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GREENWASHING AND ENVIRONMENTAL MARKET FAILURE: INFORMATION ASYMMETRY AND CONSUMER TRUST IN SUSTAINABLE CONSUMPTION

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Abstract

The growing demand for sustainable products has encouraged firms to use environmental claims such as "eco-friendly," "green," and "sustainable." While genuine green marketing can promote responsible consumption, misleading or unsubstantiated claims can lead to greenwashing, creating a potential form of market failure. This paper examines greenwashing through the perspectives of Information Asymmetry Theory, Signalling Theory, Consumer Choice Theory, and Environmental Economics. Since firms generally possess more information about their environmental performance than consumers, information gaps can make sustainability claims difficult to verify. Misleading claims may distort consumer choices, disadvantage genuinely sustainable firms, and reduce market efficiency. The study also focuses on the impact of greenwashing on consumer trust. Repeated exposure to misleading environmental claims may increase consumer scepticism and weaken confidence in green products, sustainability labels, and corporate environmental initiatives. The paper further highlights the importance of environmental governance through transparent disclosure, credible certification, independent verification, standardised environmental information, and effective regulation. These mechanisms can reduce information asymmetry and improve the credibility of environmental claims. The paper develops a conceptual relationship between information asymmetry, greenwashing, consumer trust, market efficiency, and environmental governance. It argues that effective governance can protect consumers, encourage genuine sustainable practices, and strengthen the functioning of sustainable markets. Addressing greenwashing is therefore important for building consumer confidence, promoting fair competition, and supporting sustainable production and consumption.

Keywords: Greenwashing, Market Failure, Information Asymmetry, Consumer Trust, Signalling Theory, Consumer Behaviour, Environmental Governance.

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Introduction

The growing concern over climate change and environmental sustainability has significantly influenced consumer markets. Consumers are increasingly exposed to products promoted through environmental claims such as “eco-friendly,” “green,” “sustainable,” “natural,” “carbon-neutral,” and “environmentally responsible.” Such claims can potentially encourage sustainable consumption by enabling consumers to reward firms that adopt environmentally responsible production practices. However, when environmental claims are vague, exaggerated, misleading or unsupported by credible evidence, they may result in greenwashing Greenwashing represents more than an ethical or marketing problem. It can also be interpreted as an economic problem arising from information asymmetry. Firms generally possess greater information about their environmental performance than consumers, while consumers often face difficulties in verifying environmental claims. This information gap can enable firms to communicate environmental benefits that do not accurately reflect actual environmental performance. Consequently, consumers may make purchasing decisions based on incorrect perceptions of environmental quality.

Greenwashing can therefore affect both consumer welfare and market efficiency. It may distort consumer choice, disadvantage firms that genuinely invest in environmental sustainability and weaken the incentives for businesses to improve their environmental performance. Repeated exposure to misleading claims may also reduce consumer trust in green products, environmental labels and corporate sustainability initiatives.

Against this background, the paper examines greenwashing as a form of information-related market failure and considers its implications for consumer choice and trust. It further examines the role of environmental governance mechanisms, including disclosure, certification, independent verification and regulation, in reducing information asymmetry and improving the credibility of environmental claims.

Review Of Literature

A review of **20 studies published between 2020 and 2026** was undertaken on greenwashing and its economic implications. The studies mainly focus on **information asymmetry, consumer trust, sustainable marketing, firm value, regulation, and market failure**. The review highlights the need for further research examining **greenwashing as a source of information asymmetry and market failure**.

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Objectives

1. To examine greenwashing as a market failure arising from information asymmetry and its implications for consumer choice and trust.
2. To examine the role of environmental governance in reducing greenwashing and improving the credibility of sustainable markets.

Research Gap

Existing studies have examined greenwashing mainly from marketing, consumer behaviour and corporate sustainability perspectives. However, limited attention has been given to integrating **information asymmetry, consumer trust, market failure and environmental governance** within a single economic framework. This study addresses this gap by developing a conceptual relationship between these dimensions and examining governance as a mechanism to reduce information asymmetry and improve market credibility.

