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How Digital Transformation Strategies Influence Corporate ESG Ratings — A Study Based on Empirical Analysis and Case Research

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Abstract: Driven by both globalization and informatization, digital transformation has become a crucial strategic direction for corporate development. Most enterprises pursue digital transformation in the wave of development to enhance financial performance and fulfill social responsibilities. This paper analyzes the main aspects of digital transformation strategies and examines their effects, with a particular focus on the impact of digital transformation strategies on corporate ESG (Environmental, Social, and Governance) ratings. Through empirical research, the study concludes that the higher the degree of digital transformation, the higher the corporate ESG rating. Based on this conclusion, the paper selects SANY Heavy Industry, a company listed on the A-share market, as a representative case to explore how its development strategy affects its ESG rating, and offers conclusions and insights.

Keywords: Digital Transformation, ESG Rating, Empirical Analysis, Case Study

1. Introduction

1.1. The concept of corporate ESG

With the growing global emphasis on sustainable development, the concept of green development has gained increasing attention. Traditional economic development has come at the cost of massive resource consumption and environmental pollution, while green development emphasizes sustainability and environmental cleanliness [1]. As a result, an increasing number of enterprises are beginning to focus on environmental, social, and governance issues, giving rise to ESG reports. ESG ratings measure a company's performance in these three dimensions and are becoming a key indicator used by investors, customers, and the public to assess corporate value. Variations in ESG performance among companies may stem from differences in management levels and environmental pressures [2]. As a corporate management framework, ESG emphasizes performance in environmental protection, social responsibility, and sound governance. Originating in the context of sustainable development and responsible investment, ESG reflects a company's commitment to social responsibility.

In terms of the environment, ESG ratings assess a company's impact on and sustainability with respect to the natural environment. This includes reducing carbon emissions, optimizing energy use, promoting renewable energy, and managing waste and pollutants. Companies should consider their environmental footprint and take actions to mitigate adverse environmental effects.

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Socially, ESG ratings focus on a company's impact on societal welfare, including employee rights, consumer protection, community engagement, and human rights. Enterprises should promote social equity and inclusiveness while actively fulfilling social responsibilities to meet stakeholder expectations.

From a governance perspective, ESG ratings evaluate whether a company's decision-making and management processes are transparent, fair, and accountable. Good corporate governance includes an independent board of directors, transparent financial reporting, effective risk management, and compliance systems. A sound governance structure helps ensure rational decision-making and effective oversight, thereby strengthening internal controls and risk management capabilities.

1.2. Overview of digital transformation strategies

Digital transformation, through innovations in technology and business models, has significantly altered the flow and speed of knowledge [3] and has become one of the strategic options for enterprise development. With the ongoing maturation of emerging technologies such as cloud computing, big data, artificial intelligence, and the Internet of Things, comprehensive digital transformation strategies have emerged. These strategies better equip enterprises to respond to changes in the market environment, enhance competitiveness, meet the growing demand for personalization, and improve operational efficiency.

A digital transformation strategy refers to the comprehensive use of modern information technology by enterprises to fundamentally redesign and reshape business models, organizational structures, corporate culture, and workflows, with the aim of achieving digitalization and intelligent operations, thereby enhancing core competitiveness and sustainable development capacity. Compared to other decision-making behaviors, digital transformation requires more foresight and innovation, making the practices of leading companies particularly valuable for reference [4]. This strategy involves not just technological applications but also changes in corporate thinking and management philosophy. It mainly includes key aspects such as business model innovation, operational efficiency improvement, data-driven decision-making, organizational and cultural transformation, and customer experience optimization.

Digital transformation expands the channels through which enterprises obtain financial information [5]. Companies that implement digital transformation strategies often demonstrate this through their business operations, corporate culture, financial performance, and annual report texts. Given the significant impact of digital transformation on all aspects of enterprise reform, it has become a focal point of strategic attention. Enterprises seek to optimize management structures, enhance production capacity, and improve environmental performance through digital transformation [6].

