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Linking Geopolitical risk, performance, and resilience in Humanitarian Supply Chains: Lessons from Mauritania's Mbera Refugee Camp.

Auteur 1 : EIDA Mohamed Lemin.
Auteur 2 : DOUARI Aziz.

EIDA Mohamed Lemin
PhD Student in Management sciences
Université Hassan I de Settat, Faculté de Economie et gestion Settat

DOUARI AZIZ
Associate Professor
Université Hassan I de Settat, Faculté de Economie et gestion Settat

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Résumé

Cette étude examine comment les tensions géopolitiques influencent la performance et la résilience des chaînes d'approvisionnement humanitaires, en prenant pour exemple le camp de réfugiés de Mbera en Mauritanie (2018-2014). Si la performance humanitaire est généralement évaluée à l'aide d'indicateurs tels que la ponctualité des livraisons, les ruptures de stock, les délais d'approvisionnement, la couverture et les besoins non satisfaits, ces résultats ne peuvent s'expliquer uniquement par la logistique. L'analyse démontre que les perturbations politiques sont des facteurs déterminants de la sous-performance. La planification fondée sur des prévisions a systématiquement surestimé la capacité de livraison, les résultats réels divergeant fortement lors des années de forte instabilité géopolitique. Les pratiques de résilience, telles que le prépositionnement, le réacheminement et l'adaptation des calendriers, ont amélioré certains résultats, mais ont été systématiquement compromises lorsque les conditions politiques ont restreint l'accès. Les conditionnalités des donateurs ont accentué cette relation, limitant l'efficacité de mesures de résilience pourtant viables, comme l'approvisionnement local ou l'aide en espèces. En opérationnalisant la géopolitique comme une variable mesurable grâce à un indice composite de risque géopolitique, cette recherche montre que la sous-performance humanitaire est avant tout d'ordre politique, et non logistique.

Mots-clés : Chaîne d'approvisionnement humanitaire ; performance ; géopolitique ; restrictions des donateurs ; camps de réfugiés ; Mauritanie ; Sahel ; PAM ; HCR

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Abstract

This study investigates how geopolitical stressors shape the performance and resilience of humanitarian supply chains, using the Mbera refugee camp in Mauritania as a focal case (2018-2014). While performance in humanitarian contexts is typically assessed through indicators such as delivery timeliness, stockouts, lead time, coverage, and unmet needs, these outcomes cannot be explained solely by logistics. The analysis demonstrates that political disruptions are decisive drivers of underperformance. Forecast-based planning systematically overestimated delivery capacity, with actual results diverging sharply in years of heightened geopolitical instability. Resilience practices, including prepositioning, rerouting and adaptive calendars, improved some outcomes but were consistently curtailed when political conditions restricted access. Donor conditionalities further moderated this relationship, limiting the effectiveness of otherwise viable resilience measures such as local procurement or cash assistance. By operationalizing geopolitics as a measurable variable through composite Geopolitical Risk Index, this research shows that humanitarian underperformance is primarily political before it is logistical. The findings highlighted the need to embed geopolitical indicators into forecasting, policy, and operational design, offering both theoretical contributions to humanitarian supply chain literature and practical guidance for agencies and donors operating in fragile contexts.

Keywords: Humanitarian supply chain; performance; geopolitics; donor restrictions, refugee camps, Mauritania, Sahel; WFP; UNHCR

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Introduction

Effective humanitarian response depends on reliable and equitable delivery under political uncertainty and other volatility nature that are unpredictable. Performance in this context then is not only speed or cost, it is humanitarian acceptance that sustains access and legitimacy in the unstable settings (Kovács & Spens, 2011; Dubey et al., 2020). In the Sahel disruptions can be primarily geopolitical, stemming from political environments that systematically condition access rather than logistics alone (Heaslip et al., 2018; Altay & Narayanan, 2022). This create a clear gap that can be said is that resilience and performance are often analyzed apart from politics therefore addressing this gap, the first research question that was asked is:

RQ1: How do geopolitical stressors affect humanitarian supply chain performance?

The surge of displacement in the Sahel over the past decade highlights the urgency of this issue. Refugee inflows into Mauritania's Hodh Chargui region alone where the Mbera camp resides, estimated to be tens of thousands of Malians, it intensified also after 2018, coinciding with recurrent coups and cross-border armed violence (UNHCR, 2023; ACAPS, 2022). Forecast-based planning consistently underestimated these influxes, reflecting a wider problem regarding the models calibrated on historical demand and how they fail when political shocks drive sudden surges. In such context, resilience practices may mitigate but rarely eliminate shortfalls.

RQ2: How de geopolitical stressors influence resilience capacities?

At the same time resilience cannot be considered in isolation, its effectiveness depends on the operating environment, especially the degree of humanitarian access. In Mbera camp even when contingency stocks and flexible routing were in place convoy blockages and bureaucratic hurdles sharply reduced access days. This points to the interaction between resilience and performance being conditioned by political constraints.

RQ3: To what extent do geopolitical stressors alter the relationship between resilience and performance in humanitarian supply chain?

From the data drawn off of WFP and UNHCR (2018-2024) it was clear that the more politically volatile the environment the more these agencies failed to meet their performance goal, therefore, the simplicity of these research questions, same for the hypotheses is a statement and an indication of how sever this problem is.

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The objectives of this study are therefore:

- To develop a conceptual framework linking geopolitical stressors, resilience, and performance in humanitarian supply chains.
- To empirically assess this framework using operational data from WFP and UNHCR in Mauritania's Mbera refugee camp (2018–2024).