Methodology

The study adopts a **conceptual and theoretical approach** based on secondary sources. It draws on Information Asymmetry Theory, Signalling Theory, Consumer Choice Theory and Environmental Economics. Secondary evidence from academic literature, OECD reports, European Commission documents and Indian regulatory guidelines is used to analyse greenwashing, consumer trust and environmental governance. No primary data or statistical tools are employed. Selected secondary statistics, institutional evidence and a documented case illustration are used to strengthen the conceptual analysis.

Limitations

The study is conceptual and relies on secondary evidence; therefore, the proposed relationships are not statistically tested. The findings ma y also be influenced by differences in greenwashing practices and regulatory frameworks across countries. Future studies can empirically test the proposed framework using consumer surveys, firm-level data and cross-country analysis.

Theoretical Framework

The paper integrates four complementary theoretical perspectives: **Information Asymmetry Theory, Signalling Theory, Consumer Choice Theory and Environmental Economics.**

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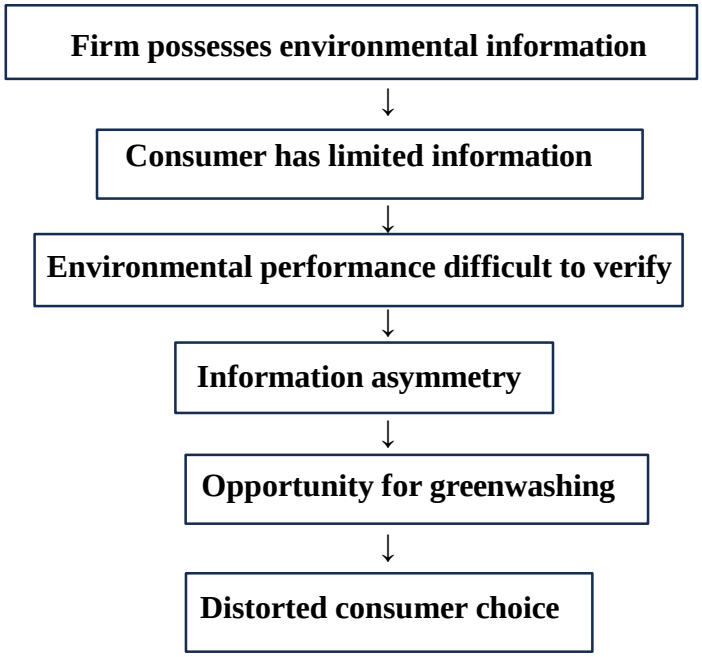
Information Asymmetry Theory

Information asymmetry exists when one party in a transaction possesses more relevant information than another. In sustainable markets, firms generally have greater knowledge about their environmental performance, production processes, emissions and resource use than consumers. Consumers therefore cannot easily determine whether an environmental claim accurately represents actual environmental performance.

This creates an environment in which misleading environmental claims can emerge.

Information Asymmetry and Greenwashing



Signalling Theory

Environmental claims can function as signals of product quality. A credible environmental signal can help consumers identify genuinely sustainable products. However, when firms can make environmental claims without adequately demonstrating their environmental performance, the signal loses credibility. Greenwashing can therefore be understood as a **low-credibility or misleading signal** that creates confusion between genuinely sustainable firms and firms that merely appear sustainable.

Consumer Choice Theory

Consumers make choices based on the information available to them. When environmental information is inaccurate, consumer preferences may not reflect actual environmental quality. A consumer may pay a premium for a product believed to be environmentally superior when its actual environmental performance does not justify that premium.

