

The Impact of Greenwashing on Corporate Performance in the Apparel Industry Under the Dual Carbon Policy: A Case Study of Lululemon

Junran Wu*

School of Business, Dalian University of Foreign Languages, 116044 No. 6, South Lushun Road, West Section, Dalian, Liaoning Province, China

Abstract. Within the context of the "dual carbon" policy, the apparel industry faces environmental pressures due to its high carbon emissions. Consequently, corporate "greenwashing" practices, such as exaggerating environmental contributions and selectively disclosing information, have emerged as a strategy to balance short-term gains with policy compliance. This study examines Lululemon as a case study, employing a qualitative case analysis methodology. By analyzing public reports, environmental allegations, and financial data, we investigate the motivations behind its greenwashing behaviors and their dynamic impact on corporate performance. We find that despite Lululemon's emission reduction targets, its actual carbon emissions have doubled, and it relies on non-biodegradable materials. While green marketing has boosted short-term profits (net profit increased by 0.9% in 2023), the company faces long-term legal risks (potential fines of \$288 million), rising supply chain costs, and damage to its brand reputation. The conclusion underscores the inherent conflict between the short-term benefits and long-term risks associated with greenwashing. Therefore, both governmental bodies and corporations must strengthen regulatory standards and enhance transparent ESG disclosures to facilitate a genuine green transformation within the industry.

1 Introduction

1.1 Research Scope

In the context of rapid global economic development, environmental pollution has emerged as a critical issue of widespread societal concern. Notably, the textile and apparel industry is responsible for approximately 10% of global carbon emissions—exceeding the combined emissions from international aviation and maritime shipping, as reported by the United Nations Environment Programme (see Table 1: Comparison of Carbon Emissions in the

* Corresponding author: 230160710@student.dlufll.edu.cn

Textile and Apparel, Aviation, and Maritime Industries). Since the onset of industrialization in the 1980s, greenhouse gas emissions have risen sharply, leading to environmental consequences such as glacial retreat, rising sea levels, and increasingly frequent extreme weather events. The 21st session of the Conference of the Parties (COP21) in Paris on December 12, 2015, saw 195 nations reach a consensus, culminating in the signing of the Paris Agreement. This agreement set a target to "hold the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C," and established a five-year global stocktake mechanism to strengthen emission reduction efforts. This broad participation underscores the international community's shared understanding of and commitment to addressing the climate crisis.

Table 1. Comparison of Carbon Emission Proportions in the Textile and Apparel Industry, Aviation Industry, and Shipping Industry.

Industry	Carbon Emissions Percentage (%)	Key Emission Stages
Textile and Apparel	10%	Raw material production, dyeing and finishing, energy consumption, waste disposal
Aviation	2.1%	Fuel combustion (primarily long-haul flights)
Shipping	2.89%	Ship fuel usage, transportation energy demands

As the world's largest developing economy, China has taken an active leadership role in global climate governance under the United Nations framework. At the 75th United Nations General Assembly, China pledged to peak carbon emissions by 2030 and achieve carbon neutrality by 2060, while concurrently developing a domestic carbon market and accelerating the transition to a low-carbon energy system. This demonstrates China's commitment to global responsibility. Today, Chinese enterprises are increasingly embracing ESG principles, with more systematic, professional, and regular ESG reporting. This shift reflects a move away from solely prioritizing scale and profitability towards a comprehensive assessment of environmental sustainability and safety, forging a uniquely Chinese path in ESG implementation. This trend is further amplified by the government's continuous enactment of environmental protection regulations, intensifying the regulatory pressure on businesses. Moreover, heightened media and public scrutiny of corporate environmental practices, coupled with investors' preference for companies with strong social responsibility, has led some firms to engage in "greenwashing." This involves exaggerating their environmental contributions while downplaying or selectively disclosing environmental pollution issues stemming from their operations, a clear indication of a lack of social responsibility. Such "greenwashing" not only impedes environmental improvements but also disrupts capital market order [1].