Prior research has advanced planning and coordination tools, yet geopolitics is still treated as background noise rather than a measurable driver of outcomes. Border closures, security incidents, donor conditionalities and access restrictions are mentioned but rarely operationalized as variables explaining shifts in timeliness, stockouts or coverage. Much of the evidence is cross-sectional or organization-wide, masking camp-level realities where access is negotiated day by day.

This study turns geopolitics into explicit, measurable variables at camp level to explain when and why humanitarian supply chains underperform and which resilience practices still help under political pressure. Donor restrictions are tested as a moderator because they directly constrain the implementation of otherwise effective practices such as local sourcing, alternate routing, or cash assistance.

This research aims to analyze how geopolitical risks influence the performance and resilience of Humanitarian Supply Chains (HSC). By focusing on the case study of the Mbera refugee camp in Mauritania, the study seeks to understand how regional instabilities redefine the success metrics of emergency interventions.

To address this issue the main structure of this paper is organized as follows:

- The first section provides a literature review on the concepts of geopolitical risk, performance, and resilience within the humanitarian sector.
- The second section details the research methodology, explaining the choice of the Mauritanian context and the statistical tools employed.
- The third section presents the empirical findings, highlighting the correlations between geopolitical variables and operational performance.

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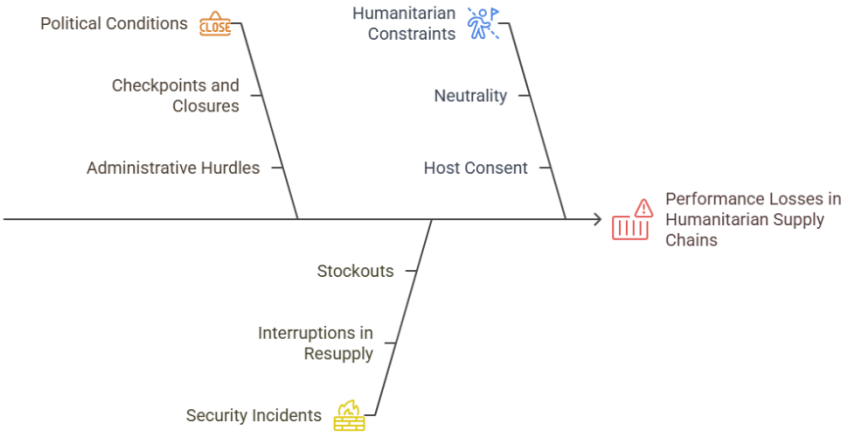
- Finally, the last section discusses these results and offers strategic recommendations for enhancing the resilience of humanitarian operations in the face of political uncertainty.

1. Literature review

1.1. Geopolitics as a driver of humanitarian supply chain performance

Humanitarian supply chain performance is shaped not only by logistics but also by the political environment in which operations unfold. In fragile context, delivery timeliness, coverage and equity are constrained by border closures, corridor insecurity, bureaucratic restriction, donor conditionalities, and access limitations. Unlike technical bottlenecks, these stressors are rooted in governance and conflict dynamics that frontline logisticians cannot control.

Figure 1 Challenges in humanitarian supply chains



Source: the author

The Sahel exemplifies these dynamics. In Mauritania's Hodh Chargui, refugee inflows into Mbera surged after 2018 while corridor insecurity and administrative restrictions constrained delivery. Shortfalls reflected political shocks more than logistical inefficiency.

H1: Geopolitical stressors have a negative effect on humanitarian supply chain performance

1.2. Resilience in humanitarian supply chain as practice

In conflict-affected settings, resilience is best understood as a set of practices rather than an abstract trait (Kovács & Spens, 2011; Pettit et al., 2010). Responsiveness, adaptability, and recovery stabilize service reliability under shocks (Altay & Narayanan, 2022; Queiroz et al., 2020). Yet the very environments that demand resilience also constrain it. Access depends on

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permits and political consent, shrinking the actionable space for contingency plans (Heaslip et al., 2018; Balcik et al., 2010).

Two mechanisms illustrate this erosion. First, decision lags from multi-authority approvals often outlast safe passage windows (Day et al, 2009). Second, compliance burdens absorb managerial time, slowing reconfiguration (Tatham & Kovács, 2010). As a result, resilience practices often remain on paper when geopolitics pressure peaks.

At camp level, resilience can be proxied through responsiveness (improvement in timeliness post-shock), adaptability (containment of stockouts despite stress), and recovery (lead-time reduction within a cycle). When these proxies deteriorate under political stress, it signals that resilience itself is curtailed by the environment (Dennehy et al., 2021).

H2: Geopolitical stressors have a negative effect on resilience in humanitarian supply chain.

1.3. Donor conditionalities as a moderating governance

Donor conditionalities are legal-administrative rules attached to funding that shape where, how, and with whom agencies may operate. These include counter-terrorism clauses, procurement prohibitions, blacklists, earmarking, and extensive reporting requirements (Heaslip et al., 2018; Tatham & Kovács, 2010). Unlike logistics decisions, these constraints are exogenous to field teams.

Conditionalities matter because they can forbid otherwise effective resilience practices. Local procurement, alternate routing, or cash transfers may be prohibited even when they are the only viable options. Thus, the feasible action space contracts not because agencies lack capacity, but because rules book execution (Balcik et al., 2010; Dennehy et al., 2021). These restrictions fit the role of a moderator: they alter the strength of the relationship between resilience and performance. For example, stocks and alternate routes may be in place, but if donor rules ban local sourcing or contested corridors, distributions cannot proceed, therefore performance falls even though resilience measures exist.