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Environmental Economics

From an environmental economics perspective, greenwashing can weaken market incentives for sustainable production. If consumers cannot distinguish genuinely sustainable firms from firms making misleading claims, market demand may fail to reward genuine environmental improvements. Thus, these theories together establish the central argument that **information asymmetry can facilitate greenwashing, which can distort consumer choice and contribute to market failure.**

Greenwashing, Information Asymmetry and Market Failure

Greenwashing occurs when firms communicate environmental claims that are misleading, exaggerated, vague or unsupported by sufficient evidence. It can take several forms, including vague environmental terminology, unsupported claims, selective disclosure, misleading symbols and claims that emphasise a minor environmental benefit while ignoring significant environmental impacts.

Major Forms of Greenwashing

Form	Explanation
Vague claims	Use of terms such as “green” or “eco-friendly” without clear meaning
Unsubstantiated claims	Environmental claims without credible evidence
Hidden trade-offs	Emphasising one environmental benefit while ignoring other impacts
Misleading labels	Use of symbols or labels that create an impression of environmental certification
Irrelevant claims	Presenting legally required characteristics as special environmental benefits

The economic significance of greenwashing arises because consumers cannot perfectly verify these claims. This is particularly important because environmental attributes often have **credence characteristics**: consumers may find it difficult to evaluate the environmental quality of a product even after purchasing or using it.

Evidence from the European Commission illustrates the scale of the problem. An examination of environmental claims found that **53% provided vague, misleading or unfounded environmental information, while 40% lacked sufficient supporting evidence**.

Problematic Environmental Claims

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Category	Percentage
Vague, misleading or unfounded claims	53%
Claims lacking sufficient evidence	40%

Source: European Commission.

Greenwashing can generate several market consequences. First, consumers may allocate expenditure towards products that are perceived to be environmentally superior but are not. Second, genuinely sustainable firms may lose their competitive advantage because firms using misleading claims can obtain similar reputational benefits without making equivalent environmental investments. Third, consumer trust in environmental information may decline.

Therefore:
Information asymmetry → Greenwashing → Distorted consumer choice → Competitive distortion → Market inefficiency

This demonstrates why greenwashing can be conceptualised as a **market failure rather than merely a communication problem**.

Case Illustration: Volkswagen "Clean Diesel"

The Volkswagen "Clean Diesel" case illustrates how information asymmetry can affect consumer decisions. Volkswagen marketed diesel vehicles as environmentally friendly and low-emission, while the vehicles were equipped with software designed to manipulate emissions testing. More than **550,000 affected diesel vehicles** were marketed in the United States. The case demonstrates how consumers may rely on environmental information that they cannot independently verify. It also resulted in significant consumer compensation and regulatory intervention, with Volkswagen and Porsche eventually paying more than **US$9.5 billion** to consumers.

Volkswagen "Clean Diesel" Case: Economic Interpretation

Case element	Economic interpretation
"Clean diesel" environmental claim	Environmental signal
Consumers unable to verify actual emissions	Information asymmetry
Manipulation of emissions testing	Misleading environmental claim
Consumer purchases based on environmental perception	Distorted consumer choice
Regulatory action and compensation	Market correction

Source: U.S. Federal Trade Commission.

