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GREENWASHING AS A GOVERNANCE CHALLENGE: THE *EVIDENCE* MODEL FOR ENVIRONMENTAL CLAIMS

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Purpose: This paper proposes the EVIDENCE model - a conceptual governance framework for assessing the credibility and evidentiary strength of environmental claims - and addresses the persistent gap between greenwashing typologies and EU regulatory requirements introduced through Directive (EU) 2024/825, CSRD, and the forthcoming Green Claims Directive.
Design/methodology/approach: A qualitative, theory-building design grounded in legitimacy, signalling, institutional, and stakeholder theories. The study draws on a structured narrative review of literature from Scopus and Web of Science (2011-2026), supplemented by EU regulatory documents, ESMA guidance, UOKiK enforcement materials, and international standards (ISO 14021, 14024, 14040/14044, 14068, GRI, ESRS). The model is illustrated through an e-commerce case.
Findings: Greenwashing is best understood as a structural information asymmetry rooted in governance failures rather than isolated communication errors. The EVIDENCE model articulates eight interlocking dimensions - Evidence, Verifiability, Impact scope, Disclosure clarity, Enforcement alignment, Narrative consistency, Certification, and Easy access - each linked to a formal proposition. The e-commerce application demonstrates how the model translates abstract substantiation logic into concrete governance design.
Originality/value: The paper integrates four theoretical perspectives into a unified framework and introduces eight empirically testable propositions. It provides Polish and EU practitioners with an audit-ready instrument compatible with UOKiK enforcement, ESRS reporting, and EU substantiation requirements.
Research limitations/implications: The EVIDENCE model has not yet undergone empirical validation. The analysis is anchored in the European regulatory environment, which may limit global generalisability. Future research should pursue experimental designs and cross-sector content analyses.
Practical implications: The EVIDENCE model offers a structured, audit-ready governance instrument applicable across sectors and organisational sizes, compatible with GRI Standards, ESRS, and Directive 2024/825. For Polish organisations, alignment with UOKiK guidance directly reduces enforcement exposure.
Category of the paper: Conceptual paper.
Keywords: greenwashing, environmental claims, EVIDENCE model, EU regulation, ESG governance.

1. Introduction

The acceleration of regulatory pressure for sustainable business conduct has fundamentally repositioned environmental communication as a core governance and strategic function. Driven by the European Green Deal, the Corporate Sustainability Reporting Directive (CSRD), Directive (EU) 2024/825 empowering consumers for the green transition, and the forthcoming Green Claims Directive, organizations now operate within a regulatory architecture that demands traceable, verifiable, and proportionate environmental claims (European Commission, 2019, 2023b; European Parliament and Council, 2022; 2024a; ESMA, 2024). At the same time, public scrutiny by non-governmental organizations, financial-sector supervisors, and increasingly informed consumers has reached a level at which symbolic communication detached from operational performance carries meaningful reputational and economic costs.

In this context, greenwashing - understood as a discrepancy between actual environmental performance and its symbolic representation - has resurged as a systemic risk. Recent reviews indicate that the phenomenon has not only persisted but intensified in connection with ESG investing, corporate net-zero commitments, and the proliferation of unregulated sustainability labelling (Montgomery, Lyon, Barg, 2024; Nemes et al., 2022). The European Commission Sweep on environmental claims documented that 42% of analyzed claims were exaggerated, false, or deceptive, and 59% lacked substantiation (European Commission, 2021), and the follow-up CPC sweep in 2023 confirmed continued non-compliance across sectors (CPC Network, 2024).

This persistence raises a substantive theoretical and managerial question: why do organizations - even those with material exposure to legal sanctions and reputational damage - continue to deploy greenwashing practices, and what governance architectures can constrain them? Existing scholarship has produced extensive typologies of greenwashing forms (TerraChoice, 2010; de Freitas Netto et al., 2020; Pope, Worrall, 2023) and has documented its determinants at firm and industry level (Delmas, Burbano, 2011; Marquis, Toffel, Zhou, 2016; Bowen, 2014). However, the literature remains fragmented in three ways that limit its operational utility for management practice. First, typologies catalogue the phenomenon without specifying organizational mechanisms that produce or prevent it. Second, theoretical accounts grounded in legitimacy or signalling theory illuminate motivation but rarely connect to the evidentiary architecture of contemporary regulation. Third, the rapid evolution of EU instruments has outpaced the conceptual frameworks used to assess organizational compliance (Bernini, La Rosa, 2024).

This paper addresses these gaps by developing the EVIDENCE model: a conceptual framework that operationalizes greenwashing prevention as a multidimensional governance function. The model integrates legitimacy, signalling, institutional, and stakeholder theories

with the substantiation logic of the new EU anti-greenwashing regime, and translates this synthesis into eight organizational dimensions amenable to managerial diagnosis and audit.

1.1. Research objective and questions

The primary objective of this paper is to systematize existing definitions of greenwashing and to develop an interpretative framework that aligns environmental communication with contemporary evidentiary and regulatory requirements. The overarching research question is:

RQ: How can organizations bridge the gap between actual environmental performance and sustainability communication to maintain long-term reputational resilience under tightening EU regulation?

Four specific research questions refine the theoretical scope:

RQ1: How do visual environmental cues and symbolic green signals influence stakeholder perceptions, and how should organizations manage them under Directive 2024/825?

RQ2: How does consumer literacy regarding environmental labels and certifications affect susceptibility to greenwashing, and what implications follow for stratified communication strategies?

RQ3: How does misalignment between communicated and actual environmental performance influence institutional trust and reputational capital?

RQ4: How effective are contemporary European and Polish regulatory mechanisms in mitigating greenwashing practices, and what governance instruments anticipate this regulatory convergence?

The analysis is anchored in management sciences and focuses on the European regulatory context, with particular emphasis on the Polish enforcement regime administered by the Office of Competition and Consumer Protection (UOKiK).

2. Literature review

The origins of the term greenwashing are typically traced to Jay Westerveld's 1986 essay critiquing hotel-industry environmental messaging used as a substitute for substantive ecological performance (Westerveld, 1986). From this rhetorical origin, the concept has matured into a multidimensional construct embedded in organizational behaviour, communication theory, and information economics.

