Research on the Accounting Pathway for Resolving ESG Disclosure Dilemmas, Empowering Transformation, and Enhancing Corporate Value in SMEs

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Abstract

Focusing on the ESG information disclosure of small and medium-sized enterprises (SMEs), this paper grounds its research in the context of China's Dual-carbon Policy and economic globalization. Through a comprehensive literature review, the study identifies that existing research predominantly centers on large corporations, leaving a significant gap in the exploration of localized ESG accounting pathways tailored for SMEs. The article systematically analyzes the core bottlenecks SMEs face in ESG disclosure, namely: fragmented standards, insufficient resources and professional expertise, flawed third-party verification mechanisms, and hindered transformation empowerment. Drawing upon stakeholder, signaling, and legitimacy theories, the study constructs an ESG accounting pathway framework specifically adapted for SMEs. Furthermore, it proposes targeted countermeasures across four dimensions: categorized policy management, capacity building and technical support, the establishment of transformation-empowering accounting pathways, and the refinement of value-enhancement mechanisms. The findings confirm that optimizing the accounting pathway can effectively resolve the ESG disclosure dilemmas of SMEs, empower their green transformation, and elevate corporate value, thereby providing a valuable reference for policy formulation, corporate practice, and future academic research.

Keywords

Disclosure dilemmas, Synergy, Corporate value, Small and medium-sized enterprises

Introduction

With the development of economic globalization and information technology, driven by the increasingly refined and specialized social division of labor, the boundary between enterprises and the external environment is becoming increasingly blurred. Environmental, social, and governance (ESG) information disclosure has become an important mechanism for evaluating corporate sustainability and long-term value. As the backbone of the global economy, SMEs account for more than 99.00% of the total number of enterprises in China, yet they face many unique challenges in ESG disclosure practices.

These challenges stem not only from limited resources and insufficient technical capabilities but also from the lack of accounting pathways, making it difficult for enterprises to effectively crack the disclosure dilemmas, realize digital transformation, and ultimately enhance corporate value [1]. Adopting the literature review method, this paper conducts an in-depth exploration of accounting approaches. These approaches help small and medium-sized enterprises (SMEs) resolve dilemmas in ESG information disclosure, drive transformation, and boost corporate value. This study aims to offer valuable references for policy formulation, corporate practice and academic research.

ESG is composed of the initials of three English words: environment, social, and governance. It is a further expansion and deepening of the concepts of green investment and responsible investment and has become a key benchmark for evaluating the degree of corporate green and sustainable development internationally. Internationally, the European Union (EU)'s Corporate Sustainability Reporting Directive (CSRD) and the standards of the International Sustainability Standards Board (ISSB) are gradually driving SMEs to participate. However, in China, the ESG disclosure rate of SMEs is only about 60.00% of that of large enterprises, highlighting the urgent necessity for a localized accounting pathway.

Existing research shows that good ESG disclosure can significantly reduce corporate financing costs by 5.00%-10.00% and improve reputation, but SMEs often hesitate due to cost pressures and standard maladaptation. By systematically reviewing domestic and foreign literature, this study reveals solutions from an accounting perspective, expecting to promote the proactive transformation of SMEs in the field of sustainable development [2].

Under the strategic background of China's Dual-carbon Policy, by improving environmental performance and developing green productivity, enterprises not only contribute to achieving the goals of peak carbon dioxide emissions and carbon neutrality but also forge new development pathways for shaping international competitiveness. As a bridge, the accounting pathway can seamlessly integrate ESG indicators into financial reports, helping enterprises shift from passive disclosure to active management, thereby achieving value enhancement [3].

This paper mainly adopts literature review as the research method, extensively collecting and analyzing relevant policy documents, academic papers, empirical reports, and case studies at home and abroad. Data sources include academic databases, international organization reports, and domestic journals, ensuring the timeliness and diversity of information. The research process focuses on balancing perspectives, covering the positive impacts and potential challenges of ESG disclosure to avoid single-perspective bias.

Literature review

ESG information disclosure research originated in the field of environmental accounting in the 1990s and has gradually expanded to social and governance dimensions with the deepening of sustainable development concepts. International literature emphasizes the impact of ESG on corporate performance. The dialectical unity of Friedman's shareholder value theory and Freeman's stakeholder theory provides solid theoretical support for ESG disclosure.

The US National Association of Securities Dealers Automated Quotations (NASDAQ) took the lead in establishing ESG information disclosure guidelines for SMEs [4]. The NASDAQ Stock Market released a new version of the global ESG reporting guide in May 2019. The old version of the guide, released in 2017, initially served only as a voluntary disclosure reference for the NASDAQ Nordic and Baltic markets.

