

An ESG Evaluation System Based on New Quality Productivity and Blockchain Application

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Abstract: Within the context of the rapid advancement of information technology, this study examines the effects of information construction in the "Pilot Zones of Integration of Information and Industrialization" on the synchronicity of stock prices. The research findings indicate that the development of information has a significant reducing effect on stock price synchronicity. This conclusion still holds after undergoing a series of robustness tests. Furthermore, the impact is more evident in enterprises with dual roles and in areas with lower levels of legal governance. Additional analysis suggests that information construction mitigates stock price synchronicity by improving corporate governance and ensuring the prompt and accurate representation of company-specific information. In conclusion, this research offers insights for policymakers regarding the promotion of informationization, the optimization of corporate governance frameworks, and the enhancement of capital market efficiency. It advocates for the strengthening of legal protections and oversight mechanisms to guarantee that informationization can effectively elevate corporate governance standards and market transparency.

Keywords: ESG, New Quality Productivity, Blockchain Technology, Corporate Sustainable Development.

1. Introduction

In the context of the globalized economy, the Environmental, Social, and Governance (ESG) performance of businesses has become a crucial indicator for measuring their long-term value and sustainable development capabilities[1]. Investors and regulatory bodies increasingly value corporate ESG performance as a reflection of corporate social responsibility and potential for long-term growth. The ESG evaluation system not only helps businesses identify and manage risks but also promotes harmonious coexistence with society and the environment, maximizing economic, social, and environmental benefits[3].

The concept of new quality productivity signifies a new stage in the development of productive forces. This concept, with technological innovation at its core, emphasizes a qualitative leap in productivity through technological advancement and industrial upgrading. The connotation of new quality productivity is highly compatible with the ESG philosophy, and its development helps businesses achieve higher ratings in ESG evaluations. Studies show that the introduction of new quality productivity can significantly enhance a company's ESG performance, thereby strengthening its market competitiveness and social influence[6]. The development of new quality productivity provides new theoretical support and practical pathways for the ESG evaluation system by promoting continuous improvement in environmental protection, social responsibility, and governance structure.

The introduction of blockchain technology has brought revolutionary changes to the construction of the ESG evaluation system. With its characteristics of distributed ledgers, smart contracts, and tamper-proof data records, blockchain technology provides a solid technical foundation for the transparency and traceability of ESG information[11]. Applying blockchain technology in ESG ratings ensures the authenticity and reliability of the ESG information disclosed by companies, enhancing the credibility of the ratings.

Moreover, blockchain can simplify the collection and verification process of ESG information, reducing costs and improving efficiency. The advantages of blockchain technology make it promising for application in ESG ratings, facilitating innovation and development in the ESG evaluation system[12].

The aim of this paper is to delve into the theoretical basis and practical pathways of integrating new quality productivity and blockchain technology into the ESG evaluation system[5]. The paper first reviews the development history and current issues of the ESG evaluation system and analyzes its role in promoting corporate sustainable development. It then discusses in detail the core elements of new quality productivity and how it enhances corporate ESG performance through continuous improvement in environmental protection, social responsibility, and governance structure[4]. Additionally, the paper explores the potential of blockchain technology in the ESG evaluation system and how it can improve the transparency and traceability of ESG information.

Based on this, the paper proposes an ESG evaluation system framework that combines new quality productivity and blockchain technology and discusses its feasibility and potential impact. The significance of this study lies in providing a new theoretical foundation and practical guidance for constructing a more scientific and rational ESG evaluation system. By integrating new quality productivity and blockchain technology, we can more effectively assess and promote corporate sustainable development, which is of great importance for promoting the green transformation of the global economy.

The structure of the article is as follows: it first introduces the background and current status of the ESG evaluation system, including its role in promoting corporate sustainable development; then it discusses the potential impact of the combination of new quality productivity and blockchain technology on the ESG evaluation system, analyzing how new quality productivity can enhance corporate ESG

performance through continuous improvement in environmental protection, social responsibility, and governance structure; then it constructs an ESG evaluation system framework based on new quality productivity and blockchain technology and discusses its feasibility and potential impact; finally, it summarizes the entire article and proposes future research directions and policy recommendations.

