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Research Article

The Role of Leadership in Driving Sustainable Performance: Evidence from Moroccan Logistics Service Providers

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ABSTRACT

Sustainability has evolved from a peripheral concern to a strategic imperative in logistics, shaping competitiveness and legitimacy across global supply chains. This study investigates how leadership practices drive sustainable performance among logistics service providers (LSPs) in Morocco, emphasizing the mediating role of green logistics practices. Drawing on transformational and sustainability-oriented leadership theories, as well as the Resource-Based View (RBV), the research employs survey data from 210 respondents across 28 firms. Using confirmatory factor analysis (CFA) and structural equation modeling (SEM), results reveal that leadership exerts a strong positive influence on both green practices ($\beta = 0.68$, $p < 0.001$) and sustainable performance ($\beta = 0.29$, $p = 0.001$). Green practices partially mediate this relationship (indirect $\beta = 0.39$, $p < 0.001$), explaining 63% of the variance in sustainable performance. These findings highlight leadership as a strategic capability enabling environmental and social transformation in emerging economies. The study advances the understanding of sustainability-oriented leadership within the logistics sector and provides actionable insights for aligning management practices with Sustainable Development Goals (SDGs 8, 9, 12, and 13).

Keywords: leadership; sustainable performance; green logistics practices; sustainability; emerging economies; Morocco; SDG 8; SDG 9; SDG 12; SDG 13.

1. Introduction

1.1. Background and Rationale

Sustainability has become a defining paradigm for logistics and supply chain management, evolving from operational efficiency to a core determinant of competitiveness and organizational legitimacy. Logistics service providers (LSPs) now face pressure to integrate environmental, social, and governance (ESG) principles into their strategic frameworks, responding both to global sustainability commitments and stakeholder expectations (Kwak & Kim, 2023). In emerging economies, however, these transformations depend heavily on leadership capacity, as formal regulations and institutional support remain limited (Urbach & Kautonen, 2024).

In Morocco, the logistics sector plays a central role in the country's sustainable development agenda, contributing nearly 9% to GDP and acting as a key facilitator of Euro-Mediterranean trade. Through the Stratégie Nationale de Développement de la Compétitivité Logistique, Morocco has launched reforms aimed at improving efficiency and reducing carbon emissions. Yet, despite these advances, many firms remain at an early stage in translating sustainability goals into operational outcomes (Kasmi & Rhalimi, 2024). This gap underscores the importance of understanding how leadership practices can drive the adoption of green logistics initiatives that align with the Sustainable Development Goals (SDGs 8, 9, 12, and 13).

1.2. The Role of Leadership in Sustainability Transitions

The leadership–sustainability nexus has gained increasing scholarly attention in recent years, reflecting a shift from viewing sustainability as a compliance issue to recognizing it as a strategic leadership capability. Transformational and responsible leadership styles are widely acknowledged as essential drivers of organizational sustainability, fostering pro-environmental behavior, employee engagement, and innovation

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(Afsar et al., 2020; Robertson & Barling, 2017). More recently, research on sustainability-oriented leadership emphasizes leaders' ability to integrate ethical, environmental, and social concerns into decision-making, shaping both corporate vision and operational routines (Lozano & Barreiro-Gen, 2023; Urbach & Kautonen, 2024). Leaders act not only as decision-makers but also as sense-givers who frame sustainability as an intrinsic organizational value rather than an external constraint, influencing shared meanings and behavioral alignment (Metcalf & Benn, 2013).

Within the logistics sector, effective leadership is particularly critical for promoting green logistics practices (GLPs) such as route optimization, energy-efficient fleet management, and circular resource utilization. By embedding sustainability into organizational culture and strategic communication, leaders can enhance sustainable performance (SP) across environmental, economic, and social dimensions (Kwak & Kim, 2023). However, despite growing attention in developed economies, empirical studies examining the leadership–sustainability link in emerging logistics markets remain scarce. Most existing research continues to emphasize operational metrics—such as cost reduction and energy efficiency—while neglecting the behavioral, cognitive, and organizational mechanisms that facilitate sustainability integration (Wu et al., 2022). Addressing this gap requires a multidimensional understanding of leadership's impact, considering both its direct influence on sustainable outcomes and its indirect effects through mediating variables such as green practices, innovation culture, and employee engagement.

