

EFFECT OF HUMANITARIAN LOGISTICS AND LEADERSHIP FACTORS ON HUMANITARIAN OPERATIONS PERFORMANCE IN BORNO STATE, NIGERIA

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ABSTRACT

Humanitarian organizations operating in crisis-affected environments face persistent challenges in coordinating actors, procuring and delivering relief supplies, managing logistics operations, and maintaining transparency. These challenges can undermine leadership effectiveness and organizational performance. Despite the strategic importance of these capabilities, limited empirical evidence explains how humanitarian logistics factors influence leadership and, consequently, logistics performance in the Nigerian context. This study examines the effects of Coordination, Procurement, Operations, and Transparency on humanitarian leadership and determines the effect of humanitarian leadership on competitive and resilience performance among humanitarian organizations operating in Nigeria. The study is anchored in the Resource-Based View (RBV) and Dynamic Capability Theory (DCT) and adopts a quantitative cross-sectional survey design. Data were collected from 287 purposively selected staff and operational managers of humanitarian logistics organizations in Borno State, northeastern Nigeria. Data were analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM) through SmartPLS 4.0. The findings indicate that Coordination, Procurement, Operations, and Transparency have significant positive effects on humanitarian leadership. Operations demonstrates the strongest direct effect ($\beta = 0.259$, $p < 0.001$), while Coordination records the largest substantive effect size ($f^2 = 0.500$). Humanitarian leadership significantly and positively predicts resilience performance ($\beta = 0.583$, $p < 0.001$) and competitive performance ($\beta = 0.360$, $p < 0.001$), with a stronger effect on resilience performance. The study recommends strengthening coordination, operational capabilities, leadership development, procurement, and transparency systems. It contributes to humanitarian logistics literature by demonstrating that logistics capabilities serve as important organizational resources for effective leadership, sustained performance, and resilience in complex crisis environments.

Keywords: *Humanitarian logistics, Performance, Leadership, Coordination, Nigeria.*

Introduction

The global humanitarian environment has grown progressively intricate in the twenty-first century, shaped by the compounding effects of protracted armed conflicts, climate-induced disasters, and infectious disease outbreaks. The United Nations Office for the Coordination of Humanitarian Affairs reported that more than 235 million people worldwide required

humanitarian assistance in 2021, with projections surpassing 274 million in 2022, reflecting a near-doubling of need within a decade (OCHA, 2022). This surge in humanitarian demand has intensified scholarly and practitioner attention on the systems, structures, and actors responsible for delivering life-saving assistance. Humanitarian logistics has emerged as a central operational pillar,

accounting for approximately 80% of the total cost of humanitarian relief operations worldwide. (Tomasini & Van Wassenhove, 2009). Broadly understood, humanitarian logistics encompasses the planning, implementation, and control of the cost-effective flow of goods, materials, and related information from point of origin to point of consumption, with the singular objective of alleviating human suffering in crisis-affected populations (Pascucci, 2021).

Humanitarian logistics is a critical component of humanitarian response, particularly in conflict-affected and fragile environments where organizations must deliver essential assistance amid insecurity, damaged infrastructure, population displacement, restricted access, limited resources, and rapidly changing needs. These conditions create persistent challenges in coordinating multiple humanitarian actors, procuring essential goods and services, managing transportation, warehousing and distribution, and maintaining transparency and accountability across complex supply networks. Such challenges can increase delivery costs and delays while undermining the responsiveness, efficiency, and reliability of humanitarian operations (Altay et al., 2024; Kunz & Reiner, 2012). The situation is particularly challenging in Nigeria, where prolonged conflict and displacement in the Northeast have created complex operational environments requiring humanitarian organizations to make rapid decisions and coordinate scarce resources under

significant uncertainty. Effective humanitarian logistics in such settings therefore requires more than technical logistical capacity; it also depends on organizational leadership capable of coordinating diverse stakeholders, adapting to changing circumstances, managing resources, and sustaining accountability. Accordingly, coordination, procurement, operational capability, and transparency represent important dimensions through which humanitarian logistics can influence organizational leadership and, ultimately, logistics performance (Mendy, 2024; Theaspd, 2024). Examining these relationships is therefore essential for understanding how humanitarian organizations can strengthen their operational effectiveness and improve the delivery of assistance to vulnerable populations.

The intersection of humanitarian logistics with leadership scholarship has gained increasing traction in recent years. Leadership in humanitarian contexts is not merely a managerial function; it is a dynamic capability through which organizations sense, adapt to, and reconfigure their resource bases in response to rapidly evolving crises (Polater, 2021). Grounded in the Resource-Based View (RBV) and Dynamic Capability Theory, effective humanitarian leadership mobilizes logistics resources to generate competitive advantage and organizational resilience — two performance dimensions increasingly recognized as critical to the sustainability of humanitarian operations (Kofar Kudu, 2024; Hitt et al., 2016). Resilience

performance reflects the capacity of humanitarian organizations to absorb shocks, adapt to disruptions, and maintain continuity of service delivery under crisis conditions (Wiley, 2023), while competitive performance captures the relative organizational effectiveness, efficiency, and positioning of humanitarian actors vis-à-vis operational mandates and stakeholder expectations.

