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Study on the Paths of ESG Practices Empowering Value Creation of Low-Altitude Economy Enterprises

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Abstract. As a crucial component of new-quality productive forces, the low-altitude economy is increasingly becoming one of the new drivers of economic development in the new era. The development of ESG practices is an unavoidable topic for emerging industries like the low-altitude economy. This paper aims to explore the internal connection between ESG practices and low-altitude economy enterprises, analyze how ESG practices drive the development of these enterprises, and identify the challenges they pose. Ultimately, this paper argues that value creation for low-altitude economy enterprises can be achieved through three ESG dimensions as paths: leading green standards in the environmental dimension, consolidating safety and trust in the social dimension, and building a collaborative ecosystem in the governance dimension. Guided by these three paths, low-altitude economy enterprises can explore a comprehensive development path that covers all aspects.

Keywords: ESG, Low-Altitude Economy, Value Creation, Path Analysis

1. Introduction

The low-altitude economy is a key field of new-quality productive forces. Developing it well can inject new vitality and momentum into China's economic development. The National Comprehensive Multi-Dimensional Transportation Network Planning Outline issued by the CPC Central Committee and the State Council proposes to build a modern, high-quality national comprehensive multi-dimensional transportation network, indicating that the low-altitude economy has become an important part of economic development. At the National Conference on Ecological and Environmental Protection held from July 17 to 18, 2023, General Secretary Xi Jinping emphasized that the next five years will be a critical period for building a Beautiful China. He stressed the need to thoroughly implement the thought on ecological civilization of socialism with Chinese characteristics for a new era, adhere to a people-centered approach, and firmly establish and practice the concept that "lucid waters and lush mountains are invaluable assets." These views reflect great emphasis on environmental protection and sustainable development, which align with the environmental and social indicators in the ESG framework.

The low-altitude economy integrates new technologies and new industries, and it is an important layout for China to seize development opportunities, promote high-quality development, and establish a modern industrial system. At the Central Economic Work Conference held in December

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2023, it was proposed to develop several strategic emerging industries such as the low-altitude economy. With its unique advantages—such as rapid response and flexible mobility—the low-altitude economy meets this demand and demonstrates huge market potential, especially in inter-urban transportation, emergency rescue, and material transportation in remote areas.

Driven by scientific and technological innovation, accelerating the development of the low-altitude economy can inject new vitality into China's economic transformation, upgrading, and high-quality development. As a key field of new-quality productive forces, the operation and development of the low-altitude economy embody the ESG concept in all aspects. However, the low-altitude economy industry is in its infancy, so evaluating the value creation of low-altitude economy enterprises solely through conventional financial indicators is one-sided. Only by evaluating their value creation from the perspective of ESG practices can we comprehensively and reasonably identify the actual value of these enterprises.

2. How ESG practices affect low-altitude economy enterprises and realize value creation

2.1. How ESG practices affect low-altitude economy enterprises

An enterprise's ESG practices include three aspects: participating in environmental governance, undertaking social responsibilities, and improving corporate governance. From the environmental dimension, the focus should be on evaluating an enterprise's impact on the natural environment and its response capabilities. For example, in response to the national call for green development, has the enterprise achieved carbon reduction by controlling greenhouse gas emissions? Has it adopted new clean technologies and renewable energy to enhance carbon reduction effects? Has it formulated a carbon neutrality plan to address climate change? Given the growing emphasis on pollution control, has the enterprise taken measures to reduce pollutant emissions to achieve the goal of harmlessness? Has it taken actions to recycle and reuse scrapped products? Has it established effective early warning and emergency mechanisms for sudden or potential environmental issues? Regarding the sustainable use of resources, how is the enterprise's energy consumption intensity? Does it use water resources in an efficient or economical manner? Has it taken measures to carry out ecological restoration for operations that cause significant environmental damage?

From the social dimension, attention should be paid to the enterprise's fulfillment of responsibilities to employees, customers, the supply chain, and communities. For employees, what is the coverage rate of labor contracts and the contribution rate of social security for the enterprise's employees? Does the enterprise provide adequate employee safety training? Is the salary and promotion mechanism fair? For customers, does the enterprise have sound product quality management and recall systems? Does it have effective customer privacy protection and data security mechanisms? How efficient are its after-sales service and complaint handling? From the perspective of supply chain management, does the enterprise tend to select suppliers that meet ESG standards? Does it provide guarantees for supply chain stability? What is the enterprise's green procurement ratio? From the community perspective, does the enterprise actively participate in charitable donations and community support projects? What is its tax contribution and the number of jobs it has created? How does it respond to disasters and public health emergencies?