1.3. Research Gap and Objectives

This study responds to the growing call for context-sensitive analyses of leadership and sustainability in emerging markets, where institutional structures, regulatory frameworks, and cultural norms differ markedly from developed economies. While prior research underscores the role of managerial engagement in driving sustainability transitions, few studies have empirically modeled the mechanisms linking leadership behaviors to sustainable outcomes in Morocco's logistics sector—a strategic field shaped by ongoing institutional reforms and ambitious national sustainability goals (El Amrani & Assabane, 2024).

Accordingly, this research pursues three objectives:

To assess the direct impact of leadership practices on sustainable performance among Moroccan logistics service providers (LSPs).

To examine the mediating role of green logistics practices in this relationship, highlighting how environmental initiatives translate leadership intent into measurable outcomes.

To evaluate the relative strength of environmental, economic, and social performance dimensions, offering a holistic understanding of sustainability integration.

By combining quantitative rigor with contextual depth, this study advances both theoretical and practical understanding of sustainability-oriented leadership in the logistics sector. Drawing on the Resource-Based View (RBV) and leadership theory, the findings derived through Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM) provide robust, evidence-based insights into how leadership behaviors foster organizational capabilities for sustainable competitiveness and alignment with Sustainable Development Goals (SDGs 8, 9, 12, and 13).

2. Literature Review and Hypotheses Development

2.1. Leadership and Sustainable Development in Organizations

Leadership is a fundamental determinant of organizational sustainability. The integration of sustainability goals into corporate strategy often depends on leaders' values, vision, and commitment (Pless & Maak, 2011). Transformational leadership theory (Bass, 1985) posits that leaders who articulate a compelling vision and stimulate intellectual engagement can inspire employees to go beyond self-interest, aligning organizational objectives with broader social and environmental goals. Similarly, responsible leadership theory emphasizes ethical stewardship and stakeholder engagement as core to sustainable business practices (Maak et al., 2016).

Empirical research has demonstrated the positive influence of leadership on sustainability-oriented innovation and environmental performance. For instance, Afsar et al. (2020) found that environmentally specific transformational leadership enhances employees' pro-environmental behavior through psychological empowerment. In manufacturing firms, Singh et al. (2022) observed that sustainability-oriented leadership drives adoption of eco-innovation, ultimately improving competitiveness. Leaders serve as catalysts of change by creating an organizational climate supportive of sustainability learning and experimentation (Metcalf & Benn, 2013).

In logistics and supply chain management, leadership plays an equally pivotal role. Green supply chain leadership facilitates collaboration, trust, and knowledge sharing across partners, enhancing collective sustainability outcomes (Lee et al., 2019). The leadership–sustainability link thus extends beyond internal governance to encompass inter-organizational coordination, policy compliance, and stakeholder legitimacy (Seuring & Müller, 2008). Yet, the literature remains biased toward developed economies, with limited empirical exploration of how leadership shapes sustainability transitions in emerging contexts such as Morocco.

2.2. Leadership and Green Practices

Green practices (GPs) refer to the set of operational and strategic initiatives implemented to reduce environmental impact while maintaining organizational efficiency and profitability (Zhu et al., 2008). Within logistics, GPs encompass eco-efficient transportation systems, route and packaging optimization, reverse logistics, and the adoption of energy-efficient technologies (Dekker et al., 2012). The successful implementation of such practices often demands deep organizational transformation, where leadership acts as a critical enabler in overcoming resistance, shaping culture, and embedding sustainability within everyday operations (Daily et al., 2009; Kwak & Kim, 2023).

Transformational and sustainability-oriented leaders foster innovation and continuous improvement—two essential drivers for the effective adoption of green logistics practices (Chen et al., 2015; Lozano & Barreiro-Gen, 2023). By promoting shared environmental values, providing recognition for sustainability achievements, and facilitating learning-oriented cultures, leaders influence employees' intrinsic motivation to engage in environmentally responsible behaviors (Robertson & Barling, 2017; Urbach & Kautonen, 2024). Leadership also strengthens cross-functional integration, which is particularly crucial in logistics firms where coordination among procurement, operations, and distribution departments determines environmental efficiency (Wu et al., 2022).