2. Literature Review

Under the backdrop of sustainable development, the impact of ESG (Environmental, Social, and Governance) information disclosure on corporate innovation efficiency has attracted widespread attention. A study by Yao Linglin (2024) shows that there is a significant positive correlation between the quality of ESG information disclosure and corporate innovation efficiency, and this relationship exhibits heterogeneity in different contexts of marketization, financing constraints, and government subsidies[5]. This study provides an empirical basis for the improvement of the ESG information disclosure system and highlights the potential value of ESG information disclosure in promoting corporate innovation.

Li Rui (2024), starting from the perspective of logistics companies and taking Shunfeng Holdings as an example, explored the impact of ESG practices on corporate performance[8]. The study found that Shunfeng Holdings achieved positive results in environmental performance, social performance, and governance performance by implementing ESG measures. These practices not only enhanced the company's social image but also brought substantial financial performance improvements. The study emphasizes the role of ESG practices in promoting the high-quality development of logistics companies.

Bi Qian and Qu Tianli (2024) explored the impact of ESG rating divergence on audit decisions from the perspective of audit fees[2]. They found that ESG rating divergence increases audit fee levels, with corporate agency costs and media attention playing a mediating role between ESG rating divergence and audit fees. This finding provides a new perspective for understanding the economic consequences of ESG rating divergence and offers theoretical reference for audit firms' audit strategies in the face of ESG rating divergence.

Song Jia et al. (2024) focused on the concept of new quality productivity and discussed the impact of ESG development on corporate new quality productivity[13]. The results show that ESG development can significantly promote the improvement of corporate new quality productivity levels, especially in non-state-owned enterprises, small and medium-sized enterprises, and physical enterprises, where the role of ESG development in promoting new quality productivity is more significant. This study provides valuable empirical evidence for promoting corporate ESG development and accelerating the formation of new quality productivity in enterprises.

Zhu Xingxiong et al. (2018) discussed the application of blockchain technology in supply chain finance in their research[12]. They proposed that blockchain technology can improve the overall efficiency and quality of supply chain finance and enhance system security. By constructing a blockchain-based supply chain finance system, traditional problems in supply chain finance, such as incomplete credit information records and difficulties in financing, can be

solved, providing a shared and transparent information platform for all participants in the supply chain.

In summary, existing literature indicates that there is a positive association between ESG information disclosure and corporate performance, the concept of new quality productivity provides a new perspective for understanding corporate performance in ESG practices, and the application of blockchain technology has brought innovative solutions to the field of supply chain finance. These studies not only provide theoretical support for enterprises to implement ESG strategies but also offer valuable references for policymakers and auditors.

3. Background and Current Status of the ESG Evaluation System

The ESG (Environmental, Social, and Corporate Governance) evaluation system, as an important tool for measuring corporate sustainable development performance, has gained widespread attention on the international stage in recent years. The rise of this system stems from the growing global concern for climate change, social responsibility, and corporate transparency. ESG evaluation not only helps investors identify and assess a company's non-financial risks and opportunities but also encourages proactive actions by companies in environmental protection, social responsibility fulfillment, and governance structure optimization.

In terms of the environment, ESG evaluation emphasizes a company's strategy for addressing climate change, resource utilization efficiency, and ecosystem protection measures. The social dimension focuses on the company's labor practices, supply chain management, consumer protection, and community involvement. The governance dimension covers the company's board structure, compensation policies, internal controls, and shareholder rights. Through these multi-dimensional evaluations, the ESG system aims to promote the creation of long-term value for companies while reducing negative impacts on society and the environment.

Currently, the development of the ESG evaluation system shows a trend of diversification worldwide. Different rating agencies such as MSCI, Sustainalytics, and FTSE Russell use their own evaluation methods and indicator systems to score and rank the ESG performance of companies. These evaluation results are widely used in investment decision-making, corporate reputation management, and policy formulation processes.