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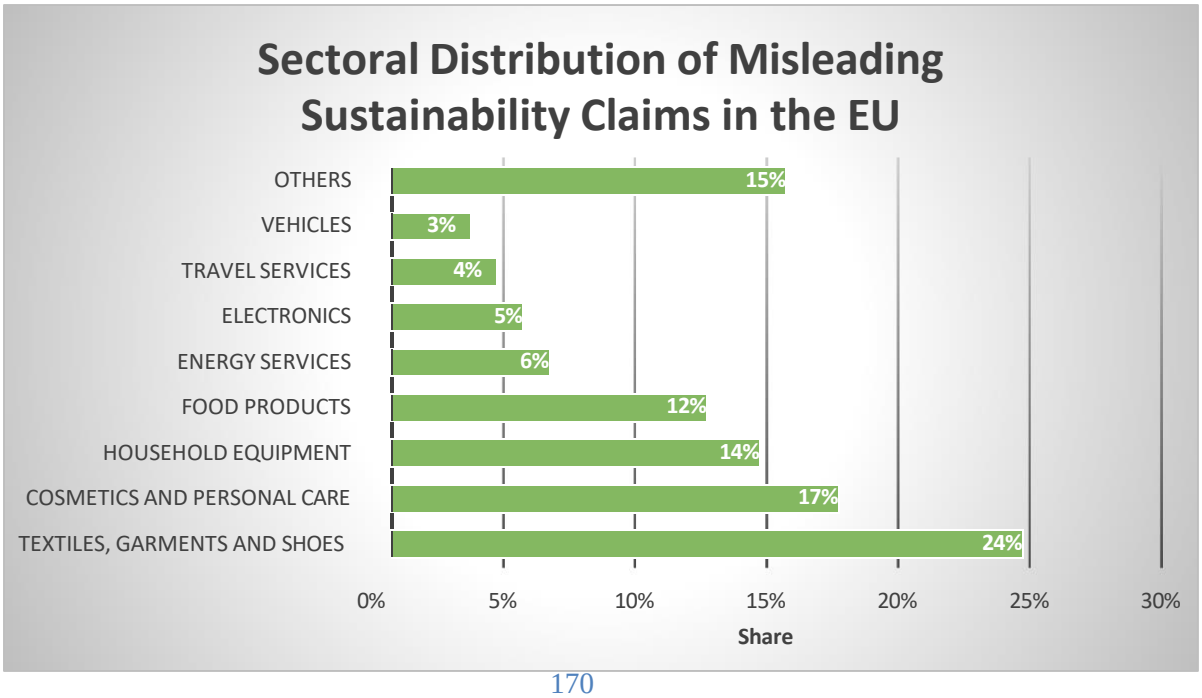
Greenwashing and Consumer Trust

Consumer trust is an important mechanism linking information quality with sustainable consumption. When consumers believe environmental claims to be reliable, they are more likely to consider sustainability information in purchasing decisions. However, repeated exposure to misleading claims may generate scepticism and reduce confidence in green products and environmental labels. Evidence supports the existence of this problem. OECD research on consumer behaviour in the green transition indicates substantial consumer distrust and difficulty in assessing environmental claims. An OECD survey also reports that many consumers experience difficulty in determining whether environmental claims are reliable.

Sectoral Distribution of Misleading Sustainability Claims in the EU

Sector	Share
Textiles, garments and shoes	24%
Cosmetics and personal care	17%
Household equipment	14%
Food products	12%
Energy services	6%
Electronics	5%
Travel services	4%
Vehicles	3%
Others	15%



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Source: European Source: European Commission, 2020 sweep on misleading sustainability claims.

The sectoral distribution indicates that misleading sustainability claims are not restricted to a single market. Textiles, cosmetics, household equipment and food products account for substantial shares of the claims identified. This widespread occurrence reinforces the need for consistent standards for environmental communication across consumer markets.

Greenwashing can therefore produce a **trust deficit**:

Greenwashing–Trust Mechanism

Misleading environmental claim
↓
Consumer perception of deception
↓ Scepticism
↓
Reduced trust in green claims
↓
Lower willingness to rely on sustainability information
↓
Potential reduction in sustainable consumption

This creates a paradox. Environmental communication is intended to encourage sustainable consumption, but widespread greenwashing can make consumers less willing to believe genuine environmental claims.

Thus, greenwashing can create a **negative external effect on the credibility of the entire green market**, because misleading firms can damage consumer confidence not only in themselves but also in genuine sustainability claims made by other firms.

Environmental Governance

Because greenwashing originates partly from an information problem, governance should focus on improving the **quality, comparability and credibility of environmental information**.

Four mechanisms are particularly important.

1. Transparent disclosure

Firms should provide clear and specific information rather than relying on broad terms such as “green” or “eco-friendly.” Standardised disclosure can make environmental performance easier to compare.

