

# Logistic Efficiency and Humanitarian Aid Delivery Among Humanitarian Organizations in Mogadishu, Somalia

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## ABSTRACT

**Purpose:** This study examined the effect of logistics efficiency on humanitarian aid delivery among humanitarian organizations operating in Mogadishu, Somalia.

**Design/Methodology/Approach:** The study adopted a positivist philosophy and a deductive, explanatory cross-sectional research design. A sample of 222 respondents was determined from a target population of 500 employees of humanitarian organizations using Slovin's formula, and data were collected through structured questionnaires (209 distributed, 204 returned, 97.6% response rate) and semi-structured key informant interviews (13 targeted, 10 completed, 76.9% response rate). Quantitative data were analyzed using descriptive statistics, Pearson's correlation, and simple linear regression in IBM SPSS Statistics.

**Findings:** Logistics efficiency and humanitarian aid delivery were both rated highly by respondents (Mean = 4.4302 and Mean = 4.3668, respectively). A very strong, positive, and statistically significant correlation was found between the two variables ( $r = .815$ ,  $p < .001$ ). Regression analysis confirmed that logistics efficiency significantly predicts humanitarian aid delivery ( $\beta = .815$ ,  $t = 20.017$ ,  $p < .001$ ), explaining 66.4% of the variance in humanitarian aid delivery ( $R^2 = .664$ ; Adjusted  $R^2 = .662$ ;  $F = 400.693$ ,  $p < .001$ ), leading to the rejection of the null hypothesis.

**Originality/Value:** This study provides empirical, field-based evidence on the logistics-delivery relationship within humanitarian operations in Mogadishu, an urban, fragile, and conflict-affected setting that remains underrepresented in the humanitarian logistics literature, and integrates the Resource-Based View and Dynamic Capabilities Theory to explain how logistics capabilities translate into humanitarian outcomes under conditions of insecurity and resource constraint.

**Keywords:** Logistics Efficiency; Humanitarian Aid Delivery; Humanitarian Logistics; Resource-Based View; Mogadishu, Somalia.

## INTRODUCTION

The scale and complexity of global humanitarian needs have intensified dramatically, driven by the interconnected forces of armed conflict, climate change, economic instability, disease outbreaks, and mass displacement. This convergence has placed unprecedented strain on aid organizations, with the United Nations Office for the Coordination of Humanitarian Affairs (OCHA, 2025) reporting that approximately 307 million people worldwide now require assistance. The impact is acutely felt across Africa, where East and Southern Africa account for roughly 85 million people in need, while West and Central Africa host an additional 57 million (OCHA, 2025). Conflict remains the primary driver, frequently compounded by climate-induced shocks such as droughts and floods that exacerbate food insecurity, infrastructure breakdown, and displacement—which has reached a record 123 million globally (UNHCR, 2024), alongside nearly 280 million individuals facing acute food insecurity (WFP, 2024) and fragile health systems struggling with recurrent outbreaks (WHO, 2024).

In this volatile environment, humanitarian logistics emerges as a decisive factor in determining the speed and effectiveness of response. Defined as the planning, implementation, and control of the flow of relief goods, information, and services from origin to beneficiaries to alleviate suffering (Van Wassenhove, 2006), humanitarian logistics differs fundamentally from its commercial counterpart by operating under extreme uncertainty, resource scarcity, time pressure, damaged infrastructure, and complex coordination demands (Kovács & Spens, 2007). Its strategic importance is underscored by empirical evidence showing that logistics accounts for approximately 73% of total response expenditures (Anaya-Arenas et al., 2014). Consequently, efficient logistics—defined as the optimal utilization of resources to deliver the right aid, in the right quantity, at the right place and time (Beamon & Balcik, 2008; Tatham & Pettit, 2010)—directly enhances responsiveness, reduces costs, improves inter-agency coordination, and ultimately strengthens humanitarian outcomes, whereas inefficiencies lead to delayed deliveries, inflated operational costs, and worsened human suffering.

Despite significant advancements in the field since the mid-2000s, the humanitarian logistics literature consistently reveals persistent gaps between academic theory and operational practice. Systematic reviews point to fragmented research (Kunz & Reiner, 2012; Altay et al., 2021), a continued lack of empirical, field-based evidence, and limited collaboration between researchers and practitioners (Nurmala et al., 2017; Agarwal et al., 2019; Altay et al., 2021), with a notable disconnect between academic frameworks and the realities of disaster settings (Besiou & Van Wassenhove, 2020). These gaps are especially pronounced in fragile contexts like Somalia, which remains one of the world's most challenging humanitarian environments due to over three decades of persistent crises driven by conflict, climate shocks, political instability, and economic vulnerability (OCHA, 2025). Aid delivery there is heavily reliant on international actors, yet operational structures remain centralized, limiting local ownership, weakening institutional capacity development, and constraining localization efforts due to barriers such as limited technical capacity and resource constraints (Abdi, 2023).

Situated within this complex landscape, Mogadishu serves as the primary coordination hub for humanitarian operations in Somalia, hosting numerous UN agencies and international partners; however, its logistics are severely constrained by pervasive insecurity, weak infrastructure, restricted access to affected populations, funding shortages, and persistent coordination fragmentation among stakeholders (Mbohwa, 2010). While effective coordination is essential for balancing the dual imperatives of saving lives and optimizing limited resources, these persistent operational challenges continue to undermine overall performance. Despite the acknowledged centrality of logistics, there remains a notable scarcity of empirical research specifically examining the relationship between logistics efficiency and humanitarian aid delivery within United Nations operations in Mogadishu. Accordingly, this study aims to address that gap by investigating this relationship, contributing to the broader knowledge base in humanitarian logistics, and offering evidence-based recommendations for improving performance and strengthening aid delivery in fragile, urban, and conflict-affected settings.