The implementation of digital transformation strategies has profound implications for enterprises. In terms of improving efficiency, digital transformation strategies—being closely tied to intelligentization—can significantly reduce costs, save labor, and markedly boost productivity, accounting efficiency, and operational efficiency. Digital transformation also promotes the development of a green economy by fostering innovation in product design and manufacturing. This enables companies to develop more environmentally friendly and energy-efficient products. By adopting digital design tools and simulation software, firms can consider material selection, energy performance, and recyclability during the design phase, thereby accelerating the market entry of green products. Moreover, technologies such as the Internet of Things and big data analytics enable real-time monitoring and optimization of resource usage in production processes, enhancing resource recycling and contributing to environmental performance improvements. Digital technologies can promote optimal resource utilization and environmental protection to a certain extent, facilitating sustainable development [7] and improving ESG performance. Digital transformation significantly

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reduces labor costs and material consumption, enabling cost reduction. With big-data-enabled customer segmentation and behavioral analysis, companies can implement more precise marketing strategies, improve conversion rates and customer loyalty, and ultimately increase sales revenue. At the same time, digital transformation enhances corporate transparency and credibility, helping companies secure funding at a lower cost.

2. Empirical analysis of the impact of digital transformation strategy on ESG

Given that industries across China are actively pursuing digital transformation while also striving for higher ESG ratings, this study selects A-share listed companies in China as the research sample, using the period from 2018 to 2022 as the research window. By reviewing existing relevant studies, this paper identifies the dependent, independent, and control variables based on prior research and constructs a research model, laying the foundation for subsequent empirical analysis.

Based on theoretical research on the impact of corporate digital transformation strategies, we propose the following hypothesis:

H_1: Digital transformation strategies have a significant positive effect on corporate ESG ratings.

2.1. Sample selection and data sources

Building on previous studies, this paper continues to explore the subject by selecting A-share listed companies in China from 2018 to 2022 as the research sample. To enhance the accuracy and robustness of the results, the sample was processed as follows:

(1) Companies labeled ST, *ST, and PT were excluded due to abnormal financial conditions and potential major financial fraud;

(2) Companies with incomplete data were removed, as data integrity affects the accuracy of regression results;

(3) Winsorization was applied to extreme values below the 1st percentile and above the 99th percentile.

A total of 7,988 observations from A-share listed companies were retained. All data were obtained from the CSMAR database by GTA Information Technology Co., Ltd. Excel 2019 was used for initial data processing, and Stata 17.0 was employed for regression analysis.

2.2. Variable selection

2.2.1. Dependent variable

Wind ESG Composite Score (ESG): The Wind ESG composite score is used as the dependent variable. ESG performance (Environment, Social, and Governance) has become a new standard by which investors evaluate companies. With growing public attention to corporate ESG performance, companies are increasingly expected to assume greater social responsibility (Lei Lei et al., 2023). A higher Wind ESG composite score indicates a higher ESG rating.

2.2.2. Independent variable

Digital Transformation (ln_Digital): In the wave of the digital economy, digital transformation is a key pathway for high-quality development. Most companies are pursuing digital transformation. Theoretically, digital transformation promotes green technological innovation, not only directly addressing complex environmental governance challenges but also enabling more efficient resource allocation and consumption reduction, thereby improving environmental responsibility performance (Zhu Jinlin et al., 2024). The data for this variable are derived from the frequency of digital

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transformation-related terms in the annual reports of listed companies from 2018 to 2022. A higher frequency of such terms indicates a higher degree of digital transformation. To normalize the data and facilitate analysis, the natural logarithm of the term frequency was taken, resulting in the variable ln_Digital.

2.3. Model construction

To further investigate the relationship between digital transformation and corporate ESG performance, this paper controls for other variables and constructs the following regression model:

$$ESG_{i,t} = \alpha + \beta Digital_{i,t} + \gamma X_{i,t} + \sum COMPANY + \varepsilon_{i,t}$$

Where $ESG_{i,t}$ denotes the Wind ESG rating of company ***i*** in year ***t***, $Digital_{i,t}$ is the degree of digital transformation, serving as the independent variable; $X_{i,t}$ represents the control variables; COMPANY ($COMPANY$), $\varepsilon_{i,t}$ is the random error term.