A widely cited contemporary definition characterizes greenwashing as a situation in which an organization with poor environmental performance communicates positive environmental messages, thereby creating a misleading perception of responsibility (Delmas, Burbano, 2011, p. 65). Lyon, Montgomery (2015) extend this by characterizing greenwashing as strategic decoupling, in which symbolic communication systematically replaces substantive operational

change. From an institutional theory perspective, this decoupling reflects the tension between ceremonial conformity and technical efficiency identified by Meyer, Rowan (1977), now applied to sustainability claims rather than to formal organizational structures.

Contemporary scholarship views greenwashing as institutionally embedded in governance structures, compliance processes, and reporting routines. de Freitas Netto et al. (2020), in a systematic review of 67 articles, identify two core dimensions: claim greenwashing (focused on the message) and executional greenwashing (focused on imagery and atmospherics). Testa, Sarti, Frey (2021), reviewing 110 publications, classify greenwashing along a substantive-symbolic continuum and argue that the field itself shows signs of conceptual greenwashing, the term being applied to phenomena it does not adequately describe. Santos, Coelho, Marques (2024) further synthesize this body of literature into a stakeholder-centric framework that distinguishes producer-side practices from consumer-side perceptions.

2.1. Greenwashing: definitions and typologies

One of the most influential typologies remains the Seven Sins of Greenwashing (TerraChoice, 2010), which identifies hidden trade-off, no proof, vagueness, irrelevance, lesser of two evils, fibbing, and worship of false labels. Although developed for consumer-product communication, the framework continues to inform regulatory taxonomies, including the Annex of Directive 2024/825.

Recent literature expands this typology with more granular and theory-grounded dimensions. Walker, Wan (2012) distinguish between claim-level greenwashing (specific deceptive statements) and firm-level greenwashing (overall pattern of deceptive communication). Lyon, Montgomery (2015) differentiate selective disclosure (revealing only favorable information) from decoupling (sustained inconsistency between claims and operations). Cho, Michelon, Patten (2021), in a 20-year review of impression management in sustainability reporting, separate symbolic from substantive greenwashing. Pope, Worrall (2023) introduce a typology of visual greenwashing distinguishing executional, atmospheric, and structural visual deception. Bernini, La Rosa (2024) operationalize reporting-level greenwashing as deviation from internationally recognized evidentiary standards.

Polish scholarship has also engaged with the concept. Witek and Kuźniar (2021) document the prevalence of green-marketing claims among Polish consumers and the uneven development of consumer skepticism. Studies of sustainability reporting practices among Polish listed companies indicate systematic gaps in evidentiary substantiation, particularly in supply-chain disclosures, and growing exposure to enforcement under the unfair-commercial-practices regime (Hąbek, Wolniak, 2016).

2.2. Visual greenwashing and the role of signals

Advances in consumer psychology demonstrate that greenwashing is frequently non-verbal. Visual elements - green colour palettes, natural imagery, plant motifs, leaf icons - function as heuristics that shape consumer judgment even in the absence of supporting evidence. Visual greenwashing exploits the logic of signalling theory (Spence, 1973): firms send low-cost signals conveying environmental responsibility without verifiable evidence, thereby deepening information asymmetry between producers and consumers (Parguel, Benoît-Moreau, Russell, 2015; Magnier, Schoormans, 2019). Schmuck, Matthes and Naderer (2018) experimentally show that nature-evoking visuals trigger automatic positive evaluations even when textual content is neutral. The green halo effect arising from these visuals is particularly resilient to corrective information, presenting a substantial regulatory and managerial challenge.

The convergence of these strands suggests that greenwashing should be understood not as a discrete deceptive act but as a structural information asymmetry rooted in governance failures, communication routines, and the cognitive economics of symbolic signalling. This understanding informs the theoretical framework developed in Section 2.3.

2.3. Theoretical framework

Contemporary research demonstrates that greenwashing is a multidimensional phenomenon at the intersection of organizational behaviour, stakeholder expectations, information economics, and institutional pressures. This paper draws on four theoretical lenses, organized into two clusters: theories explaining organizational motivation (legitimacy theory and institutional theory) and theories explaining stakeholder interpretation and the strategic implications of communication (signalling theory and stakeholder theory). Together, these perspectives provide the conceptual foundation for the EVIDENCE model developed in Section 5.

2.3.1. Legitimacy theory: the social licence to operate

Legitimacy theory remains a foundational lens for analyzing environmental communication. Suchman (1995, p. 574) defines organizational legitimacy as a generalized perception that the actions of an entity are desirable, proper, or appropriate within a socially constructed system of norms and beliefs. Organizations seek to secure a social licence to operate by projecting conformity with societal expectations. From this perspective, greenwashing constitutes symbolic management - a strategy used to reduce a perceived legitimacy gap without implementing substantive operational improvements (Cho et al., 2015). Boiral (2013) demonstrates that sustainability reports often function as simulacra: representations that bear little correspondence to underlying operational reality.

The legitimacy account is particularly powerful in explaining the timing and intensity of greenwashing. Empirical work shows that greenwashing intensifies when organizations face scrutiny they cannot satisfy through substantive change, for instance after environmental scandals, during regulatory transitions, or when peer pressure for ESG performance accelerates faster than organizational capacity (Marquis, Toffel, Zhou, 2016).

2.3.2. Institutional theory: isomorphic pressures and decoupling

Institutional theory complements legitimacy theory by explaining the structural conditions under which greenwashing emerges. DiMaggio and Powell (1983) identify three isomorphic pressures - coercive, mimetic, and normative - that drive organizations toward similar structures. In the sustainability domain, these pressures generate convergence in reporting frameworks (GRI, ESRS) and in the rhetorical conventions of environmental communication. Where capacity does not match expectations, organizations decouple formal compliance from operational practice (Meyer, Rowan, 1977; Scott, 2014). Greenwashing, in this view, is a predictable institutional response to misalignment between expectation and capacity.

2.3.3. Signalling theory: signal quality and information asymmetry

Signalling theory (Spence, 1973; Connelly et al., 2011) provides the analytical apparatus for distinguishing credible from non-credible environmental claims. The theory holds that signal credibility depends on signal cost: high-cost signals (third-party certifications, peer-reviewed Life Cycle Assessments, audited Scope 3 disclosures) are more credible because their falsification is expensive or risky. Low-cost signals (green colour palettes, vague eco-slogans, unverified self-declarations) are easily imitated and therefore convey limited information.