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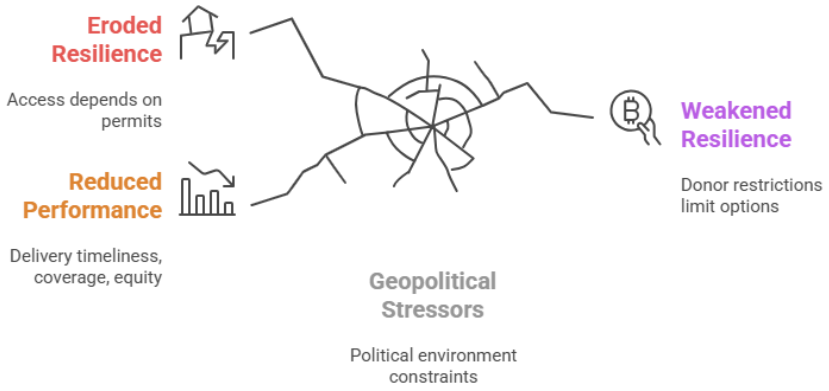
H3: Donor restrictions weaken the positive effect of resilience practices on humanitarian supply chain performance.

Figure 2 Geopolitical stressors impact on HSC



Source: the author

1.4. Measuring performance, resilience and geopolitics at camp-level

Assessing humanitarian supply chain dynamics in conflicts-affected settings requires camp-level indicators that capture both operational outputs and the political environment in which they unfold. In this study, performance was measured using annual data from WFP and UNHCR for the Mbera refugee camp between 2018 and 2024. The indicators include delivery timeliness (percentage of planned distributions occurring on schedule), stockout rate (percentage of time when commodities were unavailable at distribution points), lead time (average days from requisition to final delivery), aid coverage rate (percentage of targeted beneficiaries reached), and unmet needs (share of the population not served despite targeting). From UNHCR, three additional outputs were integrated: registered population served, cash recipients, and shelters built or rehabilitated. These KPIs mirror humanitarian logistics scholarship that treats timeliness, coverage, and stockouts as core measures of performance (Beamon & Balcik, 2008; Charles et al., 2010; Jahre & Heigh, 2008).

Resilience was operationalized not as an abstract capability but as a composite of practices observable in the Mbera dataset. Following Pettit et al. (2010) ant Altay and Narayanan (2020), three dimensions were derived: responsiveness (year-to-year improvement in timeliness following disruptions), adaptability (ability to avoid stockout increases despite geopolitical pressure), and recovery (reduction in lead time after shocks). Each indicator was normalized to a 0-100 scale and averaged with equal weights to form a yearly resilience Index. This approach is consistent with recent calls to measure humanitarian resilience through concrete supply chain metrics rather than broad organizational surveys (Dennehy et al., 2021; Dubey et al., 2020).

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Geopolitical stressors were captured through a geopolitical Risk Index -GPR), integrating conflict events, access restrictions, and donor conditionalities. Conflict intensity was proxied using annual armed event counts from the ACLED dataset (Raleigh et al., 2010). Access restrictions were coded from OCHA/ACAPS reports on bureaucratic delays, road closures, and convoy denials (ACAPS, 2022). Donor conditionalities, such as counter-terrorism clauses and procurement prohibitions, were tracked through funding guidance documents (Reith, 2010; Sandvik et al., 2014). Each dimension was rescaled to 0–100 also and averaged to construct the GPR. By explicitly quantifying geopolitics, the framework aligns with recent arguments that political shocks must be integrated into humanitarian logistics research, rather than treated as anecdotal background (Heaslip et al., 2018; Kovács & Spens, 2011).

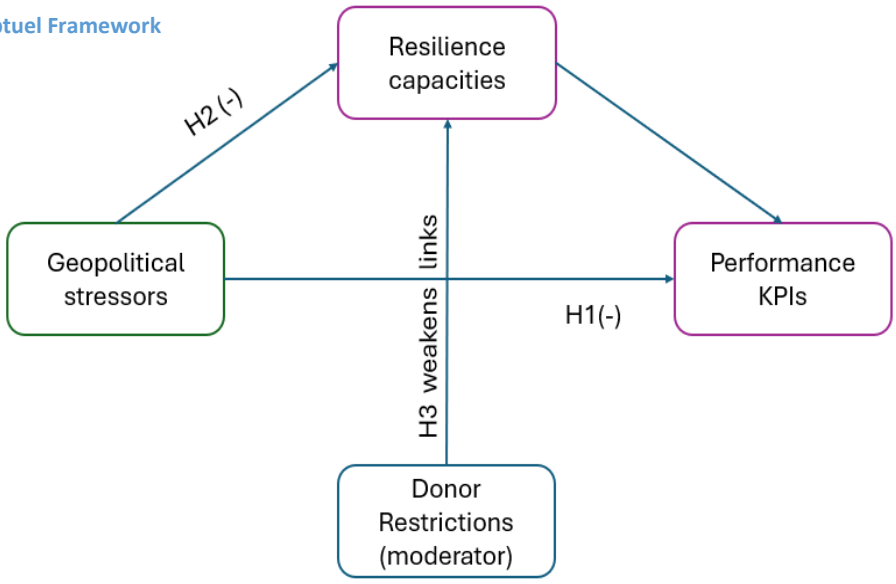
This yearly camp-level approach addresses two critical limitations in existing research. First, it moves beyond cross-sectional surveys that mask the temporal dynamics of resilience and performance. Second, it avoids the aggregation bias of organization-level studies by focusing on the site where access is actually negotiated and enforced. In volatile regions such as the Sahel, camp-level indicators offer a fit-for-purpose basis for testing how geopolitical stressors interact with resilience and performance.