Referring to existing literature, the following variables are selected as controls: company size ***(Size)***, financial leverage ***(Lev)***, growth ***(Growth)***, enterprise type ***(SOE)***, asset growth rate ***(AssetGrowth)***, return on equity ***(ROE)***, cash flow ratio ***(Cashflow)***, management shareholding ratio ***(Mshare)***, financial background of directors, supervisors, and senior executives ***(FinBack)***, and status as a high-tech enterprise ***(HighTech)***. The details of the variables are shown in Table 1:

Table 1: Variable definitions

Variable Type	Variable Symbol	Variable Name	Variable Description
Dependent Variable	ESG	ESG Composite Score	The Wind ESG composite score assigned to the company.
Independent Variable	ln_Digital	Digital Transformation	The natural logarithm of the frequency of digital transformation-related terms in the company's annual report.
Control Variable	Size	Firm Size	The natural logarithm of the company's total assets at the end of the year.
	Lev	Financial Leverage	The ratio of total liabilities to total assets.
	Growth	Growth	Calculated as (current operating revenue – previous operating revenue) / previous operating revenue.
	SOE	Firm Type	Assigned a value of 1 if the company is state-owned based on ownership nature, otherwise 0.
	AssetGrowth	Total Asset Growth Rate	The ratio of the increase in total assets during the year to the total assets at the beginning of the year.
	ROE	Return on Equity	Net profit divided by the average balance of shareholders' equity.
	Cashflow	Cash Flow Ratio	Net cash flow from operating activities divided by total liabilities.
	Mshare	Management Shareholding Ratio	The proportion of shares held by management to the total number of company shares.
	FinBack	Financial Background of Executives	Assigned a value of 1 if directors, supervisors, or executives have a financial background, otherwise 0.
	HighTech	High-Tech Enterprise	Assigned a value of 1 if the company is a high-tech enterprise, otherwise 0.
	COMPANY	Firm Fixed Effects	Dummy variable for company fixed effects.

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This chapter first filters data from China's A-share listed companies from 2018 to 2022, retaining 7,988 observations from 1,597 companies. Then, guided by existing literature, it identifies the dependent, independent, and control variables. Finally, based on prior studies, it constructs a regression model for empirical testing.

2.4. Empirical results

2.4.1. Descriptive statistics

As shown in Table 1, the descriptive statistics for all variables are presented below. The sample consists of 6,886 observations. The mean ESG score is 6.052, with a maximum of 9.400, a minimum of 3.350, and a standard deviation of 0.798, indicating considerable variation in ESG performance among A-share listed companies. The variable ln_Digital, representing the natural logarithm of the frequency of digital transformation-related terms, has a mean of 2.386, a standard deviation of 1.333, a minimum of 0, and a maximum of 6.299. This suggests that the degree of digital transformation varies significantly across firms.

Table 2: Descriptive statistics of key variables

Variable	Observations	Mean	Std. Dev.	Min	Max
ESG	6,886.000	6.052	0.798	3.350	9.400
ln_Digital	6,886.000	2.386	1.333	0.000	6.299
Size	6,886.000	22.445	1.299	19.975	26.452
Lev	6,886.000	0.420	0.184	0.051	0.902
Growth	6,886.000	0.132	0.309	-0.658	2.032
SOE	6,886.000	0.274	0.446	0.000	1.000
AssetGrowth	6,886.000	0.121	0.234	-0.384	1.812
ROE	6,886.000	0.057	0.140	-0.939	0.437
Cashflow	6,886.000	0.053	0.062	-0.167	0.267
Mshare	6,886.000	15.289	19.082	0.000	69.622
FinBack	6,886.000	0.631	0.483	0.000	1.000
HighTech	6,886.000	0.635	0.482	0.000	1.000

2.4.2. Regression results

The regression results indicate that the coefficient of digital transformation (ln_Digital) on ESG composite scores (ESG) is 0.049 and statistically significant at the 1% level, suggesting that the implementation of digital transformation promotes an improvement in corporate ESG ratings, thereby confirming the hypothesis proposed in this study.

As for the control variables, the coefficient of firm size (Size) is 0.144 and significant at the 1% level, indicating a significantly positive relationship between firm size and ESG performance. This implies that larger publicly listed companies, due to their higher visibility, are more likely to emphasize corporate social responsibility. The coefficient of financial leverage (Lev) is -0.662 and also significant at the 1% level, demonstrating that firms with lower financial leverage tend to achieve higher ESG scores and are more willing to fulfill their social responsibilities.

To ensure the robustness of the results, this study substitutes the dependent variable ESG with the Huazheng ESG Index (ln_hzESG) to further test accounting conservatism. The results are shown in the table below.

According to the regression analysis, digital transformation remains significantly positively correlated with ESG ratings, consistent with previous results. The coefficient of ln_Digital on the

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Huazheng ESG Index (ln_hzESG) is 0.007, significant at the 5% level, indicating that digital transformation helps to a certain extent improve a firm's ESG performance and promotes the fulfillment of corporate social responsibilities.