Recent empirical research confirms that green practices mediate the relationship between leadership and sustainability outcomes. For instance, Mittal and Dhar (2016) demonstrated that transformational leadership enhances environmental performance through green HRM practices, while Li et al. (2020) identified green innovation capabilities as a key mechanism translating leadership into sustainable performance. Similarly, sustainability-oriented leadership fosters environmental strategy implementation in emerging markets by mobilizing internal resources and stakeholder engagement. Despite these advances, the mechanisms linking leadership and GPs in logistics remain underexplored, particularly in developing economies where institutional pressures, resource limitations, and managerial capacity shape sustainability integration differently from Western contexts.

Hypothesis 1 (H1): Leadership positively influences the adoption of green practices among logistics service providers.

2.3. Green Practices and Sustainable Performance

The concept of sustainable performance (SP) extends the traditional performance paradigm by integrating the environmental, economic, and social dimensions of the Triple Bottom Line (TBL) framework (Elkington, 1998). In the logistics sector, environmental performance involves reducing carbon emissions, minimizing waste, and improving energy efficiency; economic performance encompasses cost optimization, operational efficiency, and long-term profitability; while social performance captures aspects of employee well-being, stakeholder relations, and community engagement (Kleindorfer et al., 2005; Jabbour et al., 2019).

Green practices (GPs) serve as the operational mechanisms that translate sustainability intentions into measurable outcomes, linking corporate environmental strategies with performance improvements (Zhu et al., 2013). Empirical studies consistently demonstrate that firms adopting comprehensive green logistics practices achieve superior environmental and economic performance, particularly when such practices are strategically aligned with organizational capabilities (Younis et al., 2016). In emerging markets, green logistics is not only a source of efficiency but also a means of achieving legitimacy and resilience, reinforcing brand reputation and institutional credibility.

However, social sustainability remains an underrepresented dimension in logistics research despite its critical role in shaping sustainable competitiveness. As logistics operations are often labor-intensive and community-based, social practices—including employee health and safety, fair labor conditions, and community engagement—are central to long-term sustainability outcomes (Urbach & Kautonen, 2024; Wang et al., 2024). Integrating green practices can thus yield multidimensional performance improvements, provided they are supported by leadership commitment, organizational learning, and a culture of continuous innovation (Kwak & Kim, 2023).

Hypothesis 2 (H2): Green practices positively influence sustainable performance among logistics service providers.

2.4. Leadership and Sustainable Performance: The Mediating Role of Green Practices

The relationship between leadership and sustainable performance (SP) is complex and frequently indirect, unfolding through the organizational capabilities and practices that leaders cultivate. Leadership shapes strategic intent, vision, and organizational culture, while green practices (GPs) operationalize these elements into tangible actions that deliver sustainability outcomes (Singh et al., 2022; Rashid & Khan, 2024). Grounded in the Resource-Based View (RBV), sustainability-oriented leadership fosters intangible strategic resources—such as knowledge, trust, employee commitment, and learning capacity—that enhance a firm's ability to innovate and adopt environmentally responsible practices (Hart, 1995; Urbach & Kautonen, 2024). These resources strengthen firm-specific capabilities, enabling the design and deployment of environmental innovations that transform leadership intent into superior sustainability performance (Zhang et al., 2022; Lozano & Barreiro-Gen, 2023).

This mediating mechanism is further explained by the Dynamic Capabilities Framework, which highlights leaders' ability to sense emerging sustainability opportunities, seize them through strategic resource reconfiguration, and transform organizational processes in response to environmental and social pressures (Teece, 2018; Kwak & Kim, 2023). Effective leaders go beyond inspiring change: they institutionalize sustainability-oriented routines and practices that persist beyond individual leadership influence, embedding sustainability into the organizational fabric. Consequently, leadership may exert both a direct effect on SP—through strategic alignment, vision, and motivation—and an indirect effect mediated by GPs, which serve as the actionable link between sustainability strategy and operational performance.