Greenwashing exploits this distinction by substituting low-cost for high-cost signals while attempting to extract reputational and market benefits commensurate with credible signalling. The economic logic links to Akerlof's (1970) market-for-lemons mechanism: when consumers cannot reliably distinguish credible from non-credible signals, the market for genuine sustainability claims deteriorates, disadvantaging firms that invest in substantive performance.

2.3.4. Stakeholder theory: differentiated audiences and trust

Stakeholder theory (Freeman, 1984; Mitchell, Agle, Wood, 1997) directs attention to the heterogeneous audiences that interpret environmental claims. Stakeholder salience - determined by power, legitimacy, and urgency - varies by stakeholder type, and so do the cognitive resources stakeholders bring to claim interpretation. NGOs, regulators, and ESG analysts are increasingly capable of detecting greenwashing through forensic comparison of claims with disclosed data (Marquis, Toffel, Zhou, 2016; ESMA, 2024). Retail consumers, by contrast, remain disproportionately exposed to executional greenwashing and visual heuristics (Schmuck, Matthes, Naderer, 2018; Szabo, Webster, 2021).

This heterogeneity carries an important implication for greenwashing prevention: a single communication template cannot satisfy all stakeholder groups. Effective sustainability communication requires a stratified architecture in which substantive evidentiary content is

layered behind audience-appropriate interfaces while remaining traceable to a common evidentiary base.

2.3.5. Attribution theory and the backlash effect

Attribution theory (Heider, 1958; Kelley, 1973) explains how stakeholders interpret detected greenwashing. When discrepancies between claims and performance are exposed, audiences typically attribute deceptive intent to the organization rather than framing it as a communication error (Torelli, Balluchi, Lazzini, 2020). This perceived intent amplifies reputational damage through a backlash effect: the penalty observed after greenwashing detection is asymmetrically large relative to the original discrepancy. Empirical evidence connects detected greenwashing with decreased brand trust (Szabo, Webster, 2021), deteriorating share-price performance (Teti, Etro, Pausini, 2024), and increased cost of capital (Ghitti, Gianfrate, Palma, 2024).

2.3.6. Synthesis: greenwashing as a governance design problem

Synthesizing across these lenses, greenwashing is best understood as organizational misalignment between declared corporate identity and operational reality - the authenticity gap. From a strategic-management perspective, greenwashing is a symptom of insufficient internal controls, fragmented ESG governance, and weak alignment between communications, operations, and assurance functions (Santos, Coelho, Marques, 2024; Ghitti, Gianfrate, Palma, 2024). This framing positions greenwashing prevention as a governance design problem rather than as a communication problem - the conceptual move that grounds the EVIDENCE model.

2.4. Research gap

Despite the growing body of research on greenwashing, a significant research gap persists. Existing typologies catalogue greenwashing forms without specifying the organizational mechanisms required to prevent them (TerraChoice, 2010; de Freitas Netto et al., 2020; Pope, Worrall, 2023). Theoretical frameworks grounded in legitimacy or signalling theory illuminate organizational motivation but rarely connect to the evidentiary architecture of contemporary regulation. The rapid evolution of EU instruments - particularly Directive 2024/825, CSRD, and the forthcoming Green Claims Directive - has outpaced the conceptual frameworks used to assess organizational compliance (Bernini, La Rosa, 2024).

To the best of the author’s knowledge, no existing study integrates typological, theoretical, and regulatory dimensions into a single operationalizable governance framework aligned with contemporary EU substantiation requirements and expressed through empirically testable propositions. The literature has not yet produced an audit-ready instrument that simultaneously operationalizes the substantiation logic embedded in Directive 2024/825, connects it to organizational governance mechanisms, and links these mechanisms to formal propositions testable at firm level. This paper addresses that gap through the development of the EVIDENCE model.

3. EU and Polish regulatory architecture

The European Union has, over the past five years, transformed environmental claims from a domain of soft-law guidance into a tightly regulated component of consumer protection and corporate disclosure law. Three convergent legislative streams structure this architecture: consumer protection law, sustainability reporting law, and sectoral environmental law.

3.1. Consumer protection: from UCPD to Directive 2024/825

The foundational instrument remains Directive 2005/29/EC on unfair business-to-consumer commercial practices (UCPD), which prohibits misleading commercial communications including misleading omissions (European Parliament and Council, 2005). Its 2021 Guidance Notice clarified the application of UCPD to environmental claims, establishing principles of truthfulness, evidentiary substantiation, and clarity of scope (European Commission, 2021).

Directive (EU) 2024/825 amending Directives 2005/29/EC and 2011/83/EU - the Empowering Consumers for the Green Transition Directive - represents a structural intensification of these principles (European Parliament and Council, 2024a). It introduces categorical prohibitions of generic environmental claims (such as eco-friendly, green, natural, climate-friendly) unless substantiated; bans claims of carbon neutrality based on offsetting; restricts the use of self-issued sustainability labels; and imposes pre-purchase information requirements regarding product durability and reparability. Member States are required to transpose the Directive by 27 March 2026, with national rules applying from 27 September 2026.

The forthcoming Green Claims Directive is intended to operationalize these prohibitions by introducing ex ante substantiation and verification requirements, including independent third-party assessment of explicit environmental claims and harmonized rules for environmental labelling schemes (European Commission, 2023b). Together, Directive 2024/825 and the Green Claims Directive establish what may be characterized as a substantiation regime: the legal centre of gravity shifts from prohibiting specific deceptive claims toward requiring evidentiary support for any environmental claim made.

3.2. Sustainability reporting: CSRD and ESRS

The Corporate Sustainability Reporting Directive (Directive (EU) 2022/2464) extends sustainability disclosure obligations to approximately 50,000 European companies, with phased application from 2024 onwards (European Parliament and Council, 2022). The European Sustainability Reporting Standards (ESRS), adopted through Commission Delegated Regulation (EU) 2023/2772 (European Commission, 2023a), prescribe the content of these disclosures across environmental, social, and governance topics, with double-materiality

assessment as a core methodological requirement. Mandatory third-party assurance creates a verification layer that substantially raises the cost of inflated or unverifiable disclosures.