Table 3: Baseline regression results

VARIABLES	ESG	ln_hzESG
ln_Digital	0.049***	0.007**
	-0.007	-0.003
Size	0.144***	0.068***
	-0.011	-0.004
Lev	-0.662***	-0.286***
	-0.06	-0.027
Growth	0.012	-0.030*
	-0.033	-0.016
SOE	0.043*	0.070***
	-0.025	-0.01
AssetGrowth	0.038	0.051**
	-0.048	-0.024
ROE	0.208***	0.392***
	-0.078	-0.045
Cashflow	0.454***	-0.051
	-0.161	-0.07
Mshare	0.001***	0.002***
	-0.001	0
FinBack	-0.042**	-0.051***
	-0.019	-0.007
HighTech	0.300***	0.016*
	-0.021	-0.009
Constant	2.744***	-0.057
	-0.226	-0.081
Observations	6,886	6,886
R-squared	0.091	0.121

Note: Values in parentheses are t-statistics. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

In summary, the empirical findings suggest that digital transformation strategies exert a significant influence on corporate social responsibility performance. Additionally, digital strategies may help firms expand their market reach and grow their business, thereby enhancing financial performance indicators.

The next section will present a case study analysis based on selected A-share listed companies.

3. Case study of digital transformation strategy — SANY heavy industry

3.1. Company overview

3.1.1. Company name and industry

SANY Heavy Industry Co., Ltd. (hereinafter referred to as "SANY Heavy Industry") is a well-known construction machinery manufacturer in China and worldwide, and is a subsidiary of the SANY

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Group. The company primarily operates in the construction machinery industry, covering various subfields such as concrete machinery, excavation machinery, hoisting machinery, piling machinery, and road construction machinery. As a leader in China's construction machinery sector, SANY Heavy Industry has vigorously advanced intelligent manufacturing and industrial internet platform development through its "Smart SANY" strategy. Leveraging technologies such as big data, cloud computing, and the Internet of Things, the company has realized digitalization and intelligent transformation across product design, production, and service processes. This has significantly improved production efficiency and resource utilization while reducing waste emissions. Furthermore, SANY Heavy Industry emphasizes environmentally friendly management throughout the entire product life cycle, which has enhanced its ESG rating.

3.1.2. Business operations

SANY Heavy Industry has a wide business scope. Its core products include excavators, concrete pump trucks, cranes, rotary drilling rigs, and road construction machinery. The company also provides comprehensive construction solutions and services, including equipment sales, leasing, maintenance, and digital and intelligent construction technologies.

3.1.3. Founding team

SANY Heavy Industry was founded in 1989 by Mr. Liang Wengen and others. Liang Wengen is a key founder of SANY Group and formerly served as the group's chairman, having made significant contributions to the development of China's construction machinery industry. Other founding members include Tang Xiuguo, Mao Zhongwu, and Yuan Jinhua, who collectively led SANY from a small welding materials factory to a global leader in construction machinery manufacturing.

3.1.4. Geographical location

The company's headquarters is located in Changsha, Hunan Province, China. It has established multiple R&D centers and manufacturing bases in Changsha, Beijing, Shanghai, Kunshan, and Bedburg, Germany, thereby forming a global industrial layout.

3.1.5. Production and operations

SANY Heavy Industry adopts an integrated business model combining R&D, manufacturing, sales, and service. It owns advanced smart manufacturing bases and a global service network. The company continuously invests in research and development to drive product innovation and the launch of new products, maintaining a leading technological edge in the industry. It also actively promotes digital and intelligent transformation by establishing smart factories and using IoT technologies to optimize after-sales services.

3.1.6. Ownership structure

SANY Heavy Industry is a publicly listed A-share company, with its stock traded on the Shanghai Stock Exchange (Stock Code: 600031). SANY Group is one of its major shareholders, and other institutional and individual investors also hold shares in the company.

3.1.7. Organizational structure

The company adopts a modern corporate governance structure with a board of directors, a board of supervisors, and a senior management team. The board of directors is responsible for formulating

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corporate strategies, the board of supervisors oversees compliance and legality of company operations, and the senior management team handles daily business operations. Internally, the company is organized into several business divisions, such as the Excavation Machinery Division and the Concrete Machinery Division, forming a matrix management model.