## Research Objective and Hypothesis

**Specific Objective:** To determine the effect of logistics efficiency on humanitarian aid delivery among humanitarian organizations in Mogadishu, Somalia.

**Hypothesis (H0):** There is no significant effect of logistics efficiency on humanitarian aid delivery among humanitarian organizations in Mogadishu, Somalia.

## LITERATURE REVIEW

Resource-Based View (RBV) Theory employed this study. The Resource-Based View (RBV) theory was first introduced by Wernerfelt (1984) and further developed by Barney (1991). The theory argues that an organization's performance is largely determined by its internal resources and capabilities. According to Barney (1991), resources create sustained organizational advantage when they are valuable, rare, inimitable, and non-substitutable (VRIN). Rather than focusing solely on external environmental factors, RBV emphasizes that superior organizational outcomes stem from the effective utilization of strategic internal

capabilities. In humanitarian organizations, logistics efficiency represents one of the most critical organizational capabilities. Efficient transportation systems, inventory management, warehousing, procurement processes, information systems, skilled logistics personnel, and inter-agency coordination constitute strategic resources that enable humanitarian organizations to operate effectively under highly uncertain and resource-constrained conditions. When these logistics capabilities are effectively integrated and managed, organizations can minimize operational costs, shorten delivery lead times, optimize resource utilization, and ensure that relief supplies reach beneficiaries in the right quantity, at the right place, and at the right time.

The humanitarian operating environment in Somalia presents significant logistical challenges arising from insecurity, poor infrastructure, climatic shocks, limited accessibility, and funding constraints. Under such conditions, humanitarian organizations possessing stronger logistics capabilities are better positioned to overcome operational barriers and deliver humanitarian assistance efficiently. From the RBV perspective, logistics efficiency therefore represents a valuable organizational capability that directly contributes to improved humanitarian aid delivery. Accordingly, this theory provides the principal theoretical foundation for the present study by explaining how logistics efficiency enhances humanitarian aid delivery among humanitarian organizations operating in Somalia. The study argues that organizations possessing superior logistics capabilities are likely to achieve higher levels of responsiveness, effectiveness, and service delivery than organizations with weaker logistics systems. Abdillahi, M. M. (2026).

Dynamic Capabilities Theory also employed this study. Dynamic Capabilities Theory (DCT) was developed by Teece, Pisano, and Shuen (1997) and later refined by Teece (2007). The theory extends the Resource-Based View by arguing that organizational success depends not only on possessing valuable resources but also on the ability to continually adapt, integrate, and reconfigure those resources in response to rapidly changing environments. Dynamic capabilities enable organizations to sense emerging opportunities and threats, seize opportunities through appropriate strategic actions, and transform organizational resources to maintain effectiveness under conditions of uncertainty. Humanitarian organizations operate in environments characterized by conflict, natural disasters, population displacement, political instability, infrastructure disruption, and rapidly changing humanitarian needs. In countries such as Somalia, logistics systems must continually adapt to road closures, security risks, fluctuating donor funding, unpredictable demand, and evolving emergency situations. Consequently, logistics efficiency cannot remain static but requires organizations to continuously modify transportation routes, warehouse locations, procurement strategies, inventory policies, and coordination mechanisms to sustain effective humanitarian operations.

Dynamic Capabilities Theory therefore explains how humanitarian organizations maintain logistics efficiency despite environmental uncertainty. Organizations capable of sensing operational disruptions, rapidly reallocating logistics resources, adopting innovative technologies, strengthening inter-organizational coordination, and continuously improving logistics processes are more likely to achieve timely, reliable, and effective humanitarian aid delivery. Within the context of this study, Dynamic Capabilities Theory complements the Resource-Based View by explaining the mechanisms through which humanitarian organizations continuously adapt their logistics capabilities to respond effectively to Somalia's complex humanitarian environment. The theory therefore provides additional justification for examining logistics efficiency as a determinant of humanitarian aid delivery under conditions of persistent uncertainty and operational complexity. Abdillahi, M. M. (2025).

## METHODOLOGY

### Research Philosophy

This study adopted a positivist research philosophy, which assumes that organizational phenomena can be objectively measured through empirical observation and statistical analysis. The positivist approach was appropriate because the study examined the effect of logistics efficiency on humanitarian aid delivery using measurable indicators collected from humanitarian organizations in Mogadishu, Somalia. This philosophy enabled the researcher to test hypotheses and establish the statistical significance of the relationship between the study variables.

## Research Approach

The study employed a deductive research approach. The deductive approach was appropriate because the study was guided by existing theories, particularly the Resource-Based View (RBV) and Dynamic Capabilities Theory, from which hypotheses were developed and empirically tested. The approach enabled the researcher to examine whether logistics efficiency significantly affects humanitarian aid delivery among humanitarian organizations.

## Research Design

The study adopted an explanatory cross-sectional research design. The explanatory aspect of the design was appropriate because the study sought to determine the effect of logistics efficiency on humanitarian aid delivery by testing the hypothesized relationship between the independent and dependent variables. The cross-sectional aspect involved collecting data from respondents at a single point in time, enabling the researcher to examine the relationship between logistics efficiency and humanitarian aid delivery without requiring repeated observations. The design was considered appropriate because it facilitated hypothesis testing using quantitative data and inferential statistical techniques, including Pearson's correlation and simple linear regression analysis (Saunders et al., 2019; Creswell & Creswell, 2018).

