literature, regulatory documents, and publicly available sustainability reports. The analysis focuses on clarifying key theoretical concepts related to performance management, identifying models and indicators used in the evaluation of financial and non-financial performance, and examining the role of ESG pillars and reporting practices in the pharmaceutical sector. The findings indicate that the integration of ESG criteria into performance evaluation represents an increasingly important trend in the pharmaceutical industry, driven by regulatory developments and growing stakeholder expectations. Performance is thus conceptualized as a multidimensional construct, in which economic efficiency is closely linked to environmental responsibility, social impact, and effective corporate governance. The article emphasizes the importance of adopting integrated and sector-specific performance management frameworks tailored to the particularities of the pharmaceutical industry.

Keywords: *Performance management; financial performance; ESG sustainability; pharmaceutical industry; non-financial performance*

JEL Classification: *G32; M14; L65*

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INTRODUCTION

The pharmaceutical industry represents one of the most dynamic and highly regulated sectors of the global economy, playing a critical role in supporting public health systems while also contributing to economic growth and technological advancement. The specific characteristics of this industry are shaped by substantial investments in research and development, long innovation cycles, and a complex regulatory framework aimed at ensuring safety, quality, and equitable access to medicines. These features generate significant managerial challenges related to operational efficiency, competitiveness, and social responsibility, making performance management a strategic priority for pharmaceutical companies (Mossialos et al., 2004; European Commission, 2020).

Within this context, performance management has evolved into a key managerial instrument for assessing and optimizing both economic and non-economic outcomes. From a conceptual perspective, performance is no longer understood solely as the achievement of superior financial results, but rather as a multidimensional construct that integrates economic efficiency, innovation capacity, ethical conduct, environmental impact, and social contribution. This expanded understanding reflects broader changes in management and accounting literature, which increasingly emphasize the limitations of purely financial performance measures in capturing organizational value creation, particularly in socially sensitive industries such as pharmaceuticals (Kaplan & Norton, 1996; Neely

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et al., 2005).

The growing relevance of sustainability has further contributed to redefining performance evaluation frameworks. Early contributions to sustainability theory highlighted the need to balance economic objectives with environmental protection and social equity, laying the foundations for contemporary approaches to sustainable business practices (Elkington, 1997; Gray et al., 1996). In this perspective, performance is closely linked to an organization's ability to manage its impacts on society and the environment, alongside its financial outcomes. For pharmaceutical companies, whose activities directly affect population health and social welfare, this balance is particularly critical.

Recent literature also emphasizes the role of corporate social responsibility and governance mechanisms in shaping organizational performance. Studies highlight that companies are increasingly expected to align their strategies with stakeholder expectations and ethical standards, especially in industries subject to intense public scrutiny and regulatory oversight (Shleifer & Vishny, 1997; Carroll, 1999). In the pharmaceutical sector, issues such as access to medicines, ethical research practices, and transparency in corporate governance significantly influence both corporate reputation and long-term performance (Dranove et al., 2014; Demir & Min, 2019).

In this evolving landscape, sustainability considerations have been operationalized through the ESG framework, which provides a structured approach for assessing non-financial dimensions of organizational performance. The increasing integration of ESG criteria into corporate reporting and investment decision-making reflects a broader shift toward long-term value creation and risk management. Empirical research suggests that ESG-related practices and disclosures are increasingly associated with improved organizational processes and enhanced performance over time (Eccles et al., 2014; Friede et al., 2015). At the same time, the literature points to significant variation in reporting practices and ongoing challenges related to comparability and credibility of sustainability information (Cho et al., 2015; Simnett et al., 2009).

Against this background, the research problem addressed in this article concerns how performance is defined, measured, and managed in the pharmaceutical industry under increasing sustainability and ESG reporting requirements. The central economic challenge lies in balancing financial competitiveness with growing pressures from regulators, investors, and society to adopt responsible and transparent business practices. This issue is particularly relevant in the European context, where recent regulatory developments have significantly expanded non-financial reporting obligations for large companies (Baumüller & Sopp, 2022; European Commission, 2022).

The aim of this article is to analyze performance management in the pharmaceutical industry through the integration of financial and non-financial dimensions, with a particular focus on sustainability and ESG reporting. To achieve this objective, the paper aims to clarify key theoretical concepts related to performance and performance management, to examine relevant models and indicators used in performance measurement, and to analyze the role of ESG pillars and reporting practices in reflecting organizational performance.