1.2 Research Objectives

This study, grounded in the framework of China's 'dual carbon' policy, aims to investigate the primary motivations that drive firms in the apparel industry to engage in greenwashing under regulatory pressure and evolving market expectations. Focusing on Lululemon as a representative case, the research seeks to explore the contradictions between the company's stated environmental commitments and its actual operational practices. The study will analyze key drivers of greenwashing behaviors, such as tensions in brand positioning and persistent supply chain sustainability challenges. In doing so, it will examine how companies balance short-term objectives, such as capturing market premiums and appealing to environmentally conscious consumers, which against long-term risks, including legal sanctions and reputational damage. This research intends to address the following core questions: What motivates apparel industry firms to adopt greenwashing strategies in the face of regulatory mandates and stakeholder pressures? And what are the implications of such strategies for corporate performance?

1.3 Significance of the Study

From a theoretical perspective, this paper aims to illuminate the driving mechanisms behind "greenwashing" practices within the "fast fashion" and "luxury brand" models of the apparel industry through case studies. It seeks to augment existing literature by focusing on the industry's unique characteristics, integrating institutional theory and resource-based view to elucidate the "double-edged sword" effect of greenwashing on corporate performance - specifically, the trade-off between short-term gains and long-term risks. This approach provides a dynamic analytical framework for ESG (Environmental, Social, and Governance) performance research.

On a practical level, this study identifies the economic incentives and regulatory loopholes that contribute to greenwashing. It highlights the industry's tendency for companies to adopt "greenwashing" strategies to balance environmental commitments with commercial interests. The research underscores the importance of transparent information disclosure and supply chain decarbonization. Furthermore, it advocates for the refinement of green claim standards and the implementation of robust penalties, such as those proposed in the EU's Green Claims Directive, to help companies avoid greenwashing pitfalls, promote industry-wide green transformation, and enhance market discernment of greenwashing practices.

2 Literature Review

The term "Greenwashing" refers to the practice of presenting a product or company as environmentally friendly when, in reality, it is not. First introduced in the mid-1980s, this concept has gained increasing attention in both academic and practical discussions, particularly regarding its mechanisms and impact on corporate performance [2]. This paper provides a systematic review of domestic and international literature on corporate green behavior and consumer response. It summarizes current research, identifies existing gaps, and offers insights into prospective research directions.

2.1 Literature Review: Detailed Description

2.1.1 Corporate Green Accounting and Information Disclosure

In the realm of corporate green accounting and information disclosure, Olivier Boiral employed content analysis to examine 148 sustainability reports from mining companies. This research illuminated how these firms utilize neutralization techniques to manage their biodiversity responsibilities and impacts. The study identified four primary neutralization techniques: claiming a net positive or neutral impact on biodiversity, denying significant impacts, distancing from impacts, and downplaying responsibility [3]. Boiral's work underscores the significance of green accounting in corporate environmental responsibility management while also highlighting the prevalence of impression management in information disclosure. However, the study's limitations include a sample restricted to mining companies and a lack of in-depth analysis of the variations in green accounting practices across different industries. In contrast to the mining industry, the fashion industry, especially fast fashion brands, often employ more subtle and varied greenwashing tactics. For example, they may emphasize the use of recycled materials in a small portion of their products while continuing to produce a large volume of non-sustainable clothing. This highlights the need for industry-specific analysis of green accounting practices and the importance of considering the unique characteristics of each industry when examining greenwashing behaviors.

2.1.2 Corporate Green Marketing and Market Response

Some studies explored the relationship between green marketing and financial performance, investigating the moderating effects of local environmental regulations and media attention. Their study, based on data from 735 listed Chinese companies between 2013 and 2017, found that green marketing generally positively impacted financial performance. However, this effect was mitigated by stringent environmental regulations and reversed under negative media scrutiny [4]. In comparison to the automotive industry, where green marketing is closely scrutinized due to the significant environmental impact of vehicles, the fashion industry's green marketing efforts may face different challenges and opportunities. For example, while consumers may be more aware of fuel efficiency in the automotive sector, in fashion, the focus is often on the sustainability of materials and production processes [5].