## Study Area

The study was conducted among humanitarian organizations operating in Mogadishu, Somalia. Mogadishu was selected because it represents the central hub of humanitarian operations in Somalia, hosting numerous international and national humanitarian organizations involved in emergency response, procurement, transportation, warehousing, and distribution of relief assistance. The city's complex humanitarian environment, characterized by security challenges, access constraints, and high demand for humanitarian services, provides an appropriate context for examining the influence of logistics efficiency on humanitarian aid delivery.

## Target Population

The target population comprised 500 employees working in humanitarian organizations operating in Mogadishu, Somalia. The study targeted personnel directly involved in humanitarian logistics and operational activities, including logistics officers, procurement officers, warehouse managers, supply chain officers, operations managers, programme managers, and fleet coordinators. These respondents were selected because of their practical knowledge and experience in humanitarian logistics operations and aid delivery processes.

## Sample Size

The sample size for this study was calculated based on the target population using Slovin's formula, at a 5 percent (0.05) level of significance:

$$n = N / [1 + N(e^2)]$$

Where  $n$  = sample size,  $N$  = target population (500), and  $e$  = margin of error (0.05).

$$n = 500 / [1 + 500(0.05^2)] = 500 / [1 + 500(0.0025)] = 500 / [1 + 1.25] = 500 / 2.25 = 222 \text{ respondents}$$

Therefore, the study selected a sample size of 222 respondents.

## Sampling Technique

The study employed a stratified sampling technique to ensure adequate representation of different categories of humanitarian organizations. The population was categorized into relevant operational groups, including international NGOs, national NGOs, and other humanitarian actors. Simple random sampling was then applied

within each category to select respondents, reducing selection bias and improving the representativeness of the sample.

## Data Analysis

Data analysis was conducted using IBM SPSS Statistics. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize respondents' demographic characteristics and describe the study variables.

Pearson's Product-Moment Correlation analysis was conducted to examine the strength and direction of the association between logistics efficiency and humanitarian aid delivery among humanitarian organizations in Mogadishu, Somalia. Pearson correlation was considered appropriate because the study variables were measured using composite scores derived from multiple Likert-scale items.

Furthermore, simple linear regression analysis was employed to determine the effect of logistics efficiency on humanitarian aid delivery. The regression analysis examined the extent to which logistics efficiency predicts variations in humanitarian aid delivery and tested the statistical significance of the proposed effect at a 5% significance level ( $p < 0.05$ ).

The regression model was specified as:

$$\text{HAD} = \beta_0 + \beta_1 \cdot \text{LE} + \varepsilon$$

Where: HAD = Humanitarian Aid Delivery; LE = Logistics Efficiency;  $\beta_0$  = constant (intercept);  $\beta_1$  = regression coefficient showing the effect of logistics efficiency on humanitarian aid delivery;  $\varepsilon$  = error term.

Before conducting inferential analysis, the assumptions of linear regression, including linearity, normality, homoscedasticity, and independence of errors, were assessed to ensure the robustness of the findings.

## RESULTS

### Response Rate

Table 1 presents the response rate for both the quantitative and qualitative components of the study.

| Instrument    | Targeted | Actual | Response Rate |
|---------------|----------|--------|---------------|
| Questionnaire | 209      | 204    | 97.6%         |
| Interviews    | 13       | 10     | 76.9%         |
| Total         | 222      | 214    | 96.4%         |

Source: Field Data (2026).

The data collection process achieved a very high response rate, which enhanced the reliability and representativeness of the collected data. As presented in Table 1, 204 out of 209 distributed questionnaires were successfully completed and returned for the quantitative component, representing a 97.6% response rate. This high level of participation minimized concerns regarding non-response bias and provided a strong foundation for statistical analysis (Smith, 2018). For the qualitative component, 10 out of 13 purposively selected key informants participated in the interviews, resulting in a 76.9% response rate. This response rate was considered satisfactory for qualitative inquiry, as it enabled the researcher to obtain relevant and in-depth

insights from participants with practical knowledge of humanitarian operations, thereby enhancing the credibility and richness of the qualitative data (Palinkas et al., 2015). Overall, the high level of participation reflected effective data collection procedures and strong engagement from respondents, providing a reliable basis for examining the effect of logistics efficiency on humanitarian aid delivery among humanitarian organizations in Mogadishu, Somalia.

### Demographic Characteristics of Respondents

Table 2 presents the demographic characteristics of the 205 respondents who took part in the quantitative survey.

| Variable        | Category           | Frequency | Percentage |
|-----------------|--------------------|-----------|------------|
| Gender          | Male               | 143       | 69.8%      |
|                 | Female             | 62        | 30.2%      |
| Age             | 18–24 years        | 40        | 19.5%      |
|                 | 25–31 years        | 84        | 41.0%      |
|                 | 32–38 years        | 47        | 22.9%      |
|                 | 39–45 years        | 27        | 13.2%      |
|                 | 46 years and above | 7         | 3.4%       |
| Education Level | Diploma            | 5         | 2.4%       |
|                 | Bachelor's degree  | 32        | 15.6%      |
|                 | Master's degree    | 73        | 35.6%      |
|                 | PhD                | 50        | 24.4%      |
|                 | Other              | 45        | 22.0%      |
| Work Experience | 1–3 years          | 44        | 21.5%      |
|                 | 4–6 years          | 82        | 40.0%      |
|                 | 7–9 years          | 48        | 23.4%      |
|                 | 10–12 years        | 24        | 11.7%      |
|                 | 13 years and above | 7         | 3.4%       |

| Variable       | Category  | Frequency | Percentage |
|----------------|-----------|-----------|------------|
| Marital Status | Single    | 51        | 24.9%      |
|                | Married   | 124       | 60.5%      |
|                | Separated | 23        | 11.2%      |
|                | Widowed   | 7         | 3.4%       |

Source: Field Data (2026).