3.2. PEST analysis

3.2.1. Political and legal environment (P)

Thanks to government initiatives in infrastructure construction, new urbanization, and the "Belt and Road" Initiative, national policies have provided ample development opportunities for the machinery industry. For SANY Heavy Industry, preferential tax policies such as the VAT reform have created a favorable environment. Moreover, national promotion of ESG rating policies has provided strategic direction for the company's development.

3.2.2. Economic environment (E)

The continued growth of the market economy has driven large-scale infrastructure construction and real estate development, creating robust demand for SANY Heavy Industry's products and services. The national urbanization plan emphasizes strengthening urban development, particularly in central and western regions, offering long-term growth opportunities for the construction machinery industry. However, global economic fluctuations and regional economic cycles directly impact the company's export business, requiring flexible market strategies reference.

3.2.3. Social and cultural environment (S)

As societal focus on environmental protection and sustainable development continues to grow, SANY Heavy Industry must place greater emphasis on the research, development, and promotion of green, energy-efficient, and environmentally friendly products. In the era of digital transformation, the company must also focus on automation and intelligent technologies to improve production efficiency, as it stands at a developmental crossroads requiring alignment with these evolving environmental demands reference.

3.2.4. Technological environment (T)

With the rapid advancement of technology, construction machinery enterprises are in urgent need of high-tech solutions. In response, SANY Heavy Industry actively invests in R&D and leverages cutting-edge technologies such as the Internet of Things, big data, and artificial intelligence to enhance the intelligence level and competitiveness of its products. Additionally, digital transformation in production, supply chain management, and customer service contributes to improved operational efficiency and customer satisfaction.

3.3. The five forces model

3.3.1. Bargaining power of suppliers

As a leading player in the construction machinery industry, SANY Heavy Industry generally possesses strong bargaining power over its suppliers due to large-scale procurement and long-term cooperative relationships. However, suppliers of key components may be relatively concentrated, and these core suppliers may hold greater bargaining power.

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3.3.2. Bargaining power of buyers

SANY's clients include construction firms, mining enterprises, and leasing companies, which typically purchase in large volumes. Given the presence of multiple competitors in the market, buyers have a certain level of bargaining power. Additionally, factors such as product differentiation, brand loyalty, and technical support also influence the bargaining power of buyers.

3.3.3. Threat of potential entrants

The construction machinery industry is capital-intensive and technologically demanding, requiring significant initial investment and prolonged technological accumulation from new entrants. Moreover, SANY has established strong brand recognition, an extensive sales network, and a comprehensive after-sales service system, all of which act as barriers to entry and increase the difficulty for potential new competitors.

3.3.4. Threat of substitutes

Substitutes mainly come from two sources: other brands of construction machinery and emerging technologies or solutions, such as more efficient construction methods or materials. Although there are few direct substitutes, technological advancements could gradually lead to the replacement of traditional products by newer, more environmentally friendly equipment.

3.3.5. Intensity of industry rivalry

Domestically, SANY faces competition from major players such as XCMG and Zoomlion, while globally it contends with multinational giants like Caterpillar and Komatsu. The industry is highly competitive, manifesting in price wars, technological innovation, and service optimization. Companies must continuously innovate and enhance product quality and service to maintain and expand their market share.

3.4. Analysis of strategic choices

3.4.1. Strategic clock model

The Strategic Clock Model, proposed in 1996 by British strategic management professor Cliff Bowman based on Michael Porter's generic strategies, is a tool used to analyze a company's competitive strategy choices.

SANY Heavy Industry has adopted a differentiation strategy (high value with high price or high value matched with price) within the Strategic Clock framework. By continuously promoting innovation in digitalization and electrification, SANY has developed smart products such as the world's first 5G remote-controlled excavator. Relying on the Rootcloud industrial internet platform, SANY has upgraded its industry offerings, significantly enhancing the added value of its products and delivering unique market value. Although such innovations may incur higher costs, SANY strives to ensure the competitiveness of its high-value products through improved efficiency and optimized cost structures. This aligns with the high value–high price or high value–price match regions of the Strategic Clock.

3.4.2. Value chain analysis

Value chain analysis divides value-adding activities within and outside the company into primary and support activities. Primary activities include production, sales, inbound logistics, outbound logistics,

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and after-sales service. Support activities involve HR, finance, planning, R&D, and procurement, together forming the corporate value chain.

