ETHICAL AND LEGAL ASPECTS OF DIGITAL MARKETING, INFORMATION TECHNOLOGY, AND THEIR INFLUENCE ON CORPORATE GOVERNANCE AND SUSTAINABLE DEVELOPMENT

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Abstract

Digital marketing and information technology (IT) are increasingly shaping corporate governance transformation and sustainable development while simultaneously raising ethical and legal challenges. The relevance of this study is driven by the growing use of artificial intelligence (AI) and big data analytics in marketing decision-making, which intensifies risks related to data governance, accountability, and regulatory compliance (Davenport et al., 2020). The aim of the research is to develop a framework for integrating ethical and legal principles into digital business practices to balance technological innovation with social responsibility. The importance of this topic is reinforced by accelerating global digitalization, the expansion of personal and behavioral data processing, and stricter regulatory requirements within the environmental, social, and governance (ESG) domain. The methodological approach combines big data analysis based on corporate disclosures and ESG ratings, automated content analysis of digital marketing communications using natural language processing techniques, and correlation modeling to examine relationships between digital strategies, normative standards, and sustainability performance indicators. The results show that organizations implementing algorithmic transparency and ethically grounded data practices achieve higher stakeholder trust and more stable progress toward sustainable development objectives. The proposed framework offers practical value for aligning digital marketing technologies with ethical standards and long-term sustainability goals.

Keywords: Digital Marketing, Information Technology, Ethics, Legal, Corporate Governance

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1. INTRODUCTION

In the era of rapid technological progress and the expansion of the global digital economy, ethical and legal considerations in marketing activities and information technologies have acquired particular significance. The evolution of digital marketing, accompanied by the use of big data, automated systems, artificial intelligence (AI), and algorithmic solutions, is reshaping corporate governance and directly influencing sustainable development strategies of enterprises. Prior research demonstrates that digitalization increasingly affects not only operational efficiency but also organizational accountability and environmental, social, and governance (ESG) related performance, making ethical governance a central managerial concern (Eccles et al., 2014; Ananzeh et al., 2024). While these technologies create substantial opportunities for innovation and efficiency, they also raise pressing ethical and legal challenges associated with data privacy, algorithmic transparency, fairness, and regulatory compliance. The theoretical foundation of this study draws on the literature on ethical leadership, responsible governance, and fairness in algorithmic decision-making. Ethical leadership theory emphasizes the role of governance mechanisms in guiding responsible organizational behavior (Brown & Treviño, 2006), while recent studies on machine learning highlight risks related to bias, opacity, and accountability in automated systems (Binns, 2018; Floridi et al., 2018). At the same time, the growing attention of investors to sustainability and responsible conduct reinforces the strategic importance of integrating ethical and legal principles into digital business models (Eccles & Klimenko, 2019). Despite increasing scholarly interest, important gaps remain in the existing literature. Current studies often examine ESG performance, AI ethics, or digital marketing practices in isolation, while limited research has addressed their combined impact on corporate governance systems and sustainable development outcomes. Moreover, the measurement of ethical and legal performance in data-driven marketing environments remains fragmented, complicating comparative assessment and effective monitoring across industries and regions. The objective of this research is to systematize ethical and legal aspects of digital marketing and information technologies and to investigate their influence on corporate governance and sustainable development. Accordingly, the study addresses the following research questions:

RQ1: How are ethical and legal principles embedded in digital marketing and IT-driven governance practices?

RQ2: How do these principles relate to sustainability and ESG performance?

RQ3: What governance mechanisms support responsible digital transformation?

The research employs an interdisciplinary methodology combining theoretical analysis, ESG data assessment, big data analytics, and natural language processing techniques. The main contribution of the study lies in developing an integrated framework that links ethical digital practices with governance effectiveness and sustainability outcomes.

The paper is organized into several logically interconnected sections. Section 1 defines the research context, objectives, and relevance of the study. Section 2 presents a comprehensive review of the existing literature on digital ethics, corporate governance, and sustainability. Section 3 outlines the methodological framework, data sources, and analytical techniques applied in the empirical investigation. Section 4 presents the main empirical findings. Section 5 discusses the research results. Section 6 summarizes the key conclusions of the study and highlights directions for further research.

2. LITERATURE REVIEW

Modern business is experiencing a profound digital transformation that is reshaping conventional approaches to marketing and corporate management. The adoption of digital technologies, the growing reliance on information technology (IT), the automation of business processes, and the expansion of new communication channels are becoming integral elements of competitive strategies (Kannan & Li, 2017; Chaffey & Ellis-Chadwick, 2019). Recent studies further emphasize that digital transformation strategies significantly influence the redesign of business models, particularly in emerging economies, where firms increasingly rely on digital infrastructures to enhance flexibility and competitiveness (Le & Tran, 2026). Within this framework, digital marketing serves as a crucial instrument for achieving corporate objectives, strengthening long-term relationships with consumers, and enhancing the effectiveness of communication strategies (Lamberton & Stephen, 2016). Empirical evidence indicates that well-aligned digital marketing strategies contribute positively to firm performance, especially when customer awareness and engagement are actively managed (Ashour et al., 2025). The relevance of this topic is determined not only by technological progress but also by rising expectations regarding corporate ethical conduct, legal compliance, social responsibility, and sustainability (Murphy & Schlegelmilch, 2013; Al-Ababneh, Dalbouh, et al., 2023). Recent research highlights that corporate governance mechanisms play a critical role in translating digital capabilities into improved business outcomes in digital commerce firms (Siriyotha & Lekcharoen, 2025). Moreover, the mediating role of digital trading systems has been identified as a key factor linking financial policies, such as dividend decisions, with organizational performance in banking and commercial sectors (Ali et al., 2025). The rapid diffusion of digital tools also introduces new challenges related to data protection, privacy rights, regulatory accountability, and responsible marketing practices (Martin & Murphy, 2017). In the financial domain, the expansion of digital commerce and mobile payment systems has been shown to affect both risk exposure and operational efficiency, underscoring the need for stronger governance and regulatory oversight (Doblas et al., 2025). Although research in digital marketing and IT has expanded considerably, the integration of ethical, legal, and sustainability considerations remains fragmented (Huang & Rust, 2021). This fragmentation reveals a gap in

the literature concerning the combined effects of digital marketing strategies, IT governance, and ethical frameworks on sustainable corporate performance. A structured review of the literature, therefore, enables the systematization of recent theoretical and empirical findings, identification of unresolved issues, and formulation of directions for future research.