The Need for Research

Nigeria presents one of the most demanding humanitarian theatres in sub-Saharan Africa. Since 2009, the Boko Haram Terrorism (BHT) insurgency in northeastern Nigeria, particularly Borno State, has generated cascading humanitarian disasters, including mass displacement, acute food insecurity, and chronic access constraints (OCHA, 2021). The Humanitarian Response Plan for northeastern Nigeria was funded at USD 631 million for the 2022–2023 cycle (OCHA, 2023), yet the effectiveness of the organizations operationalizing this investment remains contested. Nigerian humanitarian logistics firms operate under extreme duress, confronting supply chain fragmentation, transport insecurity, inadequate information-sharing infrastructure, limited funding predictability, and a deficit of specialized operational equipment (Kumar & Kumar, 2021; Luzzana et al., 2020). These structural constraints are not merely logistical inconveniences; they are systemic impediments that erode organizational leadership quality and,

ultimately, the performance outcomes on which beneficiary welfare depends.

Extant humanitarian logistics literature has largely concentrated on technical optimization, network design, vehicle routing, prepositioning, and inventory management (Altay et al., 2024), with considerably less attention directed toward the behavioral and organizational mechanisms through which logistics factor configurations translate into leadership effectiveness and downstream performance. Specifically, the relationship between internal humanitarian logistics factors (coordination, procurement, operations, and transparency) and humanitarian leadership has not been empirically examined in a structured, path-analytic framework within the Sub-Saharan African context. Equally, the sequential pathway from humanitarian leadership to dual performance outcomes, competitive performance and resilience performance, has received scant empirical treatment, especially within conflict-affected African states where the humanitarian–development nexus is most acutely felt (Kofar Kudu et al., 2022; Journal on Humanitarian Logistics and Supply Chain Management, 2021).

Prior studies on Nigerian humanitarian logistics (Kofar Kudu & Md Saad, 2024; Mendy, 2024) have focused predominantly on effectiveness determinants, external sustainability factors, and operational success and failure narratives, leaving the internal factor-to-leadership-to-performance chain structurally unaddressed. Thus, this study addresses a clearly delineated

and consequential empirical gap in the humanitarian logistics literature. No known study has simultaneously examined all four humanitarian logistics factors as antecedents of humanitarian leadership while also tracing leadership's dual predictive effect on both competitive and resilience performance dimensions within a Nigerian context.

Objectives

- To determine the effect of humanitarian logistics factors (Coordination, Procurement, Operations, and Transparency) on humanitarian leadership.
- To determine the effect of humanitarian leadership on humanitarian logistics performance (competitive and resilience).

Research Questions

- What is the effect of humanitarian logistics factors (Coordination, Procurement, Operations, and Transparency) on humanitarian leadership?
- What is the effect of humanitarian leadership on humanitarian logistics performance (competitive and resilience)?

Hypotheses

- H1a: Coordination has a positive and significant effect on humanitarian leadership in humanitarian logistics operations.
- H1b: Procurement has a positive and significant effect on humanitarian leadership in humanitarian logistics operations.

H1c: Operations has a positive and significant effect on humanitarian leadership in humanitarian logistics operations.

H1d: Transparency has a positive and significant effect on humanitarian leadership in humanitarian logistics operations.

H2a: Humanitarian leadership has a positive and significant effect on competitive performance in humanitarian logistics.

H2b: Humanitarian leadership has a positive and significant effect on resilience performance in humanitarian logistics.

Potential Contribution of the Study

This study is expected to contribute to the theory and practice of humanitarian logistics in several ways.

Theoretically, the study extends the application of the **Resource-Based View (RBV)** and **Dynamic Capability Theory (DCT)** to the humanitarian logistics context by conceptualizing humanitarian supply chain management as a strategic organizational capability through which coordination, procurement, operations, and transparency can enhance leadership and, ultimately, organizational performance. The study further contributes by establishing humanitarian leadership as an important organizational mechanism linking logistics capabilities with performance outcomes, thereby providing a more integrated explanation of how logistical resources and capabilities are translated into

competitive and resilience performance in complex humanitarian environments.

From a practical perspective, the findings are expected to provide humanitarian organizations, managers, policymakers, and donors with evidence on the logistics capabilities that require strategic attention to strengthen humanitarian leadership and improve organizational performance. The study may support organizations in developing more effective coordination mechanisms, strengthening procurement systems, improving operational processes, and enhancing transparency and accountability. By identifying the relationship between humanitarian supply chain management, leadership, and performance, the study can also inform managerial strategies aimed at improving responsiveness, resilience, resource utilization, and the effective delivery of humanitarian assistance, particularly in conflict-affected and resource-constrained environments.