However, the development of the ESG evaluation system also faces some challenges. Firstly, the lack of unified evaluation standards and methodologies makes it difficult to compare the ESG performance of companies. Secondly, the quality and transparency of corporate ESG information disclosure still need to be improved to meet the requirements of investors and regulatory bodies. In addition, for small and medium-sized enterprises, the resource investment in ESG evaluation and reporting may pose a burden.

To promote the development of the ESG evaluation system, international organizations and regulatory bodies are working on establishing global unified ESG information disclosure standards. For example, the International Financial Reporting Standards Foundation (IFRS Foundation) is considering the establishment of an International Sustainability Standards Board (ISSB) to coordinate and integrate existing ESG reporting standards. Moreover, companies are also improving the quality and consistency of their ESG practices and information disclosure through initiatives such as the United

Nations Global Compact and the Global Reporting Initiative (GRI).

The ESG evaluation system plays a crucial role in promoting corporate sustainable development. It not only guides companies to consider environmental protection and social welfare in their business operations but also enhances corporate governance levels, increasing transparency and accountability. The implementation of the ESG evaluation system helps companies identify and manage risks related to the environment, society, and governance, while seizing related opportunities to maintain a competitive edge in the long run. Additionally, the ESG evaluation system promotes dialogue between companies and investors, strengthening their joint commitment to sustainable development goals.

Despite some challenges, such as inconsistent evaluation standards, varying quality of information disclosure, and differences in capabilities and resources among companies in implementing ESG strategies, the global consensus on sustainable development goals provides a strong impetus for the improvement and application of the ESG evaluation system. International organizations, regulatory bodies, investors, and companies themselves are all working together to promote the standardization and internationalization of the ESG evaluation system. As more companies begin to recognize the positive impact of ESG practices on their brand value, market access, and risk management, the scope and depth of the application of the ESG evaluation system are expected to further expand.

4. New Quality Productivity and Blockchain Technology: Promoting the Deepening and Innovation of the ESG Evaluation System

In today's business environment, the combination of new quality productivity and blockchain technology has a significant potential impact on the ESG evaluation system. New quality productivity represents a new form of productive force with technological innovation at its core, emphasizing high-quality economic development through technological progress and industrial upgrading. Blockchain technology, with its distributed ledger, smart contracts, and data immutability, provides technical assurance for data transparency and security. The integration of these two forces brings new perspectives and possibilities for improvement to the ESG evaluation system.

Firstly, new quality productivity significantly enhances corporate ESG performance by promoting continuous improvement in environmental protection. Companies, by adopting low-carbon technologies and clean energy, not only reduce their negative impact on the environment but also innovate to develop more environmentally friendly products and services. These practices not only respond to global concerns about climate change but also improve resource efficiency, reduce production costs, and enhance market competitiveness.

Secondly, in terms of social responsibility, new quality productivity emphasizes a people-oriented approach, encouraging companies to take proactive measures in labor protection, consumer rights, and community involvement. Companies, by applying new technologies such as artificial intelligence and big data analysis, can better understand and meet the needs of employees and consumers, thereby establishing more harmonious labor and customer

relationships. Moreover, the application of blockchain technology ensures the transparency and traceability of social responsibility activities, enhancing the trust of all sectors in corporate social responsibility practices.

In terms of governance structure, the innovation and efficiency improvement advocated by new quality productivity require companies to establish more open and efficient management systems. The introduction of blockchain technology provides new tools for corporate governance, with smart contracts automatically executing contract terms, improving the efficiency and transparency of corporate operations. At the same time, the immutability of blockchain provides a reliable data recording platform for companies, helping to enhance the confidence of investors and other stakeholders in corporate governance structures.

The combination of new quality productivity and blockchain technology provides strong momentum for the innovation and improvement of the ESG evaluation system. Companies, through this integration, can not only achieve continuous improvement in environmental protection, social responsibility, and governance structure but also enhance their ESG performance, thus gaining a favorable position in the global wave of sustainable development. With the continuous advancement and in-depth application of technology, it is expected that this trend will become more pronounced in the future, and the ESG evaluation system will also usher in a broader development prospect.