2.1.3 Consumer Green Purchasing Behavior

Previous research conducted a series of experiments to investigate consumer perceptions of corporate green investment motives [6]. The study revealed that when companies emphasize economic rather than environmental motives, consumers perceive significantly less greenwashing. This finding suggests that businesses need to carefully select their motivational statements when communicating green investments to avoid consumer skepticism. However, the study's limitation lies in its sample of university students, which may not fully represent the general consumer population. In the energy sector, consumer skepticism may be higher due to the significant environmental impact of products and services, whereas in fashion, skepticism may focus more on the authenticity of sustainable materials and production processes.

2.1.4 Cross-Cultural Comparison and Influencing Factors of Green Behavior

Some studies investigated young consumers' attitudes, perceptions, and behavioral intentions toward sustainable textile and apparel consumption in a cross-cultural context [7]. The study was based on the Theory of Planned Behavior (TPB) and introduced three

antecedent variables: consumer knowledge, perceived consumer effectiveness, and perceived personal relevance. Through surveys of university students in the United States, South Korea, and China, the study found that these variables significantly impact consumers' purchase intentions. However, its limitations include a sample restricted to university students and a lack of consideration for the impact of cultural differences on green consumption behavior. In comparison to the automotive industry, where cultural differences in consumer preferences and environmental awareness also play a significant role, the findings from the fashion industry may not be directly applicable.

2. 2 Review of Current Research

Within the "dual carbon" policy framework, apparel industry enterprises are under significant environmental pressure, leading to transformative challenges. Greenwashing, as a potential strategy, has gained attention for its role in balancing short-term financial interests with long-term sustainability commitments. Research shows that companies, particularly in the apparel industry, adopt "low-cost greenwashing strategies" such as ambiguous labeling or selective disclosure to navigate policy pressures and competitive pressures. Lululemon, for example, employed "digital games" with carbon neutrality goals to secure market premiums. While these tactics may enhance short-term consumer interest, they often lead to long-term reputational damage, eroded consumer trust, and diminished financial performance. Compared to industries like automotive or energy, greenwashing in the fashion sector often revolves around claims of sustainable materials and production processes. Further quantitative research, cross-industry comparisons, and the development of effective governance strategies are necessary to better understand and address greenwashing practices

3. Analysis Of Lululemon's "Greenwashing" Behavior and Motivations

3.1 Case Study: Lululemon's "Greenwashing" - A Numbers Game in Carbon Neutrality

3.1.1 Company Overview

Lululemon Athletica Inc., founded in Vancouver, Canada, in 1998, is a global high-end athletic apparel and lifestyle brand. It focuses on yoga-inspired apparel, innovative fabrics, and a "sweat-life" philosophy. The company's products include yoga apparel, athletic wear, and accessories. It went public in 2007 and has over 700 retail locations across 17 countries. E-commerce accounts for 41% of total revenue. In 2023, it ranked 461st on the Fortune 500 list with a revenue of \$8.11 billion. In Q3 of its fiscal year 2024, Lululemon reported a 9% year-over-year increase in global net revenue, reaching \$2.4 billion, with international net revenue surging 33%

3.1.2 The Exposure of Lululemon's "Greenwashing" Practices

In 2020, Lululemon launched an "Impact Agenda" with a "Be Planet" initiative to reduce environmental impacts. It aimed to cut GHG emissions from its facilities by 60% by 2030

and achieve net-zero emissions by 2050. However, a Stand.earth report revealed that Lululemon's GHG emissions doubled from 829,456 tons to 1,691,009 tons of carbon dioxide equivalent between 2020 and 2022. Moreover, 67% of its product materials are non-biodegradable polyester or nylon (see Figure 1: Material Composition of Lululemon Products), worsening environmental pollution. Due to this discrepancy, Lululemon was accused of "greenwashing" by Stand.earth to the Canadian Competition Bureau in February 2024. The accusation centers on misleading claims made during the "Be Planet" campaign in April 2022. Despite claiming to use 100% sustainable materials by 2025, the company has not defined "sustainable" and has not disclosed specific progress.