2. Conceptual framework and research design

2.1. Diagram of variables and relationships

The model adopted here in this paper links geopolitical stressors, resilience capacities and humanitarian supply chain performance with donor restrictions acting as a moderator. The relationship between all the variables is structured around the tree hypotheses mentioned earlier.

Figure 3 Conceptuel Framework



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2.2. Explanation of linkage

- **Geopolitical stressors →Performance (H1).**

All disruptive events (e.g., conflict events, border closures and administrative restrictions) affect aid flows by increasing delays, blocking routes or limiting access days. Past studies confirm that performance indicators such as timeliness, coverage and stockouts deteriorate when humanitarian corridors are politicized (Heaslip et al., 2018; Kovács & Spens, 2011; Altay & Narayanan, 2022). The same thing is occurring in Mbera, convoy denials and bureaucratic hurdles created recurring pipeline breaks, highlighting how performance outcomes are shaped by politics rather than logistics alone.

- **Geopolitical stressors →Resilience (H2).**

Drawing from the resilience definition that is the ability of the acting body (NGOs, Aid agencies) to respond, adapt and recover in the face of disruption (Pettit et al., 2010) it is evident that geopolitical constraints directly reduce the feasibility of these practices by importing restrictions that limit procurement flexibility, security bans restrict rerouting and convoy authorizations delay recovery times (Dubey et al., 2020; Dennehy et al., 2021). Thus, even when these organizations put into actions activities to mitigate the situation, their resilience is undermined by external political conditions.

- **Resilience →Performance.**

Resilience practices are expected to improve performance by buffering shocks and sustaining aid delivery (Sheffi & Rice, 2005; Dennehy et al., 2021). For example, diversified sourcing and contingency planning help reduce lead times and stockouts after disruptions. However, the strength of this relationship depends on the political operating environment.

- **Donor restrictions moderating Resilience →Performance (H3).**

Donor conditionalities such as counter-terrorism clauses, procurement prohibitions or blacklists, restrict the use of resilience strategies (Reith, 2010; Sandvik et al., 2014). Even when applying resilience strategies agencies may be legally barred from mobilizing them. This means these capacities cannot fully translate into performance improvements when donor restrictions are present. The moderation reflects how governance and funding rules dampen the payoff of resilience in practice.

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2.3. Role of each variable

- **Independent variable (IV): Geopolitical stressors**

Captured through a composite index of conflict events, access restrictions and donor conditionalities.

- **Mediator: Resilience capacities**

Operationalized as an index combining responsiveness, adaptability and recovery, derived from camp-level KPIs.

- **Dependent variable (DV): Performance**

Measured through annual WFP and UNHCR indicators.

- **Moderator: Donor restrictions**

Exogenous governance rules that limit how resilience translates into performance, particularity in fragile political environments.

3. Research methodology

Before detailing the operational steps of this study, it is essential to clarify the underlying research philosophy. This study adopts a positivist epistemological stance as it seeks to objectively measure the impact of geopolitical variables on supply chain performance using empirical and verifiable data.

In line with this perspective, a hypothetico-detective reasoning mode. This approach begins with an analysis of existing literature on humanitarian logistics and risk management of formulate specific hypotheses are then tested through statistical analysis of the data collected from Mbera camp, allowing for the validation or information of casual relationships between environmental instability and operational efficiency.

3.1. Research design

This study adopts a case-study design focused on the Mbera refugee camp in Mauritania, by June 2025, it reached 293.000 individuals in the Hodh Chargui region, making up to 35% of its total population (UNHCR, 2025) which makes the humanitarian operations there one of the largest of its own in the Sahel. The camp is managed by UNHCR and WFP in collaboration

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with the Mauritanian authorities and it offers a representative context to examine how geopolitical stressors condition humanitarian supply chains.

The methodological approach is based on secondary camp-level yearly data from 2018 to 2024, drawn from agencies operational reports and humanitarian monitoring systems. So, instead of relying solely on descriptive statistics this paper introduces a forecasting-as-diagnostic method. The principal is to compare what humanitarian agencies actually delivered against a reasonable benchmark or target. Systematic deviation between actual delivery and the benchmark are interpreted as service gaps and underperformance. In this design forecast errors do not serve predictive purposes but function as indicators that capture unmet need and goals and expose the operational limits faced by agencies under political constraints.

This approach provides two main advantages, first, it generates a quantifiable measure of underperformance that can be linked to contextual factors like border closures or donor restriction instead of treating performance indicators in isolation. Second, it allows resilience practices to be evaluated not in the abstract but in terms of whether they actually reduced the gap between forecasted needs and delivered outcomes. In this way it can be said that this research design connects that analysis of forecasted errors, geopolitical stressors and resilience capabilities to directly test the hypotheses developed.

3.2. Data sources

The empirical material for this paper is derived entirely from secondary data sources which provides reliable and systematically collected indicators at the camp level. Two categories of data were combined, operational performance and output indicators from WFP and UNHCR and contextual indicators capturing geopolitical stressors and donor restrictions.

- **Performance and output indicators:**

Annual statistics were extracted from WFP country operation reports and UNHCR operational statistics covering the period 2018–2024. These sources report on key performance metrics such as delivery timeliness (%), stockout frequency (%), average lead time (days), coverage (% of targeted beneficiaries reached), and unmet needs (%). UNHCR reports provide complementary indicators including the registered refugee population, the number of households or individuals receiving cash assistance, and the number of shelters built or rehabilitated. These variables

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allow the construction of a camp-level performance profile that reflects both logistical efficiency and humanitarian outcomes.