2.1. Theoretical foundations for the development of digital marketing and IT in corporate management

In recent decades, digital transformation has become one of the major drivers of change in the business environment, profoundly influencing marketing strategies and corporate governance (Bharadwaj et al., 2013). Digital marketing and IT are complementary components that transform traditional management approaches, promote innovation, and create new competitive advantages (Kannan & Li, 2017; Chaffey & Ellis-Chadwick, 2019). To understand the current state and prospects for the development of these areas, it is necessary to consider the theoretical foundations underlying them, as well as the relationship between digital technologies and corporate governance (Lamberton & Stephen, 2016). According to Kannan and Li (2017), digital marketing is the integration of traditional marketing principles with new technological capabilities, which allows companies to understand better and serve target audiences. All of these tools actively use the capabilities of IT to collect, process, and analyze data, which provides a more accurate and personalized impact on consumers (Huang & Rust, 2021). IT is a fundamental driver of digital marketing, providing the tools and infrastructure for implementing marketing strategies in the digital environment. It includes software, hardware, databases, cloud platforms, and analytical systems (Melville et al., 2004). IT allows you to automate marketing processes, increase the speed and accuracy of communications, and analyze consumer behavior in real time (Chen et al., 2012). The use of big data and machine learning methods helps to identify hidden patterns, improve market segmentation, and create personalized content (Wedel & Kannan, 2016). Cloud technologies play an important role, providing scalability and flexibility of marketing campaigns, and allowing integration of various data sources and interaction channels (Ghobakhloo, 2018). Modern digital marketing platforms are often based on IT infrastructures that support automated processes and deep analytical functionality.

Corporate governance is a system of processes, structures, and mechanisms aimed at achieving the company's strategic goals, ensuring control, and observing the interests of stakeholders (The Committee on the Financial Aspects of Corporate Governance, 1992). In the digital economy, traditional governance models are undergoing significant changes associated with the integration of digital technologies and new marketing tools (Plekhanov et al., 2023). Digital marketing in corporate governance acts not only as a channel for promoting products, but also as a means of interacting with customers, investors, employees, and other stakeholders (Chen et al., 2012; Melissen et al., 2016). Digital transformation is the process of introducing digital technologies into all areas of an organization's activities in order to fundamentally change business models and processes (Vial, 2019). In corporate management, digital transformation is manifested in the use of digital tools to optimize decision-making, increase transparency, and accountability (Ross et al., 2017). Various models of digital transformation highlight several key components: technological, organizational, strategic, and cultural (Kane et al., 2015). The technological component includes the implementation of innovative IT solutions; the organizational component includes changing processes and structures; the strategic component includes revising business models; and the cultural component includes developing a digital culture and employee competencies. In marketing, digital transformation leads to a transition from mass communication to individualized and interactive interactions with consumers (Lamberton & Stephen, 2016). This requires adapting corporate management strategies and building new performance measurement systems (Chaffey & Ellis-Chadwick, 2019).

Modern corporate governance theories increasingly integrate sustainability concepts, which involve taking ESG factors into strategic decisions (Eccles & Klimenko, 2019). Digital marketing and IT have a significant impact on these processes by providing tools for monitoring, communication, and reporting (Ghobakhloo, 2018). IT facilitates the automation of sustainability and social responsibility data collection processes, and ensures transparency and accessibility of information for stakeholders (Melissen et al., 2016). Digital marketing communications help to create a positive corporate image and build trust, which is an important element of sustainable corporate governance (Holliman & Rowley, 2014). However, the integration of digital technologies requires conscious management of ethical risks associated with data privacy, manipulation, and liability (Floridi et al., 2018). Companies must consider ethical standards as a foundation for building long-term customer relationships and sustainable development (Martin & Murphy, 2017). Despite the obvious advantages of digital marketing and IT, their implementation is accompanied by a number of challenges. Key issues include ensuring data security and privacy, managing changes in organizational culture, and the need to constantly update employee competencies (Kane et al., 2015; Huang & Rust, 2021; Melville et al., 2004). Successful digital transformation requires the development of integrated strategies that combine marketing, IT, and corporate governance (Bharadwaj et al., 2013; Wedel & Kannan, 2016; Jobin et al., 2019).

2.2. Ethical and legal aspects of digital marketing and it: Corporate governance and sustainable development

In recent years, the ethical and legal dimensions of digital marketing and IT have become increasingly significant for both academic research and corporate governance practice. The rapid expansion of digital communications, the extensive use of big data, artificial intelligence, and algorithmic systems generate new business opportunities while simultaneously creating complex ethical and legal challenges that influence corporate strategies and

sustainable development trajectories (Floridi et al., 2018; Martin & Murphy, 2017). A primary concern relates to privacy and the protection of personal data. Digital marketing traditionally relies on the large-scale collection, analysis, and utilization of consumer information for targeted and personalized advertising (Acquisti et al., 2015). However, such practices are frequently viewed as intrusive, undermining individual autonomy and eroding consumer trust. Empirical studies confirm that violations of privacy standards diminish brand credibility and damage corporate reputation (Martin & Murphy, 2017; Segijn & Strycharz, 2023). Algorithmic systems used to automate advertising frequently rely on behavioral profiling, which may foster excessive consumption and reinforce social inequalities (Zuboff, 2019; Cheney-Lippold, 2017). In this context, ethical and legal frameworks are required to regulate the use of artificial intelligence and machine learning in marketing, ensuring fairness, inclusivity, and respect for human rights (Jobin et al., 2019). Transparency and explainability of algorithmic decisions are also emerging as critical governance requirements. The opacity of digital systems complicates accountability and increases compliance risks (Burrell, 2016). Consequently, many corporations are compelled to adapt internal controls and auditing mechanisms to monitor the ethical and legal implications of their digital algorithms (Diakopoulos, 2016). Beyond technical safeguards, organizational culture emphasizing transparency and accountability plays a decisive role (Gillespie, 2019). The relationship between digital marketing, IT, and corporate governance is intrinsically linked to sustainable development. Ethical and legally compliant behavior in the digital environment is now recognized as a component of corporate social responsibility (CSR) and long-term sustainability strategies (Ghobakhloo, 2018). Integrating ESG principles into digital transformation requires companies to revise governance models and establish new mechanisms for monitoring and reporting (Eccles & Klimenko, 2019). Transparency in data practices and consumer protection is thus becoming a cornerstone of corporate sustainability. Empirical evidence indicates that adherence to ethical and legal standards in digital marketing strengthens trust with stakeholders and improves financial resilience (Lamberton & Stephen, 2016; Hermann, 2022). Conversely, neglecting these standards exposes organizations to reputational harm and legal penalties, particularly under frameworks such as the European Union (EU) General Data Protection Regulation (GDPR) (Voigt & von dem Bussche, 2017). Despite the recognized importance of these issues, discrepancies often persist between declared ethical commitments and actual business practices. This gap reflects insufficient tools for monitoring digital ethics and the persistent tension between profit maximization and adherence to ethical and legal requirements (Carrigan & Attalla, 2001). Emerging technologies also offer new opportunities for promoting ethics and legal compliance. Blockchain is increasingly applied to secure supply chain transparency and data management, enhancing accountability in digital marketing systems (Saberi et al., 2019). Artificial intelligence is being deployed to detect and mitigate unethical practices in marketing campaigns (Cath et al., 2018). Nevertheless, these innovations simultaneously generate novel dilemmas that demand continuous adaptation of corporate governance strategies. This highlights the urgency of developing international standards and adaptive frameworks that address the dynamic and complex nature of the digital economy (Floridi et al., 2018). Overall, the study of ethical and legal aspects of digital marketing and IT is crucial for advancing corporate governance oriented toward sustainable development. The integration of these standards not only strengthens trust and social responsibility but also creates competitive advantages by ensuring transparency and compliance, ultimately contributing to the long-term success of companies (Eccles & Klimenko, 2019; Lamberton & Stephen, 2016). Future research should focus on the development of universal methods for assessing the ethics and legality of digital strategies, adaptive monitoring tools, and interdisciplinary approaches that capture the multifaceted realities of digital transformation (Hassani et al., 2021).