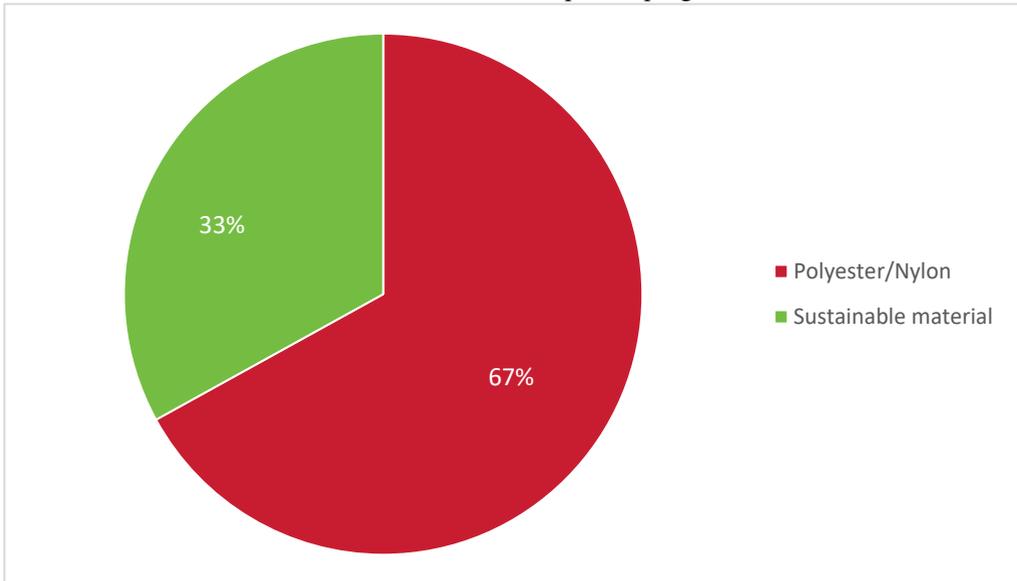


Fig. 1. Material Composition of Lululemon Products

3.2 Analysis of the Motivations of Lululemon's Greenwashing Behavior

3.2.1 Conflict Between High-End Brand Positioning and Sustainable Image

From the perspective of brand positioning, Lululemon faces a dilemma between maintaining its high-end image and establishing a sustainable brand image [8]. According to stakeholder theory, companies must balance the expectations of various stakeholders, including consumers, investors, and regulators. Consumers increasingly demand sustainable products, but high-end brands like Lululemon also rely on perceptions of luxury and exclusivity. This creates a tension where the company may feel pressured to make green claims to satisfy consumer demands while maintaining its premium brand positioning. However, without concrete actions to support these claims, the company risks being perceived as greenwashing.

3.2.2 Sustainability Challenges in the Supply Chain and Production Links

Lululemon's supply chain is complex, with over 60% of its manufacturers located in countries such as Vietnam, Cambodia, Sri Lanka, Bangladesh, and Indonesia. (see Figure 2: Distribution of Lululemon's supply chain) These countries have relatively low levels of

renewable energy adoption, making it difficult for Lululemon to achieve its sustainability goals. According to the resource dependency theory, companies may face challenges in balancing resource availability and sustainability objectives. Lululemon's reliance on traditional production models in these regions may stem from the need to maintain cost efficiency and production capacity, even though it conflicts with its environmental commitments.