Empirical studies provide strong support for this dual-pathway model. Chen et al. (2015) found that environmental leadership indirectly influences firm performance through environmental management systems, while Afsar et al. (2020) demonstrated that green practices partially mediate the relationship between transformational leadership and sustainability outcomes. More recent evidence shows similar patterns: Rashid and Khan (2024) identified green innovation as a key mediating mechanism in the leadership–performance nexus, and Wang et al. (2024) confirmed the partial mediation of green practices in logistics SMEs. Yet, this mechanism remains underexplored in North African logistics contexts, where evolving regulatory environments, infrastructural constraints, and institutional asymmetries shape how leadership translates sustainability intent into practice.

Hypothesis 3 (H3): Green practices mediate the relationship between leadership and sustainable performance.

2.5. Conceptual Framework

Building on the theoretical synthesis discussed above, this study proposes the conceptual model illustrated in Figure 1. Leadership (LEAD) is conceptualized as an exogenous construct that directly influences both Green Practices (GP) and Sustainable Performance (SP). GP functions as a mediating variable, translating leadership intent and strategic orientation into concrete sustainability actions.

Sustainable Performance (SP) is modeled as a second-order reflective construct comprising three interrelated dimensions — Environmental (ENV), Economic (ECO), and Social (SOC) performance — consistent with the Triple Bottom Line (TBL) framework (Elkington, 1998). Through this structure, the model captures the multidimensional nature of sustainability and emphasizes the dual role of leadership: exerting both a direct effect on SP and an indirect effect through the adoption of GP.

This conceptual framework underpins the following hypotheses:

H1: Leadership positively influences the adoption of green practices.

H2: Green practices positively influence sustainable performance.

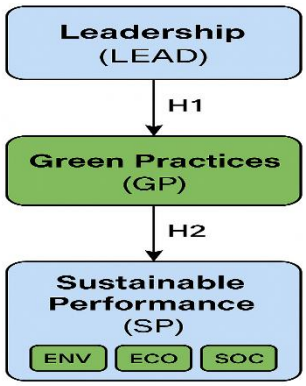

Figure 1 Conceptual framework linking Leadership, Green Practices, and Sustainable Performance

H3: Green practices mediate the relationship between leadership and sustainable performance.

3. Methodology

3.1. Research Design

This study adopts a quantitative, cross-sectional design aimed at empirically examining the relationships between leadership, green practices, and sustainable performance among Moroccan logistics service providers (LSPs). The model is grounded in the resource-based view (RBV) and transformational leadership theory, which together posit that leadership acts as a strategic resource that enhances firms' capability to adopt sustainability-oriented practices and achieve triple-bottom-line performance outcomes.

Data were collected through a structured survey distributed to logistics firms operating in Morocco. The survey included validated measurement scales adapted from prior research on leadership, green logistics

practices, and sustainability performance. Each construct was measured using a five-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree.

3.2. Sample and Data Collection

The target population comprised executives, managers, and operational supervisors within Moroccan LSPs, including freight forwarding, warehousing, and distribution firms. A total of 210 valid responses were obtained from 28 logistics companies across major economic zones, including Casablanca, Tangier, and Kenitra. Respondents represented multiple hierarchical levels, with 45% holding managerial roles, 32% operational supervisors, and 23% executives.

The gender distribution was balanced, with 56% male and 44% female respondents, reflecting the sector's evolving inclusivity. The average firm size was medium (50–250 employees), and the majority (68%) had been operating for more than five years. This distribution enhances representativeness across diverse organizational profiles in the Moroccan logistics ecosystem.

3.3. Measurement of Constructs

- **Leadership (LEAD)**

Leadership was measured using four items (GLPG1–GLPG4) adapted from Afsar et al. (2020) and Chen et al. (2015), focusing on leaders' environmental vision, empowerment, and role modeling for sustainability. The Cronbach's alpha for this construct was 0.88, exceeding the 0.70 reliability threshold (Nunnally, 1978).

- **Green Practices (GP)**

Green practices were assessed with three items (GP1–GP3) based on Zhu et al. (2008) and Wu et al. (2022), capturing the adoption of eco-efficient logistics, waste reduction, and energy optimization initiatives. Cronbach's alpha was 0.84, indicating strong internal consistency.