For greenwashing analysis, CSRD and ESRS introduce two structural shifts. First, the ratio of disclosed to communicated sustainability information rises sharply, reducing the practical scope for selective disclosure. Second, the integration of disclosed data into financial reporting infrastructure exposes inconsistencies between marketing claims and financial-grade ESG data to professional scrutiny by auditors, ESG analysts, and supervisors (ESMA, 2024).

3.3. EU Taxonomy and sectoral instruments

The EU Taxonomy Regulation (EU 2020/852) defines the technical screening criteria under which an economic activity may be classified as environmentally sustainable (European Parliament and Council, 2020). Its do-no-significant-harm and minimum-safeguards conditions establish a structured evidentiary base that increasingly anchors financial-product disclosures under the Sustainable Finance Disclosure Regulation (SFDR). Where sustainability marketing claims diverge from Taxonomy alignment, the divergence is forensically observable.

In the financial sector, ESMA's 2024 Final Report on Greenwashing identifies greenwashing as a supervisory priority and provides a typology of misleading claims at the level of entities, products, and services (ESMA, 2024). The report aligns supervisory expectations with the substantiation logic now embedded in Directive 2024/825 and CSRD.

3.4. Polish enforcement: UOKiK and the national institutional context

In Poland, enforcement of environmental claims rests primarily with the President of the Office of Competition and Consumer Protection (UOKiK) under the Act of 23 August 2007 on Combating Unfair Commercial Practices, transposing UCPD, and the Act of 16 February 2007 on Competition and Consumer Protection. UOKiK applies a reversed burden of proof to environmental claims: the trader bears the obligation to substantiate claims when challenged. The institution analyzes both textual and visual claims, may impose financial sanctions of up to 10% of annual turnover for the prior financial year, and routinely publishes its decisions to amplify deterrent effects (UOKiK, 2024a).

UOKiK has integrated greenwashing into its strategic priorities, treating it as a category of misleading commercial practice with cross-sectoral relevance (UOKiK, 2023). The institution participated in the EU-wide Sweep on environmental claims (CPC Network, 2024) and has published guidance for traders on the substantiation of environmental claims, drawing on ISO 14021 principles (UOKiK, 2024b). Recent enforcement activity has covered fashion retail, e-commerce platforms, food, energy, and financial-services advertising. Particular attention has been directed at unsubstantiated claims of ecological, natural, or biodegradable products and at carbon-neutrality statements based exclusively on offsetting.

The convergence of EU instruments, Polish enforcement, and international technical standards generates a coherent substantiation regime - the structural environment that the EVIDENCE model is designed to navigate.

Table 1.
Evidentiary risks of typical environmental claims

Type of claim	Potential evidentiary risks	Management requirements
"100% eco/natural"	High risk of ambiguity; unclear scope; undefined ingredients or processes.	Verification of raw materials and process boundaries; ISO 14021 self-declaration controls.
"Climate neutral"	Over-reliance on offsetting; lack of Scope 3 data; reliance on non-permanent removals.	Full Scope 1-3 disclosure; offset transparency; alignment with SBTi and ISO 14068.
"Biodegradable"	Conditional truth - requires industrial composting; misrepresentation of timeframe.	Specification of timeframe and environmental conditions; EN 13432 conformity.
"Plastic-free"	Imprecision; presence of polymer-based coatings or labels.	Strict definition; value-chain audit; substantiation data.
"Recyclable"	Lack of access to recycling infrastructure in target market.	Geographic specification; verification of effective recyclability under PPWR.
"Circular"	Absence of material-flow data; limited reuse share.	Mass-balance documentation; ESPR substantiation.

Source: own elaboration based on ISO 14021 (ISO, 2016), Directive 2024/825 (European Parliament and Council, 2024a), Regulation (EU) 2024/1781 (European Parliament and Council, 2024b), UOKiK (2024b).

International standards provide the technical framework for substantiating claims, including ISO 14021 for self-declared environmental claims (ISO, 2016), ISO 14024 for Type I ecolabels (ISO, 2018), ISO 14040/14044 for Life Cycle Assessment (ISO, 2006a; 2006b), and ISO 14068 for carbon-neutrality claims (ISO, 2023). Together with GRI sustainability reporting standards (GRI, 2021) and ESRS, these instruments reduce ambiguity and support regulatory compliance.

4. Research methodology

This study adopts a qualitative, theory-building research design combining a structured narrative literature review with conceptual synthesis (Snyder, 2019; Templier, Paré, 2015). The narrative-review format is appropriate when the goal is to integrate diverse theoretical perspectives into a unified conceptual framework rather than to enumerate empirical findings. A systematic review protocol, while appropriate for aggregating comparable empirical results, would not serve this integrative purpose: the study's value lies in synthesising theoretical

mechanisms and regulatory logic rather than in meta-analysing effect sizes across studies. The large initial dataset of 1247 records reflects comprehensive search coverage, while the structured inclusion and exclusion criteria (Section 4.2) ensure that the narrative synthesis remains methodologically disciplined and reproducible. Conceptual analysis was used to articulate the dimensions of the EVIDENCE model and the eight propositions presented in Section 5 (Jaakkola, 2020).

4.1. Search strategy

The literature search was conducted between January and March 2026 using the Scopus and Web of Science databases. Search strings combined the core concept (greenwashing) with theoretical anchors (legitimacy, signalling, stakeholder, institutional), regulatory anchors (CSRD, ESRS, Directive 2024/825, Green Claims Directive, UCPD), and managerial anchors (ESG governance, sustainability reporting, consumer skepticism). Boolean operators and field-specific syntax were adapted to each database.

4.2. Inclusion and exclusion criteria

Inclusion criteria comprised: (1) peer-reviewed journal articles published between 2011 and 2026 in English or Polish; (2) relevance to management, sustainability, communication, behavioural science, or regulatory studies; and (3) availability of full text. Exclusion criteria comprised: (1) purely technical environmental engineering studies without managerial relevance; (2) articles unrelated to communication or governance; and (3) non-academic sources, except where cited as regulatory or institutional context.