The demographic profile in Table 2 shows that the sample was predominantly male (69.8%, n=143) compared to female respondents (30.2%, n=62), reflecting the gender composition typical of logistics and operations functions within humanitarian organizations in the region. Most respondents were aged between 25 and 31 years (41.0%, n=84), indicating a relatively young and experienced logistics workforce. The sample was also highly educated, with the majority holding a master's degree (35.6%, n=73) or a PhD (24.4%, n=50), suggesting that respondents were well placed to provide informed assessments of logistics efficiency and humanitarian aid delivery within their organizations. In terms of work experience, most respondents had between four and six years of experience (40.0%, n=82), while the majority were married (60.5%, n=124). Overall, the demographic profile indicates that the data were obtained from an experienced and professionally qualified group of humanitarian logistics practitioners, which strengthens confidence in the validity of their responses.

### Descriptive Analysis of Logistics Efficiency

Table 3 presents the descriptive statistics of logistics efficiency among humanitarian organizations in Mogadishu, Somalia.

| Code | Statement                                                                                                        | N   | Mean | Std. Dev. |
|------|------------------------------------------------------------------------------------------------------------------|-----|------|-----------|
| LOG1 | The organization develops logistics plans to support humanitarian response operations.                           | 205 | 4.50 | .583      |
| LOG2 | The organization's logistics planning supports timely availability of humanitarian supplies.                     | 205 | 4.46 | .564      |
| LOG3 | The organization has reliable transportation systems for delivering humanitarian supplies to targeted locations. | 205 | 4.49 | .654      |
| LOG4 | The organization's transportation processes minimize delays in the movement of humanitarian supplies.            | 205 | 4.56 | .579      |
| LOG5 | The organization maintains accurate records of humanitarian supplies.                                            | 205 | 4.47 | .704      |

|       |                                                                                                                   |     |        |        |
|-------|-------------------------------------------------------------------------------------------------------------------|-----|--------|--------|
| LOG6  | The organization's warehouse operations ensure proper storage of humanitarian supplies.                           | 205 | 4.41   | .733   |
| LOG7  | Coordination between procurement, warehouse, and transportation functions improves logistics efficiency.          | 205 | 4.57   | .595   |
| LOG8  | The organization's logistics information systems provide accurate information for operational decision-making.    | 205 | 4.26   | .816   |
| LOG9  | The organization adapts logistics operations effectively when facing security and access challenges in Mogadishu. | 205 | 4.21   | .880   |
| LOG10 | The organization effectively manages logistics resources required for humanitarian operations.                    | 205 | 4.36   | .705   |
|       | Average Mean                                                                                                      |     | 4.4302 | .37241 |

Source: Field Data (2026).

LOG1 ("The organization develops logistics plans to support humanitarian response operations"). Respondents strongly agreed that their organizations develop logistics plans to support humanitarian response operations, as reflected by the high mean score of 4.50 (SD = 0.583). This finding indicates that logistics planning is well institutionalized within humanitarian organizations operating in Mogadishu and is widely recognized as a fundamental component of humanitarian operations. Effective logistics planning enables organizations to anticipate resource requirements, coordinate supply chain activities, and allocate resources efficiently during emergency response. From the perspective of the Resource-Based View, logistics planning constitutes a valuable organizational capability that enhances operational efficiency and strengthens organizational performance. The relatively low standard deviation indicates a high level of consensus among respondents, suggesting that logistics planning practices are consistently implemented across humanitarian organizations despite operating in a complex and volatile environment.

LOG2 ("The organization's logistics planning supports timely availability of humanitarian supplies"). Respondents expressed strong agreement that logistics planning contributes to the timely availability of humanitarian supplies, as indicated by the mean score of 4.46 (SD = 0.564). Timely availability of relief commodities is one of the primary indicators of effective humanitarian logistics because it directly influences the speed and effectiveness of emergency response. The finding suggests that humanitarian organizations have developed effective planning mechanisms that facilitate the synchronization of procurement, warehousing, transportation, and distribution activities. Consistent with the Resource-Based View, effective logistics planning represents a strategic organizational capability that enables efficient utilization of internal resources, thereby improving operational responsiveness and humanitarian performance.

LOG3 ("The organization has reliable transportation systems for delivering humanitarian supplies to targeted locations"). The mean score of 4.49 (SD = 0.654) indicates strong agreement that humanitarian organizations possess reliable transportation systems for delivering humanitarian assistance to intended beneficiaries. Transportation reliability is a critical organizational capability because it directly determines the continuity, speed, and accessibility of humanitarian operations, particularly in fragile environments characterized by insecurity and inadequate infrastructure. According to the Resource-Based View, transportation systems



represent valuable organizational resources that strengthen logistics performance and improve organizational effectiveness.

LOG4 ("The organization's transportation processes minimize delays in the movement of humanitarian supplies"). This statement recorded one of the highest mean scores ( $M = 4.56$ ,  $SD = 0.579$ ), indicating that respondents strongly agreed that transportation processes effectively minimize delays in the movement of humanitarian supplies. Efficient transportation processes are essential for ensuring rapid emergency response and uninterrupted delivery of humanitarian assistance. Because humanitarian organizations in Somalia operate under rapidly changing security and accessibility conditions, maintaining efficient transportation processes also reflects the adaptive capabilities emphasized by Dynamic Capabilities Theory, whereby organizations continually adjust logistics operations in response to environmental uncertainty.