- **Sustainable Performance (SP)**

Sustainable performance was modeled as a second-order construct, comprising three first-order dimensions:

- Environmental Performance (ENV): measured with four items (ENV1–ENV4; $\alpha = 0.86$) reflecting emission reduction, energy efficiency, and waste minimization.
- Economic Performance (ECO): measured with four items (ECO1–ECO4; $\alpha = 0.82$) reflecting cost savings, operational efficiency, and competitiveness.
- Social Performance (SOC): measured with four items (SOC1–SOC4; $\alpha = 0.85$) addressing employee welfare, training, and community engagement.

All Cronbach's alpha values exceeded the recommended threshold, confirming satisfactory reliability.

3.4. Construct Validity and Reliability

Confirmatory Factor Analysis (CFA) was performed using the lavaan package in R to assess convergent and discriminant validity. The Composite Reliability (CR) values ranged from 0.84 to 0.91, while the Average Variance Extracted (AVE) values ranged between 0.61 and 0.73, exceeding the Fornell and Larcker (1981) threshold of 0.50 (see Table 1).

Table 1. Construct Reliability and Convergent Validity

Construct	Cronbach's α	CR	AVE
Leadership (LEAD)	0.88	0.90	0.69
Green Practices (GP)	0.84	0.87	0.65
Environmental Perf. (ENV)	0.86	0.89	0.72
Economic Perf. (ECO)	0.82	0.86	0.63
Social Perf. (SOC)	0.85	0.88	0.68
Sustainable Perf. (SP)	0.89	0.91	0.73

All standardized factor loadings were greater than 0.70 and statistically significant ($p < .001$), indicating strong item reliability. The discriminant validity criterion was satisfied, as the square root of each construct's AVE exceeded its correlations with other constructs.

3.5. Common Method Bias and Multicollinearity

To minimize common method variance (CMV), procedural remedies were implemented—such as ensuring respondent anonymity and randomizing item order. A Harman's single-factor test showed that the first component accounted for only 32.8% of the variance, below the 50% threshold (Podsakoff et al., 2003).

Variance Inflation Factors (VIF) ranged from 1.24 to 2.61, confirming the absence of multicollinearity (Hair et al., 2019).

3.6. Model Fit and Measurement Assessment

The CFA results indicated an acceptable overall model fit (Table 2).

Table 2. Confirmatory Factor Analysis Fit Indices

Fit Index	Recommended	Obtained
χ^2/df	< 3.0	2.14
CFI	≥ 0.90	0.93
TLI	≥ 0.90	0.91
RMSEA	≤ 0.08	0.056
SRMR	≤ 0.08	0.047

The fit statistics confirm a good model fit to the data, with robust indices exceeding conventional thresholds.

3.7. Structural Model Specification

The Structural Equation Model (SEM) was estimated using the robust MLR estimator with Full Information Maximum Likelihood (FIML) to handle missing data. Leadership (LEAD) was modeled as an exogenous latent variable predicting Green Practices (GP) and Sustainable Performance (SP). Green Practices was specified as a mediator between Leadership and SP, which itself was a second-order construct composed of ENV, ECO, and SOC. Control variables included firm ownership, position, and fleet size.

3.8. Model Fit and Predictive Power

The SEM model demonstrated satisfactory fit indices (χ^2/df = 2.38, CFI = 0.92, TLI = 0.90, RMSEA = 0.061, SRMR = 0.052).

The model explained 54% of the variance in Green Practices (R^2 = 0.54) and 63% of the variance in Sustainable Performance (R^2 = 0.63), indicating strong predictive capacity.

3.9. Hypotheses Testing Results

Table 3. Standardized Structural Path Coefficients

Path	β	SE	t-value	p-value	Support
H1: LEAD → GP	0.68	0.07	9.71	< .001	Supported
H2: GP → SP	0.57	0.08	7.12	< .001	Supported
H3: LEAD → SP (direct)	0.29	0.09	3.21	.001	Supported
Indirect (LEAD → GP → SP)	0.39	0.06	—	< .001	Supported

The results confirm that leadership exerts a significant direct effect on sustainable performance and an additional indirect effect via green practices, consistent with a partial mediation model.