Methodologically, the article adopts a qualitative and synthetic approach based on the analysis of academic literature, regulatory documents, and institutional reports relevant to the pharmaceutical industry. This approach allows for a comprehensive understanding of current conceptual frameworks and reporting practices, without engaging in empirical case analysis. The structure of the paper reflects this research design. The first section addresses the concept of performance management and its evolution, including a bibliometric perspective on literature. The second section discusses the three pillars of ESG sustainability in the context of the pharmaceutical industry. The third section examines the current state of ESG reporting, highlighting key trends and challenges. The paper concludes with a synthesis of the main findings and outlines implications for both academic research and managerial practice.

I. THE CONCEPT OF PERFORMANCE MANAGEMENT

Performance management is a foundational concept in management studies, being associated with the processes through which organizations set objectives, monitor progress, and implement actions aimed at continuous improvement. The early research highlights that performance is no longer defined exclusively in terms of financial outcomes, but is approached as a multidimensional construct that integrates economic, operational, and strategic dimensions (Kaplan & Norton, 1996; Eccles et al., 2014). This conceptual evolution reflects the transformations of the contemporary economic environment and the need to align financial objectives with internal processes and innovation capacity.

In the pharmaceutical industry, performance management acquires distinct relevance given the sector's specific features, including high levels of investment in research and development (R&D), lengthy innovation cycles, and stringent regulatory oversight. Firm performance in this industry is influenced not only by economic efficiency, but also by compliance with quality standards, risk management, and the social impact of their activities (Porter & Kramer, 2011). Consequently, performance reflects an organizations' ability to simultaneously create

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economic and social value.

The complexity of pharmaceutical operations requires the use of models and indicators tailored to the sector's specificities, capable of simultaneously reflecting financial efficiency, innovative performance, and the non-financial dimensions of organizational activity (Eccles et al., 2014). This complexity justifies the need for an in-depth theoretical analysis of the concept of performance management and of the main research directions developed in the specialized literature, an analysis that will be detailed in the following subsections.

Bibliometric analysis

Bibliometric mapping of the literature on management in the pharmaceutical industry, reveals a clear evolutionary trajectory from a primary focus on financial metrics toward a broader, integrated understanding of performance synthetic perspective on how performance has been conceptualized and examined over time, highlighting the transition from predominantly financial approaches to integrated perspectives.

Early research focused predominantly on financial and operational metrics, profitability, working capital efficiency inventory turnover, reflecting the industry's traditional orientation toward short-term economic results (Grabowski & Vernon, 2000; Scherer, 2001). Subsequent, studies expanded the analytical scope to include innovative performance, reflected through R&D intensity, patent counts, and new product approvals (Cockburn & Henderson, 2000; Munos, 2009).

Over the past decade, bibliometric evidence documents a significant increase in publication that incorporate non-financial dimensions into performance evaluation, particularly corporate social responsibility and ESG criteria. This shift signals a fundamental change in the performance paradigm: performance is now conceptualized as the joint outcome of economic efficiency and sustainable business practice (Eccles et al., 2014; Friede et al., 2015).

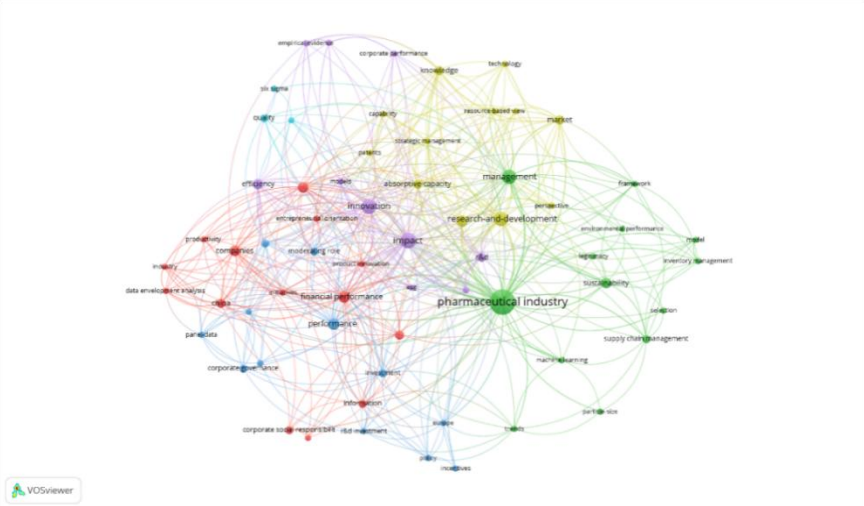

Figure 1. Bibliometric map of research on performance in the pharmaceutical industry
Source: own processing based on data extracted from Web of Science, 2025