Literature Review

Theoretical Frameworks

This study is anchored in two complementary theories: the Resource-Based View (RBV), developed by **Barney (1991)** building on Wernerfelt (1984), and Dynamic Capability Theory (DCT), developed by Teece, Pisano, and Shuen (1997). The central theme of RBV is that organizations achieve superior and sustained performance by developing and effectively utilizing resources and capabilities that are

valuable, rare, difficult to imitate, and non-substitutable (VRIN). Applied to humanitarian logistics, RBV views coordination, procurement, operations, and transparency as strategic organizational capabilities that enable humanitarian organizations to manage resources effectively and strengthen their logistics outcomes. Thus, RBV provides the theoretical foundation for examining how humanitarian supply chain management capabilities influence humanitarian leadership and organizational performance.

DCT extends RBV by emphasizing an organization's ability to sense changes and opportunities, seize them, and reconfigure resources and competencies in rapidly changing environments (Teece et al., 1997). This is particularly relevant to humanitarian operations, which are characterized by uncertainty, insecurity, resource constraints, changing needs, and operational disruptions. In this study, humanitarian leadership represents a dynamic capability through which logistics resources and capabilities are integrated, adapted, and mobilized to respond effectively to changing humanitarian conditions. Consequently, DCT explains how humanitarian leadership can transform logistics capabilities into improved competitive and resilience performance. Together, RBV explains the strategic value of humanitarian logistics resources, while DCT explains how leadership mobilizes and reconfigures these resources to achieve improved humanitarian logistics performance.

Empirical Review

Previous empirical studies demonstrate that coordination, procurement, operations, and transparency are important components of humanitarian logistics; however, the extent to which these capabilities shape humanitarian leadership and subsequently influence logistics performance remains insufficiently established. Coordination has been associated with effective multi-actor resource mobilization, information sharing, and stakeholder alignment (Balcik et al., 2020; Tatham, 2022), while procurement capabilities have been linked to operational effectiveness and stakeholder confidence (Behl & Dutta, 2019; Moshtari et al., 2021). Similarly, operational capability has been identified as critical to logistics responsiveness and inter-agency effectiveness (Heaslip & Tatham, 2023; Altay et al., 2024), whereas transparency supports accountability, stakeholder trust, and organizational legitimacy (Khan et al., 2023; Vaillancourt, 2022). Although these studies establish the importance of individual logistics capabilities, most examine them in relation to logistics effectiveness, supply chain performance, governance, or accountability, rather than explicitly examining their combined influence on humanitarian leadership. Consequently, there is limited empirical evidence on whether coordination, procurement, operations, and transparency collectively constitute organizational capabilities that strengthen leadership within humanitarian logistics environments.

The literature also demonstrates that humanitarian leadership is important for organizational and supply chain performance. Kovács et al. (2019) emphasized the role of leadership in coordinating complex multi-actor humanitarian responses, while Anjomshoe et al. (2022) identified leadership and human resource management as important elements of humanitarian supply chain governance. Dubey et al. (2022) further showed that adaptive and visionary leadership contributes to organizations' ability to absorb, adapt to, and recover from disruptions. However, existing studies have largely **examined** leadership as an independent organizational factor, with limited empirical attention to its role as a mechanism through which humanitarian logistics capabilities are translated into performance outcomes. In particular, there is insufficient evidence linking logistics capabilities to leadership and subsequently to distinct dimensions of competitive and resilience performance. Furthermore, much of the existing evidence originates from disaster-management and general humanitarian supply chain contexts, with comparatively limited empirical investigation in conflict-affected and resource-constrained settings in Nigeria. This creates both a contextual gap, arising from limited evidence from Nigerian humanitarian operations, and a relational gap, arising from inadequate examination of the interconnected relationships among humanitarian logistics capabilities, humanitarian leadership, and performance. This study addresses these gaps by empirically

examining the effects of coordination, procurement, operations, and transparency on humanitarian leadership and assessing how humanitarian leadership influences competitive and resilience performance among humanitarian organizations operating in Nigeria.

Study Area and Methodology

This study adopted a quantitative cross-sectional survey design within a positivist research orientation. The study was conducted in Borno State, northeastern Nigeria, a major humanitarian operational environment affected by prolonged conflict, displacement, food insecurity, and access constraints (OCHA, 2021). The target population comprised staff and operational managers of humanitarian organizations and logistics operations who were directly involved in coordination, procurement, logistics operations, transparency, or organizational leadership. Purposive sampling was used to select respondents with relevant knowledge and experience, resulting in 287 usable responses. Data were collected using a structured questionnaire adapted from previously validated measurement instruments. The questionnaire was administered directly to eligible respondents through face-to-face distribution, and completed questionnaires were retrieved, screened for completeness, coded, and prepared for analysis. All study constructs were measured using a five-point Likert scale ranging from 1 = Strongly Disagree to 5 = Strongly Agree.