3.10. Summary of Analytical Procedures

- Reliability and validity confirmed via Cronbach's α, CR, AVE.
- Measurement model validated using CFA with robust fit.
- Structural paths tested via SEM with MLR estimator.
- Mediation analysis confirmed through indirect path significance.

No CMV or multicollinearity issues detected.

4. Results and Discussion

4.1. Measurement Model Results

The Confirmatory Factor Analysis (CFA) confirmed the validity and reliability of the measurement model. All constructs demonstrated strong internal consistency, with Cronbach's α coefficients above 0.80, and composite reliabilities (CR) ranging from 0.84 to 0.91 (see Table 1).

The Average Variance Extracted (AVE) exceeded 0.60 for all constructs, confirming convergent validity (Fornell & Larcker, 1981). The Fornell–Larcker criterion and inter-construct correlations showed that discriminant validity was also achieved.

Furthermore, all standardized factor loadings were statistically significant ($p < .001$) and above 0.70, indicating that the indicators reliably represented their underlying constructs. The CFA fit indices

demonstrated satisfactory model adequacy ($\chi^2/df = 2.14$, CFI = 0.93, TLI = 0.91, RMSEA = 0.056, SRMR = 0.047), exceeding the thresholds recommended by Hu and Bentler (1999).
These results confirm that the measurement model is statistically robust, validating the use of Leadership (LEAD), Green Practices (GP), and Sustainable Performance (SP) as latent constructs in the subsequent structural analysis.

4.2. Structural Model Results

The Structural Equation Model (SEM) was estimated using the MLR estimator with Full Information Maximum Likelihood (FIML), ensuring robustness against potential non-normality and missing data. The SEM fit indices confirmed a good model fit ($\chi^2/df = 2.38$, CFI = 0.92, TLI = 0.90, RMSEA = 0.061, SRMR = 0.052).

This indicates that the hypothesized relationships among leadership, green practices, and sustainable performance adequately reflect the observed data.
As shown in Table 3, the hypothesized relationships were all significant:

- Leadership → Green Practices (H1): $\beta = 0.68$, $p < .001$
- Green Practices → Sustainable Performance (H2): $\beta = 0.57$, $p < .001$
- Leadership → Sustainable Performance (direct, H3): $\beta = 0.29$, $p = .001$
- Indirect Effect (Leadership → GP → SP): $\beta = 0.39$, $p < .001$

The model explained 54% of the variance in Green Practices ($R^2 = 0.54$) and 63% of the variance in Sustainable Performance ($R^2 = 0.63$), indicating strong predictive power.
These findings suggest that leadership not only exerts a direct influence on sustainable performance, but also indirectly enhances it through the adoption of green practices.

4.3. Interpretation of Findings

4.3.1. Leadership as a Driver of Green Practices

The strong positive relationship between leadership and green practices ($\beta = 0.68$, $p < .001$) underscores the critical role of transformational and environmental leadership in embedding sustainability within organizational culture. This finding aligns with previous studies by Afsar et al. (2020) and Robertson and Barling (2013), who demonstrated that leaders serve as catalysts for sustainability by promoting shared environmental goals, motivating employees, and allocating resources for eco-innovation.
In the Moroccan logistics context, leadership behaviors appear to play a pivotal role in operationalizing sustainability, particularly where regulatory pressures are limited. The result supports the Resource-Based View (RBV), suggesting that leadership acts as an intangible resource that enables the implementation of environmental management practices, thereby creating long-term strategic advantages.

4.3.2. Green Practices and Sustainable Performance

The significant effect of green practices on sustainable performance ($\beta = 0.57$, $p < .001$) confirms their mediating role. Firms implementing eco-efficient logistics, energy optimization, and waste reduction achieved superior environmental, economic, and social outcomes.
This aligns with findings by Zhang et al. (2023) and Wu et al. (2022), who noted that green logistics fosters efficiency and innovation while reducing environmental impact.
In Morocco, these results are particularly relevant as logistics firms increasingly respond to global supply chain pressures for carbon neutrality and sustainable transport. The evidence suggests that firms adopting structured green initiatives outperform competitors across triple-bottom-line dimensions.