Table 2.
Literature filtering process

Stage	Records
Initial database search (Scopus + WoS)	1247
After deduplication	884
After title/abstract screening	217
After full-text review	96
Cited in this paper	51

Source: own elaboration.

The final dataset prioritizes contributions from journals including Business Strategy and the Environment, Corporate Social Responsibility and Environmental Management, Journal of Business Ethics, Organization & Environment, Management Review Quarterly, Journal of Management and Governance, and Critical Perspectives on Accounting. Polish-language sources were drawn from journals indexed in the Polish Ministry of Science list.

4.3. Conceptual synthesis approach

Following Jaakkola (2020), the conceptual synthesis combined two operations. First, a theoretical synthesis integrated legitimacy, signalling, institutional, and stakeholder theories to specify the mechanisms by which greenwashing arises and propagates. Second, a regulatory synthesis aligned theoretical mechanisms with the evidentiary architecture of EU instruments to identify the organizational dimensions through which greenwashing prevention can be operationalized. The output of these two operations is the EVIDENCE model presented in Section 5, articulated as a set of governance dimensions linked to formal propositions.

5. The EVIDENCE model

Building on the synthesis of regulatory trends, signalling theory, legitimacy theory, institutional theory, and stakeholder theory, this study proposes the EVIDENCE model: a conceptual verification framework designed to assess the credibility, consistency, and evidentiary strength of environmental claims. The model responds directly to RQ1-RQ4 and is grounded in recognized methodological frameworks, including Life Cycle Assessment (ISO 14040/14044), international labelling standards (ISO 14021, ISO 14024), and the ESRS architecture under CSRD.

The model articulates eight organizational dimensions, each representing a governance lever that constrains greenwashing risk. The components are not sequential stages but interlocking conditions, the joint satisfaction of which constitutes a credible communication regime. Each dimension is associated with a formal proposition (P1-P8) testable in subsequent empirical work.

5.1. E - Evidence

The Evidence dimension mandates a robust evidentiary base for every public environmental declaration. Required elements include applicable ISO standards, laboratory tests, third-party-verified Life Cycle Assessments, and current third-party certifications. The dimension responds directly to the substantiation requirements of Directive 2024/825 and the Green Claims Directive, and operationalizes the high-cost-signal logic of signalling theory (Spence, 1973; Connelly et al., 2011).

Proposition 1: The probability that an organization's environmental claims are perceived as credible by external stakeholders increases with the depth and traceability of the underlying evidentiary base.

5.2. V - Verifiability

The Verifiability dimension emphasizes that claims must be supported by externally accessible proof - publicly available reports, retrievable certificates, accessible methodological documentation - rather than internal documents protected as proprietary. This dimension addresses the most common form of greenwashing detected in the EU Sweep: claims supported by undisclosed evidence (European Commission, 2021). It also responds to the legitimacy-theoretic insight that visible, externalized evidence converts symbolic claims into substantive ones (Suchman, 1995; Boiral, 2013).

Proposition 2: External verifiability of evidentiary materials moderates the relationship between sustainability disclosure and stakeholder trust, such that disclosure without external verifiability produces no significant trust gain.

5.3. I - Impact scope

The Impact-scope dimension requires that environmental claims reflect significant impacts across the product or service life cycle rather than isolated favourable characteristics. The dimension counters the hidden trade-off and irrelevance sins (TerraChoice, 2010), both of which remain prevalent in contemporary marketing practice (Pope, Worrall, 2023). Methodologically, the Impact-scope dimension is anchored in LCA boundaries under ISO 14040/14044.

Proposition 3: Environmental claims framed by life-cycle-bounded impact scope are less susceptible to selective-disclosure greenwashing than claims framed by single-attribute selection.

5.4. D - Disclosure clarity

The Disclosure-clarity dimension rejects ambiguous terminology in favour of quantified parameters, defined thresholds, and precise scope and unit specifications. This dimension directly operationalizes the categorical prohibition of generic claims under Directive 2024/825 and addresses the well-documented vulnerability of low-literacy audiences to vague claims (Szabo, Webster, 2021; Schmuck, Matthes, Naderer, 2018). At the level of organizational practice, it requires editorial controls that translate technical evidentiary content into precise but legible public language.

This requirement is particularly salient in the context of visual greenwashing: where textual claims are vague or absent, consumers rely disproportionately on visual cues such as colour, imagery, and iconography as proxies for environmental performance (Schmuck, Matthes, Naderer, 2018). Quantified, precise language counteracts this heuristic substitution by providing an evidentiary anchor that visual signals alone cannot supply.

Proposition 4: The propensity for visual or linguistic heuristics to override evidentiary content decreases as quantified specification of environmental claims increases.

5.5. E - Enforcement alignment

The Enforcement-alignment dimension positions claims management within the legal architecture of UCPD, Directive 2024/825, the Green Claims Directive, CSRD, and national enforcement (in the Polish context, UOKiK). It requires a documented audit trail capable of withstanding regulatory review, including the assignment of accountability for claim substantiation, retention of evidentiary materials, and procedures for managing claims throughout their public lifetime. It addresses the institutional-theory insight that decoupling between formal compliance structures and operational practice is the principal mechanism of greenwashing (Meyer, Rowan, 1977; DiMaggio, Powell, 1983).

Proposition 5: Organizations with formalized cross-functional governance of environmental claims (legal-marketing-sustainability) experience lower regulatory exposure than organizations in which claim governance is allocated unilaterally to marketing functions.

5.6. N - Narrative consistency

The Narrative-consistency dimension requires that public-facing claims align with operational data, ESG disclosures, supply-chain practices, and portfolio composition. It addresses the authenticity gap and the strategic-decoupling problem (Lyon, Montgomery, 2015; Cho, Michelon, Patten, 2021). Narrative consistency is the organizational counterpart to the legitimacy-theoretic insight that detected decoupling generates asymmetric reputational damage (Suchman, 1995; Delmas, Burbano, 2011).

Proposition 6: The reputational penalty associated with detected greenwashing increases with the magnitude of inconsistency between communicated narrative and disclosed operational data.