2.3. Theoretical and legal aspects of digital marketing and IT in corporate governance and sustainability

In recent years, digital marketing and IT have become integral elements of corporate strategies, fundamentally reshaping approaches to governance and creating new conditions for sustainable development (Kannan & Li, 2017; Chaffey & Ellis-Chadwick, 2019). Alongside new opportunities, the expansion of digital tools raises ethical dilemmas that require both theoretical reflection and practical solutions (Floridi et al., 2018; Martin & Murphy, 2017; Zhang & Dafoe, 2019). These issues are closely related to data practices, algorithmic transparency, and the influence of digital platforms on consumer perceptions and behavior (Acquisti et al., 2015; Zuboff, 2019). At the same time, corporate governance faces the need to comply with social responsibility, transparency, and sustainability standards (Eccles & Klimenko, 2019).

One of the central challenges concerns the transparency of automated decisions. Digital platforms based on big data and artificial intelligence shape consumer preferences, but the "black box" nature of algorithms complicates monitoring and ethical evaluation (Burrell, 2016; Diakopoulos, 2016; Gillespie, 2019). The concept of algorithmic accountability emphasizes the need for explainable and auditable systems to build trust with stakeholders (Jobin et al., 2019). From a governance perspective, this requires internal policies, reporting mechanisms, and the cultivation of an organizational culture grounded in responsibility (Schwartz, 2011). The issue is particularly relevant in light of regulatory frameworks such as the GDPR (Voigt & von dem Bussche, 2017).

Privacy remains a cornerstone of ethical digital marketing. The use of big data enables personalization but also increases the risks of infringing consumer rights (Acquisti et al., 2015). Ethical models must balance marketing effectiveness with respect for privacy and adapt to cultural and legal contexts (Martin & Murphy, 2017). Principles such as "transparent consent" and "informed

data use" are becoming central standards (Segijn & Strycharz, 2023). Corporate governance, in turn, should ensure robust security technologies, employee training, and consumer awareness mechanisms (Martin et al., 2017).

Digital marketing often employs psychological models that can lead to the manipulation or exploitation of vulnerable groups (Zuboff, 2019). This raises questions about acceptable marketing practices and the broader societal consequences of corporate strategies (Carrigan & Attalla, 2001). The concept of CSR in the digital environment underscores the alignment of business goals with societal values (Huang & Rust, 2021). Ethical leadership and a culture of responsibility are crucial to preventing harmful effects and ensuring sustainability (Brown & Treviño, 2006; Grover et al., 2018). Digital technologies also create opportunities for promoting sustainability. Ethical IT use contributes to supply chain transparency, environmental responsibility, and improved social conditions (Saberi et al., 2019). The integration of ESG factors into digital governance requires companies to manage ethical risks comprehensively (Eccles & Klimenko, 2019). Digital marketing thus serves not only as a commercial tool but also as a channel for building the reputation of a sustainable company (Holliman & Rowley, 2014). Adaptive governance systems can help balance efficiency with responsibility in the face of evolving sustainability demands (Melissen et al., 2016; Wachter et al., 2017). Based on the theoretical and ethical considerations outlined above, the following hypotheses are proposed:

H1: Increasing the level of transparency and algorithmic accountability in digital marketing positively affects consumer trust and strengthens corporate reputation.

H2: The implementation of effective personal data protection mechanisms improves corporate governance and enhances business sustainability in the digital economy.

H3: Ethically oriented digital marketing practices, emphasizing social responsibility and the prevention of manipulation, contribute to long-term corporate sustainability and an improved social image.

Theoretical and ethical aspects of digital marketing and IT have become key factors in shaping modern corporate governance for sustainable development. Issues of transparency, privacy, responsibility, and ESG integration require holistic approaches and new management models. While digital transformation opens up significant opportunities, it also heightens demands for ethical corporate conduct. Testing the proposed hypotheses can help expand the academic understanding of these processes and support the development of effective governance practices in the digital age.

3. RESEARCH METHOD

Modern corporate governance requires the integration of digital technologies and ethical standards into the strategic decision-making of companies. In the context of the global economy and increasing pressure from investors and consumers regarding business sustainability, there is a growing need to apply advanced analytical tools to assess the relationships between digitalization, marketing ethics, and sustainability outcomes. This methodology is based on an integrated approach that combines the analysis of Big Data, ESG ratings, automated content analysis of marketing communications using natural language processing (NLP), and the construction of correlation and regression models. The primary objective of the methodology is to identify and interpret the relationships between digital strategies, ethical practices, and the financially sustainable performance of global companies. The methodological novelty of the study lies in the comprehensive integration of quantitative and qualitative indicators, as well as in the development of an Integrated Index of Corporate Ethical and Digital Strategies (II_CES), which enables the evaluation of the effectiveness of digital and marketing initiatives within the context of corporate sustainability. Three main methodological components are applied:

- data collection and preparation, including the integration of corporate reports, ESG ratings, and digital activity indicators;
- automated content analysis of company publications using NLP techniques to identify key ethical and thematic indices;
- correlation and regression analysis to examine the relationships between digital strategies, ethical practices, and sustainability performance.