The collected data were analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM) because of its suitability for examining complex relationships among latent constructs and its predictive orientation (Hair et al., 2019). Data analysis involved two stages: assessment of the measurement model and assessment of the structural model. The measurement model was evaluated using indicator loadings, Cronbach's alpha, Composite Reliability (CR), Average Variance Extracted (AVE), and the Heterotrait–Monotrait (HTMT) ratio to establish reliability, convergent validity, and discriminant validity. The structural model was subsequently assessed using path coefficients, coefficient of determination (R^2), effect sizes (f^2), predictive relevance (Q^2), and bootstrapping to determine the significance of the hypothesized relationships.

Ethical considerations were maintained throughout the research process. Respondents were informed about the purpose of the study, participation was voluntary, and informed consent was obtained before questionnaire administration. Respondents were assured of the confidentiality and anonymity of their responses and were informed that they could decline participation without penalty. No personally identifying or sensitive operational information was required, and the data were used strictly for academic purposes. Given the conflict-affected nature of Borno State, particular attention was given to protecting respondents from potential security or professional risks by ensuring that

individual responses and organizational information were not disclosed.

The target population comprised 980 staff and operational managers of humanitarian organisations and logistics firms in Borno State who were directly involved in logistics coordination, procurement, field operations, or organisational leadership. The minimum sample size was determined using the Krejcie and Morgan (1970) sample-size determination procedure, which yielded a required sample of 275 respondents for a population of 980 at the conventional 95% confidence level and 5% margin of error. The study obtained 287 valid responses, exceeding the minimum required sample by 12 respondents and thereby providing an adequate basis for subsequent statistical analysis. Purposive sampling was employed to ensure that respondents possessed direct

knowledge and practical experience relevant to the study variables. The model is moderately complex because it simultaneously examines multiple exogenous constructs, a mediating construct, and several endogenous performance outcomes, requiring the estimation of multiple direct and indirect relationships through PLS-SEM. Thus, the final sample of 287 was considered adequate both in relation to the population-based sample-size requirement and the analytical demands of the proposed model (Hair et al., 2014).

All items were measured on a five-point Likert scale (1 = Strongly Disagree; 5 = Strongly Agree). Table 1 presents the measurement instruments and their respective sources.

items and a citation in separate columns:

Table 1: Measurement instrument and sources

Construct	No. of Items	Measurement Source/Basis
Coordination	3	Adapted from Busck-Lumholt et al. (2022)
Procurement	2	Adapted from Chopra and Meindl (2019)
Operations	2	Adapted from Jones and Hester (2019)
Transparency	3	Adapted from Khan et al. (2019) and Hassan et al. (2008)
Humanitarian Leadership	4	Adapted from Podsakoff et al. (1990) and Dubey et al. (2015)
Competitive Performance	4	Adapted from Ali and Anwar (2021)
Resilience Performance	3	Adapted from Altay et al. (2018) and Dubey et al. (2022)
Total	21	

Source: Khan et al. (2019)

The measurement instruments used in this study were adapted from previously validated scales

reported in the humanitarian logistics, supply chain management, leadership, and

organizational performance literature. The adaptation process involved reviewing the conceptual definitions and measurement items of the original studies and modifying the wording where necessary to reflect the context of humanitarian organizations operating in Nigeria. Coordination, procurement, operations, and transparency were measured using items adapted from established supply chain and humanitarian logistics studies, while humanitarian leadership was measured using items informed by established transformational leadership and humanitarian logistics leadership measures. Competitive performance and resilience performance were similarly measured using

previously established performance indicators. Table 1 presents the constructs, number of measurement items, and the original sources from which the instruments were adapted.

PLS-SEM through SmartPLS 4.0 was selected over covariance-based SEM because: (a) the study involves second-order constructs and complex interrelationships among latent variables; (b) PLS-SEM is robust with non-normal data (Sarstedt et al., 2023); and (c) the study is theory-building in orientation (Hair et al., 2019). Bootstrapping with 5,000 subsamples generated standard errors and t-statistics for hypothesis testing.