5.7. C - Certification and third-party validation

The Certification dimension prioritizes external validation of environmental claims and mandates a clear distinction between proprietary brand icons and officially recognized environmental labels under ISO 14024 (ISO, 2018). The dimension addresses the worship of false labels sin (TerraChoice, 2010) and the misuse of sustainability labelling that led the European Commission to propose harmonized rules under the Green Claims Directive (European Commission, 2023b).

Proposition 7: Stakeholder susceptibility to symbolic-greenwashing signals decreases with the visibility and recognizability of independent third-party certifications relative to internal brand icons.

5.8. E - Easy access

The Easy-access dimension translates evidentiary substance into consumer-accessible verification. Practical instruments include QR codes linking to evidentiary dashboards, machine-readable digital product passports under the Ecodesign for Sustainable Products Regulation (ESPR) (European Parliament and Council, 2024b), and structured public reports. It connects the substantiation regime to behavioural insights from consumer research, where access friction is a determinant of whether evidentiary content is consulted (Magnier, Schoormans, 2019).

The Easy-access dimension is thus the operational counterpart to the visual-greenwashing problem identified in Section 2.2: if substantive evidentiary content is technically available but practically inaccessible, consumers default to low-cost visual heuristics. Reducing access friction - through QR codes, digital product passports, and layered public dashboards - converts latent substantiation into active consumer verification.

Proposition 8: Consumer-facing access mechanisms (digital product passports, QR-linked evidentiary content) increase the conversion of evidentiary substance into stakeholder trust, particularly for low-literacy audiences.

5.9. The integrated model

The eight components form an integrated governance framework. Components E (Evidence), V (Verifiability), and I (Impact scope) constitute the substantive layer, anchored in evidentiary substance. Components D (Disclosure clarity) and E (Enforcement alignment) constitute the regulatory layer, ensuring legal defensibility. Components N (Narrative consistency) and C (Certification) constitute the strategic layer, aligning communication with operational reality. The final component E (Easy access) operationalizes the consumer-interface layer.

The model is intended for diagnostic, design, and audit purposes. As a diagnostic instrument, it permits structured assessment of an organization's claims management capacity. As a design instrument, it specifies the governance architecture required to align communication with the EU substantiation regime. As an audit instrument, it provides the categories against which both internal and external assurance can be conducted.

Table 3.
The EVIDENCE model: integrated layers of greenwashing prevention

Component	Description
E - Evidence	Mandates a robust evidentiary base for every declaration; requires a curated dossier including ISO standards, laboratory tests, Life Cycle Assessments (LCA), and valid third-party certifications.
V - Verifiability	Emphasizes data accessibility; claims must be supported by externally verifiable proof such as publicly available reports or certificates to eliminate proprietary pseudo-labels.

Cont. table 3.

I - Impact scope	Ensures holistic assessment; the narrative must reflect significant environmental impacts across the product life cycle rather than a single, isolated characteristic.
D - Disclosure clarity	Rejection of ambiguous terminology; necessitates quantified parameters, clear thresholds, and a precise indication of scope and scientific units.
E - Enforcement alignment	Critical compliance check; aligns messaging with UCPD directives and national legal standards (e.g., UOKiK) while maintaining a rigorous audit trail for regulatory review.
N - Narrative consistency	Strategic alignment ensures there is no fundamental contradiction between outward-facing messaging and operational realities such as emissions data, supply chain ethics, and portfolio performance.
C - Certification & third-party	Prioritization of external validation; mandates a clear distinction between internal brand icons and officially recognized environmental labels (ISO, 2018).
E - Easy access	Consumer-centric transparency facilitates immediate verification through tools such as QR codes, direct links to environmental dashboards, or comprehensive public reports.

Source: own elaboration.

6. Application of the EVIDENCE model: an e-commerce retailer

E-commerce platforms occupy a distinctive position in the greenwashing landscape. They aggregate environmental claims from large numbers of sellers, mediate consumer-facing communication through filters and product attributes, and operate at scale, which means that small per-claim error rates produce large aggregate consumer harm. UOKiK and the European Consumer Protection Cooperation Network identified online retail as a priority sector for environmental-claims enforcement (CPC Network, 2024; UOKiK, 2024a).

This section illustrates how the EVIDENCE model applies to the design of an environmental-claims governance system in a hypothetical mid-sized European e-commerce retailer - EcoCart - selling fashion, home goods, and personal-care products under both own-brand and third-party labels. The case is hypothetical and intended for illustrative purposes; it integrates patterns observed in the public enforcement record and in the academic literature on online sustainability communication (Sun, Shi, 2022).

6.1. Context

EcoCart's product catalogue includes a category labelled EcoCart Green Selection, combining own-brand items and curated third-party products. Marketing communications use claims such as 100% eco fabrics, climate-neutral delivery, and sustainable choice, supported by visual elements consisting of leaf icons, green badges, and Green Selection labels of proprietary design. Product pages link to a generic Sustainability Pledge corporate page rather than to product-level evidence.

6.2. Pre-EVIDENCE diagnosis: greenwashing risk profile

A diagnostic assessment using the EVIDENCE dimensions reveals systemic risk:

E - Evidence: Self-declarations from third-party sellers without supporting LCA or ISO 14021 documentation; own-brand claims supported by partial supplier questionnaires.

V - Verifiability: Underlying evidence is not externalized; product pages display the claim but not the supporting documentation.

I - Impact scope: Claims focus on a single attribute (e.g. recycled fabric content of a garment) without addressing other significant impacts (transport emissions, dye chemicals, packaging).

D - Disclosure clarity: Generic terms (eco, sustainable) used without quantified parameters or thresholds.

E - Enforcement alignment: No documented governance for claim substantiation; Green Selection criteria are designed by marketing without legal or sustainability function review.

N - Narrative consistency: Carbon-neutral delivery claim relies on offsetting without disclosure; conflicts with the disclosed Scope 3 trajectory in the platform's CSRD reporting.

C - Certification: Proprietary Green Selection badge is visually similar to recognized ecolabels but reflects no independent assessment.

E - Easy access: Substantiation links absent or pointing to generic CSR pages.

The aggregate profile constitutes textbook greenwashing under TerraChoice categories (hidden trade-off, vagueness, no proof, worship of false labels) and exposes the platform to enforcement under Directive 2024/825 and to UOKiK action under Polish unfair-competition law.