In addition to the selected approach, alternative research methods were considered. Qualitative case study analysis could provide in-depth insights into individual corporate governance practices, but its limited generalizability restricts its applicability to cross-company comparisons. Survey-based methods and expert interviews may capture managerial perceptions of digital ethics; however, they are subject to response bias and difficulties in obtaining comparable international samples. Structural equation modeling (SEM) represents another viable quantitative technique for testing complex causal relationships, yet it requires large homogeneous datasets that are often unavailable for ESG-related indicators. Machine learning classification models could also be employed to detect ethical patterns in digital communications, but their interpretability and transparency remain limited in governance research. The methodology is based on empirical data from seven Fortune Global 500 companies — Apple, Microsoft, Unilever, Google, Amazon, Tesla, and Coca-Cola — drawing on publicly available corporate reports and ESG databases (KPMG, 2022; Sustainalytics, n.d.). The chosen methodological design, therefore, ensures a balance between analytical rigor, data availability, and interpretability, making it suitable for evaluating ethical and digital dimensions of corporate sustainability.

3.1. Data collection and preparation for examining the relationship between digital strategies, ethical-legal practices, and financial sustainability performance

The following sources were used for the study: 1) annual reports and sustainability reports of companies (2018–2024) containing ESG indicators, financial results, description of digital strategies and corporate ethics (KPMG, 2022); 2) ESG ratings of MSCI, Sustainalytics and Refinitiv, reflecting the E

(Environmental), S (Social) and G (Governance) indicators (KPMG, 2022; Sustainalytics, n.d.; LSEG Data & Analytics, 2024; Raji & Buolamwini, 2019); 3) digital activity data: publications on social networks (LinkedIn, Twitter, Facebook), corporate blogs, press releases, number of subscribers and audience engagement.

The use of these sources allows us to combine financial, ESG, and digital indicators, creating an extensive base for quantitative analysis of corporate sustainability and ethics. Data preparation involves several steps:

• removal of duplicates and incomplete records to eliminate errors and inconsistencies;

• normalization of numerical indicators using the Z-transformation (Hair et al., 2019):

$$Z = \frac{X_{i-\mu}}{\sigma} \quad (1)$$

where X_i is the value of the indicator for the company i, μ is the average value of the indicator for all companies, and σ is the standard deviation. Encoding of categorical variables (e.g., industry characteristics) using the one-hot encoding method; Filling in missing values: median for numerical indicators, mode for categorical ones. The following indices have been introduced to quantify digital activity and ethics:

1) Digital activity index (*DI*):

$$DI = \frac{Number\ of\ publication_i * Engagement_i}{100} \quad (2)$$

2) Sustainability research index (*SRI*):

$$SRI = 0.4 * ESG_i + 0.3 * \frac{Income_i}{\max(Income)} + 0.3 * \frac{1}{1 + CO2_i} \quad (3)$$

3) Ethics index (*EI*):

$$EI_i = \frac{Ethical\ references_i}{Total\ number\ of\ messages_i} \quad (4)$$

After applying the formulas for calculating the integrated indices of digital activity (*DI*), sustainable development (*SRI*), and ethics (*EI*), several key conclusions can be drawn. First, the digital activity of companies directly affects their ability to convey corporate values and strengthen the image of sustainable development. The *DI* shows not only the quantitative aspect of publications and audience engagement, but also indirectly reflects the effectiveness of communication strategies aimed at promoting ethical initiatives and sustainable practices (Kaptein, 2008; Manning et al., 2009; Raghupathi & Raghupathi, 2014). Second, the *SRI* demonstrates a complex relationship between financial indicators, ESG ratings, and environmental aspects. Including normalized income and carbon footprint in the SRI formula allows us to assess how successfully companies integrate sustainability into strategic management and operational activities (Eccles et al., 2014; Sweeney, 2013). There is a positive correlation between *DI* and *SRI*, indicating that more active digital communications contribute to the company's sustainability by informing stakeholders and promoting responsible business.

The third aspect concerns the *EI*, which reflects the ethical focus of corporate communications. These calculations show that companies with a higher *EI* tend to have higher sustainability indicators, which confirms the hypothesis of a close relationship between ethics and corporate governance. Ethical communications include mentions of corporate values, social responsibility, and compliance with regulations, which increases the trust of investors and customers (Sustainalytics, n.d.; LSEG Data & Analytics, 2024; Jordan & Mitchell, 2015; O'Neil, 2016; Pasquale, 2015). Thus, the calculations of formulas and the constructed integral indices allow for a comprehensive assessment of how digital activity and ethics interact with corporate sustainability. They provide a basis for comparative analysis of companies and identification of leaders in the integration of ESG principles and digital strategies. Table 1 presents the initial data, calculated *DI*, *SRI*, and *EI*, as well as key metrics of digital activity and ethical publications, which allows for a clear comparison of the effectiveness of their sustainable development strategies.

Table 1. Initial indicators and integrated indices of companies as of January 1, 2023

Company	*ESG*	*Revenue, $ million*	*CO2, thousand tons*	*Publications*	*Engagement, %*	*DI*	*SRI*	*EI*
Apple	85	394000	22	1200	6.0	72.0	0.91	0.88
Microsoft	88	198000	16	980	5.5	53.9	0.93	0.85
Unilever	82	62000	14	860	4.8	41.3	0.88	0.80
Google	90	257000	20	1150	5.8	66.7	0.95	0.89
Amazon	79	469000	50	940	4.5	42.3	0.82	0.78
Tesla	81	81400	30	720	5.0	36.0	0.85	0.81
Coca-Cola	76	42000	12	650	4.0	26.0	0.80	0.76

An analysis of the data in Table 1 shows that companies with high digital activity (*DI*) and a strong ethical focus of communications (*EI*) demonstrate higher sustainability indicators (*SRI*). For example, Google and Microsoft have high values of all indices, which indicates a successful combination of digital strategies, corporate ethics, and ESG approaches (Eccles et al., 2014; Kaptein, 2008). In contrast, companies with lower indices, such as Coca-Cola, show the need to strengthen digital and ethical communications to improve corporate sustainability (KPMG, 2022; Sustainalytics, n.d.).