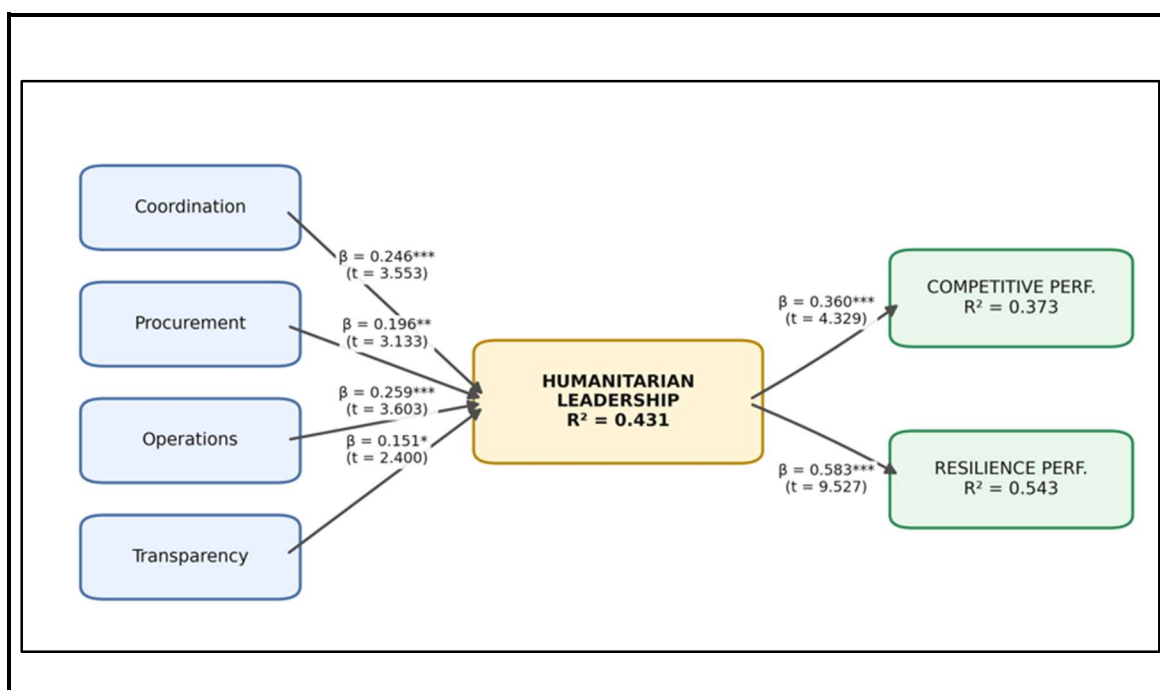


Figure 1: Structural Model with Path Coefficients

Source: Tatham and Kovacs (2010)

Note: *** $P < 0.01$; ** $p < 0.05$

Figure 1 presents the structural model showing the hypothesized relationships among the study

constructs. The model indicates that coordination ($\beta = 0.246$), procurement ($\beta =$

0.196), operations ($\beta = 0.259$), and transparency ($\beta = 0.151$) have positive effects on humanitarian leadership. Operations has the strongest direct effect on humanitarian leadership, while transparency has the weakest. Humanitarian leadership, in turn, has positive effects on competitive performance ($\beta = 0.360$) and resilience performance ($\beta = 0.583$), with a stronger effect on resilience performance. The R^2 values indicate that the model explains 43.1% of the variance in humanitarian leadership, 37.3% in competitive performance, and 54.3% in resilience performance.

Results and Discussions

Descriptive Analysis of Study Constructs

The descriptive statistics revealed that all constructs registered mean scores ranging from

3.65 to 4.02 on a five-point Likert scale. Humanitarian leadership recorded the highest mean ($M = 4.02$, $SD = 0.66$), while procurement registered the lowest ($M = 3.65$, $SD = 0.79$). These findings align with Kovács et al. (2019) and Anjomshoe et al. (2022), who established that leadership capacity consistently emerges as the most positively evaluated construct within humanitarian supply chain contexts. Skewness and kurtosis values were within acceptable thresholds of ± 2 and ± 7 respectively (Curran et al., 1996; Tabachnick et al., 2013), confirming normality assumptions were not violated.

Table 2: Descriptive Statistics and Normality Assessment

Construct	N	Mean	Std Dev	Skewness
Coordination	287	3.87	0.72	-0.43
Procurement	287	3.65	0.79	-0.57
Operations	287	3.92	0.68	-0.61
Transparency	287	3.71	0.75	-0.48
Humanitarian Leadership	287	4.02	0.66	-0.74
Competitive Performance	287	3.78	0.73	-0.52
Resilience Performance	287	3.84	0.71	-0.64

Source: (Fornell & Larcker, 1981; et..al 2014)

Measurement Model Assessment

All Composite Reliability (CR) values exceeded 0.70 and all Average Varance Extracted (AVE) values exceeded 0.50, confirming adequate construct reliability and convergent validity (Fornell & Larcker, 1981; et..al 2014). All HTMT discriminant validity values fell below the 0.90 threshold (Henseler et., al 2015), confirming discriminant validity across all constructs.

Table 3: Construct Reliability and Convergent Validity

Construct	Item Loadings	Composite Reliability (CR)	AVE
Coordination	0.732–0.804	0.862	0.564
Procurement	0.786–0.833	0.840	0.638
Operations	0.794–0.834	0.852	0.657
Information Transparency	0.730–0.819	0.811	0.590
Organizational Transparency	0.780–0.854	0.866	0.683
Humanitarian Leadership	0.745–0.807	0.862	0.609
Competitive Performance	0.751–0.803	0.853	0.591
Resilience Performance	0.776–0.829	0.837	0.632

Source: (Fornell & Larcker, 1981; et..al 2014)

Table 4: Discriminant Validity

	CORD	PROC	OPER	TRAN	HL	COMP	RESI
Coordination (CORD)	—						
Procurement (PROC)	0.54	—					
Operations (OPER)	0.62	0.58	—				
Transparency (TRAN)	0.48	0.51	0.57	—			
Hum. Leadership (HL)	0.69	0.63	0.70	0.59	—		
Competitive (COMP)	0.57	0.55	0.61	0.52	0.66	—	
Resilience (RESI)	0.64	0.57	0.66	0.55	0.71	0.63	—