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2. Certification

Credible environmental certification can reduce the information burden on consumers by providing an independently recognised signal of environmental performance.

3. Independent verification

Third-party verification and assurance can increase the credibility of corporate environmental claims and reduce opportunities for unsupported claims.

4. Regulation

Regulation can establish minimum requirements for environmental claims and impose consequences for misleading communication.

India provides an important contemporary example. The **Central Consumer Protection Authority's Guidelines for Prevention and Regulation of Greenwashing or Misleading Environmental Claims, 2024** specifically address misleading environmental claims and require greater transparency and substantiation.

The European Union has also strengthened its approach to environmental claims and consumer protection, while OECD work emphasises the importance of consumer information and protection in the green transition.

Governance Mechanisms

Mechanism	Problem addressed	Expected outcome
Disclosure	Information asymmetry	Greater transparency
Certification	Signal credibility	Easier identification of genuine products
Third-party verification	Unsubstantiated claims	Greater reliability
Standardised labels	Consumer confusion	Better comparison
Regulation	Misleading claims	Consumer protection
Consumer education	Information limitations	Better decision-making

Therefore, effective governance can transform environmental information from a **weak and potentially misleading signal into a credible market signal.**

8. Proposed Governance Framework

Based on the theoretical analysis, this study proposes an integrated governance framework to address greenwashing as an information-related market failure. Information asymmetry between firms and consumers can create opportunities for misleading environmental claims, resulting in consumer confusion, loss of trust and inefficient market outcomes. Environmental governance mechanisms such as transparency, standardisation,

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certification, independent verification, regulation and consumer education can reduce information asymmetry and improve the credibility of environmental signals. This, in turn, can strengthen consumer trust, promote fair competition and support more efficient sustainable markets.

Information Asymmetry
↓ Greenwashing
↓
Consumer Confusion & Trust Loss
↓
Market Failure
Environmental Governance
(Transparency • Standardisation • Certification • Verification • Regulation • Consumer Education)
↓
Reduced Information Asymmetry
↓
Credible Environmental Signals
↓
Consumer Trust & Fair Competition
↓
More Efficient Sustainable Markets

Conclusion

Greenwashing can be understood as an information-related market failure in sustainable markets. The unequal distribution of environmental information between firms and consumers creates opportunities for misleading or unsubstantiated environmental claims. Such claims can distort consumer choice, disadvantage genuinely sustainable firms and weaken the efficiency of markets. The problem is further intensified when repeated exposure to misleading claims reduces consumer trust in green products, sustainability labels and corporate environmental initiatives.

The paper argues that environmental governance can play a central role in addressing this problem. Transparent disclosure, standardized environmental information, credible certification, independent verification, consumer education and effective regulation can reduce information asymmetry and improve the credibility of environmental signals. Addressing greenwashing is therefore important not only for consumer protection but also for maintaining fair competition and strengthening incentives for genuine environmental improvement. **Effective governance can ultimately contribute to more trustworthy, transparent and efficient sustainable markets.**

Suggestion

The analysis demonstrates that greenwashing has implications beyond individual firms and consumers. It can affect the functioning of sustainable markets as a whole. Information asymmetry allows firms to communicate environmental characteristics that consumers cannot easily verify. When such claims are misleading, consumers may make inefficient purchasing decisions and genuinely sustainable firms may face unfair competition.

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The resulting loss of consumer trust can create a wider credibility problem. If consumers become sceptical of environmental claims generally, even firms undertaking genuine environmental improvements may find it difficult to communicate their sustainability performance effectively.

Therefore, policy should focus not only on punishing misleading claims but also on improving the information environment of sustainable markets. Governments and regulatory institutions should promote standardised environmental terminology, evidence-based claims, credible certification, independent verification and accessible disclosure. Consumer education should complement these measures by improving consumers' ability to interpret environmental information.

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