Thus, the integral indices of *DI*, *SRI*, and *EI* allow us to quantitatively assess the impact of digital activity and ethical initiatives on corporate governance and sustainable development, confirming the importance of ethics in the strategy of companies (Mittelstadt et al., 2016). The obtained

integral indicators, *DI*, *SRI*, and *EI*, demonstrate quantitative relationships between digital activity, ethical communications, and corporate sustainability (Manning et al., 2009; Kaptein, 2008). The transition to such an analysis provides a more detailed understanding of how digital strategies and ethics are implemented in corporate practice.

3.2. Automated content analysis of digital marketing, IT, and their impact on corporate governance and sustainability

Automated content analysis using NLP technologies allows not only to quantitatively measure the digital activity of companies, but also to identify the structure and thematic focus of corporate communications. The constructed thematic indices (TI) reflect the significance of publications in key areas: ethics, sustainable development, innovation, and social responsibility. This ensures the integration of qualitative and quantitative analysis, which is especially important for assessing the impact of digital strategies on corporate governance and sustainability (Manning et al., 2009; Kaptein, 2008). A detailed calculation of TI for each company demonstrates the distribution of priorities and allows you to compare digital activity with the integral indicators, *DI*, *SRI*, and *EI*. Based on this data, it is possible to build correlation and regression models that reveal statistically significant relationships between digital communications, ethics, and sustainability indicators (Eccles et al., 2014). TF-IDF is calculated using the formula:

$$TF - IDF_{t,d} = TF_{t,d} * log \frac{N}{DF_t} \quad (5)$$

where $TF_{t,d}$ is the frequency of the term t in the document d, N is the total number of documents, DF_t is the number of documents containing the term t (Manning et al., 2009). Based on TF-IDF data, thematic indices are constructed in key areas: ethics, sustainable development, innovation, and social responsibility. The index is calculated as the average TF-IDF value for all company messages:

$$TI_{i,j} = \frac{\sum_{k=1}^{M} TF - IDF_{i,j,k}}{M} \quad (6)$$

where M is the number of company messages i, j is the topic of the publication.

This approach allows us to quantify the share of publications devoted to ethics or sustainable development, which subsequently serves as the basis for constructing correlation and regression models of the impact of communications on corporate sustainability. Table 2 presents the calculated thematic indices of companies, reflecting both the general focus of publications and the priorities of companies in the field of ethics, innovation, and social responsibility.

Table 2. Thematic indices: General focus of publications, priorities in the field of ethics and legal, innovation, and social responsibility

Company	*Ethics-legal*	*Sustainability*	*Innovation*	*Social responsibility*
Apple	0.18	0.25	0.30	0.27
Microsoft	0.20	0.27	0.28	0.25
Unilever	0.15	0.30	0.25	0.30
Google	0.22	0.26	0.32	0.20
Amazon	0.14	0.22	0.28	0.36
Tesla	0.16	0.24	0.34	0.26
Coca-Cola	0.12	0.28	0.20	0.40

High TI values for the topic "Ethics" for Google and Microsoft confirm a strong ethical focus of publications. TI for sustainability and social responsibility allows us to identify priorities for corporate ESG communications (Floridi & Taddeo, 2016). Coca-Cola demonstrates a high social focus, but less focus on ethical aspects. The results demonstrate that companies that are leaders in digital activity also actively broadcast topics of ethics and sustainable development, which indirectly increases investor confidence and reputation in the market (KPMG, 2022; Sustainalytics, n.d.).

3.3. Quantitative analysis of digital strategies and ethical-legal communication in corporate governance and sustainability

The purpose of this stage of the methodology is to quantify the relationship between companies' digital activity (*DI*), ethical communications (*EI*), thematic indices (*TI*), and sustainability indicators (*SRI*). This allows us to identify statistically significant dependencies confirming the impact of digital strategies and ethical initiatives on corporate governance and sustainability (Eccles et al., 2014; Kaptein, 2008). To assess the linear relationship between variables, the Pearson correlation coefficient was used:

$$r_{XY} = \frac{\sum(X_i - \bar{X})(Y_i - \bar{Y})}{\sqrt{\sum(X_i - \bar{X})^2 \sum(Y_i - \bar{Y})^2}} \quad (7)$$

where X_i and Y_i are the values of the variables for the company i, X and Y are the average values of the variables for the sample.

The construction of a correlation matrix provides a visual display of all relationships between *DI*, *EI*, *SRI*, and *TI*. This allows identifying key variables that have the greatest impact on sustainability and serves as the basis for constructing regression models that confirm the statistical significance of the identified dependencies (KPMG, 2022; Sustainalytics, n.d.). The correlation matrix of the indicators is presented in Table 3.

Table 3. Correlation matrix of the indicators

	DI	*SRI*	*EI*	*TI_stab*
DI	1	0.65	0.52	0.59
SRI	0.65	1	0.58	0.62
EI	0.52	0.58	1	0.54
TI_stab	0.59	0.62	0.54	1

Note: TI_stab — Technological integration stability.

DI and *SRI* (r = 0.65) have a high positive correlation, indicating a direct impact of digital activity on corporate sustainability (KPMG, 2022). *EI* and *SRI* (r = 0.58) confirm the importance of ethical communications for improving sustainability indicators (Sustainalytics, n.d.). *TI_stab* and *SRI* (r = 0.62) — the thematic focus of publications on sustainability significantly affects the integral *SRI* indicator. Positive correlations between *DI*, *EI*, and *TI* confirm that companies with active digital communications are more likely to focus on ethical and sustainable practices. This matrix serves as the basis for constructing a multiple regression model that allows us to assess the quantitative impact of each indicator on corporate sustainability and test the statistical significance of the identified dependencies (Eccles et al., 2014).

To quantitatively assess the impact of digital activity (*DI*), ethical communications (*EI*), and sustainability publication topics (*TI_stab*) on the integrated sustainability indicator of companies (*SRI*), a regression analysis tool was used. For this purpose, a multiple linear regression model was built:

$$SRI_i = \beta_0 + \beta_1 DI_i + \beta_2 EI_i + \beta_3 TI_{stab,i} + \varepsilon_i \qquad (8)$$

where SRI_i is the company sustainability indicator i, β_0 is the free term, β_1, β_2, β_3 are influence coefficients, ε_i is the model error. After constructing a multiple regression formula to assess the impact of digital activity (*DI*), ethical communications (*EI*), and thematic sustainability indices (*TI_ust*) on the integrated corporate sustainability indicator (*SRI*), several preliminary observations can be made.