Source: (Henseler et., al 2015)

The HTMT discriminant validity results presented in Table 4 demonstrate that all HTMT values among the study constructs are below the recommended threshold of 0.90 (Henseler et al., 2015). The values range from 0.48 to 0.71, with the highest value observed between humanitarian leadership and resilience performance (HTMT = 0.71), followed by the

relationship between humanitarian leadership and operations (HTMT = 0.70). Other construct relationships also recorded relatively low HTMT values, including coordination and transparency (0.48), procurement and transparency (0.51), and procurement and competitive performance (0.55). These results indicate that no pair of constructs exceeds the recommended threshold,

confirming that the constructs are empirically distinct and measure conceptually different phenomena. Therefore, **Table 4** provides evidence of satisfactory discriminant validity,

supporting the suitability of the measurement model for subsequent structural model and hypothesis testing (Henseler et al., 2015)

Hypothesis Testing — H1a to H1d: Logistics Factors → Humanitarian Leadership

Table 5: Direct Path Coefficients — Logistics Factors → Humanitarian Leadership

Hypothesis	Path	B	SE	t-stat	Decision
H1a	Coordination → Leadership	0.246	0.069	3.553 (p=0.000)	Supported
H1b	Procurement → Leadership	0.196	0.063	3.133 (p=0.002)	Supported
H1c	Operations → Leadership	0.259	0.072	3.603 (p=0.000)	Supported
H1d	Transparency → Leadership	0.151	0.063	2.400 (p=0.017)	Supported

Source: (Altay et al., 2024 and Balcik et al., 2020),

Note: Bootstrap n=5,000; t-critical (two-tailed) = 1.96 at p<0.05

All four H1 hypotheses were supported. Operations exerted the strongest influence ($\beta = 0.259$, $t = 3.603$, $p < 0.001$), followed by Coordination ($\beta = 0.246$), Procurement ($\beta = 0.196$), and Transparency ($\beta = 0.151$). The prominent influence of operations on humanitarian leadership corroborates Heaslip et al. (2019) and Tatham et al. (2023), who demonstrated that operational capacity fundamentally shapes the strategic direction and decision-making authority of humanitarian leaders. The significant effect of coordination on leadership is consistent with Altay et al. (2024) and Balcik et al. (2020), who argued that inter-organizational coordination serves as a critical

antecedent to effective humanitarian leadership by enabling synchronized resource mobilization, information sharing, and stakeholder alignment. The positive relationship between procurement and humanitarian leadership aligns with Moshtari et al. (2021), who established that procurement efficiency directly contributes to the operational authority and credibility of humanitarian leaders. Transparency demonstrated the weakest but still statistically significant direct effect, consistent with Khan et al. (2023) and Vaillancourt (2022), who noted that transparency exerts a more diffuse influence on leadership relative to operational and coordination factors.

Hypothesis Testing — H2a and H2b: Humanitarian Leadership → Performance

Table 6: Direct Path Coefficients — Humanitarian Leadership → Performance

Hypothesis	Path	B	SE	t-stat	Decision
H2a	Leadership → Competitive Performance	0.360	0.083	4.329 (p=0.000)	Supported
H2b	Leadership → Resilience Performance	0.583	0.061	9.527 (p=0.000)	Supported

Source: Dubey et al. (2022).

Both hypotheses were strongly supported. Humanitarian leadership demonstrated a particularly robust influence on resilience performance ($\beta = 0.583$, $t = 9.527$, $p < 0.001$), exceeding its effect on competitive performance ($\beta = 0.360$, $t = 4.329$, $p < 0.001$). The exceptionally strong path coefficient for resilience performance aligns with Dubey et al. (2022) and the supply chain leadership resilience framework of Ivanov et al. (2022), who established that visionary, adaptive, and values-

driven leadership constitutes the primary determinant of humanitarian organizations' capacity to absorb, adapt to, and recover from logistical disruptions. The moderately strong effect on competitive performance is consistent with Salem et al. (2022) and Heaslip and Barber (2019), who posited that humanitarian leaders who effectively translate logistics competencies into strategic organizational positioning achieve superior inter-agency competitive advantage.

Effect Size (f^2) and Predictive Relevance (Q^2)

Table 7: Effect Size (f^2) Analysis

Predictor	Endogenous Construct	f^2	Interpretation
Coordination	Humanitarian Leadership	0.500	Large
Procurement	Humanitarian Leadership	0.039	Small
Operations	Humanitarian Leadership	0.019	Small
Transparency	Humanitarian Leadership	0.026	Small
Humanitarian Leadership	Competitive Performance	0.171	Medium
Humanitarian Leadership	Resilience Performance	0.408	Large

Source: Balcik et al. (2020)

Table 8: Predictive Relevance (Q^2) — Blindfolding Results

Construct	SSO	SSE	Q^2 (1-SSE/SSO)
Humanitarian Leadership	287.000	163.294	0.431
Competitive Performance	1,148.000	719.350	0.373
Resilience Performance	287.000	131.081	0.543