Figure 1 presents a co-occurrence map of key terms extracted from the reviewed corpus. The term performance occupies a central position, tightly linked to innovation, R&D, and financial performance, confirming the persistent relevance of technological and economic drivers. A distinct thematic cluster connects CSR, sustainability, and ESG, located in close proximity to performance. This spatial proximity on the map corroborates the growing scholarly recognition that non-financial factors are not peripheral but integral to long-term value creation in the pharmaceutical sector. Additionally, the map reveals significant associations between performance and internal process variables, operational efficiency, supply chain management, inventory management, underscoring the continued importance of operational excellence as a performance enabler (Shah, 2009; Narayana et al., 2014; Choi et al., 2025).

Another relevant thematic cluster is represented by concepts associated with sustainability and social responsibility, such as "corporate social responsibility", "sustainability", and "ESG". The presence of these terms in close proximity to the concept of performance indicates the recent orientation of research toward the integration of non-financial dimensions into organizational performance evaluation. This thematic convergence supports the view of performance as the outcome of the interaction between economic efficiency and sustainability practices, as also emphasized in studies addressing the impact of ESG factors on long-term financial performance (Eccles et al., 2014; Friede et al., 2015).

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A second relevant cluster associates performance with the efficiency of internal processes, through terms such as operational efficiency, supply chain management, and inventory management. These links confirm that operational performance is an essential component of overall performance in the pharmaceutical industry, being closely correlated with financial results and companies' ability to respond promptly to market demands (Shah, 2009; Narayana et al., 2014).

Overall, the analysis of the bibliometric map reveals a clear evolution of the specialized literature towards integrated performance evaluation models that combine financial, innovative, and non-financial dimensions. This direction justifies the need to develop performance management models tailored to the specificities of the pharmaceutical industry - an aspect that will be detailed in the following subsection, dedicated to performance measurement models and indicators.

II. SUSTAINABILITY AND ESG IN THE PHARMACEUTICAL INDUSTRY

In recent decades, the concept of sustainability has become a fundamental benchmark in the analysis of organizational performance, reflecting the transition from an approach focused exclusively on profit maximization to long-term value creation. In this context, the ESG (Environmental, Social, Governance) framework has established itself as an essential tool for evaluating the non-financial impact of companies' activities and for integrating it into strategic decision-making processes. ESG does not represent an isolated concept, but rather an extension of performance management, in which economic results are correlated with responsibility towards the environment, society, and governance structures (Eccles & Serafeim, 2014; Friede et al., 2015).

The environmental dimension (Environmental) concerns the impact of organizational activities on ecosystems and natural resources. In the pharmaceutical industry, it gains increased relevance due to the intensive use of resources and chemical substances, as well as the generation of waste, including hazardous waste. Environmental performance is evaluated through indicators such as greenhouse gas emissions, energy efficiency, and the management of water and waste (OECD, 2025). The social dimension (Social) reflects the organization's relationship with key stakeholders, including employees, patients, and the community. In the pharmaceutical industry, it holds particular importance, given its direct impact on public health. Aspects such as equitable access to medicines, ethics in clinical research, and working conditions influence companies' reputation and the level of public trust (Porter & Kramer, 2011).

The governance dimension (Governance) refers to the structures and mechanisms through which organizations are directed and controlled. In the pharmaceutical industry, corporate governance is essential for ensuring transparency, managerial accountability, and compliance with strict health regulations. Specific indicators include the structure of the board of directors, remuneration policies, and internal control mechanisms (Shleifer & Vishny, 1997).

The interdependence of the three ESG pillars highlights that sustainable performance cannot be achieved by addressing a single dimension in isolation (see Table 1). Imbalances between financial and non-financial performance can generate negative long-term effects, such as loss of public trust or regulatory sanctions. In this regard, the integration of ESG into organizational strategies is perceived as a key factor of overall performance (European Commission, 2022).