SANY's primary activities include raw material procurement and supply chain management, product R&D and innovation, manufacturing, marketing and sales, as well as after-sales service and technical support. Within this framework, SANY emphasizes supply chain optimization to reduce reliance on external suppliers, strengthen cost control, and ensure supply chain stability. Through an efficient supply chain management system, SANY guarantees material quality and timely delivery. It also increases R&D investment to promote intelligent technology applications, creatively establishing the SANY Production System (SPS), which highlights streamlined, just-in-time, and automated production to improve efficiency and product quality.

Support activities at SANY encompass infrastructure development, human resource management, technology development, and strategic and operational management. The company embraces the mission of "Quality Changes the World," formulates long-term development strategies, and emphasizes governance optimization. It values talent acquisition and development, having built a highly qualified team for R&D, management, and service. SANY also stresses corporate culture and staff training to inspire employee potential.

3.5. Reasons for choosing a digital transformation strategy

3.5.1. Urgent need for competitiveness in traditional industries

In traditional manufacturing, competition has shifted from purely production capabilities to a combination of service, digital, and manufacturing capabilities. Without digital transformation, traditional enterprises risk being outperformed or replaced by high-tech firms. Thus, SANY seeks to enhance its overall competitiveness through digital transformation to adapt to rapidly changing markets and tackle challenges from both domestic and international competitors.

3.5.2. Changing market and customer demands in the new era

With the rapid development of the digital age, customers increasingly demand intelligent and digital solutions. Digital transformation allows SANY to better align with market needs and customer expectations, deliver customized solutions, and improve customer satisfaction and loyalty.

3.5.3. Internal efficiency and cost control

Digitalization significantly boosts internal operational efficiency by reducing reliance on manual labor through automation and smart technologies, lowering labor costs, improving productivity and product quality, and maximizing profits. By optimizing internal processes and enhancing production flexibility and market responsiveness, SANY can maintain stable operations even during industry downturns through effective cost control.

3.5.4. Strategic upgrading needs

To achieve the strategic goals of "two new and three transformations" (digitalization, electrification, and internationalization strategies, along with new businesses, new formats, and new models), digital transformation is an essential path and a critical measure for realizing the company's long-term development objectives.

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3.6. The impact of SANY heavy industry's digital transformation on its ESG rating

3.6.1. Environmental (E) impact of digital transformation

Through the application of digital technologies, SANY Heavy Industry has achieved refined management of production processes, optimized energy usage, and reduced raw material waste, thereby lowering energy consumption and carbon emissions. In the course of development, a more transparent and efficient supply chain system has been built, making supply chain management more environmentally friendly and promoting the green upgrading of the industrial chain.

SANY Heavy Industry has developed intelligent construction machinery products, which significantly reduce carbon emissions and noise pollution during operations when compared to traditional fuel-powered equipment. These intelligent devices further reduce environmental impacts by precisely controlling and optimizing operational efficiency.

Additionally, digital technologies have enhanced SANY's ability to monitor construction environments, enabling the company to better protect ecological environments during the construction process and prevent unnecessary damage to surrounding areas. Through training and technical empowerment, frontline workers are not only able to master advanced skills but also practice green production concepts in their daily work. The environmental protection effects of the digital transformation strategy are significant.

3.6.2. Social (S) impact of digital transformation

As a leading company in the industry, the digital transformation process at SANY Heavy Industry has had a broad social impact. Its successful cases have set a benchmark for the construction machinery industry, driving technological innovation and the digitalization process throughout the entire industry, promoting the collaborative development of upstream and downstream industries, and contributing to local economic growth.

At the same time, the digital transformation of the company has created new job demands, such as positions for data analysts, AI engineers, and intelligent manufacturing technicians, thus promoting the optimization and upgrading of the employment structure. SANY Heavy Industry has established an incentive mechanism for digital transformation, stimulating employees' enthusiasm for learning new skills. Additionally, the company collaborates with educational institutions to cultivate versatile talent that can meet future industrial demands, providing high-quality labor resources to society.

3.6.3. Governance (G) impact of digital transformation

During its digital transformation process, SANY Heavy Industry has not only optimized internal management but also improved overall operational efficiency and decision-making quality. This has enhanced the company's market competitiveness and sustainable development capacity. By establishing a unified data asset platform, the company has improved its data analysis capabilities, enabling real-time access to accurate data from production, sales, supply chain, and other areas, providing data-driven decision support to management. At the same time, internal processes have been standardized and automated, reducing human error and improving production efficiency.