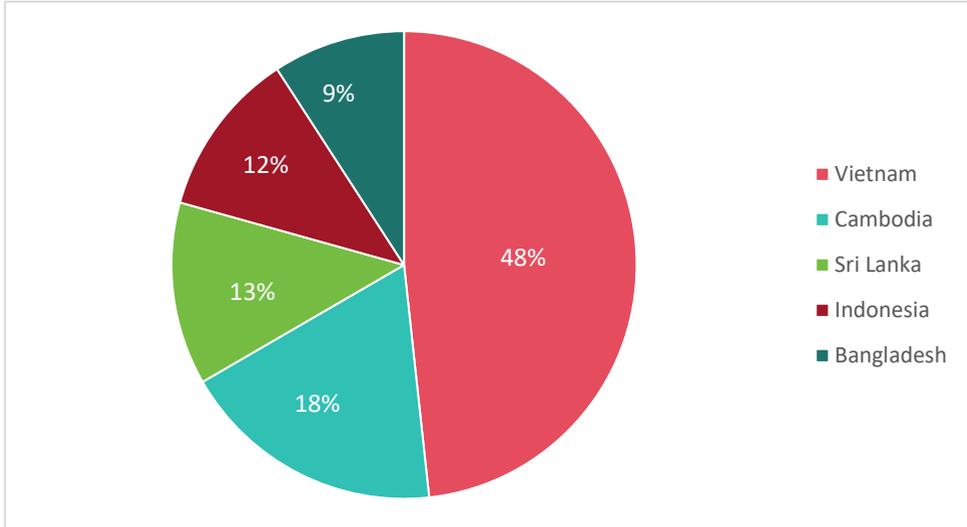


Fig. 2. Lululemon supply chain distribution

3.3 Non-Financial Impact of Greenwashing

The exposure of Lululemon's greenwashing practices has significant non-financial implications. A survey conducted by the Consumer Trust Institute in 2024 revealed that 72% of consumers reported a decline in trust towards Lululemon following the greenwashing accusations. This decline in trust can have long-term effects on brand loyalty and customer retention. Additionally, a brand reputation study by Brandwatch in 2024 indicated that Lululemon's brand reputation score dropped by 25% in the months following the accusations. Such non-financial impacts can undermine the company's market position and competitive advantage, highlighting the importance of genuine sustainability efforts in maintaining consumer trust and brand integrity.

4. Performance Impact of Lululemon's "Greenwashing" Exposure

4.1 Financial Effect

4.1.1 Risk of Legal Punishment

Lululemon's "greenwashing" claims have attracted the attention of regulatory bodies. The environmental organization Stand.earth has requested the Canadian Competition Bureau to order Lululemon to halt its "Be Planet" campaign, issue a public apology to Canadian

consumers, and pay a fine equivalent to up to 3% of its global revenue. Given Lululemon's fiscal 2023 net revenue of US\$9.6 billion, the potential fine could reach US\$288 million or more. This legal risk not only poses a significant financial burden but also threatens the company's reputation and market standing.

4.1.2 Escalating Supply Chain Costs

Lululemon's ongoing reliance on non-biodegradable materials like polyester and nylon, which make up 67% of its product offerings, necessitates increased investment in sustainable alternatives. Transitioning to eco-friendly materials or enhancing existing manufacturing processes is expected to result in higher short-term costs. Furthermore, with 80% of its suppliers located in regions with limited renewable energy access (e.g., Vietnam and Cambodia), the costs associated with decarbonizing the supply chain will be substantial. These increased expenditures may negatively affect the company's profit margins and reduce shareholder value.

4.2 Non-Financial Effects

The exposure of Lululemon's "greenwashing" has had significant non-financial repercussions. The company's core customer base, yoga enthusiasts, have expressed disappointment and skepticism. As of January 2024, a petition signed by 7,000 yoga teachers and students demanded that Lululemon transition its supply chain to 100% renewable energy. In 2023, over 100 athletes wrote to the company urging it to address its increasing greenhouse gas emissions. This backlash has eroded consumer trust and damaged the brand's image, potentially leading to long-term customer attrition and a decline in market share.