Table 1. Main ESG indicators in the pharmaceutical industry

ESG Dimension	Indicators used	Relevance for the pharmaceutical industry
Environmental	CO_2 emissions, energy consumption, waste management	pharmaceutical production involves chemical processes and high energy consumption
Social	access to medicines, patient safety, ethics of clinical trials	direct impact on public health
Governance	decision transparency, regulatory compliance, corporate ethics	highly regulated sector

Source: adapted after Eccles & Serafeim (2014); Friede et al. (2015)

Sustainability reporting represents a central instrument through which companies communicate information regarding the impact of their activities on the environment, society, and governance structures. Over the past two decades, these reports have evolved from voluntary documents to standardized instruments, integrated into performance management processes and subject to increasingly strict requirements of transparency and comparability (Gray et al., 1996; Clarkson et al., 2008). In the pharmaceutical industry, the importance of ESG reporting is amplified by the specific characteristics of the sector, characterized by a direct and significant social

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impact. Access to medicines, ethics in clinical research, and the relationship with regulatory authorities constitute sensitive aspects that influence public perception of companies' performance. An essential role in the standardization of ESG reporting is played by international frameworks, such as the standards developed by the Global Reporting Initiative (GRI), which provide a coherent set of indicators for evaluating non-financial performance. In the pharmaceutical industry, these standards are used to report environmental impact, social performance, and governance practices (GRI, 2020). At the European level, the ESG framework is strengthened by regulations such as the Corporate Sustainability Reporting Directive (CSRD), which extends reporting obligations and introduces stricter requirements regarding the quality and verification of reported information (European Commission, 2022).

The analysis of sustainability reports highlights the existence of significant differences between companies in terms of the level of maturity of ESG reporting. Large companies have more extensive resources for implementing complex reporting systems, while smaller organizations face difficulties in adopting a comprehensive ESG framework. At the same time, the specialized literature signals the existence of limitations of ESG reporting, such as the tendency toward selective reporting or the difficulty of quantifying the real impact on public health. These limitations justify the need for a critical analysis of reporting practices and their use in evaluating organizational performance (Cho et al., 2015).

Overall, the integration of ESG criteria in the pharmaceutical industry reflects a structural transformation in the way performance is defined, it being increasingly associated with the ability of organizations to generate sustainable value and to respond responsibly to societal requirements.

III. COMPARATIVE ANALYSIS OF THE PERFORMANCE OF PHARMACEUTICAL COMPANIES

The analysis of the performance of pharmaceutical companies was carried out based on a set of relevant financial indicators for the period 2019–2024. The analyzed sample includes internationally recognized pharmaceutical companies, namely Johnson & Johnson, Merck & Co., Pfizer, Roche Group, and AbbVie, selected based on size, industry relevance, and data availability. In order to highlight the evolution of financial performance, indicators such as earnings per share (EPS) and operating result (EBIT) were analyzed, being considered relevant for evaluating profitability and operational efficiency (see Figure 2).

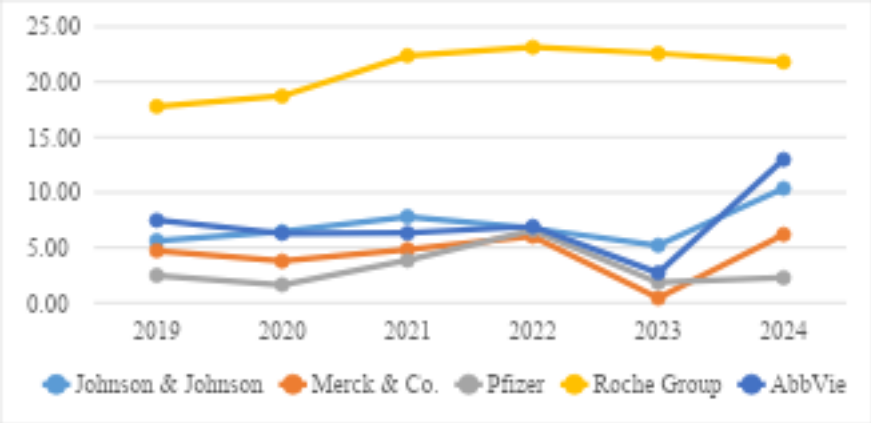

Figure 2. Evolution of earnings per share (EPS) during the period 2019–2024
Source: own processing based on companies' financial data, 2025

The analysis of the evolution of earnings per share (EPS) during the period 2019-2024 highlights significant differences among the analyzed pharmaceutical companies, both in terms of performance levels and their stability.