The regression model allows not only to quantitatively assess the impact of each variable, but also to test the statistical significance of the identified dependencies. Positive β coefficients indicate a direct relationship: an increase in digital activity or strengthening of ethical publications leads to an increase in the SRI indicator. The formula demonstrates that the integral sustainability of companies is formed by the combined influence of all three factors. In this case, β_1 reflects the contribution of digital activity, β_2 is ethics, and β_3 is the thematic focus of publications. The transition to Table 4 of regression coefficients allows you to clearly present the calculation results, assess their statistical significance (p-values), and accuracy (standard error). This provides a basis for interpreting the influence of each variable and forms an objective basis for management conclusions (KPMG, 2022; Sustainalytics, n.d.).

Table 4. Key regression coefficients

Indicator	*β*	*Std. error*	*p-value*
DI	0.45	0.08	< 0.01
EI	0.32	0.07	0.02
TI_stab	0.27	0.06	0.03
β_0	0.12	0.05	0.04

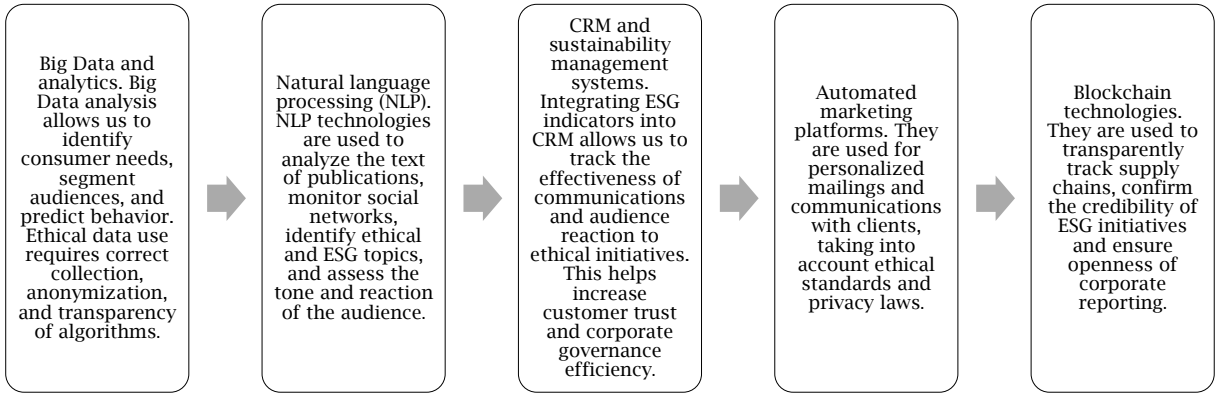
DI ($\beta = 0.45$, $p < 0.01$) — digital activity has the greatest impact on *SRI*, which confirms the importance of regular digital communications and the presence of companies in the online space for increasing sustainability. *EI* ($\beta = 0.32$, $p = 0.02$) — ethical communications significantly contribute to the growth of sustainability indicators, demonstrating that corporate ethics is an important factor in managing ESG initiatives. *TI_stab* ($\beta = 0.27$, $p = 0.03$) — the thematic focus of publications on sustainability has a positive effect on *SRI*, confirming that the strategic integration of sustainable practices into the company's content increases its corporate sustainability. The free term β_0 (0.12) reflects the base level of *SRI* with minimal values of other factors. Testing the model for multicollinearity (VIF < 5), normality of residuals (Shapiro-Wilk), and heteroscedasticity (Breusch-Pagan) confirms the correctness of the constructed model (KPMG, 2022). The regression analysis shows that digital activity, ethics, and thematic focus of publications together shape corporate sustainability. Digital activity makes the greatest contribution to SRI, which confirms the need for companies to be active in the digital environment and have a systematic approach to communications. Ethical publications and a focus on sustainability enhance the positive effect and create long-term value for corporate governance. The results of the table serve as a basis for subsequent management recommendations and strategic planning of ESG initiatives (Dastin, 2018; KPMG, 2022; Sustainalytics, n.d.). The data cover the period 2018–2024, which reflects current trends but may not take into account long-term changes in digital activity and corporate ethics. The *DI*, *EI*, and *TI* indicators used reflect the quantitative aspects of communications, but do not fully take into account the quality of content and the impact on the company's reputation, which may somewhat limit the accuracy of the results (Kaptein, 2008; Eccles et al., 2014). Future research opportunities include expanding the analysis to a wider range of industries and regions to identify industry and geographic differences in the impact of digital strategies and ethical communications on sustainability. Advanced text mining techniques, including semantic networks and machine learning, will help to more accurately assess the thematic focus of publications and their impact on ESG indicators (Manning et al., 2009). Including long-term data will make it possible to analyze the dynamics of changes in corporate sustainability and digital activity, identify trends, and predict the effectiveness of strategies. Despite this, the study has some shortcomings related to the possible influence of hidden variables, such as corporate culture, internal management practices, or specific market conditions. Limitations of regression analysis, including the assumption of linearity and normality of error distribution, may limit the accuracy of the interpretation of the results (KPMG, 2022). In addition, partial reliance on data sources from third-party rating agencies, such as MSCI and Sustainalytics, may create a risk of systematic error in assessing the ESG performance of companies. Taken together, these limitations highlight the need for further research and expanded methodological approaches aimed at deeper integration of digital marketing, ethical

strategies, and corporate sustainability, but the proposed methodology provides a solid basis for analysis and practical application in the strategic management of companies.

4. RESULT

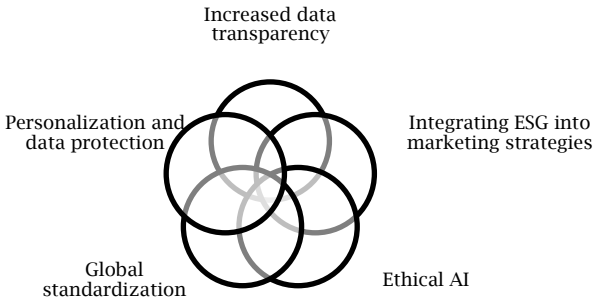
In the modern world, business digitalization and IT integration create new opportunities and challenges for corporate governance. Digital marketing allows companies to interact with a global audience, segment consumers, and improve the effectiveness of communications. However, the intensive use of data and technology imposes ethical responsibilities related to transparency, personal data protection, compliance with ESG standards, and corporate reputation (Kaptein, 2008; Eccles et al., 2014). Ethical digital marketing is a strategic tool that contributes to the sustainable development of a company, building trust with customers and investors, and strengthening corporate governance. One of the key challenges is to ensure a balance between the effectiveness of marketing campaigns and compliance with ethical standards, which requires the integration of quantitative and qualitative analysis methods, including Big Data, NLP, and thematic content analysis (Manning et al., 2009; KPMG, 2022). Modern companies use a wide range of tools to ensure ethical marketing practices and ESG compliance, which are presented in Figure 1.