From the corporate governance dimension, the focus is on evaluating the enterprise's capabilities in decision-making mechanisms, compliance, and long-term risk management and control. Specifically, from the perspective of enterprise management, is the independence of the board of directors ensured? Are the functions of the board of supervisors effectively implemented? Are shareholders' rights protected? Furthermore, attention should be paid to whether the enterprise

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operates in line with business ethics—for example, has it formulated anti-corruption policies and measures to prevent commercial bribery? Does it practice intellectual property protection and fair competition? Finally, attention should be given to the enterprise's information disclosure and risk management mechanisms. Is the release of ESG reports timely and the framework standardized? Are major risk events disclosed in a timely manner? Has the enterprise established an ESG risk identification system? Does it monitor abnormal governance issues such as equity pledges and related-party transactions?

For low-altitude economy enterprises, their operation models differ from those of traditional manufacturing enterprises. Evaluating the value creation capabilities of low-altitude economy enterprises through ESG indicators can basically cover most of their business operations. However, at the same time, since there are multiple ESG rating agencies worldwide with inconsistent evaluation standards, ESG discrepancies can lead to negative market reactions [1]. Moreover, there may be a certain gap between an enterprise's actual ESG capabilities and its ESG performance rated by these agencies [2]. Therefore, when evaluating the ESG level of low-altitude economy enterprises, specific analysis should be conducted based on the actual situation of each enterprise to provide a reference for the ESG level of enterprises in this industry.

ESG indicators are related to all aspects of the business processes and social management of low-altitude economy enterprises, and they have a multi-faceted impact on the value creation of these enterprises. When analyzing the development paths of low-altitude economy enterprises from the three dimensions of environment, social responsibility, and corporate governance, appropriate ESG indicators should be selected based on the particularities of low-altitude economy enterprises to evaluate their value creation. In the environmental dimension, focus should be placed on carbon emission intensity, energy efficiency, and noise control; in the social dimension, focus should be on air traffic safety, data privacy protection, and community communication mechanisms; in the corporate governance dimension, focus should be on airspace compliance management, supply chain ESG audits, and transparency of innovation investment.

2.2. How ESG practices realize value creation

ESG can be deeply integrated with the core business of low-altitude economy enterprises. Enterprises can achieve pollution reduction, carbon reduction, and efficiency improvement through green technological innovation [3]. Low-altitude economy enterprises can reduce energy consumption and carbon emissions by developing clean energy applications, circular production processes, and introducing intelligent carbon management systems, thereby directly reducing environmental costs. The rapid development of digital technology has driven the transformation of the supply chain [4]. By actively fulfilling social responsibilities such as charitable giving, employee welfare protection, and green supply chain management, enterprises can enhance consumer trust, thereby converting social responsibilities into brand premiums and driving sales growth. ESG information disclosure is closely related to audit opinions issued by accounting firms [5]. By promoting transparency in information disclosure and establishing an ESG risk management system, enterprises can improve their corporate governance structure, thereby optimizing governance to enhance operational efficiency, reduce decision-making risks, and improve resource allocation efficiency.

ESG has a positive feedback effect in the capital market. Green finance can promote the development of new-quality productive forces, which is a key factor in China's economic development [6]. Enterprises with excellent ESG performance are more likely to obtain low-cost capital support. Sound ESG practices can help enterprises attract long-term foreign investment,

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which is conducive to the realization of long-term corporate value and the enhancement of market value [7]. An increasing number of investors are incorporating ESG into their investment decisions, and enterprises with high ESG scores are more likely to be favored by investors. Through measures such as energy conservation, emission reduction, and employee efficiency improvement, the net profit margin of enterprises practicing ESG will increase.