Roche Group consistently records the highest EPS values throughout the analyzed period, with a peak in 2022 (23.15), followed by a slight decrease to 21.82 in 2024. This evolution indicates solid and stable financial performance, suggesting the company's ability to maintain a high level of profitability over time. Johnson & Johnson shows a relatively stable evolution during the period 2019-2023, with values ranging between 5.20 and 7.81, followed by a significant increase in 2024 (10.36). This dynamic may indicate an improvement in financial results in the recent period, after a phase of moderate stability. Merck & Co. shows a fluctuating evolution, characterized by a gradual increase until 2022 (6.01), followed by a sharp decrease in 2023 (0.42) and a recovery in 2024 (6.19). This volatility suggests a higher sensitivity to conjunctural factors or changes in the revenue

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structure. Pfizer shows the highest instability of the indicator, with significant year-to-year variations, including an increase in 2022 (6.58), followed by a sharp decrease in 2023 (1.84) and a slight recovery in 2024 (2.28). This evolution reflects less predictable performance compared to the other companies analyzed. AbbVie also records significant fluctuations, with a notable decrease in 2023 (2.71), followed by a strong increase in 2024 (12.98), the highest value of the analyzed period. This evolution suggests an accelerated recovery of financial performance in the last year.

Overall, the analysis highlights the existence of two distinct patterns: on the one hand, companies characterized by relatively stable performance (Roche Group, Johnson & Johnson), and on the other hand, companies with more volatile evolutions (Pfizer, Merck & Co., AbbVie). These differences reflect the particularities of organizational strategies and the different degree of exposure to economic and operational factors specific to the pharmaceutical industry (see Figure 3).

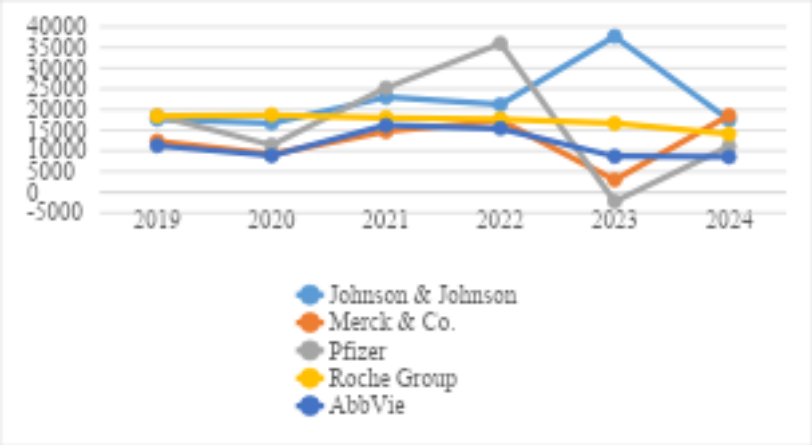

Figure 3. Evolution of operating result (EBIT) during the period 2019–2024
Source: own processing based on companies' financial data, 2025

The analysis of the evolution of EBIT during the period 2019-2024 highlights significant differences among the analyzed pharmaceutical companies, both in terms of the level of operational performance and its stability.

Johnson & Johnson records a relatively stable evolution during the period 2019-2022, with values ranging between 16.698 and 22.959, followed by a sharp increase in 2023 (37.661) and a return to a more moderate level in 2024 (17.476). This dynamic indicates solid operational performance, but influenced by specific factors in 2023. Merck & Co. shows a fluctuating evolution, characterized by a decrease in 2020 (9.235), followed by a steady increase until 2022 (17.399), a significant decline in 2023 (3.023), and a recovery in 2024 (18.536). This evolution suggests a moderate level of instability in operational performance. Pfizer shows the most pronounced volatility of EBIT, reaching a peak in 2022 (35.973), followed by a drastic decrease in 2023 (-2.230), the only negative value in the sample, and a partial recovery in 2024 (11.125). This evolution reflects significant instability in operational performance. Roche Group shows the most stable evolution of EBIT, with relatively constant values during the analyzed period, ranging between 14.088 and 18.719, without major fluctuations. This stability indicates a balanced operational model and a high capacity to maintain performance over time. AbbVie records moderate fluctuations, with an increase until 2021 (16.167), followed by a gradual decrease until 2024 (8.567), suggesting a decline in operational performance in the recent period.