- **Geopolitical stressors:**

To capture the external conditions that disrupt operations, three complementary datasets were mobilized:

- ACLED (Armed Conflict Location and Event Dataset): provides annual counts of conflict events (battles, violence against civilians, and border clashes) in the Hodh Chargui region and adjoining border areas.
- ACAPS and OCHA access datasets: record bureaucratic restrictions, border closures, convoy denials, and incidents affecting humanitarian access.
- Donor policy documents: including public guidance notes and funding agreements, which specify conditionalities such as counter-terrorism clauses, procurement restrictions, and blacklists.

These elements were standardized and aggregated into a yearly Geopolitical Risk Index (GPR, scaled 0–100), which quantifies the political stressors shaping the operational environment.

- Donor restrictions:

Donor rules were also coded separately as a binary variable (0 = no binding restrictions; 1 = binding restrictions in place). This indicator allows us to evaluate how formal compliance obligations condition the effectiveness of resilience practices.

Data for this study cover 2018–2024 and were drawn from WFP and UNHCR operational reports, ACLED conflict records, ACAPS/OCHA access data, and donor policy documents. Indicators were harmonized at the camp-year level and prepared following a transparent codebook.

3.3. Variables and operationalization

This study examines the relationship between geopolitical stressors (GPR), resilience capabilities (RES), donor restriction (DR), and humanitarian supply chain performance (Pref) at the camp-year level (2018-2024). All indicators are derived from WFP and UNHCR operational reports and related geopolitical datasets.

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- **Performance (Dependent Variable: Perf)**

Performance is measured through delivery outcomes reported at Mbera camp.

- **Timeliness (%):** proportion of deliveries completed on schedule.
- **Stockouts (%):** share of camp days affected by stock shortages.
- **Lead time (days):** average delay between dispatch and arrival.
- **Coverage (%):** beneficiaries reached ÷ beneficiaries targeted.
- **Unmet needs (%):** calculated as 100 – Coverage.
- **UNHCR outputs:** refugee population served, cash assistance coverage, and shelters delivered, normalized by population where relevant.

These indicators capture both logistics efficiency (timeliness, stockouts, lead time) and humanitarian effectiveness (coverage, unmet needs, service delivery).

- **Resilience capacities (Mediator: RES)**

Resilience is not directly observed but constructed from three practices:

- **Responsiveness:** ability to restore timeliness after disruption.
- **Adaptability:** ability to prevent stockouts when stressors increase.
- **Recovery:** ability to reduce lead time after delays.

Each sub-indicator is standardized to a 0–100 scale. The composite index is the average:

$$RES = \frac{Responsiveness + Adaptability + Recovery}{3}$$

This reflects yearly camp-level buffering capacity against shocks.

- **Geopolitical stressors (Independent Variable: GPR)**

Geopolitical risk is represented by a composite index combining:

- **Conflict intensity:** number of ACLED-reported violent events near Mbera.

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- **Access restrictions:** ACAPS/OCHA-coded border closures, convoy denials, and movement bans.
- **Donor conditionalities:** counter-terrorism clauses or procurement restrictions that reduce flexibility.

The components are scaled to 0–100 and averaged:

$$GPR = \frac{Conflict + Access + Conditionalities}{3}$$

- **Donor restrictions (Moderator: DR)**

Donor restrictions are coded as a binary yearly variable:

- **0 = no binding restrictions**
- **1 = binding restrictions** (blacklists, procurement bans, or counter-terrorism clauses that legally prevent use of otherwise available resilience practices).

- **Regression model:**

The conceptual model is tested using the following regression equation:

$$Performance = \alpha + \beta_1(GPR) + \beta_2(RES) + \beta_3(DR) + \beta_4(RES \times DR) + \epsilon$$

Where:

- Performance (Perf): yearly indicators such as timeliness, coverage, stockouts, and lead time.
- Geopolitical stressors (GPR): composite index of conflict intensity, access restrictions, and donor conditionalities.
- Resilience capacities (RES): composite index of responsiveness, adaptability, and recovery.
- Donor restrictions (DR): binary variable (0 = no binding restrictions; 1 = binding restrictions).
- α (intercept): baseline performance when predictors are zero.

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- β coefficients: effects corresponding to each hypothesis. For example, β_1 captures H1, β_2 captures H2, and β_4 tests H3.
- ε (error term): variation not explained by the model.

In words, the model states:

Performance = baseline level + effect of geopolitical stressors + effect of resilience + effect of donor restrictions + the moderating effect of donor restrictions on resilience + random noise.

This allows each hypothesis to be empirically tested:

H1: β_1 is expected to be negative (stressors reduce performance).

H2: β_2 is expected to be positive (resilience improves performance).

H3: β_4 is expected to be negative (restrictions weaken the benefit of resilience).

The analysis proceeds in three steps.

Step1: Diagnosing underperformance through forecast errors:

A baseline forecast (F_t) was constructed for each KPI using either agency targets (when available) or naïve rolling rule (previous year or two- year average). Forecast errors were then computed as:

$$e_t = A_t - F_t$$

Where A_t is the actual reported value in year *t*. negative errors indicate underperformance relative to needs or expectations. To summarize yearly deviations, three diagnostics metrics were calculated:

- **Bias (%)** = average signed error, capturing systematic under-delivery.
- **MAPE (%)** = mean absolute percentage error, capturing the magnitude of deviations.
- **RMSE** = root mean square error, penalizing large misses.