LOG5 ("The organization maintains accurate records of humanitarian supplies"). Respondents strongly agreed that their organizations maintain accurate records of humanitarian supplies, as reflected by the mean score of 4.47 ( $SD = 0.704$ ). Accurate inventory information enhances supply chain visibility, minimizes stock discrepancies, improves accountability, and supports evidence-based operational decision-making. Within the Resource-Based View, information generated through inventory management constitutes an important intangible organizational resource that facilitates efficient coordination and resource optimization.

LOG6 ("The organization's warehouse operations ensure proper storage of humanitarian supplies"). The mean score of 4.41 ( $SD = 0.733$ ) indicates that respondents perceived warehouse operations to be highly effective in ensuring the safe storage and preservation of humanitarian supplies. Effective warehouse management safeguards relief commodities against deterioration, minimizes operational losses, and improves organizational preparedness for emergency response. From the perspective of the Resource-Based View, warehousing infrastructure and warehouse management competencies represent strategic organizational resources that contribute significantly to logistics efficiency and humanitarian performance. Although respondents generally expressed strong agreement, the slightly higher standard deviation suggests modest differences in warehouse management effectiveness across organizations.

LOG7 ("Coordination between procurement, warehouse, and transportation functions improves logistics efficiency"). This item achieved the highest mean score ( $M = 4.57$ ,  $SD = 0.595$ ), demonstrating respondents' strong recognition that coordination among logistics functions significantly enhances logistics efficiency. Effective coordination facilitates information sharing, improves operational integration, minimizes duplication of effort, and strengthens organizational decision-making. According to the Resource-Based View, cross-functional coordination represents an important organizational capability that enables efficient integration and utilization of strategic resources, while Dynamic Capabilities Theory suggests that organizations capable of continuously strengthening coordination mechanisms are better positioned to respond effectively to rapidly changing humanitarian conditions.

LOG8 ("The organization's logistics information systems provide accurate information for operational decision-making"). Respondents agreed that logistics information systems provide accurate information for operational decision-making, as reflected by the mean score of 4.26 ( $SD = 0.816$ ). Although respondents generally perceived logistics information systems positively, this item recorded one of the comparatively lower mean scores and greater variation, suggesting differences in technological capacity across organizations. The relatively larger standard deviation indicates that some organizations may still experience limitations in technological infrastructure and information management capabilities.

LOG9 ("The organization adapts logistics operations effectively when facing security and access challenges in Mogadishu"). This statement recorded the lowest mean score ( $M = 4.21$ ,  $SD = 0.880$ ), although respondents still expressed overall agreement. The comparatively lower rating suggests that adapting logistics operations to persistent security threats, infrastructure limitations, and restricted humanitarian access remains one of the greatest operational challenges facing humanitarian organizations in Somalia. This finding is most appropriately explained by Dynamic Capabilities Theory, which argues that organizations operating in highly uncertain environments must continually sense emerging threats, reconfigure organizational resources, and modify operational processes to sustain performance. The relatively higher standard deviation further indicates

variation in organizations' adaptive capacity, implying that some humanitarian organizations possess stronger capabilities than others in responding to operational disruptions.

LOG10 ("The organization effectively manages logistics resources required for humanitarian operations"). Respondents agreed that humanitarian organizations effectively manage logistics resources required for humanitarian operations, as indicated by the mean score of 4.36 (SD = 0.705). Effective management of transportation assets, warehouse facilities, inventory, financial resources, and logistics personnel enables organizations to optimize operational efficiency while minimizing unnecessary costs. According to the Resource-Based View, effective resource management enhances organizational capability by ensuring that strategic resources are utilized efficiently to achieve superior humanitarian performance.

Overall, logistics efficiency was rated highly across all ten items (Average Mean = 4.4302, SD = .37241), confirming that humanitarian organizations in Mogadishu generally possess strong logistics capabilities. Coordination between procurement, warehouse, and transportation functions (LOG7) and minimizing delays in transportation (LOG4) emerged as the strongest capabilities, whereas adaptive capacity under conditions of insecurity and restricted access (LOG9) and the accuracy of logistics information systems (LOG8) emerged as comparative weaknesses, consistent with the environmental volatility described under Dynamic Capabilities Theory.

### Descriptive Analysis of Humanitarian Aid Delivery

Table 4 presents the descriptive statistics of humanitarian aid delivery among humanitarian organizations in Mogadishu, Somalia.

| Code | Statement                                                                                               | N   | Mean | Std. Dev. |
|------|---------------------------------------------------------------------------------------------------------|-----|------|-----------|
| HAD1 | The organization delivers humanitarian assistance within the required response timeframe.               | 205 | 4.31 | .856      |
| HAD2 | The organization responds quickly when humanitarian needs are identified.                               | 205 | 4.33 | .718      |
| HAD3 | The organization delivers humanitarian assistance according to assessed beneficiary needs.              | 205 | 4.32 | .837      |
| HAD4 | The organization ensures that vulnerable populations have access to humanitarian assistance.            | 205 | 4.30 | .789      |
| HAD5 | The organization provides humanitarian assistance according to required quantity and quality standards. | 205 | 4.35 | .807      |
| HAD6 | The organization maintains reliable delivery of humanitarian assistance during emergency situations.    | 205 | 4.34 | .748      |

|       |                                                                                                     |     |        |        |
|-------|-----------------------------------------------------------------------------------------------------|-----|--------|--------|
| HAD7  | Coordination with humanitarian partners improves the effectiveness of aid delivery.                 | 205 | 4.30   | .717   |
| HAD8  | The organization implements transparent humanitarian aid distribution processes.                    | 205 | 4.39   | .782   |
| HAD9  | The organization monitors humanitarian aid delivery performance to improve future responses.        | 205 | 4.54   | .581   |
| HAD10 | The organization uses beneficiary feedback to improve the effectiveness of humanitarian assistance. | 205 | 4.50   | .639   |
|       | Average Mean                                                                                        |     | 4.3668 | .46492 |

Source: Field Data (2026).