ESG can promote external collaboration and ecological co-construction of low-altitude economy enterprises. Through ESG practices, supply chain finance can enhance corporate value [8]. Leading enterprises can drive the upgrading of upstream and downstream industries through ESG standard output, forming an industrial agglomeration effect. Participating in global ESG ratings such as MSCI and S&P CSA can enhance recognition in overseas markets. Building an ESG digital and intelligent management platform can realize dynamic monitoring and decision optimization.

3. Challenges in evaluating the value creation paths of ESG practices for low-altitude economy enterprises

The industrial chain of the low-altitude economy covers links such as aircraft manufacturing, energy consumption, and operation and maintenance. The evaluation dimensions of ESG indicators for low-altitude economy enterprises should differ from those for traditional manufacturing industries. However, when evaluating the ESG indicators of low-altitude economy enterprises, enterprises often use indicators for traditional manufacturing industries or do not evaluate indicators without reference, which greatly reduces the rationality and accuracy of indicator evaluation.

From the environmental dimension, low-altitude economy enterprises face the problem of missing ESG indicators. Due to the lack of an upstream and downstream data collaboration mechanism, few enterprises disclose information on indirect emissions related to mineral mining for drone battery production and battery scrapping and recycling. There are differences in indicator regulations across regions—for example, there are discrepancies in indicators such as energy consumption limits for charging piles at low-altitude take-off and landing sites and carbon emission intensity of drone logistics hubs between coastal areas and central and western regions, making it difficult to properly connect cross-regional projects. The rapid technological iteration of low-altitude economy enterprises easily leads to lagging standards. There is a lack of dynamic monitoring standards for noise limits of drone logistics and urban air traffic routes. The existing Law on the Prevention and Control of Noise Pollution only stipulates static indicators for the airworthiness stage, while low-altitude aircraft need to cope with dynamic scenarios such as flight path changes and community density changes. Low-altitude aircraft may interfere with bird migration routes and damage the ecological balance of nature reserves, but the industry has not yet established targeted monitoring indicators and compensation mechanisms.

From the social dimension, low-altitude economy enterprises have vulnerabilities in supply chain and data security. There is a lack of a framework for supply chain human rights risk management and control. In other words, the supply chain of the low-altitude economy has not yet formed a complete and effective management system. The proper fulfillment of supply chain responsibilities currently relies on upstream enterprises to take the initiative, without institutional constraints. There are significant differences in labor standards among low-altitude economy enterprises, and enterprises need to bear multiple compliance costs when expanding their global layout. Rules on data sovereignty and privacy protection for low-altitude economy enterprises are unclear. Geographic information and resident image data collected by drones have both commercial value and national security attributes. Low-altitude economy data such as flight trajectories, user behaviors, and resident image data need to undergo desensitization processing, but there is no

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unified industry standard for this work. These data require classified management during cross-border transmission, and failure to do so properly will expose enterprises to legal litigation risks.

From the governance dimension, low-altitude economy enterprises face multiple pressures, including a complex regulatory environment, low quality of information disclosure, and insufficient international recognition. First, airspace management and compliance requirements are highly complex. When applying to the Civil Aviation Administration, airspace management departments, and other authorities for industry standard certification and operation permits, enterprises often face complex procedures and long approval cycles, resulting in enterprises facing unclear airspace management rules and unstable expectations for a long period. China's Interim Regulations on the Management of Unmanned Aerial Vehicle Flights, as a programmatic document, fails to specify detailed indicators such as responsible entities for battery recycling and detailed standards for noise limits. In actual operations, enterprises need to comply with the regulatory requirements of multiple departments, including the Civil Aviation Administration, the Ministry of Industry and Information Technology, the Ministry of Ecology and Environment, and the Ministry of Transport. This "multi-agency management" situation significantly increases compliance complexity and costs. Second, the quality and credibility of ESG information disclosure face challenges. The ESG data of low-altitude economy enterprises come from diverse sources with uneven quality. At present, most enterprises disclose ESG information on a voluntary basis, lacking mandatory third-party audit verification, which makes the objectivity and comparability of the data questionable. Third, the recognition of international ESG ratings is generally low. Currently, low-altitude economy enterprises often perform poorly in mainstream international ESG ratings. This not only reflects that the existing ESG rating system fails to fully adapt to the industrial characteristics of the low-altitude economy but also exposes concerns of the international capital market about the industry's environmental and social risk management and control capabilities, which may affect the enterprises' ability to attract global long-term capital.

