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Article

Administrative Risks and Logistics Supply Challenges in Gaza Shelter Centers During the 2023–2026 Conflict

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ABSTRACT

This study analyzed the administrative risks and challenges facing logistics operations and coordination at shelter centers in the Gaza Strip. The study sample consisted of 18 participants from various fields related to logistics and supply. Using a descriptive-analytical approach, the responses were analyzed based on frequency distributions and response consistency. The findings revealed significant logistical risks, primarily due to inaccurate data, the lack of pre-prepared plans, and a shortage of trained staff. The results also showed a disparity in coordination roles, with UN agencies leading at 60%, the government exceeding 30%, and NGOs accounting for less than 10%, alongside weak institutional synergy between local and international entities. The study recommends developing risk-based administrative plans, establishing centralized joint operations rooms, and enhancing human and technical capacities. Furthermore, it emphasizes strengthening cooperation among governmental and international entities through comprehensive strategies tailored to the Gaza Strip's unique context as a conflict zone.

KEYWORDS

Risks, administrative challenges, logistics, armed conflicts, shelter centers.

1. Introduction

Disasters are among the most significant challenges facing human civilization in the modern era, particularly those resulting from military conflicts, whether internal or international, given the acute crises and devastating impacts they impose on all aspects of human life. According to UNDRR (2020), areas of armed conflict are among the environments most susceptible to exacerbated disaster impacts and the emergence of successive and complex crises. This is due to weak governance systems, the prevalence of chaos, the lack of security control, logistical supply difficulties, and the restricted access of humanitarian aid to those in need.

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Given the increasing frequency of international conflicts, the concept of logistics supply in conflict zones has gained growing importance as a strategic framework aimed at preserving human life and enhancing resilience and survival. The Sphere Handbook (2018) clarified that determining the best methods for delivering humanitarian aid during conflicts requires an analysis of service delivery methods and an understanding of supply chains and logistical capacities.

Based on the above, the importance of adopting effective logistics supply strategies in conflict zones has emerged, ensuring that emergency and shelter system operators achieve the goal of delivering the necessities of a dignified life to every displaced individual within the conflict area. However, implementing these strategies in conflict zones remains a major challenge due to the intersection of security, political, and economic factors, and the occasional absence of institutional and security stability. Furthermore, many of these strategies remain theoretical or are hampered by political and funding constraints.

The Gaza Strip serves as a vivid example of a conflict zone facing multiple levels of risk, resulting from repeated wars, prolonged political instability, the comprehensive blockade imposed after the Palestinian division in 2007, when Hamas assumed responsibility for administering the region, and deteriorating infrastructure. According to Al-Ramlawi et al. (2025), these conditions have significantly shaped the humanitarian and operational environment in Gaza. According to Abu-Sada and El-Masri (2021), the field reality in the Gaza Strip reveals fundamental challenges related to the multiplicity of active actors, weak linkage between central plans and local implementation, as well as limited technical and logistical capacities.

Consequently, this study aims to analyze the strategies adopted for logistics supply in the Gaza Strip under armed conflict, shedding light on the risks of administrative challenges that hinder the delivery of humanitarian aid to beneficiaries within shelter centers. The study also offers a set of recommendations based on best practices and lessons learned from the Palestinian reality and similar contexts in this field.

The study problem focuses on the collapse of administrative capacity to manage logistics supply chains in Gaza's shelter centers from October 2023 to January 2026, despite international aid inflows. According to UN-OCHA (Update No. 327, October 2025), most water and fuel missions in northern Gaza were denied, leading to a decline of more than 90% in community kitchen production, while standard logistics protocols, including storage, distribution, and inventory management, were disrupted due to strikes on infrastructure.

Although general studies on logistics in conflict settings exist, there is still a lack of research analyzing daily administrative challenges such as route timing, needs assessment, communication blackouts, and flexible strategies for addressing the "logistics bottleneck" caused by border closures and security constraints. This gap further increases the mismatch between the needs of displaced persons, including food, medicine, and energy, and the ability of supervising entities to respond effectively.

This study presents a unified analytical framework that integrates conflict logistics, shelter management, risk management, and resilience modeling within a single, interconnected system. Risk management is considered a proactive phase for identifying threats, while logistics represents the operational mechanism for implementation and response. Shelter management embodies the direct field-level application, and resilience reflects the final outcome in terms of the system's ability to adapt and recover, thereby ensuring a clear methodological integration of the study's components.

The significance of this study is both theoretical and practical. From a theoretical perspective, it addresses knowledge gaps related to supply management under prolonged conflict and total blockade, a context that differs significantly from traditional natural disasters. It also contributes to the theoretical foundation of "logistics resilience" under total uncertainty and infrastructure collapse, while providing a documentary data foundation for the critical period from 2023 to 2026 for researchers in management and political science.

From a practical perspective, the study seeks to improve operational efficiency by providing recommendations for international organizations, such as UNRWA and the Red Crescent, to improve

aid delivery and reduce waste. It also supports the development of an "Administrative Risk Map" to help field workers anticipate crises and implement contingency plans. In addition, it may help donors better understand ground-level obstacles in order to direct support more effectively, for example through mobile warehouses and solar systems. Ultimately, the study has direct humanitarian relevance, as optimizing logistics for life-saving needs may contribute to improving the lives of hundreds of thousands of displaced persons.

2. Research Questions and Objectives

The main research question of this study is: What administrative risks hinder the efficiency of logistics operations in Gaza's shelter centers, and how can a resilient management model be developed to address them? In order to answer this main question, the study examines the main strategies for managing logistics supply operations in shelter centers during conflict, including governmental and institutional efforts, the role of international and humanitarian organizations, and community and local initiatives. It also investigates the primary administrative challenges faced by field teams in logistics supply operations for shelter centers during the Gaza conflict, particularly those related to planning, organization, and regulation.