Table 4 shows that humanitarian aid delivery was also rated highly across all ten items (Average Mean = 4.3668, SD = .46492), indicating that humanitarian organizations in Mogadishu generally deliver assistance effectively despite the constraints of the operating environment. HAD9 ("the organization monitors humanitarian aid delivery performance to improve future responses") recorded the highest mean score (M = 4.54, SD = 0.581), followed by HAD10 ("the organization uses beneficiary feedback to improve the effectiveness of humanitarian assistance", M = 4.50, SD = 0.639). These results suggest that monitoring and beneficiary feedback mechanisms are comparatively well established, enabling organizations to continuously learn from and adjust their operations, a capability consistent with the sensing and reconfiguration processes emphasized by Dynamic Capabilities Theory.

By contrast, HAD4 ("the organization ensures that vulnerable populations have access to humanitarian assistance") and HAD7 ("coordination with humanitarian partners improves the effectiveness of aid delivery") recorded the lowest, though still high, mean scores (M = 4.30 each), suggesting that ensuring equitable access for vulnerable populations and strengthening inter-agency coordination remain comparatively more difficult to achieve than internal delivery processes. This is consistent with the Resource-Based View, which holds that the capacity to reach the most vulnerable and coordinate across multiple actors depends on organizational resources, such as access negotiation capacity and partnership infrastructure, that are harder to build and sustain than internal operational routines.

HAD1, HAD3, and HAD6, which concern response timeframes, needs-based delivery, and reliability during emergencies, recorded closely clustered mean scores between 4.31 and 4.34, indicating fairly consistent performance across the core dimensions of humanitarian aid delivery. Taken together, these results indicate that while humanitarian organizations in Mogadishu perform strongly on internally driven processes such as monitoring and feedback utilization, external-facing dimensions of delivery that depend on inter-organizational coordination and access to vulnerable populations remain comparatively more constrained by the volatile operating environment.

## Relationship between Logistics Efficiency and Humanitarian Aid Delivery

### Correlation

Table 5 presents the Pearson correlation results examining the strength and direction of the relationship between logistics efficiency and humanitarian aid delivery.

| Variable                  |                     | Logistics Efficiency | Humanitarian Aid Delivery |
|---------------------------|---------------------|----------------------|---------------------------|
| Logistics Efficiency      | Pearson Correlation | 1                    | .815**                    |
|                           | Sig. (2-tailed)     |                      | <.001                     |
|                           | N                   | 205                  | 205                       |
| Humanitarian Aid Delivery | Pearson Correlation | .815**               | 1                         |
|                           | Sig. (2-tailed)     | <.001                |                           |
|                           | N                   | 205                  | 205                       |

\*\*Correlation is significant at the 0.01 level (2-tailed). Source: Field Data (2026).

As presented in Table 5, there is a very strong, positive, and statistically significant correlation between logistics efficiency and humanitarian aid delivery ( $r = .815$ ,  $p < .001$ ,  $n = 205$ ). This indicates that as humanitarian organizations improve their logistics efficiency, the effectiveness of their humanitarian aid delivery increases correspondingly. Because the correlation coefficient exceeds the conventional 0.80 threshold for a very strong relationship and the significance value is well below the 0.01 alpha level, the finding provides preliminary support for rejecting the null hypothesis that there is no significant effect of logistics efficiency on humanitarian aid delivery. This result is consistent with the Resource-Based View, which holds that valuable and well-managed logistics capabilities translate directly into superior organizational performance (Barney, 1991), with prior humanitarian logistics literature emphasizing logistics as a central determinant of humanitarian effectiveness (Beamon & Balcik, 2008; Tatham & Pettit, 2010)

### Regression Analysis

Table 6 presents the results of the simple linear regression analysis conducted to determine the effect of logistics efficiency on humanitarian aid delivery.

### Model Summary

| Model | R     | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------|----------|-------------------|----------------------------|
| 1     | .815a | .664     | .662              | .27026                     |

Predictors: (Constant), logistics efficiency.

### ANOVA

| Model |            | Sum of Squares | Df | Mean Square | F       | Sig.  |
|-------|------------|----------------|----|-------------|---------|-------|
| 1     | Regression | 29.267         | 1  | 29.267      | 400.693 | <.001 |

|  |          |        |     |      |  |  |
|--|----------|--------|-----|------|--|--|
|  | Residual | 14.827 | 203 | .073 |  |  |
|  | Total    | 44.094 | 204 |      |  |  |

Dependent Variable: Humanitarian aid delivery. b. Predictors: (Constant), logistics efficiency.

### Coefficients

| Model |                      | B     | Std. Error | Beta | t      | Sig.  |
|-------|----------------------|-------|------------|------|--------|-------|
| 1     | (Constant)           | -.139 | .226       |      | -.616  | .539  |
|       | Logistics Efficiency | 1.017 | .051       | .815 | 20.017 | <.001 |

Dependent Variable: Humanitarian aid delivery.