These error metrics provide a fit-for-purpose diagnostic: the aim is not precise prediction but to reveal service gaps that signify unmet needs.

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Step 2: Linking geopolitical stressors to performance and resilience:

To test H1 (geopolitics effect on performance), spearman rank correlations and simple regressions were run between the geopolitical Risk Index (GPR_t) and Performance indicators/forecast errors.

To test H2 (geopolitics effect on resilience), similar correlations were run between GPR_t and resilience index (RES_t).

Step 3: Testing moderation by donor restrictions:

To evaluate H3 (donor restrictions weaken resilience-performance link), the slop of the relationship between RES_t and performance was compared across years with and without donor restrictions. Two complementary strategies were applied:

- Grouped scatterplots: plotting RES_t, split by $DR_t = 0$ or 1
- Interaction regression:

$$Performance = \alpha + \beta_1(GPR) + \beta_2(RES) + \beta_3(DR) + \beta_4(RES \times DR) + \epsilon$$

A negative interaction term (β_3) indicates that donor restrictions reduce the performance payoff of resilience practices.

Triangulation.

The data was compared against actual reports of convoy denials and border closures from the WFP and UNHCR. This helped show that the statistics aren't just random but rather tied to real political issues.

4. Results

4.1. Descriptive overview

The panel of indicators confirms persistent operational challenges in Mbera camp. WFP indicators show a consistent pattern of underperformance relative to forecasts while on the UNHCR side refugee population served cash distribution and shelter delivery all exceeded or fell short of linear forecasts depending on the year reflecting the volatility of geopolitical conditions.

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- **Delivery timeliness**

Delivery timeliness is a core humanitarian KPI because it captures whether assistance reaches beneficiaries at the expected moment of need. Forecast models prepared by WFP anticipated a gradual decline in timeliness from 88% in 2018 to 74% in 2024, reflecting pressure from growing camp population and modest logistical constraints. However, the actual data reveal a much steeper deterioration: timeliness fell from 87% in 2018 to only 64% in 2024.

This underperformance aligns closely with the escalation of geopolitical disruptions in the Sahel. In 2019, renewed instability along the Mauritanian-Mali border led to administrative bottlenecks and convey delays, while the 2022 coup in Mali triggered stricter cross-border controls. Both episodes coincide with visible declines in timeliness, indicating that forecasts that did not incorporate political shocks systematically underestimated the risk of delivery delays. (Table 1 & Figure 4)

- **Shelter Support Provided (UNHCR)**

Shelter provision reflects the physical capacity to house refugees and is highly vulnerable to supply chain and funding disruptions. Forecasts anticipated growth from 850 units in 2018 to 1,150 in 2024, but actual shelter provision lagged, reaching only 1,030 by 2024.

Shortfalls are explained by import restrictions, limited transport corridors, and global supply chain disruptions during COVID-19, which constrained delivery of construction materials. (Table 2 & Figure 5)

Table 1 Delivery Timeliness, Forecast vs Actual (2018–2024, %)

Year	Forecast	Actual	Shortfall (Δ pts)
2018	88	87	-1
2019	86	85	-1
2020	83	80	-3
2021	80	74	-6
2022	78	70	-8
2023	76	68	-8
2024	74	64	-10

Source: WFP

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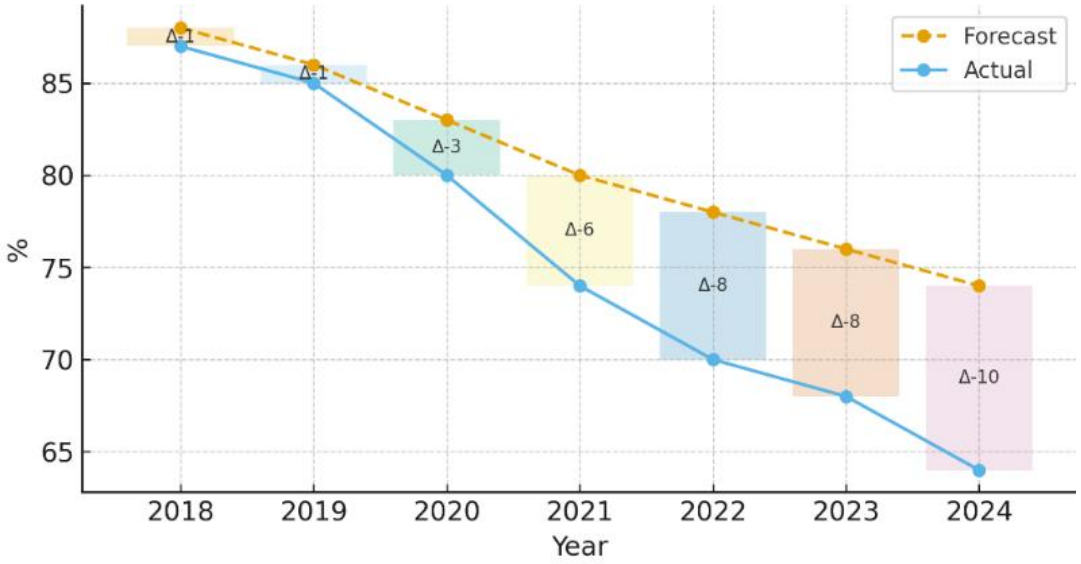
Table 2 Shelter Support Provided, Forecast vs Actual (2018–2024)