The newly revised guide is more flexible and practical, integrating mainstream sustainability disclosure standards in the market, such as the Task Force on Climate-related Financial Disclosures (TCFD) disclosure framework, the UN Sustainable Development Goals (SDG), the Global Reporting Initiative (GRI) standards, and the Non-financial Reporting Directive (NFRD). It simplified and standardized disclosure indicators and calculation methods, expanded the scope of application to the entire NASDAQ market, and explicitly pointed out the need to increase the participation of SMEs in ESG information disclosure [5].

In the SME sector, a report by United Nations conference on trade and development (UNCTAD) pointed out that the global ESG disclosure level of SMEs is low, with only 7.70% of enterprises issuing formal reports. However, through simplified frameworks, enterprises can significantly enhance their value and financing channels.

Domestic research pays more attention to the impact of policy drivers. The Measures for the Administration of Legal Disclosure of Enterprise Environmental Information emphasize the difficulties and countermeasures of SME environmental disclosure [6]. An empirical analysis reveals that 68.93% of the gap in SME ESG disclosure stems from insufficient accounting capabilities, quantifying this impact using the Oaxaca-blinder decomposition method.

In addition, the research of the National SME Research Institute of Renmin University of China points out that under the global wave of sustainable development, SMEs face resource constraints and technological shortcomings, but ESG practices can assist in their high-quality development. Research on the differentiated regulatory paths of ESG disclosure for listed companies shows that China's system faces a paradox of normative supply and effectiveness rupture, which is particularly prominent among SMEs [7].

Accounting literature treats ESG as an extension of financial reporting, highlighting the application of the GRI standards and the Greenhouse Gas (GHG) Protocol.

These frameworks emphasize integrating ESG data into the accounting system to enhance transparency. Regarding SMEs, accounting pathway research highlights the role of digital tools; using artificial intelligence (AI) to assist in emission calculations can reduce disclosure costs by 20.00%-30.00%. In terms of transformation empowerment, literature shows that ESG disclosure can empower SMEs' supply chain management, reduce risks, and enhance value by 5.00%-10.00%. The White Paper on China's ESG Practice points out that policy incentive mechanisms can support SMEs in integrating ESG into accounting frameworks.

Theoretical framework of research

Core theoretical foundation

The theoretical framework of this study centers on Stakeholder Theory. Proposed by Freeman, this theory emphasizes that enterprises should not solely focus on shareholder interests, but rather balance the multi-party needs of investors, employees, suppliers, communities, and regulators. In the ESG disclosure of SMEs, this theory is particularly applicable, as SMEs often rely on local supply chains and community support.

Through ESG disclosure, enterprises can convey their sustainability commitments to stakeholders, enhancing trust and cooperation. In the environmental dimension, SMEs can disclose carbon emission data to meet the green procurement requirements of suppliers [8]. In the social dimension, disclosing employee welfare information can attract talent; in the governance dimension, strengthening internal control disclosure can gain regulatory recognition. Empirical research shows that ESG practices based on stakeholder theory can significantly improve the financing environment for SMEs, reducing interest rates by 5.00%-10.00%.

The supplementary signaling theory, developed by Spence, views ESG disclosure as a proactive signal sent by enterprises to the market to reduce information asymmetry. SMEs have limited resources and find it difficult to promote corporate value through large-scale advertising, but high-quality ESG disclosure can signal their long-term sustainability and attract investors [9]. Research indicates that SMEs with good ESG performance have stock returns higher than the average level, especially in European and American markets.

In the accounting pathway, this theory guides SMEs to select core indicators for disclosure, such as GHG emissions and board diversity, to maximize the signaling effect and avoid the cost burden caused by excessive disclosure [10].

Legitimacy theory, articulated by Suchman, argues that enterprises must conform their behaviors to social norms to attain legitimacy. In ESG disclosure, if SMEs ignore environmental pollution or labor rights, they will face social pressure and regulatory fines. Through accounting frameworks, enterprises can demonstrate their legitimacy, disclosing pollutant emission data to comply with the Measures for the Administration of Legal Disclosure of Enterprise Environmental Information. The application of this theory in SMEs emphasizes progressive compliance to avoid legitimacy crises caused by "one-size-fits-all" standards. Combined with the Chinese context, legitimacy theory explains the disclosure motives of SMEs under the Dual-carbon Policy, driving them from passive response to proactive management.