The regression results in Table 6 confirm that logistics efficiency significantly predicts humanitarian aid delivery among humanitarian organizations in Mogadishu, Somalia. The overall model was statistically significant ( $F(1, 203) = 400.693, p < .001$ ), indicating that the regression model fits the data well. Logistics efficiency accounted for 66.4% of the variance in humanitarian aid delivery ( $R^2 = .664$ ), and 66.2% after adjusting for sample size (Adjusted  $R^2 = .662$ ), leaving approximately 33.8% of the variance explained by factors outside the model. The unstandardized coefficient ( $B = 1.017, SE = .051$ ) indicates that for every one-unit increase in logistics efficiency, humanitarian aid delivery increases by 1.017 units, holding other factors constant. The standardized coefficient ( $Beta = .815, t = 20.017, p < .001$ ) confirms that this effect is both substantively large and highly statistically significant, while the non-significant constant ( $B = -.139, t = -.616, p = .539$ ) indicates that humanitarian aid delivery does not differ meaningfully from zero in the absence of logistics efficiency, lending further support to the explanatory strength of the model.

On the basis of these results, the null hypothesis, which stated that there is no significant effect of logistics efficiency on humanitarian aid delivery among humanitarian organizations in Mogadishu, Somalia, is rejected. The findings confirm that logistics efficiency is a strong and statistically significant predictor of humanitarian aid delivery. Consistent with the Resource-Based View, this indicates that logistics capabilities function as valuable strategic resources that translate directly into improved humanitarian performance (Barney, 1991; Wernerfelt, 1984). At the same time, the unexplained variance of 33.8% suggests that other factors, most plausibly funding availability, security conditions, and inter-agency coordination structures beyond the scope of this model, also shape humanitarian aid delivery outcomes, an interpretation consistent with Dynamic Capabilities Theory's emphasis on the broader environmental and organizational conditions that shape performance (Teece, 2007).

## DISCUSSION

The findings of this study reject the null hypothesis and establish a very strong, positive, and statistically significant effect of logistics efficiency on humanitarian aid delivery among humanitarian organizations in Mogadishu, Somalia ( $r = .815, p < .001; \beta = .815, \text{Adjusted } R^2 = .662, p < .001$ ). This result corroborates the Resource-Based View, which holds that valuable, well-managed internal resources and capabilities are a primary source of superior organizational performance (Barney, 1991; Wernerfelt, 1984); it is consistent with the broader humanitarian logistics literature identifying logistics as one of the most resource-intensive and

outcome-determining functions of humanitarian response (Anaya-Arenas et al., 2014; Beamon & Balcik, 2008; Tatham & Pettit, 2010; Van Wassenhove, 2006); and it reinforces prior arguments that logistics constraints in fragile, insecure, and infrastructure-poor settings directly undermine humanitarian effectiveness (Kovács & Spens, 2007; Mbohwa, 2010).

At the descriptive level, the item-level results reveal an important pattern that mirrors Dynamic Capabilities Theory's distinction between possessing resources and being able to adapt them under uncertainty. Organizations rated themselves highly on relatively stable, internally controlled logistics capabilities, such as logistics planning (LOG1, LOG2), transportation reliability (LOG3, LOG4), and cross-functional coordination (LOG7), all of which recorded means above 4.45. By contrast, the capability to adapt logistics operations to Mogadishu's security and access constraints (LOG9) and the reliability of logistics information systems (LOG8) recorded the comparatively lowest, though still generally positive, scores. This pattern suggests that while humanitarian organizations in Mogadishu have built strong routine logistics capabilities, the more dynamic, adaptive capabilities required to respond to a volatile and insecure operating environment remain comparatively less developed, a finding directly explained by Dynamic Capabilities Theory's emphasis on sensing, seizing, and reconfiguring resources under uncertainty (Teece, 2007; Teece, Pisano & Shuen, 1997).

A parallel pattern is evident on the humanitarian aid delivery side. Internally driven processes, such as monitoring aid delivery performance (HAD9) and using beneficiary feedback (HAD10), were rated most favourably, whereas externally dependent dimensions, ensuring access for vulnerable populations (HAD4) and inter-agency coordination effectiveness (HAD7), were rated comparatively lower. This is consistent with the study's introductory observation that humanitarian coordination in Mogadishu remains fragmented relative to the more structured coordination mechanisms found in commercial supply chains (Mbohwa, 2010), and it supports the view that persistent gaps between academic logistics frameworks and field-level operational realities are most pronounced in precisely these externally dependent, coordination-heavy functions (Besiou & Van Wassenhove, 2020; Kunz & Reiner, 2012).

Taken together, the strength of the logistics efficiency-humanitarian aid delivery relationship found in this study, combined with the descriptive pattern of stronger internal capabilities and weaker adaptive and coordination capabilities, suggests that improving humanitarian aid delivery in Mogadishu depends less on introducing entirely new logistics functions and more on strengthening organizations' capacity to adapt existing logistics resources to insecurity, restricted access, and inter-agency coordination demands. This finding extends the fragmented humanitarian logistics literature (Altay et al., 2021; Nurmala et al., 2017) by providing field-based, quantitative evidence from an urban, fragile, and conflict-affected humanitarian hub that has received limited prior empirical attention.

### **Limitations of the Study**

This study has several limitations that should be considered when interpreting its findings. First, the cross-sectional design captured logistics efficiency and humanitarian aid delivery at a single point in time, which allows for the identification of a strong statistical association but does not permit firm causal conclusions about the direction of the relationship between the two variables. Second, both constructs were measured using respondents' self-reported perceptions on Likert-scale items, which may be subject to social desirability bias, particularly given that respondents were reporting on the performance of their own organizations. Third, the study was confined to humanitarian organizations operating in Mogadishu, which limits the generalizability of the findings to other Somali regions and to rural or less accessible humanitarian operating contexts. Fourth, although ten key informant interviews were conducted, achieving a 76.9% response rate, the qualitative thematic findings from these interviews were not incorporated into the present analysis; their inclusion would likely have enriched the interpretation of the mechanisms underlying the statistical relationship reported here. Finally, the study did not report formal validity and reliability statistics, such as Cronbach's alpha coefficients, for the logistics efficiency and humanitarian aid delivery scales, and future replications of this instrument should incorporate and report such measures.