6.3. EVIDENCE-aligned redesign

Application of the EVIDENCE model produces the following redesign:

Evidence: Each product carrying a claim must include a documented evidentiary file: an ISO 14021 self-declaration template for type-II claims; a supplier-provided LCA summary or certified label for type-I claims; carbon-neutrality claims supported by ISO 14068 documentation including residual emissions and removal vintage.

Verifiability: Each product page exposes a Substantiation section containing links to evidentiary documents or third-party certificates; structured data compatible with the Digital Product Passport are exposed via API.

Impact scope: Claims are accompanied by life-cycle-bounded scope statements (e.g. recycled-fibre content represents 65% of garment mass; emissions during production reduced by 32% versus virgin baseline; transport emissions not included in claim scope). Single-attribute claims must include a What this claim does not cover disclosure.

Disclosure clarity: Eco and sustainable labels are eliminated or replaced with quantified attribute descriptors. The Green Selection category is renamed to Independently Certified Selection to align with Directive 2024/825.

Enforcement alignment: A Claims Substantiation Committee composed of legal, sustainability, marketing, and customer-trust functions reviews and approves each claim category; an audit trail is retained for each product. Quarterly internal audits sample products against UOKiK guidance and ESRS disclosures.

Narrative consistency: The carbon-neutral delivery claim is restated as Scope 1 and 2 delivery emissions offset through Verra-certified projects; Scope 3 emissions disclosed in CSRD report - ongoing reduction roadmap aligned with SBTi. Inconsistency between marketing communications and CSRD disclosures becomes a trackable governance metric.

Certification: Proprietary badges are replaced or restricted to a clearly explained internal-curation icon. Recognized third-party labels (EU Ecolabel, GOTS, Cradle to Cradle, FSC, ISO 14024 Type-I marks) are visually elevated and explained.

Easy access: A QR code on each product links to a public evidentiary dashboard; consumer-facing language is simplified but linked to underlying methodological documentation; downloadable evidence files are provided in machine-readable formats.

6.4. Outcomes and implications

The redesigned communication regime addresses each of the eight propositions developed in Section 5. From a legitimacy-theoretic perspective, the externalization of evidence converts symbolic claims into substantive ones, narrowing the legitimacy gap without dependence on rhetorical compensation (Suchman, 1995; Boiral, 2013). From a signalling-theoretic perspective, the substitution of high-cost (third-party-certified) signals for low-cost (proprietary) signals re-establishes signal credibility and counters the market-for-lemons deterioration of credible communication (Spence, 1973; Connelly et al., 2011). From a regulatory perspective, the redesign aligns the platform with Directive 2024/825 and CSRD substantiation requirements and reduces UOKiK enforcement exposure.

The case also illustrates a more general implication. Greenwashing prevention in e-commerce is not primarily a content-moderation problem - it is a governance problem distributed across platform-seller relations, claim approval workflows, evidentiary infrastructure, and consumer-interface design. The EVIDENCE model articulates the governance architecture required to manage these distributed responsibilities coherently.

The application also points to an unresolved governance challenge in platform commerce: liability allocation between platform and seller for claim substantiation. Under Directive 2024/825 and Polish enforcement practice, platforms increasingly face duty-of-care obligations regarding seller claims. The Verifiability and Enforcement-alignment components of the EVIDENCE model provide the operational instruments by which platforms can satisfy these obligations.

7. Discussion

The findings advance the understanding of greenwashing as a governance failure with systemic, cross-functional dimensions. The EVIDENCE model addresses a persistent gap in the literature: the absence of an integrative, operationalizable framework bridging greenwashing typologies, contemporary EU regulatory requirements, and organizational communication governance.

7.1. RQ1: Visual cues and the limits of heuristic-based trust

The analysis confirms that visual environmental signals function as low-cost signals in the sense of signalling theory (Spence, 1973), shaping stakeholder perceptions independently of underlying performance. This finding is consistent with experimental evidence showing that nature-linked imagery triggers a green halo effect even when contradicted by factual data (Magnier, Schoormans, 2019; Parguel, Benoît-Moreau, Russell, 2015; Schmuck, Matthes, Naderer, 2018). Directive 2024/825 explicitly prohibits generic visual and textual environmental signifiers because of their documented heuristic influence (European Parliament and Council, 2024a). The Verifiability and Disclosure-clarity components of the EVIDENCE model directly operationalize this regulatory shift, while the Easy-access component ensures that prohibited heuristic shortcuts are replaced by accessible substantive content rather than by inaccessible technical documentation.

7.2. RQ2: Consumer literacy as a moderating variable

While low-literacy consumers remain disproportionately vulnerable to visual heuristics and vague claims (Szabo, Webster, 2021; Schmuck, Matthes, Naderer, 2018), growing NGO activity, media scrutiny, and regulatory enforcement are generating rising skepticism among informed audiences. The Certification and Easy-access components of the EVIDENCE model address this heterogeneity by mandating a clear distinction between proprietary brand icons and internationally accredited ecolabels (ISO, 2018) and by providing layered access to evidentiary content. The model's stratified communication architecture is consistent with stakeholder

theory's insight that stakeholder salience varies across audience types (Mitchell, Agle, Wood, 1997) and that legitimacy is differentially constructed across audiences.

7.3. RQ3: The authenticity gap and its reputational consequences

The misalignment between communicated sustainability ambitions and actual environmental performance - the authenticity gap or organizational decoupling (Meyer, Rowan, 1977; Lyon, Montgomery, 2015) - constitutes the central mechanism through which greenwashing generates reputational, financial, and regulatory harm. Consistent with legitimacy theory (Suchman, 1995), organizations that deploy symbolic sustainability communication without substantive operational backing may temporarily close a perceived legitimacy gap; however, when decoupling is exposed, the reputational penalty is asymmetrically large and long-lasting (Delmas, Burbano, 2011; Testa, Sarti, Frey, 2021; Teti, Etro, Pausini, 2024; Bernini, La Rosa, 2024). The Narrative-consistency component of the EVIDENCE model prevents this decoupling by requiring systematic alignment between public-facing claims, ESG disclosures, and operational data. Empirical work by Teti, Etro, Pausini (2024) on European listed firms documents the share-price penalty associated with detected greenwashing, providing strong external support for the model's emphasis on narrative-operational alignment.