4.3.3. Direct and Indirect Effects of Leadership

The partial mediation observed between leadership and sustainable performance (direct $\beta = 0.29$, indirect $\beta = 0.39$) reveals that leadership enhances sustainability both directly, through strategic vision and employee engagement, and indirectly, via the implementation of green practices.
This dual pathway emphasizes the multidimensional nature of leadership in sustainability transitions, echoing the integrative perspectives of Bass and Riggio (2006) and Kim et al. (2020). Leaders not only define environmental priorities but also facilitate the organizational learning and behavioral change necessary for achieving them.
In the Moroccan context, where sustainability adoption often depends on managerial initiative rather than institutional enforcement, leadership acts as a key enabler bridging policy gaps and operational realities.

4.4. Comparative Insights with International Evidence

Compared with global studies, the Moroccan results exhibit similar patterns but with stronger leadership effects. For example, Singh and El-Kassar (2019) in India and Chen et al. (2015) in China found comparable but weaker indirect effects, suggesting that in emerging markets, leadership influence is more pronounced due to the absence of rigid environmental regulation.
This reinforces the argument that in developing economies, leadership substitutes for institutional mechanisms, shaping organizational values toward sustainability (Khan et al., 2021).

Moreover, while Western studies emphasize technological innovation as the main sustainability driver (e.g., de Sousa Jabbour et al., 2019), Moroccan data show that soft capabilities—vision, training, and culture—drive change more effectively.

4.5. Theoretical Implications

These findings contribute to the sustainability and leadership literature in three ways:

- Integration of Leadership and RBV: Demonstrating that leadership functions as a strategic capability that enhances sustainability performance through process innovation.
- Empirical Evidence from North Africa: Filling a geographical research gap, as most sustainability studies focus on Asia and Europe.
- Validation of a Second-Order Sustainability Construct: Confirming that environmental, economic, and social dimensions can be modeled as interrelated but distinct outcomes, reinforcing the multidimensionality of corporate sustainability.

4.6. Managerial Implications

For practitioners, the results suggest that investing in leadership development—particularly in sustainability-oriented training and empowerment—can significantly enhance firm performance.

Managers should integrate green practices into logistics processes, linking them with strategic KPIs such as efficiency, cost reduction, and brand reputation.

Furthermore, policymakers in Morocco should consider leadership-focused interventions, such as sustainability leadership programs, to accelerate private sector adoption of the national green transition agenda.

4.7. Limitations and Future Research

Despite its contributions, this study has several limitations. First, the cross-sectional design limits causal inference. Longitudinal studies could examine how leadership and green practices evolve over time.

Second, the data were self-reported, which may introduce perceptual bias, though tests confirmed that CMV was not a major concern.

Finally, future research could expand the model by including moderators such as regulatory support, digitalization, or firm size to explore contextual differences.

4.8. Conclusion of the Results and Discussion

This study empirically confirms that leadership is a decisive factor in driving sustainability in Moroccan logistics firms.

Through both direct and indirect pathways, leadership fosters the adoption of green practices that enhance environmental, economic, and social performance.

These results demonstrate that sustainability leadership is not merely symbolic but strategic, shaping firms' long-term competitiveness and societal contribution.

5. Conclusion and Policy Recommendations

5.1. Conclusion

This study provides empirical evidence on the critical role of leadership in shaping sustainable performance among Moroccan logistics service providers. Using a robust structural equation modeling (SEM) approach, the findings demonstrate that leadership exerts both direct and indirect effects on sustainable performance through the mediating role of green practices. Specifically, the results revealed that leadership significantly predicts the adoption of green logistics practices ($\beta = 0.68$, $p < .001$), which, in turn, enhance environmental, economic, and social dimensions of sustainability ($\beta = 0.57$, $p < .001$).

The study's theoretical framework, grounded in the Resource-Based View (RBV), underscores that leadership represents a strategic intangible resource capable of fostering environmental innovation and organizational learning. In emerging economies like Morocco—where institutional pressure and regulatory frameworks are less mature—leadership compensates for structural weaknesses by driving sustainability through vision, commitment, and internal motivation.