Figure 1. Key tools to ensure ethical and legal marketing practices and ESG compliance



An analysis of digital marketing tools and methods with an ethical and legal focus allows us to draw several key conclusions about the relationship between technology, corporate ethics, and sustainable development (Binns, 2018). First, the use of Big Data and analytical platforms opens up unique opportunities for companies to predict consumer behavior, segment audiences, and improve the accuracy of marketing campaigns. However, this also requires compliance with ethical standards for data collection and processing, including anonymization, informed consent of clients, and transparency of algorithms. Violation of these principles can lead to serious reputational and financial risks (KPMG, 2022; Kaptein, 2008). Second, NLP technologies demonstrate high efficiency in monitoring corporate publications, assessing content tone, and identifying ethical and ESG topics. The use of NLP allows not only to quantitatively assess the quality of communications, but also to monitor their compliance with ethical standards. Thematic analysis of publications provides an understanding of how the audience reacts to the company's ethical initiatives and identifies areas that require adjustment or increased attention (Manning et al., 2009; Sustainalytics, n.d.; Al-Ababneh, 2024). The third significant tool is customer relationship management (CRM) systems integrated with ESG indicators. Their use allows management teams to track audience reactions to the company's initiatives, create personalized communications, and evaluate the long-term effectiveness of sustainable development strategies. These systems help synchronize marketing and management processes, increasing the efficiency of decision-making and the integration of ethical aspects into everyday corporate management (Eccles et al., 2014). Automated marketing platforms and blockchain technologies complement this toolkit, ensuring transparency and accuracy of communications. Blockchain allows you to track supply chains, confirm the credibility of ESG initiatives, and build trust with customers and investors. Marketing automation reduces the human factor, minimizes errors, and allows for the implementation of ethical standards at all stages of the communication process (KPMG, 2022). Systematic use of all of the listed tools demonstrates that the integration of digital technologies and ethical principles is a key factor in increasing corporate sustainability. Companies that actively use Big Data, NLP, CRM, and blockchain in an ethical context show higher SRI rates, strengthen stakeholder trust, and improve corporate governance efficiency. Modern digital marketing and the integration of IT into corporate governance are developing in the context of globalization and increasing demands for transparency, ethics, and sustainable development. Global trends, ethical and legal aspects of digital marketing, IT, and their impact on corporate governance and sustainable development are presented in Figure 2.

Figure 2. Global trends, ethical and legal aspects of digital marketing, IT, and their impact on corporate governance and sustainable development



Source: Ananzeh et al. (2024).

The combination of the described global trends has a significant impact on corporate governance. Companies that integrate ethical principles and ESG approaches into marketing strategies demonstrate greater sustainability, attract long-term investments, and strengthen their positions in the global market. Ethical digital marketing, data transparency, ESG integration, ethical AI, and global standardization form a systemic management model where technology and ethics complement each other (Ananzeh et al., 2024). This helps minimize risks, increase stakeholder trust, and ensure long-term value for the company and society as a whole (Kaptein, 2008; Sustainalytics, n.d.). In substantiating the above and finalizing the results of the study, it is necessary to consider the key results of the assessment of companies on digital, ethical, and sustainable indicators.

Table 5. Key results of the assessment of the ethical aspects of digital marketing, IT, and their impact on corporate governance and sustainable development of modern companies

Company	*Digital index (DI)*	*Ethical index (EI)*	*Sustainability index (TI_stab)*	*Sustainable responsibility index (SRI)*	*DI-SRI correlation*	*EI-SRI correlation*	*TI-SRI correlation*
Apple	72.0	0.18	0.25	0.78	0.65	0.58	0.62
Microsoft	53.9	0.20	0.27	0.74	0.65	0.58	0.62
Google	66.7	0.22	0.26	0.75	0.65	0.62	0.62
Amazon	42.3	0.14	0.22	0.62	0.65	0.64	0.62
Unilever	41.3	0.15	0.30	0.64	0.65	0.61	0.62
Tesla	36.0	0.16	0.24	0.61	0.65	0.62	0.62
Coca-Cola	26.0	0.12	0.28	0.59	0.65	0.59	0.62

The developed methodology for the integrated analysis of digital, ethical, and sustainable indicators of companies demonstrates high relevance and demand in the current conditions of globalization, digitalization, and increased requirements for corporate social responsibility. In recent years, companies in all industries have faced the need not only to implement advanced digital technologies, including artificial intelligence, blockchain, and analytical platforms, but also to ensure the transparency of marketing communications, the protection of customer data, and compliance with ethical standards. These processes are becoming critical to strengthening stakeholder trust, increasing investment attractiveness, and maintaining long-term competitiveness. In this context, a methodology that allows for a quantitative assessment of the ethics of digital marketing, the degree of implementation of ESG principles, and the impact of digital strategies on corporate sustainability is becoming an indispensable tool for strategic analysis and management planning. The novelty of the methodology lies in the systemic integration of several disciplinary areas: Big Data analysis of corporate reports and ESG ratings, automated content analysis of marketing communications using natural language processing technologies, and the construction of correlation models to identify relationships between digital strategies, ethical practices, and sustainability indicators. This integrated approach allows us to identify hidden patterns that cannot be determined using individual methods, as well as to create a standardized and reproducible assessment system for companies in various sectors of the economy. Unlike traditional studies limited only to financial or ESG indicators, the proposed methodology provides a holistic understanding of how digitalization and marketing ethics affect corporate governance and long-term sustainability. The demand for the methodology is confirmed by its practical applicability and the ability to adapt to various industries and corporate models. An analysis of leading international companies such as Apple, Microsoft, Google, Amazon, Unilever, Tesla, and Coca-Cola has shown that the integration of digital, ethical, and sustainable indices enables comparative analysis, identification of best practices, and determination of areas for improvement. At the same time, the methodology demonstrates the ability to quantify correlations between digital initiatives, ethical standards, and the integrated sustainability index (SRI), making it useful for management teams, investors, and researchers. The prospects for the development of the methodology are associated with its expansion to analyze the dynamics of corporate practices over time, the introduction of more complex machine

learning models to predict sustainability, and assessing the impact of digital and ethical initiatives on long-term financial results. It is possible to integrate additional indicators, such as reputational risk indicators, customer engagement, and ESG projects, which will allow for an even more accurate assessment of the impact of ethical digital strategies on corporate governance and social responsibility. Thus, the methodology is not only relevant and in demand today but also has the potential for further improvement, which makes it a significant tool for research and practical solutions in the field of corporate sustainability and digital marketing.