Source: Hair et al. (2019)

The effect size (f^2) analysis revealed that coordination exerted a large effect on humanitarian leadership ($f^2 = 0.500$), while procurement, operations, and transparency each demonstrated small effects. This disproportionately large f^2 value for coordination suggests that among all logistics factors, coordination capability constitutes the most substantively important predictor of humanitarian leadership effectiveness, extending the theoretical contributions of Balcik et al. (2020) and Maghsoudi and Hristidis (2020). Humanitarian leadership recorded a large effect on resilience performance ($f^2 = 0.408$) and a medium effect on competitive performance ($f^2 = 0.171$). All Q^2 values exceeded zero, confirming adequate predictive relevance for all endogenous constructs Hair et al., (2019).

Discussion

The descriptive statistics revealed that all constructs registered mean scores ranging from 3.65 to 4.02 on a five-point Likert scale. Humanitarian leadership recorded the highest mean ($M = 4.02$, $SD = 0.66$), while procurement registered the lowest ($M = 3.65$, $SD = 0.79$). These findings align with Kovács et al. (2019)

and Anjomshoae et al. (2022), who established that leadership capacity consistently emerges as the most positively evaluated construct within humanitarian supply chain contexts, given its central role in coordinating multi-actor response environments. The moderately high means observed for operations ($M = 3.92$) and coordination ($M = 3.87$) are consistent with Altay et al. (2024), who affirmed that operational efficiency and inter-agency coordination are increasingly recognized as foundational competencies in humanitarian logistics governance.

All four hypotheses relating logistics factors to humanitarian leadership were supported, as presented in Table 5. Operations exerted the strongest direct effect on humanitarian leadership ($\beta = 0.259$, $t = 3.603$, $p < .001$), followed by coordination ($\beta = 0.246$, $t = 3.553$, $p < .001$), procurement ($\beta = 0.196$, $t = 3.133$, $p = .002$), and information transparency ($\beta = 0.151$, $t = 2.400$, $p = .017$). The prominent influence of operations on humanitarian leadership corroborates the findings of Heaslip et al. (2019) and Tatham et al. (2023), who demonstrated that operational capacity,

encompassing last-mile delivery, warehousing efficiency, and field logistics execution, fundamentally shapes the strategic direction and decision-making authority of humanitarian leaders.

The significant effect of coordination on leadership (H1a: $\beta = 0.246$) is consistent with the theoretical position advanced by Altay et al. (2024) and Balcik et al. (2020), who argued that inter-organizational coordination serves as a critical antecedent to effective humanitarian leadership by enabling synchronized resource mobilization, information sharing, and stakeholder alignment during disaster response operations. This finding further reinforces the resource-based view (RBV) postulation that coordination capabilities constitute rare, valuable, and inimitable organizational resources that enhance leadership effectiveness (Barney, 1991, as cited in Dubey et al., 2022).

The positive relationship between procurement and humanitarian leadership (H1b: $\beta = 0.196$) aligns with the empirical evidence of Moshtari et al. (2021) and the systematic review of Behl and Dutta (2019), who established that procurement efficiency, particularly standardization of purchasing procedures and supplier relationship management, directly contributes to the operational authority and credibility of humanitarian leaders in complex supply environments. The comparatively moderate effect size observed here may reflect the contractual and regulatory constraints that

typically limit procurement agility in humanitarian organizations, as documented by Paciarotti and Piotrowicz (2018).

Transparency demonstrated the weakest but still statistically significant direct effect on humanitarian leadership (H1d: $\beta = 0.151$, $p = .017$). This finding is supported by Khan et al. (2023) and Vaillancourt (2022), who established that information transparency in humanitarian supply chains enhances accountability mechanisms, stakeholder trust, and the perceived legitimacy of humanitarian leaders, albeit with a more diffuse influence relative to operational and coordination factors. The relatively smaller effect of transparency may be attributed to institutional information asymmetries and donor-driven reporting obligations that constrain the proactive use of transparency as a leadership tool, as highlighted by Humanitarian Supply Chain Logistics reports (CHORD, 2024).

Both hypotheses relating humanitarian leadership to organizational performance were strongly supported. Humanitarian leadership demonstrated a significantly stronger effect on resilience performance (H2b: $\beta = 0.583$, $t = 9.527$, $p < .001$) compared to competitive performance (H2a: $\beta = 0.360$, $t = 4.329$, $p < .001$), as shown in Table 6. The exceptionally strong path coefficient for resilience performance aligns with Dubey et al. (2022) and the supply chain leadership resilience framework advanced by Ivanov et al. (2022), who established that visionary, adaptive, and values-

driven leadership constitutes the primary determinant of humanitarian organizations' capacity to absorb, adapt to, and recover from logistical disruptions and crises.