5 Implications of Lululemon's "Greenwashing" Behavior on Corporate Performance and Governance Recommendations

5.1 Dynamic Performance Impact

In the short term, Lululemon's "greenwashing" behavior may enhance its corporate image, making consumers believe it is environmentally responsible. This positive image can attract environmentally conscious consumers, increasing brand favorability and loyalty, thereby boosting sales performance. However, in the long run, once "greenwashing" practices are exposed, they will severely damage a company's reputation. Consumer trust will decline sharply, reducing the perceived value of green initiatives. Consumers may perceive the company as deceptive, causing irreversible damage to the brand [9]. As awareness of "greenwashing" grows, consumers may boycott such companies and shift to those genuinely committed to environmental protection, leading to a decline in Lululemon's sales, market share, and financial performance, and weakening its market competitiveness.

5.2 Implications for Policies and Enterprises

5.2.1 Supervision Needs to Strengthen Standards and Penalties for Greenwashing

Governments and regulatory bodies should refine relevant laws and regulations to clarify the definition of "greenwashing" and impose clear penalties for violations. Simultaneously, avenues for public participation in environmental governance and protection should be expanded. This includes establishing comprehensive and efficient channels for public environmental complaints and suggestions, thereby enhancing public awareness and participation in environmental protection, and granting the public greater participatory rights [10]. Furthermore, regulatory bodies can employ economic incentives, such as tax reductions or subsidies, to encourage genuine environmental efforts by businesses. This dual strategy of penalties and incentives will prompt companies to focus on actual environmental performance rather than superficial promotion.

5.2.2 Companies Should Establish a Transparent ESG Information Disclosure Mechanism

Companies should establish transparent ESG information disclosure mechanisms, regularly publishing detailed ESG reports. These reports should cover specific measures and performance in environmental protection, social responsibility, and corporate governance. For example, companies can adopt the Global Reporting Initiative (GRI) standards to ensure comprehensive and transparent reporting. Internally, companies can set up dedicated ESG management teams, define clear ESG goals and indicators, and establish internal supervision and audit mechanisms. This will not only enhance consumer and investor trust but also provide a platform for self-monitoring and continuous improvement.

5.2.3 Practical Corporate Action Plans

To mitigate "greenwashing" practices, corporations should integrate sustainability into their core business strategies. This necessitates the enhancement of internal governance structures, the establishment of specialized review teams, and the creation of independent audit departments. Regular reviews of ESG reports and related activities are crucial to ensure the integrity of the reported information [10]. Companies like Lululemon can learn from such practices by:

Supply Chain Management: Engaging with suppliers to transition to renewable energy sources and sustainable materials. For instance, setting targets for suppliers to increase the use of renewable energy and providing support for the adoption of sustainable practices.

Product Innovation: Investing in R&D to develop sustainable materials and production processes. Lululemon can collaborate with material science companies to create eco-friendly alternatives to polyester and nylon.

Consumer Education: Educating consumers about the company's sustainability efforts and the importance of genuine environmental responsibility. Transparent communication about the challenges and progress can build consumer trust.

By adopting these strategies, companies can not only avoid the pitfalls of "greenwashing" but also contribute to a more sustainable future.

6 Conclusion

6.1 Research Summary

This study focuses on the greenwashing behavior of Lululemon, an enterprise in the apparel industry, against the backdrop of the dual carbon policy, and reveals the formation mechanism of greenwashing behavior and its dynamic impact on corporate performance from the perspective of institutional pressure and corporate resource constraints. The following are the main conclusions of this study:

6.1.1 Driving Mechanism of Greenwashing Behavior

Faced with multiple pressures such as policy compliance, intensified competition, and rising consumer demand for sustainability, companies often resort to "low-cost greenwashing strategies." These include vague environmental claims and selective disclosure of information. The cases of Decathlon and Lululemon demonstrate how companies can evade the high costs of supply chain decarbonization by promoting false eco-design or relying on carbon neutrality goals that are not substantiated.