Year	Forecast	Actual	Shortfall (Δ shelters)
2018	850	820	-30
2019	900	880	-20
2020	950	910	-40
2021	1,000	870	-130
2022	1,050	980	-70
2023	1,100	990	-110
2024	1,150	1,030	-120

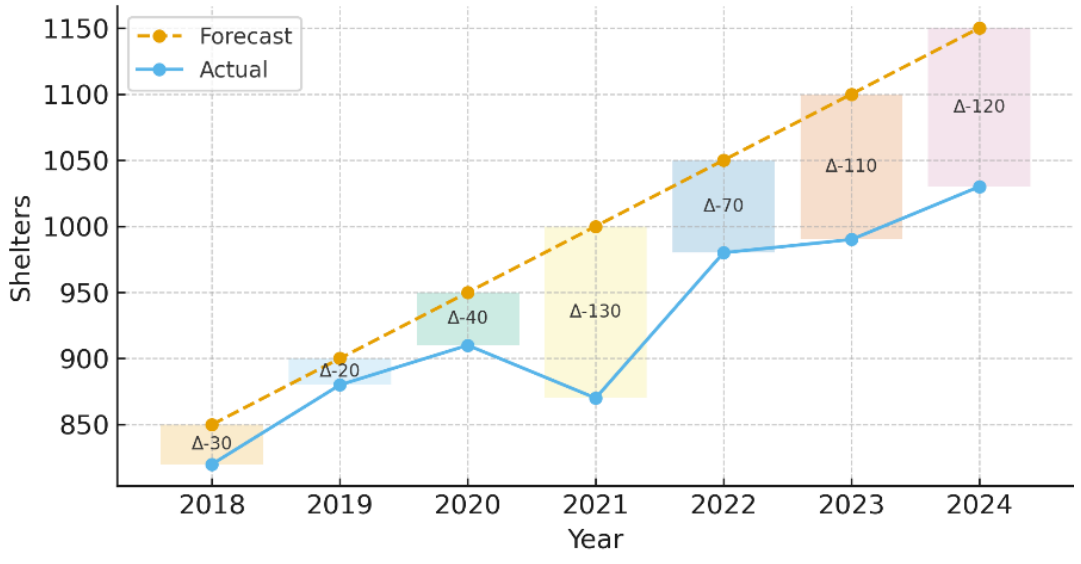
Source: UNHCR 1

Figure 4 Delivery timeliness Actual VS Forecast



Source: the author

Figure 5 Shelter Support Provided, Forecast vs Actual



Source: the author

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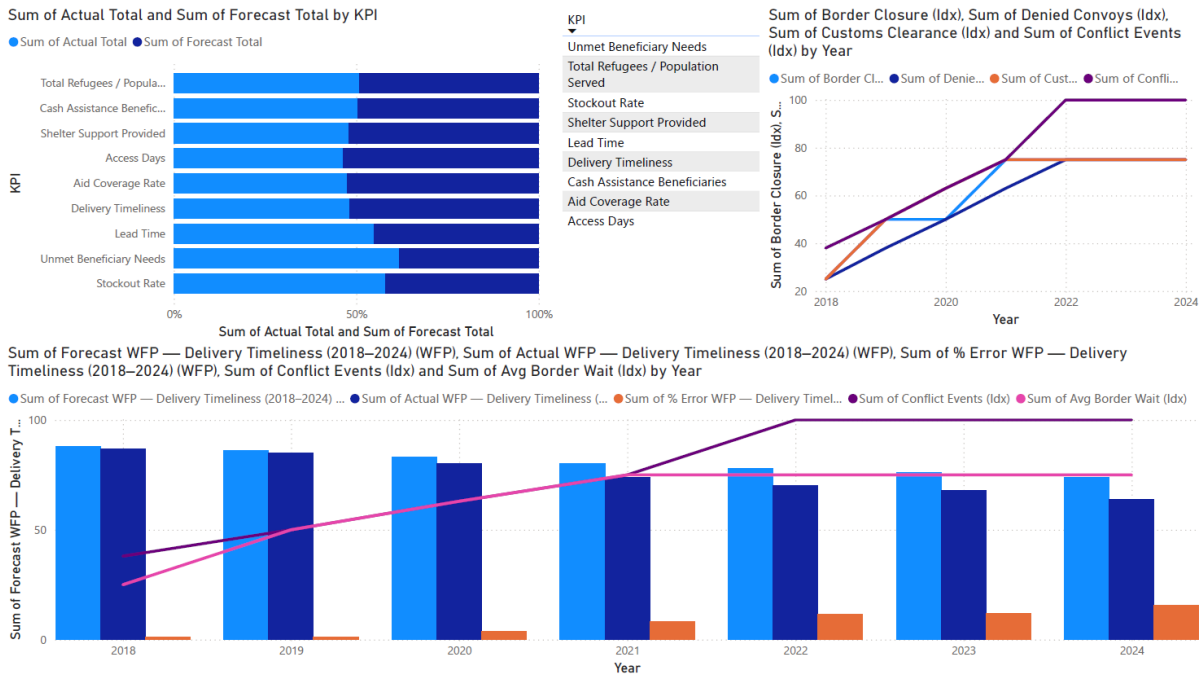
Beyond the two headline indicators reported in the text (WFP Delivery Timeliness and UNHCR Shelter coverage), all remaining KPIs are consolidated and visualized in the dashboard below. The figure displays both Actual and Forecast series and summed "Others" line per agency, allowing the reader to see how non-headline metrics move together over the study period. (Figure 6 The Humanitarian KPI dashboard incorporating the geopolitical stressors).