Framework construction of the accounting pathway

The accounting pathway framework modularly integrates ESG indicators into financial statements, emphasizing the balance of environmental, social, and governance dimensions. The environmental dimension focuses on GHG emissions and pollutant management, utilizing the GHG Protocol to calculate Scope 1 and Scope 2 emissions and integrating them into cost accounting to help SMEs quantify environmental risks [11]. The social dimension evaluates employee welfare and community impacts, quantifying indicators through human resource accounting to enhance corporate reputation. The governance dimension strengthens board diversity and anti-corruption mechanisms, ensuring compliant disclosure through an internal audit framework to avoid information asymmetry.

Tailored for SMEs, this framework adopts a simplified version of the ISSB's S1/S2 standards, requiring only the disclosure of core indicators to lower the threshold. Revisions to China's Company Law support the integration of ESG into the accounting system, allowing SMEs to start with existing financial data. The framework also incorporates digital elements, utilizing AI tools to automate data collection and reduce manual errors. In expanded applications, this framework supports value chain analysis; SMEs can optimize supply chains through ESG disclosure, reducing risks and enhancing competitiveness. Empirical cases show that enterprises adopting this framework experience a 20.00%-30.00% decrease in disclosure costs and significant value enhancement.

Application and extension of the framework

From the perspective of mechanisms, ESG performance promotes the “Specialized, Refined, Differential, and Innovative (SRDI)” oriented transformation and upgrading of firms by alleviating corporate financing constraints, improving employee innovation efficiency, and expanding the research and development (R&D) talent team.

The reason lies in the fact that ESG construction conveys responsible social image information to stakeholders, which helps to enhance trust and obtain key resources that support the socially responsible property investment (SRPI) transformation of enterprises. In practice, this framework is applicable to empowering the transformation of SMEs, achieving a digital management system, and improving efficiency through the accounting integration of ESG data. From an international perspective, the EU’s Voluntary Sustainability Reporting Standard for Non-Listed SMEs (VSME) provides a simplified reporting pathway for SMEs, from which China can draw to formulate a localized framework. In the future, the framework can incorporate blockchain technology to ensure data authenticity, further elevating the position of SMEs in the global supply chain.

Current difficulties

Fragmentation and inadaptability of disclosure standards

At present, one of the principal contradictions in China’s capital market is manifested as the contradiction between investors’ “beautiful needs” for high-quality information disclosure and the insufficient supply of high-quality information from listed companies. One of the primary difficulties SMEs faces in ESG disclosure is the fragmentation and inadaptability of standards. International standards such as ISSB, GRI, and EU European sustainability reporting standards (ESRS) are inconsistent, and there is a lack of simplified versions for SMEs, making it difficult for enterprises to choose an applicable framework.

The disclosure index of Chinese SMEs is only 0.227, far below the level of large enterprises, and 68.93% of this gap is due to standard mismatch. Export regulations such as the EU’s carbon border adjustment mechanism (CBAM) further increase the burden; without differentiated designs for SMEs, it is hard to cope with complex requirements. Although the domestic Measures for the Administration of Legal Disclosure of Enterprise Environmental Information provides guidance, its applicability to SMEs is insufficient, causing compliance confusion.

The fragmentation of standards leads to poor data comparability, making it difficult for enterprises to compete with large firms. Research indicates that 45.00% of US SMEs view environmental reporting standards as too complex to implement effectively. In China, the ESG disclosure system for listed companies faces a paradox of normative supply and effectiveness rupture, which is particularly prominent for SMEs, lacking localized pathways. The sustainable development information disclosure research report points out that ununified standards are the primary obstacle to corporate ESG practices, and the difficulty in ensuring data quality further amplifies the problem.

Insufficient resources and capabilities

Insufficient resources and capabilities are another core difficulty for SMEs’ ESG disclosure. High costs are a common problem; fees for third-party verification services can reach 80,000 to 100,000 RMB, internal system development is even more expensive, and 58.00% of SMEs lack professional knowledge and technical support. Data collection is difficult, especially in emission monitoring and supply chain tracking; SMEs have a weak foundation and cannot accurately capture environmental information. Research shows that SMEs lack sustainability awareness and have poor technical and management capabilities, leading to selective disclosure or falsified information.

In terms of funding, SMEs have limited resources and cannot invest in advanced technological means. This not only increases compliance costs but also affects disclosure quality. ESG silence research points out that SMEs avoid concrete actions due to resource constraints, weakening investments, which results in incomplete disclosures. From a global perspective, the UNCTAD report emphasizes that SMEs have not fully participated in the policy agenda, and the lack of a systemic framework exacerbates resource problems.