Overall, the analysis highlights two distinct patterns in the evolution of operational performance: on the one hand, companies characterized by stability and predictability (Roche Group), and on the other hand, companies with a high level of volatility (Pfizer, Merck & Co.), marked by significant variations in EBIT. Johnson & Johnson is positioned in an intermediate area, with a generally stable evolution, but influenced by specific increases. These differences reflect varying levels of operational resilience and adaptation to the dynamics of the pharmaceutical industry.

IV. CONCLUSION

The paper aimed to analyze the relationship between financial performance and ESG sustainability in the pharmaceutical industry, a sector characterized by a high level of regulation, dependence on innovation, and a direct impact on public health. The research results highlight that performance management in this field can no

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longer be approached exclusively from a financial perspective, but requires the integration of economic, social, and environmental dimensions. The analysis of the theoretical framework highlighted the evolution of the concept of organizational performance, from traditional models focused on financial indicators to multidimensional approaches. In this context, ESG criteria acquire an essential role in performance evaluation, reflecting the ability of organizations to generate sustainable value and to respond to the increasingly complex requirements of the economic and institutional environment. The integration of sustainability into performance management does not represent only a theoretical trend, but a practical necessity, determined by the pressures exerted by regulators, investors, and society.

The results of the empirical analysis confirm the existence of significant differences among pharmaceutical companies in terms of the level and dynamics of financial performance. The analyzed indicators, namely earnings per share (EPS) and operating result (EBIT), highlight two main patterns of evolution: on the one hand, companies characterized by stability and predictability, such as Roche Group, and on the other hand, companies with a high level of volatility, such as Pfizer and Merck & Co. Johnson & Johnson is positioned in an intermediate position, with a relatively stable evolution, but influenced by specific variations, while AbbVie shows significant fluctuations followed by recovery periods.

These differences reflect not only the particularities of organizational strategies, but also the different degree of exposure to external factors, such as regulatory changes, demand dynamics, or developments in research and innovation. In this sense, financial performance is influenced both by operational efficiency and by the ability of organizations to manage risks and to capitalize on opportunities specific to the pharmaceutical industry. An important aspect highlighted by the paper is the role of sustainability and ESG criteria in supporting long-term performance. The integration of these dimensions contributes to increasing organizational resilience, improving the relationship with stakeholders, and reducing non-financial risks. In a sector in which public trust and compliance with regulations are essential, the adoption of sustainable practices becomes a strategic factor of competitiveness.

At the same time, the analysis highlights that the relationship between financial performance and sustainability is not uniform, as there are significant differences among companies in terms of the level of integration of ESG criteria and their impact on economic results. This heterogeneity confirms the conclusions of the specialized literature and underlines the need for differentiated approaches in evaluating organizational performance. From the perspective of scientific contribution, the paper provides an integrated approach to performance management in the pharmaceutical industry, by correlating the theoretical framework with the empirical analysis of relevant companies at the international level. By simultaneously using financial indicators and ESG dimensions, the study highlights the complexity of the performance evaluation process and the need to adopt multidimensional models. However, the research presents certain limitations. First, the analysis is conducted on a limited sample of companies, which limits the degree of generalization of the results. Second, the use of a limited number of financial indicators does not allow for a complete capture of organizational performance. Also, the ESG analysis has a predominantly conceptual character, not being quantified through specific indicators within the empirical study.

From the perspective of future research, it is recommended to extend the sample of analyzed companies, to include quantifiable ESG indicators, and to analyze the relationship between financial performance and sustainability in the long term. Also, a relevant research direction is the investigation of the impact of ESG reporting on investors' decisions and on the market value of pharmaceutical companies.

In conclusion, the paper highlights that performance in the pharmaceutical industry must be approached in an integrated manner, in which financial and non-financial dimensions are interdependent. In an environment characterized by complexity and uncertainty, the ability of organizations to integrate sustainability into their strategies becomes an essential determinant of long-term success.

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