6.1.2 Dynamic and Contradictory Performance Impact

Greenwashing can stimulate consumers' willingness to buy through environmental marketing or maintain profit margins by reducing compliance costs (Lululemon's net profit increased slightly by 0.9% in 2023), thereby gaining short-term benefits. However, in the long run, the exposure of greenwashing leads to the collapse of consumer trust, the risk of legal penalties (Lululemon's potential fine is up to US\$288 million) and the loss of brand reputation (being removed from the ESG rating system), which ultimately weakens the company's market competitiveness and financing capabilities.

6.1.3 Industry Specificity Exacerbates the Risk of Greenwashing

The "low price-sales volume" model of fast fashion and the "premium-experience" model of high-end brands both rely on unsustainable resource inputs, making the apparel industry a disaster area for greenwashing. The misalignment between consumers' environmental awareness and behavioral deviations (paying for green premiums but lacking traceability) further amplifies the motivation of companies to greenwash.

6.2 Limitations and Prospects

The current study has certain limitations. Firstly, the case coverage is restricted to only one multinational company, which is insufficient to fully capture the greenwashing characteristics of small and medium-sized local enterprises or the diverse policy responses across different regions. Additionally, while the financial and public opinion data utilized extend up to 2024, long-term tracking is essential to comprehensively verify the dynamic effects of greenwashing behavior over extended periods.

Future research should address these limitations by expanding the scope of investigation. Specifically, future studies could:

Expanding to High-Carbon Industries: Including energy and automotive sectors to explore cross-industry differences in greenwashing behaviors and impacts.

Conducting Multi-Industry Comparisons: Identifying commonalities and unique characteristics across industries to develop tailored governance strategies.

Using Quantitative Models: Applying panel data to analyze the nonlinear relationship between greenwashing intensity and corporate performance, pinpointing key thresholds and inflection points.

Undertaking Cross-National Studies: Investigating how regulatory and cultural contexts influence greenwashing globally, informing international regulatory efforts.

In summary, Future research should broaden the scope, use sophisticated methods, and consider the global context to enhance understanding of greenwashing and inform effective governance.

Reference

1. X. Wang, Study on corporate greenwashing behavior and performance under external pressure: A case study of Yanjing Beer, Master Thesis, Inner Mongolia University of Finance and Economics (2024)
2. H. Zhu, Research on the Drivers and Impacts of Greenwashing from a Long-Term Perspective—A Case Study of China Shenhua, Master Thesis, Southwestern University of Finance and Economics (2024)
3. Boiral O. Accounting for the unaccountable: Biodiversity reporting and impression management. *J bus ethics*, **135(4)**, 751-768(2016)
4. Y. Wang. Motivations and Governance of Corporate "Greenwashing" Behavior under the Context of ESG Information Disclosure. **11 (03)**, 84-87(2025)
5. W. Li, Seppänen V, et al. Effects of greenwashing on financial performance: Moderation through local environmental regulation and media coverage. *Bus strategie environ*.**32(1)**, 820-841(2023)
6. De Vries, Gerdien, et al. "Sustainability or profitability? How communicated motives for environmental policy affect public perceptions of corporate greenwashing." *Corporate social responsibility and environmental management*, **22**,142-154 (2015)
7. J. Kang, C. Liu, Kim S H. Environmentally sustainable textile and apparel consumption: The role of consumer knowledge, perceived consumer effectiveness and perceived personal relevance. *Int j cinsum stud*, **37(4)**, 442-452 (2013)
8. Thematic Group on "Environmental Costs" of the Research on "Corporate Costs" by the Chinese Academy of Fiscal Sciences. Research on the Status and Trends of Corporate Environmental Costs under Green and Low-Carbon Development. *CGE*, **12**, 21-32 (2023)
9. W. Zhuang, X. Luo, M. Gomez-Suárez. On the Factors Influencing Green Purchase Intention: A Meta-Analysis Approach. *Front psychol*, **12**, 644020 (2021)
10. X. Liu. The Impact of Environmental Greenwashing on Corporate Performance: An Empirical Study and Case Analysis, Master Thesis, Xi'an International Studies University (2024)