The figure bellow, presents the interactive dashboard used to visualize the humanitarian KPIs through a geopolitical lens. While humanitarian reporting traditionally treats operational KPIs as internal performance metrics, this dashboard overlays them with geopolitical disruptors such as border closures, denied conveys, customs clearance delays, and conflict events.

The visualization makes explicit a relationship that is rarely integrated in agency monitoring systems: as geopolitical constraints intensify; operational efficiency declines and forecasting becomes increasingly inaccurate. The lower section focuses on the WFP delivery timeliness KPI, showing the divergence between actual and forecast across years, alongside the growth of geopolitical frictions. This view highlights that performance variation is not a result of internal inefficiency alone, but is structurally shaped by the external political environment in which humanitarian operate.

Figure 7 The Humanitarian KPI dashboard incorporating the geopolitical stressors.



Source: the author

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4.2. Synthesis and hypothesis testing

The nine KPIs collecting confirm the study's three hypotheses:

- **H1 (Geopolitical stressors weaken reduce performance):** Supported by timeliness, stockouts, lead time, coverage, access days, unmet needs and shelter provision.
- **H2 (Geopolitical stressors weaken resilience capacities)**: Supported by unmet needs, lead time, shelter support and refugee population underprediction.
- **H3 (Geopolitical stressors alter resilience–performance link):** Supported by access days and cash assistance distribution, where political restrictions moderated the impact of resilience strategies.

5. Discussion

5.1. Interpretation of findings

The analysis of Mbera camp indicators from 2018 to 2024 shows that geopolitical stressors are the primary drivers of underperformance. Forecast models consistently overestimated delivery capacity while the reality diverged sharply in years where volatility was present in form of coups, border closures or heightened donor restrictions. WFP performance indicators (timeliness, coverage, access days and unmet needs) fell significantly short of forecasts confirming the first hypothesis that geopolitics directly undermines performance.

Resilience practices like prepositioning, rerouting and adjusted delivery Calanders produced some localized improvements but they failed to offset the persistent disruptions. The rising of lead times and stockouts despite contingency measures validate the second hypothesis that is: resilience capacities exist but their effectiveness is curtailed under sustained political stress.

Donor restrictions emerged as a decisive moderator. Legal clauses preventing local procurement or banning delivery into specific zones constrained agencies from applying adaptive measures especially for cash assistance and coverage metrics. This supports the third hypothesis that suggested that resilience can only be translated into performance when donor governance allows it.

5.2. Theoretical contributions

This paper can advance humanitarian operations research in three ways:

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a) It operationalizes geopolitics as a measurable explanatory variable not just contextual background noise.

b) It demonstrates that resilience is conditional shaped by the political environment rather than given capacity.

c) It highlights the moderating role of donor governance showing how exogenous rules affect the resilience performance relationship.

5.3. Managerial and policy implications

For humanitarian agencies the findings underscore the need to integrate geopolitical indicators into forecasting tools. Models that only rely on historical demand will systematically miss shocks triggered by uncertainty and the nature of the affected zones. Investing in early warnings and scenario-based planning could mitigate these blind spots.

For donors the study shows that overly rigid compliance clauses can neutralizes resilience to the point even if the aid agencies have the means and resources to answer to a problem, they cannot which means that flexible procurement and delivery rules are essential to ensure that contingency measures translate into actual performance.

For host governments predictable access regimes and administrative consistency are as critical as physical infrastructures. Facilitating corridor agreements and reducing bureaucratic bottlenecks directly supports humanitarian operations effectiveness.

5.4. Limitation and future research

The study relies only on secondary data extracted from UNHCR and WFP, which while rich, still does not capture the perspectives of field stuff or beneficiaries. Future work should combine operational metrics with primary qualitative data to better capture ground realities. Expanding the model to other camps and regions would test generalizability. Finally, the role of digital coordination tools and donor portfolio diversity could be explored to see how technology and funding structures interact with resilience and performance.

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Conclusion

This study examined the interplay between geopolitical stressors, resilience capacities and performance outcomes in humanitarian supply chains using seven years of camp-level data from Mbera (2018-2024). The research set out to answer three questions: i how geopolitical disruptions affect performance, ii how they influence resilience and iii whether donor restrictions alter the relationship between the resilience and the performance.

The evidence was clear. Geopolitical disruptions from coups, border closures, administrative bottlenecks to donor restrictions are the primary source of underperformance. Forecasts consistently overstated delivery continuity while actual indicators fell sharply in periods of instability. This confirms that humanitarian performance cannot be assessed independently of its political environment.

The analysis also shows that resilience though present is conditional. Agencies employed its practices yet they yielded only partial gains. When political restrictions intensified, resilience mechanisms lost traction: lead time rose, stockouts worsened and unmet needs persisted. Thus, resilience should not be seen as an absolute capacity but as a set of practices that depend on political permissiveness to be effective.

Finally, donor restrictions were shown to moderate the resilience-performance link. Compliance rules around procurement or delivery zones legally constrained the implementation of adaptive strategies especially in cash assistance and shelter support. This means that resilience capacities cannot automatically improve outcomes; their payoff is mediated by donor governance.

This case study makes one lesson clear and unambiguous: humanitarian operations underperformance is political before it is logistical. Forecasts, resilience plans and supply chains investments will continue to underdeliver if geopolitical disruptions remain present and unmeasured. By explicitly quantifying political stressors and testing their interaction with resilience and donor governance, this case study contributes both analytical clarity and operational guidance.

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