4. Analysis of paths for ESG practices to empower value creation of low-altitude economy enterprises

In the face of the above challenges, low-altitude economy enterprises should not wait passively but should proactively integrate ESG into their corporate DNA, explore opportunities from challenges, and convert compliance pressure into competitive advantages. The specific paths are as follows:

4.1. Environmental dimension: from missing indicators to leading green innovation

Faced with the challenge of missing environmental indicators, enterprises should not wait passively for standards to be issued but take proactive actions to convert this challenge into competitiveness in defining industry standards and leading green development. The specific paths include: First, proactively build an internal environmental evaluation system. Based on their own business characteristics, enterprises should refer to mainstream domestic and international ESG evaluation frameworks and, considering the high-tech and high energy consumption characteristics of the low-altitude economy, develop a set of systematic key performance indicators for internal environmental management. These indicators include, but are not limited to, systematically recording core data such as decibel levels, energy consumption, and carbon dioxide emissions per unit flight time or unit transportation turnover of each aircraft. This system can not only help enterprises achieve internal refined management, energy conservation, and consumption reduction but also prepare them fully for future mandatory compliance requirements, enabling them to gain a first-mover advantage.

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Second, regard green technological innovation as the core content for recording and disclosure. Enterprises should promptly and in detail record data on the update and iteration of aircraft in terms of noise reduction, energy conservation, and emission reduction, as well as the degree of improvement in actual performance. For example, enterprises can release technical white papers to demonstrate the percentage improvement in energy efficiency and reduction in carbon emissions of the new generation of electric vertical take-off and landing (eVTOL) aircraft compared to the previous generation or traditional ground transportation. By accumulating a large amount of authentic and verifiable data through practice, enterprises can not only effectively evaluate the actual ESG performance of their technologies but also demonstrate their technological leadership to the market. Third, vigorously apply digital technology to achieve precise environmental management. Use Internet of Things (IoT) sensors, big data analytics, and artificial intelligence (AI) technologies to conduct real-time monitoring and predictive maintenance of the operating status, energy consumption, and noise emissions of low-altitude aircraft. Establish a "digital twin" platform to simulate and optimize flight paths to find the optimal solution for energy consumption and noise. These digital tools not only provide authentic and reliable data support for environmental performance evaluation but also themselves constitute a value creation process that enhances operational efficiency and reduces environmental costs.

4.2. Social dimension: from trust crisis to proactive safety assurance

The core of the social dimension is building trust, which stems from solid safety guarantees and responsible supply chain management. Low-altitude economy enterprises must place "safety" and "responsibility" at the core of business success. First, fully enhance the transparency and security of the supply chain. Establish strict supplier ESG access and regular evaluation mechanisms, and incorporate standards such as environmental performance, labor rights, and business ethics into procurement contracts. Use blockchain technology to realize full-process traceability of key components from mineral sources to scrapping and recycling. Through empowerment and screening, improve the ESG performance and resilience of the entire supply chain. This not only reduces the risk of supply chain disruption but also leverages the leading role of enterprises to enhance the overall industry level and shape a responsible industry brand image. Second, build data security and privacy protection into the enterprise's core competitiveness. Invest resources in developing data encryption, desensitization, and security management technologies that exceed current regulatory requirements. Clarify the data classification and grading management system, and clearly and transparently inform users of data collection and use policies. Take "safe, reliable, and trustworthy" as the core commitment of the brand, directly converting trust into brand advantages and market competitiveness to attract government and corporate clients with high requirements for data security. Third, build a forward-looking and interactive community communication mechanism. Proactively establish regular communication channels with communities, properties, and schools under flight routes. Instead of passively responding to complaints, enterprises should take the initiative to introduce the benefits of low-altitude flight, safety measures, and progress in noise control, and sincerely listen to feedback. By holding open days, releasing community reports, and establishing feedback reward mechanisms, enterprises can create unique community value, resolve the "NIMBY (Not In My Backyard) effect," and ultimately achieve a harmonious state of mutual trust and win-win cooperation between the community and the enterprise.