Furthermore, through the digital transformation strategy, the company has strengthened its risk monitoring capabilities, enhanced internal controls, and reduced the risk of non-compliance.

The implementation of the digital transformation strategy has also enabled SANY Heavy Industry to optimize resource allocation from a holistic perspective, achieving efficient collaboration across business units and departments. By integrating information systems, the company can better coordinate production, sales, research and development, and other key functions, creating synergies that accelerate new product launches and enhance market responsiveness.

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4. Conclusion and recommendations

4.1. Companies can enhance their ESG rating through digital transformation strategies

By implementing a digital transformation strategy, companies can make their products and production chains greener and more sustainable. Additionally, digital transformation can help reduce risks and further enhance a company's social responsibility. More companies today are pursuing digital transformation strategies within the context of ESG, aiming to elevate their ESG ratings while advancing digitalization and intelligence.

4.2. The multifaceted impact of digital transformation strategies on business development

4.2.1. Cost reduction and profit enhancement

Digital transformation helps companies achieve lean management by reducing labor, saving material consumption, optimizing supply chains, and cutting unnecessary expenses. This leads to significant reductions in operational and labor costs, ultimately enhancing profits.

4.2.2. Enhanced customer loyalty

Digital tools allow companies to better understand and predict customer needs, providing personalized services. For example, by analyzing data on consumer behavior, companies can tailor marketing strategies or use AI-driven customer service to improve response times and service quality, enhancing customer satisfaction and loyalty.

4.2.3. Promoting product innovation

The digital transformation strategy enables companies to develop new products and services and enter new markets. By leveraging technologies like big data, artificial intelligence, and 3D printing, companies can quickly iterate product designs, implement customized production, and even create entirely new business models.

4.2.4. Strengthening competitive advantage

In the context of digital transformation, companies can significantly enhance their competitive advantages in areas such as process automation, product digital innovation, and more, improving both their products and business operations.

4.3. Companies should combine the times with their own characteristics when implementing strategies

Research and analysis of different companies show that, when implementing strategies, businesses should choose approaches that align with both the development of the times and their own characteristics.

On one hand, companies should align their development with the characteristics of the era. For instance, digital transformation is an inevitable trend, and enabling reasonable transformation that meets the demands of the times and users is crucial for sustainable development. On the other hand, a company's strategic choice should also consider its own characteristics. For example, the traditional cultural industry may only be suited for digital transformation in certain processes, while its presentation methods may not be suitable for digital innovation, as it could hinder users from experiencing traditional culture authentically.

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Therefore, companies should combine the development of the times with their own characteristics to find a development path that suits them when implementing strategies.

References

[1] *Gan, L. (2025). The impact of green finance development on corporate mergers and acquisitions and per formance: Based on the ESG perspective. Financial and Accounting Communications, (08), 29-33. https:// doi.org/10.16144/j.cnki.issn1002-8072.2025.08.006*

[2] *Chen, Y. (2025). Corporate financial flexibility, external environment governance, and ESG performance. Financial and Accounting Communications, (08), 52-56. https://doi.org/10.16144/j.cnki.issn1002-8072.2025.08.009*

[3] *Liu, G., Yan, Y., & Liu, Y. (2025). Digital transformation and green innovation: The moderating role of intellectual property protection. Soft Science, 1-13. Retrieved April 17, 2025, from http://kns.cnki.net/kcms/ detail/51.1268.G3.20250417.1324.010.html*

[4] *Lu, X., Pan, H., & Xin, F. (2025). Research on the multiple group effects of corporate digital transformation. Soft Science, 39(02), 1-8. https://doi.org/10.13956/j.ss.1001-8409.2025.02.01*

[5] *Fan, Y., & Wei, W. (2024). The impact of corporate digital transformation on the comparability of accounting information: The "inverted U-shaped" moderating effect of executive stock incentives. Accounting Friends, (21), 41-51.*

[6] *Wang, D., & Zhang, Y. (2024). Corporate digital transformation, strategic green innovation, and environmental performance. Economic Research, 59(10), 113-131.*

[7] *Ma, Y., Song, P., Liu, W., et al. (2025). Digital transformation, new productivity, and corporate ESG pe rformance. Accounting Friends, 1-9. Retrieved April 17, 2025, from http://kns.cnki.net/kcms/detail/14.1063. F.20250411.1323.002.html*