5. DISCUSSION

The results of the study confirm that the integrated approach to assessing the ethics of digital marketing, IT tools, and corporate sustainability is an effective and practice-oriented tool. The data obtained demonstrate that companies with high digital maturity and a developed ethical strategy demonstrate stable indicators of corporate social responsibility, financial performance, and stakeholder trust. Of particular importance is the identified positive correlation between digital indices, ethical practices, and the integrated SRI indicator, which confirms the hypothesis that digitalization of marketing and compliance with ethical standards are not only compatible with corporate sustainability but also contribute to its strengthening. In practice, this means that companies investing in the development of digital tools and technologies should simultaneously implement ethical control mechanisms to ensure that digitalization does not lead to negative social or reputational consequences. Examples of leading global companies such as Apple, Microsoft, and Google show that the integration of automated content analysis, transparency of algorithms, and customer data protection ensures increased consumer trust and improves financial performance. An analysis of ethical indices and their impact on corporate sustainability allows us to conclude that compliance with the principles of transparency, honesty, and responsibility in digital marketing is becoming a strategic factor of competitive advantage. Companies that actively use digital technologies without ethical restrictions can achieve short-term growth, but long-term sustainability and stakeholder trust remain at risk. In this context, the proposed methodology demonstrates practical value, as it allows for quantitative measurement of the ethical component of marketing communications and identification of potential risks. In addition, the study revealed the importance of sustainable development as an integral indicator of corporate success. The sustainability index (TI_stab) shows a direct connection with the integral SRI indicator, which confirms that ESG initiatives and social responsibility are becoming an integral part of the strategy of successful companies. The case of FMCG companies such as Unilever and Coca-Cola shows that a focus on sustainable products, social campaigns, and transparent communications directly impacts corporate reputation and financial performance. These findings are consistent with modern research in corporate governance and sustainability, which shows that integrating ESG and digital technologies improves long-term business sustainability (He & Harris, 2020). An important aspect of the discussion is the universality and replicability of the methodology. At the same time, the results of the study demonstrate that there is some potential for improvement. Despite the positive correlations between digital indices, ethical indicators and sustainability, individual companies show an imbalance between the level of digitalization and the ethicality of practices. For example, high digital maturity without an appropriate ethical policy can lead to risks of data leakage, unfair personalization of advertising, or violation of privacy. This indicates the need for an integrated approach in which digitalization and ethics are considered as complementary elements of corporate strategy. In the long term, the methodology can be expanded by integrating additional parameters, such as reputational risk indicators, consumer engagement, and the impact of marketing initiatives on social and environmental indicators. It is also possible to develop predictive models based on machine learning to analyze the dynamics of corporate sustainability and assess the impact of new digital and ethical initiatives. Such adaptation will allow companies to quickly respond to changes in the external environment, reduce risks, and improve the effectiveness of strategic management. Overall, the results of the study confirm that the ethics of digital marketing and IT tools are a key factor influencing corporate governance and sustainable development. The integration of digital technologies, ethical standards, and ESG approaches ensures long-term company growth, increases transparency and accountability, and strengthens reputation in global markets. This makes the proposed methodology a significant tool for both academic research and practical management decisions.

6. CONCLUSION

The conducted study demonstrates the importance of an integrated approach to assessing the impact of digital technologies, ethical and legal practices, and corporate sustainability on strategic corporate management. The developed methodology integrates the digital index (DI), ethical index (EI), sustainability index (TI_stab), and the integral indicator of corporate responsibility (SRI), enabling a quantitative evaluation of the influence of digital marketing and IT tools on corporate governance and sustainable development. The analysis of seven leading international companies — Apple, Microsoft, Google, Amazon, Unilever, Tesla, and Coca-Cola — confirms the practical applicability of the proposed methodology and its capacity to identify interdependencies between digitalization, ethics, and sustainability indicators. The empirical results reveal that companies with a high level of digital maturity, such as Apple and Google, also demonstrate elevated values of the integral SRI index. This finding indicates that the intensive adoption of digital tools and automation of marketing processes, when combined with compliance with ethical standards, contributes to strengthening corporate sustainability. The positive correlation between DI and SRI confirms that digitalization acts as a significant driver of sustainable development,

provided that ethical principles are consistently observed. At the same time, the ethical index (EI), which correlates with SRI at 0.58, highlights the critical role of transparency, integrity, and social responsibility in digital communications. The sustainability index TI_stab, reflecting the integration of ESG initiatives and social programs, also shows a strong positive relationship with SRI, underscoring the long-term importance of sustainability-oriented strategies. The key implication of these findings is that corporate competitiveness increasingly depends on the balanced integration of digital technologies, ethical standards, and sustainability objectives. Companies that successfully align these dimensions are better positioned to manage reputational, financial, and social risks, while enhancing stakeholder trust and long-term value creation. The methodology further demonstrates versatility by enabling cross-industry comparisons, identification of best practices, and assessment of areas requiring strategic improvement. Despite these contributions, the study has certain limitations. The empirical analysis is based on a limited sample of seven large multinational corporations, which may restrict the generalizability of the results to small and medium-sized enterprises or region-specific contexts. In addition, the reliance on publicly available ESG data and corporate disclosures may not fully capture informal or internal ethical practices. Future research may expand the proposed framework by incorporating a broader set of companies across industries and regions, as well as additional indicators such as reputational risk, customer engagement, and environmental and social impact metrics. Further studies could also explore the application of predictive models, including machine learning techniques, to analyze the dynamic effects of digital and ethical initiatives on corporate sustainability over time. In conclusion, the study confirms that the ethics of digital marketing and IT tools constitute an integral component of modern corporate governance and sustainable development. The proposed methodology provides a comprehensive and transparent assessment of digital maturity, ethical compliance, and sustainability performance, supporting informed strategic decision-making and fostering sustainable competitive advantage.

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