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4.3. Governance dimension: from passive compliance to proactive value co-creation

Sound governance is the cornerstone for the achievement of environmental and social performance. It requires planning from a strategic perspective to realize the shift from "being required to do" to "wanting to do." First, embed ESG deeply into the corporate strategy and top-level structure. The board of directors should establish an ESG committee led by independent directors and systematically integrate ESG factors into the enterprise's core risk management processes and major investment decision-making processes. Integrate ESG goals closely with the enterprise's business strategy, product R&D roadmap, and market expansion plan to ensure that ESG is not a marginalized public relations activity but a core element driving business innovation and risk management and control. For example, set reducing carbon emissions throughout the product lifecycle as one of the KPIs of the R&D department. Second, proactively link various stakeholders to build a collaborative governance ecosystem. Proactively communicate with regulatory authorities, participate in the formulation of industry standards, and provide constructive suggestions for the improvement of regulations. Cooperate with peer enterprises and industry associations to jointly develop industry-specific ESG guidelines and data sharing platforms. Collaborate with universities and research institutions to carry out green low-altitude technology R&D. Maintain transparent communication with investors and disclose ESG progress and long-term value strategies. Through the establishment of such regular and institutionalized communication and coordination mechanisms, enterprises can transform from "answerers" passively responding to various compliance requirements into "participants" and "value co-creators" proactively participating in rule-making, co-building the industrial ecosystem, and sharing development achievements, thereby gaining strategic initiative and broader development space.

5. Conclusion

In summary, by in-depth studying three core issues—how ESG affects the value creation of low-altitude economy enterprises, the challenges faced by low-altitude economy enterprises in value creation through ESG practices, and the feasible path analysis—this paper elaborates in detail the internal logic and feasible solutions for low-altitude economy enterprises to realize value creation through ESG practices. The path of value creation through ESG practices for low-altitude economy enterprises is by no means a smooth road; it is a process that requires foresight, courage, and continuous investment—a process of converting external regulatory pressure, market expectations, and social responsibilities into internal driving forces for optimizing internal corporate management, technological innovation, and enhancing core competitiveness. By proactively building standards and leading green innovation in the environmental dimension, consolidating the safety bottom line and building a trust network in the social dimension, and taking strategy as the guide and building a collaborative ecosystem in the governance dimension, low-altitude economy enterprises can effectively reshape ESG from a seemingly additional "compliance cost" into a tangible "competitive advantage" and "value engine." Ultimately, when ESG truly becomes the strategic core and action guide of low-altitude economy enterprises, these enterprises will not only gain favor from the capital market and trust from customers and communities but also lay a solid foundation for the high-quality and sustainable development of China's low-altitude economy—a strategic emerging industry. This will realize the synergistic win-win of economic, social, and environmental benefits and ultimately achieve genuine and sustainable value creation.

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References

[1] Guo, H. L., & Xu, M. F. (2025). Market reaction to ESG rating divergence: From the perspective of stock liquidity. Communication of Finance and Accounting, (10), 25-29.
[2] Huang, L. Q., Wang, L. X., Li, L., & Wang, Y. H. (2025). ESG rating divergence and corporate innovation: Crisis or opportunity. Modernization of Management, 45(01), 139-152.
[3] Tao, C. Q., Xie, T., & Xu, Y. (2025). Green technology innovation and the synergistic effect of pollution reduction and carbon emission reduction: From the perspective of joint emission reduction and environmental improvement. Statistical Research, 42(04), 31-47.
[4] Li, X. Z., Xia, Z. L., Guo, J. Y., Wan, Y. C., & Zhong, H. L. (2025). Research on the formation path of green supply chain in manufacturing enterprises enabled by digital intelligence. Journal of Wuhan University (Engineering Edition), 58(01), 163-170.
[5] Jiang, Y. Y., & Cheng, J. X. (2025). ESG information disclosure and audit opinion decision-making. Friends of Accounting, (11), 104-111.
[6] Pan, W. F., Yu, R. M., & Li, S. H. (2025). Green finance, green technology innovation and new-quality productive forces. Friends of Accounting, (12), 132-139.
[7] Liu, J., & Zhang, Z. Q. Corporate ESG performance and foreign capital inflow: Impact effect and mechanism. Collected Essays on Finance and Economics, 1-12.
[8] Qiu, J. L., Cui, M. M., & Pan, A. L. Supply chain finance and corporate sustainable development: Empirical evidence from ESG performance. Nankai Business Review, 1-32.