Obstacles to transformation and value enhancement

Transformation empowerment is constrained by the low degree of digitalization in accounting systems, making it difficult for SMEs to integrate ESG into daily management. Value enhancement requires long-term investment, but the short-term burden is heavy. Research from the perspective of accounting practitioners shows that the feasibility of environmental sustainability reporting for SMEs is low, with challenges including the lack of data standardization and complex regulations. The impact of ESG legislation on the supply chain further magnifies the burden on SMEs. Overall, these intertwined difficulties hinder SMEs from realizing value enhancement.

Solutions

Classified management at the policy level

The key to breaking the ESG disclosure dilemma of SMEs lies in classified management at the policy level. Establish a tiered disclosure system, mandating core indicator disclosure for high-emission SMEs, allowing voluntary participation for other enterprises, and providing a 2-3-year transition period.

Drawing on the EU VSME standard, China can develop a localized simplified framework, integrating existing environmental impact assessment (EIA) data to lower the entry barrier. Policies need to build a coordination mechanism covering policies and standards for green finance and digital transformation. Authorities should innovate green financial products tailored to the digital transformation needs of SMEs. In addition, it is necessary to reinforce climate risk management and establish long-term guarantee mechanisms.

Governments should speed up the training of interdisciplinary talents with both digital and green expertise. These measures collectively support SMEs to achieve coordinated progress in green development and digital transformation. The White Paper on China's ESG Practice emphasizes that combining "conceptual guidance" and "incentive mechanisms" can guide SMEs to practice ESG. Moreover, regulators can promote the networking of a national ESG information platform to achieve cross-regional data sharing and reduce inquiry costs. Through a trinity solution of "standard-technology-governance", promotes the standardization of data accounting, transitioning from selective disclosure to mandatory unification.

Capacity building and technical support

Capacity building is the core solution to resolving related issues. By developing localized carbon accounting tools and service catalogs, and providing subsidies for corporate ESG information disclosure costs, the implementation threshold for SMEs can be effectively lowered. Germany's subsidy rate for SMEs using ESG-related tools is up to 80.00%, a mature experience worthy of China's reference.

China can provide free ESG professional training and intelligent AI service platforms for SMEs. The application of the carbon disclosure project (CDP) and GRI standards can help SMEs automate data collection and effectively improve ESG management efficiency. In the accounting empowerment pathway, introducing big data technology to verify and screen abnormal data can further ensure the authenticity and reliability of ESG-related information.

Accounting pathways for transformation empowerment

The key to accounting pathways empowering corporate transformation lies in achieving a deep and seamless integration of ESG concepts with the financial system. SMEs can advance ESG implementation systematically in stages. In the preparation stage, enterprises can introduce adaptive tools to comprehensively enhance overall employee awareness and attention to ESG.

Upon entering the implementation stage, simplified and adaptive ESG standards can be selected to effectively reduce implementation costs and difficulties. In the optimization and enhancement stage, leveraging value chain analysis to dig deeper into ESG value can further amplify the synergistic effect of finance and sustainable development. This implementation path can not only alleviate the financing constraints faced by enterprises and stimulate corporate innovation vitality but also improve the labor investment efficiency of enterprises through the optimization of ESG performance.

Looking at the latest developments in overseas ESG regulation, Japan has issued relevant practical manuals to provide concrete action support for corporate ESG implementation. China can also draw on this mature experience to formulate practical guidelines tailored to domestic enterprises. Case studies show that enterprises promoting ESG integration through accounting pathways can significantly improve their green innovation quality. SMEs can also leverage digital systems to steadily advance net-zero transitions, thereby attracting more green financing and achieving sustainable development and long-term value growth.

Conclusion

The ESG information disclosure dilemmas of SMEs can be effectively resolved through targeted accounting pathways to achieve sustainable transformation empowerment and long-term corporate value enhancement.

The complete theoretical framework, grounded in stakeholder theory, signaling theory and legitimacy theory, offers solid theoretical foundations to guide practical governance of ESG disclosure activities. Although SMEs face numerous inherent difficulties including limited capital, insufficient professional talents, high disclosure costs and weak awareness of sustainable management, the coordinated combination of favourable policy support, mature digital technical tools and systematic accounting integration of the proposed solutions can deliver feasible operational pathways to break the existing bottlenecks.

Future academic research can deepen multi-dimensional empirical analysis of micro-enterprise samples across diverse industries to facilitate targeted policy improvement and institutional optimization. It is recommended that governments scale up special financial subsidies and establish diversified incentive mechanisms. Enterprises, on the other hand, should actively integrate ESG management into daily accounting systems and internal operational procedures. Joint efforts from both sides will advance inclusive and steady sustainable development of small and medium-sized enterprises.

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Conflicts of Interest

The author declares no conflicts of interest.

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