5. Constructing an ESG Evaluation System Framework Based on New Quality Productivity and Blockchain Technology

Framework Construction. This study aims to provide a comprehensive analytical framework to assess and promote corporate performance in environmental, social, and governance aspects. The construction of the framework is based on an in-depth analysis of the existing ESG evaluation system, combined with the core elements of new quality productivity and the potential advantages of blockchain technology.

In the process of constructing an ESG evaluation system framework with Chinese characteristics, this study has adopted a series of principles to ensure that the system conforms to international standards while also adapting to China's social, economic, and cultural background. Firstly, the framework is closely aligned with China's national strategies and development plans, such as the "14th Five-Year" plan and carbon neutrality goals, to ensure synchronization with domestic development stages and industrial characteristics. Secondly, the framework is consistent with national policies and regulations, following policy orientations such as the "Guiding Opinions on Promoting High-Quality Development of the Banking and Insurance Industries" to promote the coordination of corporate ESG practices with national policies.

In addition, the framework incorporates elements of traditional Chinese culture, reflecting the social responsibility and socialist core values of Confucian thought, emphasizing corporate ethical standards and social responsibility. Technical adaptability is also considered, with the framework integrating China's technological advancements in new quality productivity, especially in technological innovation and industrial upgrading. These, as the core of new quality

productivity, play an important role in promoting continuous improvement of companies in environmental protection, social responsibility, and governance structure. The use of advanced technologies such as artificial intelligence, big data, and cloud computing enhances the collection, processing, and analysis capabilities of ESG data, helping companies more effectively achieve sustainable development goals.

At the same time, the design of the framework takes into account the characteristics of China's capital market and investor needs, aiming to provide a reference for investor decision-making and ensuring that ESG evaluation results have market adaptability and practical value. The framework also emphasizes the ability for continuous improvement, maintaining flexibility and openness to adapt to changes in the domestic and international economic environment and the development needs of society. Multi-party participation is another important principle in the construction of the framework, encouraging the participation of the government, businesses, investors, social organizations, and the public to

form a broad social consensus and cooperation mechanism.

The framework also ensures the transparency and comparability of ESG information, adopting unified standards and methods, so that the ESG performance of different companies and industries can be effectively compared, thereby improving the scientific and authoritative nature of the entire evaluation system. Through the comprehensive application of these principles, the constructed ESG evaluation system will more effectively promote the sustainable development of Chinese companies, provide strong support for China's green finance and social responsibility investment, and achieve long-term value creation for enterprises and social prosperity under the impetus of new quality productivity.

Based on the aforementioned theoretical standards, this framework has established a total of 5 first-level indicators and 15 second-level indicators, as shown in Table 1, where each dimension aims to fully capture the company's performance in the corresponding area.

Table 1. First-level and Second-level Indicators

First-Level Indicators	Second-level Indicators	Second-level Indicator Codes
Management Practice Score	Innovation Capability	M1
	Leadership and Strategy	M2
	Operational Efficiency	M3
Hotspot Event Score	New Quality Productivity	H1
	Public Relations	H2
	Risk Management	H3
Environmental Score	Energy Use and Carbon Footprint	E1
	Resource Management	E2
	Ecological Impact	E3
Social Score	Labor Standards	S1
	Consumer Protection	S2
	Community Involvement	S3
Governance Score	Board Structure	G1
	Shareholder Rights	G2
	Transparency and Disclosure	G3

Blockchain Application and Its Feasibility and Potential Impact Analysis. The application of blockchain technology in the Environmental, Social, and Governance (ESG) rating field has brought innovative changes to this area. Through a series of carefully designed steps, the technology can significantly enhance the transparency and accuracy of ESG data, thereby strengthening the credibility of the rating. Firstly, companies need to comprehensively collect ESG-related data, such as energy consumption, waste management, labor relations, community involvement, and governance structure. Subsequently, the authenticity of the data is ensured through internal audits and third-party verification. The verified data is then encrypted and uploaded to the blockchain platform, using the tamper-proof nature of blockchain to ensure the integrity and security of the data. On this basis, the introduction of smart contracts automates tasks such as data verification, scoring calculation, and report generation, improving the efficiency of the entire process and reducing human errors. In addition, authorized stakeholders can access and share ESG data in real-time, enhancing the usability of the data.