The moderately strong effect of humanitarian leadership on competitive performance ($\beta = 0.360$) is consistent with Salem et al. (2022) and Heaslip and Barber (2019), who posited that humanitarian leaders who effectively translate logistics competencies into strategic organizational positioning achieve superior inter-agency competitive advantage, including improved donor relations, preferred vendor status, and enhanced program delivery reputation. However, the relatively lower effect size for competitive performance compared to resilience performance suggests that humanitarian organizations may prioritize operational resilience over competitive positioning, a distinction that reflects the mission-driven, non-profit orientation of the sector, as noted by Altay et al. (2024) and Vaillancourt (2022).

The effect size (f^2) analysis revealed that coordination exerted a large effect on humanitarian leadership ($f^2 = 0.500$), while procurement, operations, and transparency each demonstrated small effects ($f^2 = 0.039, 0.019$, and 0.026 , respectively). The disproportionately large f^2 value for coordination suggests that among all logistics factors, coordination capability constitutes the most substantively important predictor of humanitarian leadership

effectiveness. This finding extends the theoretical contributions of Balcik et al. (2020) and Maghsoudi and Hristidis (2020), who identified coordination as the cornerstone of effective humanitarian supply chain governance, arguing that no single logistics function, not even operational efficiency, can substitute for coordinated multi-actor alignment in disaster response settings.

Humanitarian leadership recorded a large effect on resilience performance ($f^2 = 0.408$) and a medium effect on competitive performance ($f^2 = 0.171$), corroborating the conclusion that leadership is a far more powerful driver of resilience than of competitive outcomes in humanitarian settings. These effect sizes are consistent with those reported by Dubey et al. (2022) and Bag et al. (2021) in comparable PLS-SEM studies of humanitarian supply chains. The blindfolding analysis further confirmed adequate predictive relevance ($Q^2 > 0$) for all endogenous constructs, with humanitarian leadership ($Q^2 = 0.431$), competitive performance ($Q^2 = 0.373$), and resilience performance ($Q^2 = 0.543$) all indicating strong out-of-sample predictive accuracy (Hair et al., 2019). Author's construct, adapted from the cited sources; author's field survey, 2026.

Conclusion

This study concludes that humanitarian logistics capabilities are important determinants of humanitarian leadership and organizational performance. Coordination, procurement,

operations, and transparency collectively contribute to strengthening humanitarian leadership, while leadership significantly improves both competitive and resilience performance. The findings particularly demonstrate that effective logistics capabilities provide the operational foundation through which humanitarian organizations can make timely decisions, coordinate stakeholders, manage resources, and respond effectively to complex and changing humanitarian conditions.

The study further establishes that humanitarian leadership plays a critical role in translating logistics capabilities into performance outcomes, with a stronger influence on resilience performance than competitive performance. This highlights the importance of adaptive and effective leadership in enabling humanitarian organizations to withstand disruptions, recover from operational challenges, and sustain service delivery in conflict-affected environments. The findings therefore reinforce the relevance of the Resource-Based View and Dynamic Capability Theory in explaining how logistics capabilities and leadership contribute to organizational performance.

Going forward, humanitarian organizations, government agencies, and policymakers should treat logistics capability and leadership development as strategic priorities rather than isolated operational functions. Strengthening coordination systems, operational capacity, procurement processes, transparency, and

adaptive leadership can provide a more resilient foundation for humanitarian response. By translating these findings into policy, organizational practice, and capacity-building initiatives, the study can contribute meaningfully to the development of more responsive, accountable, and resilient humanitarian logistics systems in Nigeria and other complex crisis environments.

Recommendations

Humanitarian organizations and relevant federal, state, and local government agencies should strengthen inter-agency coordination within 12 months by establishing or improving joint coordination mechanisms, standardized response protocols, and monthly coordination meetings. Organizations should aim to ensure that at least 90% of major humanitarian logistics activities are covered by documented coordination protocols. In addition, shared digital logistics dashboards should be introduced within 12–18 months to provide real-time information on needs, inventory, procurement, transportation, and distribution, with a target of updating at least 80% of critical logistics information within 24 hours. These measures would improve information sharing, accelerate leadership decisions, and strengthen operational resilience.

Humanitarian organizations should improve procurement efficiency and transparency within 12 months by implementing e-procurement systems, supplier prequalification databases, standardized approval procedures, and electronic

procurement records. At least 80% of routine procurement transactions should be processed through the approved digital system, supported by quarterly procurement audits. Identified deficiencies should be addressed within 30 days. These measures would reduce procurement delays, strengthen accountability, minimize irregularities, improve supplier management, and provide humanitarian leaders with reliable information for effective resource allocation.

Finally, humanitarian organizations should strengthen leadership and logistics capabilities through annual training programmes covering adaptive leadership, coordination, procurement, digital logistics, accountability, and crisis-response management, with a target of at least 20% improvement in post-training competency scores. Within 12 months, organizations should also establish logistics performance scorecards covering coordination, procurement, operations, transparency, leadership, and resilience, with performance reviewed quarterly. These actions would enable organizations to monitor progress, identify operational weaknesses, assign corrective responsibilities, and translate the study findings into measurable improvements in humanitarian logistics performance and resilience.

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