## Theoretical Implications

Theoretically, the findings extend the Resource-Based View by demonstrating that logistics efficiency functions as a valuable, performance-enhancing organizational capability even within highly constrained, non-commercial, humanitarian operating environments, not only within the competitive commercial settings in which RBV was originally developed (Barney, 1991; Wernerfelt, 1984). At the same time, the comparatively weaker performance on adaptive, security-responsive logistics capabilities (LOG9) indicates that RBV alone is insufficient to explain sustained humanitarian logistics performance in volatile settings such as Mogadishu. Dynamic Capabilities Theory therefore provides a necessary complementary lens, suggesting that humanitarian organizations that invest not only in possessing logistics resources but in the capacity to sense disruptions and reconfigure those resources are likely to achieve more consistent humanitarian aid delivery outcomes over time (Teece, 2007). Future theoretical work in humanitarian logistics may therefore benefit from explicitly integrating RBV's resource-based explanation of performance with DCT's adaptive-capacity explanation of resilience under uncertainty.

## CONCLUSION

This study set out to examine the effect of logistics efficiency on humanitarian aid delivery among humanitarian organizations in Mogadishu, Somalia. The findings demonstrate that logistics efficiency is a strong, positive, and statistically significant predictor of humanitarian aid delivery, accounting for approximately two-thirds of the variance in delivery outcomes. Humanitarian organizations that plan effectively, maintain reliable transportation and warehousing systems, coordinate closely across logistics functions, and manage logistics resources efficiently are substantially better positioned to deliver timely, needs-based, and reliable humanitarian assistance. At the same time, the comparatively weaker performance on adaptive capacity under insecurity and on inter-agency coordination indicates that logistics efficiency in Mogadishu remains constrained by the volatility of the operating environment. Strengthening humanitarian aid delivery in Mogadishu therefore requires sustained investment not only in core logistics infrastructure and planning systems but also in the adaptive, coordination-oriented capabilities that allow organizations to respond effectively to Somalia's persistently fragile and insecure humanitarian context.

## RECOMMENDATIONS

For humanitarian organizations operating in Mogadishu, there is a need to strengthen the adaptive dimension of logistics operations, which recorded the lowest performance in this study, by developing contingency plans, alternative transport routes, and rapid-response protocols that allow logistics teams to adjust quickly to security incidents and access restrictions.

For logistics and information management units within humanitarian organizations, there is a need to invest in upgrading logistics information systems and digital tracking tools, given that this item recorded a comparatively lower mean score and greater variation across organizations, in order to improve the accuracy and timeliness of information available for operational decision-making.

For humanitarian coordination bodies and cluster leads operating in Mogadishu, there is a need to strengthen formal inter-agency coordination mechanisms, given that coordination with partners recorded a comparatively lower score on the humanitarian aid delivery construct, so as to reduce duplication, improve resource sharing, and enhance the collective effectiveness of humanitarian response.

For donors and international partners supporting humanitarian operations in Somalia, there is a need to prioritize funding for logistics capacity building, including transportation infrastructure, warehousing, and staff training, recognizing logistics efficiency as a strategic determinant, rather than a peripheral cost, of effective humanitarian aid delivery. For policymakers and humanitarian coordination structures at the national level, there is a need to support the development of standardized access negotiation and security management protocols that enable humanitarian organizations to reach vulnerable populations more consistently, given that ensuring access for vulnerable populations recorded a comparatively lower score on the humanitarian aid delivery construct.

## Contribution to Knowledge

This study contributes empirical, field-based evidence to the humanitarian logistics literature by quantifying, for the first time in the Mogadishu context, the strength of the relationship between logistics efficiency and humanitarian aid delivery among humanitarian organizations. In doing so, it responds directly to prior calls for more empirical, field-based humanitarian logistics research undertaken in close collaboration with practitioners (Nurmala et al., 2017; Agarwal et al., 2019; Altay et al., 2021), and it addresses the broader concern that academic humanitarian logistics frameworks are often disconnected from field-level operational realities in fragile and conflict-affected settings (Besiou & Van Wassenhove, 2020). Theoretically, the study contributes by jointly applying the Resource-Based View and Dynamic Capabilities Theory to explain not only that logistics efficiency predicts humanitarian aid delivery, but also why certain logistics capabilities, particularly those requiring adaptation to insecurity and coordination across agencies, remain comparatively underdeveloped in urban, fragile, and conflict-affected humanitarian hubs such as Mogadishu.

## Areas for Further Research

- A longitudinal study tracking logistics efficiency and humanitarian aid delivery among humanitarian organizations in Mogadishu over successive years, to determine whether investments in adaptive logistics capabilities produce measurable improvements in humanitarian outcomes over time.
- A thematic qualitative analysis of the key informant interviews already collected as part of this study, to explore in greater depth the operational mechanisms, particularly around security adaptation and inter-agency coordination, through which logistics capabilities translate, or fail to translate, into effective humanitarian aid delivery.
- A comparative study examining logistics efficiency and humanitarian aid delivery across multiple Somali regions beyond Mogadishu, including more remote and less accessible operational areas, to determine whether the relationship identified in this study holds across differing levels of insecurity and infrastructure development.
- A study examining the moderating or mediating role of factors such as donor funding stability, security conditions, and formal inter-agency coordination structures in the relationship between logistics efficiency and humanitarian aid delivery, to better explain the unexplained variance identified in the regression model of this study.

## Declaration of Competing Interests

The author(s) declare no competing interests. No financial or personal relationships have influenced the research, analysis, or interpretation of the findings presented in this manuscript.

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