Based on the data on the blockchain, combined with established evaluation standards and algorithms, the company's ESG rating is calculated and published through the blockchain platform for all stakeholders to review. This open and transparent rating system not only promotes the development of responsible investment but also encourages companies to continuously improve their ESG performance. At the same time, regulatory authorities can monitor the ESG

performance of companies in real-time, reducing the difficulty and cost of supervision. However, despite the great potential of blockchain technology in ESG ratings, companies still need to face challenges such as technical implementation difficulties, privacy and security, cost issues, and legal and compliance issues during the implementation process. Companies need to evaluate the long-term return on investment of blockchain technology applications and ensure that their solutions meet the requirements of relevant laws and regulations.

6. Conclusion and Policy Recommendations

This paper has in-depth explored the application of new quality productivity and blockchain technology in the ESG evaluation system and how they jointly promote corporate sustainable development. Through a review of existing literature and analysis of the ESG evaluation system, we have drawn the following conclusions:

The ESG evaluation system, as an important tool for measuring corporate sustainable development company's non-financial risks and opportunities but also encourages proactive actions by companies in environmental protection, social responsibility, and governance structure optimization. The introduction of new quality productivity can significantly enhance a company's ESG performance. By promoting continuous improvement in environmental protection, social responsibility, and governance structure, new quality

productivity supports companies in achieving higher ratings in ESG evaluations. Furthermore, the introduction of blockchain technology has brought revolutionary changes to the construction of the ESG evaluation system. It ensures the transparency and traceability of ESG information through distributed ledgers, smart contracts, and tamper-proof data records, enhancing the credibility of the ratings.

The ESG evaluation system framework proposed in this paper, based on new quality productivity and blockchain technology, aims to provide a comprehensive analytical tool to assess and promote corporate performance in environmental, social, and governance aspects. The framework takes into account China's social, economic, and cultural background, as well as the characteristics of the capital market and investor needs. Although blockchain technology shows great potential in ESG ratings, companies still face challenges such as technical implementation difficulties, privacy and security, cost issues, and legal and compliance issues during the implementation process.

Based on the above conclusions, the following policy recommendations are proposed:

Strengthen the Normativity of ESG Information Disclosure: Governments and regulatory bodies should establish unified ESG information disclosure standards to improve the quality and transparency of information disclosure to meet the requirements of investors and regulatory bodies.

Promote the Development of New Quality Productivity: Encourage enterprises to improve resource utilization efficiency and develop environmentally friendly products and services through technological innovation and industrial upgrading, thereby enhancing their ESG performance.

Support the Application of Blockchain Technology in ESG Evaluation: The government should provide policy support and financial incentives to promote the application of blockchain technology in the ESG evaluation system, improving the credibility and efficiency of the ratings.

Enhance Corporate Social Responsibility: Encourage enterprises to strengthen interaction with communities, improve labor protection and consumer rights, and use new technology applications to enhance the transparency and traceability of social responsibility practices.

Improve Corporate Governance: Advocate for enterprises to establish more open and efficient management systems, using blockchain technology to improve operational efficiency and transparency, and to enhance the confidence of investors and other stakeholders.

Promote Multi-Party Participation and Cooperation: Encourage the participation of governments, enterprises, investors, social organizations, and the public in the construction and implementation of the ESG evaluation system, forming a broad social consensus and cooperation mechanism.

Continuous Tracking and Evaluation: Establish a regular assessment mechanism to track the application effects of new quality productivity and blockchain technology in the ESG evaluation system, and adjust and optimize policy measures in a timely manner.

Strengthen International Cooperation: Actively participate in the formulation of international ESG evaluation standards, promote the internationalization of the ESG evaluation system, and adapt to the trend of global economic integration.

By implementing these policy recommendations, we can

more effectively assess and promote corporate sustainable development, provide strong support for China's green finance and social responsibility investment, and achieve long-term value creation for enterprises and social prosperity under the impetus of new quality productivity.

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