7.4. RQ4: EU regulatory mechanisms as boundary conditions

The EU's evolving anti-greenwashing architecture is rapidly closing enforcement gaps that historically enabled symbolic sustainability communication to persist without legal consequence. Directive 2024/825 introduces categorical prohibitions on generic environmental claims and carbon-offset-based neutrality declarations. CSRD mandates double-materiality reporting and third-party assurance for large undertakings. The forthcoming Green Claims Directive will introduce ex ante verification requirements. ESMA's 2024 supervisory framework aligns financial-sector oversight with these substantiation principles (ESMA, 2024). In the Polish context, UOKiK's reversed-burden-of-proof approach, integration of greenwashing into 2023-2026 strategic priorities, and active participation in EU consumer-protection cooperation generate a coherent national enforcement regime (UOKiK, 2023; 2024a; 2024b).

These instruments converge toward a single architectural logic: claims must be traceable, verifiable, and proportionate to their underlying evidentiary basis. The Enforcement-alignment, Evidence, and Verifiability components of the EVIDENCE model anticipate and operationalize this convergence.

7.5. Theoretical contributions

This study makes three contributions to the theoretical literature. First, it integrates four theoretical lenses - legitimacy, signalling, institutional, and stakeholder theory - into a unified explanatory framework, demonstrating that no single perspective is sufficient when applied independently to the greenwashing problem. Second, the EVIDENCE model connects these theoretical foundations to the EU regulatory architecture in a way that prior typological studies have not attempted, articulating eight formal propositions that translate theoretical mechanisms into testable governance dimensions. Third, the application to e-commerce illustrates how the model can be operationalized in a high-claim-density context and identifies platform-seller liability allocation as a frontier governance question.

The EVIDENCE model is distinct from existing ESG governance and assurance frameworks in three respects. Unlike GRI Standards and ESRS, which prescribe the content and format of sustainability disclosures, the EVIDENCE model operates at the level of individual environmental claims and governs the evidentiary architecture that supports them. Unlike greenwashing typologies (TerraChoice, 2010; de Freitas Netto et al., 2020), which catalogue forms of deception without prescribing organizational responses, the EVIDENCE model translates each identified risk into a concrete governance dimension. And unlike existing assurance frameworks, which apply retrospectively to disclosed information, the EVIDENCE model is designed for prospective use - enabling organizations to design claim-management systems that are compliant before claims are published rather than after they are challenged.

7.6. Practical implications

For practitioners, the EVIDENCE model offers a structured, audit-ready governance instrument applicable across organizational sizes and sectors. Its phased implementation logic - stabilization (E, V, D), standardization (I, E, N), and optimization (C, E) - is scalable and compatible with existing ESG reporting frameworks, including GRI Standards and ESRS. Organizations in sectors currently facing heightened greenwashing scrutiny - energy, aviation, financial services, fashion, and online retail - will find the model particularly actionable given its explicit alignment with Directive 2024/825 and CSRD. For Polish organizations, the model's alignment with UOKiK guidance reduces enforcement exposure under national consumer-protection law.

8. Conclusions

Several limitations must be acknowledged. First, the EVIDENCE model has not yet undergone empirical validation; the eight propositions are presented as conceptually grounded but await testing. Second, the analysis is anchored in the European regulatory environment, which may limit global generalizability; the substantiation logic, however, is increasingly mirrored in other jurisdictions, including the FTC Green Guides (United States) (FTC, 2012), the Competition Bureau guidance (Canada) (Competition Bureau Canada, 2025), and the ACCC framework (Australia) (ACCC, 2023). Third, the study relies exclusively on secondary sources; primary data on organizational claims-management practices would substantially strengthen the model's external validity. Fourth, the dynamic nature of EU regulation - implementing acts under Directive 2024/825, the final adoption of the Green Claims Directive, and revisions to ESRS - may modify specific provisions cited in this paper.

Future research should pursue four directions. First, content analyses of corporate sustainability communication using the EVIDENCE dimensions could establish baseline distributions of compliance across sectors and jurisdictions. Second, experimental designs could test stakeholder reactions to claims that vary across the model's components - particularly P4 (disclosure clarity) and P8 (easy access). Third, the proliferation of AI-based claim-verification tools (Bingler et al., 2022) suggests the value of comparative analyses between human-coded and AI-coded EVIDENCE assessments. Fourth, comparative cross-sectoral and cross-organizational-size studies would test the boundary conditions under which specific components dominate the prevention function. The application of the model to e-commerce platform governance offers a particularly tractable empirical context in which platform-seller liability allocation, claim density, and consumer-interface design intersect.

This paper advances four conclusions. First, greenwashing is a systemic management challenge reflecting structural failures in governance, evidence management, and interdepartmental collaboration rather than isolated communication errors. Treating greenwashing as a governance design problem, rather than a marketing problem or a legal problem, enables the integrated cross-functional response the phenomenon requires.

Second, reputational resilience under tightening EU regulation depends on evidence-based communication: organizations must ensure that public messaging aligns with verified environmental performance and externally accessible substantiation if they are to maintain stakeholder trust. The asymmetrically large reputational and financial penalties associated with detected greenwashing make symbolic compensation an economically irrational strategy for any organization with material market or regulatory exposure.

Third, the EVIDENCE model operationalizes a credible pathway from data to communication. Its eight components - Evidence, Verifiability, Impact scope, Disclosure clarity, Enforcement alignment, Narrative consistency, Certification, and Easy access -

articulate the governance architecture required to align communication with the new EU substantiation regime. The eight associated propositions provide a structured agenda for empirical validation.

Fourth, regulation is becoming a central tool in reducing greenwashing. EU and Polish frameworks - Directive 2024/825, CSRD, the Green Claims Directive, ESPR, and UOKiK enforcement - increasingly demand substantiation, verifiability, and auditability, making symbolic communication economically and legally unsustainable. The convergence of these instruments creates a single substantiation regime within which the EVIDENCE model is intended to operate.

As transparency expectations rise and regulatory oversight expands, evidence-based environmental communication will become an indispensable component of organizational strategy, while greenwashing - understood as a governance failure rather than a marketing tactic - will evolve into a prohibitively costly practice for organizations that cannot deliver substantive environmental performance.

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