Overall, the results affirm that sustainability-oriented leadership is not a peripheral factor but a central determinant of competitive advantage in the logistics sector. By cultivating eco-conscious behaviors, aligning goals with sustainable development principles, and embedding environmental responsibility into core strategy, Moroccan logistics firms can enhance not only their operational efficiency but also their long-term legitimacy and resilience.

5.2. Theoretical Implications

Theoretically, this research makes three distinct contributions.

First, it advances the leadership-sustainability nexus by empirically validating leadership as a driver of multidimensional sustainable performance. Second, it extends the RBV perspective by integrating green practices as a mediating mechanism through which leadership translates into tangible sustainability

outcomes. Third, by employing a second-order sustainability construct, the study provides methodological clarity on how environmental, economic, and social dimensions can be simultaneously modeled while retaining conceptual independence.
These insights enrich the broader sustainability discourse by demonstrating that leadership behaviors are integral to embedding sustainability as a systemic, rather than episodic, organizational process.

5.3. Practical and Managerial Implications

For managers and practitioners, the study highlights several actionable insights:

- Integrate Sustainability into Leadership Training: Organizations should design and implement training programs that develop leaders' competencies in sustainability management, stakeholder engagement, and systems thinking.
- Institutionalize Green Practices: Firms should operationalize sustainability through measurable green logistics initiatives—such as route optimization, eco-driving, and waste minimization—supported by leadership-driven accountability.
- Embed Sustainability in Strategic KPIs: Managers should align environmental and social indicators with financial performance measures to reinforce sustainability's strategic importance.
- Foster a Culture of Environmental Responsibility: Leadership communication and recognition mechanisms can strengthen employees' psychological ownership of sustainability objectives, enhancing long-term performance.

Through these actions, logistics firms can transition from compliance-based sustainability to strategic sustainability leadership, positioning themselves as regional pioneers in green logistics.

5.4. Policy Recommendations

Given Morocco's ambition to emerge as a regional logistics hub under the Stratégie Nationale de la Logistique, policymakers play an instrumental role in amplifying the leadership–sustainability link. The following recommendations are proposed:

Leadership Capacity-Building:
Public agencies and professional associations should collaborate to create executive education programs on sustainable logistics leadership, integrating case-based learning and international benchmarking.

Incentivizing Green Innovation:
Fiscal incentives and grants should target firms that adopt advanced green logistics technologies—such as renewable-powered fleets and circular packaging systems.

Public–Private Partnerships:
The government could foster cross-sector partnerships that enable knowledge sharing and joint sustainability projects, reinforcing Morocco's green transition goals.

Measurement and Reporting Frameworks:
A standardized national reporting mechanism for logistics sustainability (aligned with GRI and ISO 26000) would enhance transparency, comparability, and investor confidence.

By embedding sustainability leadership into national policy frameworks, Morocco can accelerate its progress toward the UN Sustainable Development Goals (SDGs), particularly SDG 9 (Industry, Innovation, and Infrastructure), SDG 12 (Responsible Consumption and Production), and SDG 13 (Climate Action).

5.5. Limitations and Future Research Directions

While this study offers robust empirical evidence, several limitations must be acknowledged. The cross-sectional design limits causal inference, and future longitudinal research could explore the temporal dynamics of leadership and sustainability integration.
Additionally, while the sample is representative of Moroccan logistics firms, extending the analysis to other sectors or North African countries could provide comparative insights.
Future research may also integrate digital transformation, ESG governance, or supply chain resilience as moderating variables to expand the understanding of sustainability performance drivers in emerging economies.

This study contributes to the growing body of research emphasizing that leadership is the cornerstone of corporate sustainability. In the Moroccan logistics industry, where environmental regulation remains emergent, leadership provides the moral and strategic compass that guides firms toward sustainable transformation.
By institutionalizing sustainability-oriented leadership, Morocco can not only improve the competitiveness of its logistics sector but also reinforce its global image as a leader in the ecological transition of the MENA region.

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