Furthermore, the study explores the relationship between existing administrative risk challenges and the efficiency of logistics supply in Gaza's shelter centers during the period from October 2023 to January 2026. It also evaluates the efficiency level of logistics operations, including storage, transport, and distribution, directed to displaced persons in shelter centers. Finally, the study seeks to develop a proposed framework for a resilient administrative model capable of overcoming logistics obstacles in ongoing conflicts.

In accordance with these research questions, the main objective of the study is to analyze administrative risks in conflict-zone logistics. More specifically, the study aims to identify the main strategies for managing logistics supply operations in shelter centers during conflict, including governmental and institutional efforts, the role of international and humanitarian organizations, and community and local initiatives. It also aims to explore the primary administrative challenges faced by field teams in logistics supply operations for shelter centers during the Gaza conflict, especially planning, organizational, and regulatory challenges.

In addition, the study aims to analyze the relationship between existing administrative challenges and logistics supply efficiency in Gaza's shelter centers from October 2023 to January 2026. It also seeks to evaluate the efficiency level of logistics operations, including storage, transport, and distribution, directed to displaced persons in shelter centers. Finally, the study aims to propose a framework for a resilient administrative model to overcome logistics obstacles in ongoing conflicts.

3. Scope, Variables, and Key Terms

3.1. Study Scope

The study is defined by four main dimensions: subject scope, spatial scope, temporal scope, and human scope. The subject scope focuses on the administrative risks and challenges facing logistics operations within the context of armed conflict and humanitarian disaster management. The spatial scope focuses on the Gaza Strip as a model for chronic conflict zones and recurring humanitarian crises.

The temporal scope covers the period of the ongoing Israeli military operations in the Gaza Strip from October 2023 to January 2026. This timeframe is chosen because it encompasses both the onset and progression of military operations in Gaza and their consequent impact on shelter logistics. October 2023 represents the point of major escalation, which led to widespread displacement and increased operational strain. The endpoint, January 2026, is determined by the availability of sufficiently reliable and comprehensive data. Defining the study within this period ensures a focused

analysis based on complete and verifiable information, while avoiding dependence on incomplete or still-evolving data. The human scope targets personnel in local, governmental, and humanitarian organizations involved in disaster management in Gaza.

3.2. Study Variables

The study is based on two main variables: administrative challenge risks as the independent variable and logistics supply operations as the dependent variable. The independent variable refers to administrative challenges and risks in conflict zones, including organizational challenges, security and field challenges, and coordination challenges. Organizational challenges include staff shortages, destruction of administrative headquarters, and the absence of automation systems. Security and field challenges include movement difficulties, targeting of convoys, and crossing closures. Coordination challenges include jurisdictional conflicts between international and local entities and data gaps.

The dependent variable refers to the efficiency of logistics supply operations in shelter centers. This efficiency is measured through lead time, quality and abundance, and distribution equity. Lead time refers to the time required for aid to travel from border crossings until it reaches beneficiaries in shelter centers. Quality and abundance refer to the adequacy of supplies, including food, medicine, and fuel, relative to the needs of displaced persons. Distribution equity refers to the ability to cover all shelter centers fairly, without discrimination or waste.

3.3. Definition of Key Terms

Risk is defined according to the ISO 31000 standard as the "effect of uncertainty on objectives." An effect is a deviation from the expected, whether positive or negative (ISO 31000:2018 Risk Management; Definitions in Plain English, 2020).

Risk management is "a coordinated set of activities designed to direct and control an organization with regard to risk, through the continuous identification, analysis, evaluation, and treatment of risks within the context of the organization's objectives" (ISO 31000:2018). Risk management is characterized by integrated processes that contribute to the development and improvement of the ability of institutions, departments, organizations, companies, factories, or enterprises to understand risk, its dimensions, the most important sources of risk, and the assessment of those risks, their resulting actions, levels of impact and expected damage to the surrounding environment, as well as assessing human, property and working environment vulnerability to damage affecting work streams and procedures to establish comprehensible mechanisms for managing and controlling their sources and limiting their impact on their surroundings (El Mougher et al., 2023).

Administrative challenges are defined as a set of internal and external difficulties, constraints, and variables facing an organization that impact its ability to achieve goals efficiently. Addressing them requires strategic and tactical decision-making to ensure organizational continuity and growth within a dynamic environment (Daft, 2018; Robbins & Coulter, 2020).

Logistics supply is the process of planning, implementing, and controlling the efficient, cost-effective flow and storage of resources and related information from the point of origin to affected areas. In complex and unstable environments, its primary goal is to alleviate human suffering and protect lives through speed, flexibility, and risk management (Thomas & Kopczak, 2005; Van Wassenhove, 2006).

According to the International Committee of the Red Cross, an armed conflict exists when there is a resort to armed force between states, referred to as international armed conflict, or protracted armed violence between governmental authorities and organized armed groups, or between such groups within a state, referred to as non-international armed conflict. It is characterized by organized violence and ongoing military operations, thereby distinguishing it from mere internal disturbances or social tensions (ICRC, 2024).

According to the United Nations Office for Disaster Risk Reduction, resilience is defined as the ability of a system, community, or society exposed to hazards to resist, absorb, accommodate, adapt to, transform, and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions (UNDRR, 2017).

4. Literary review

The study by Malhouni and Mabrouki (2024) analyzed the challenges facing International Non-Governmental Organizations (INGOs) operating in armed conflicts within the Democratic Republic of the Congo and the Central African Republic. Through 20 months of fieldwork using a mixed-methods approach, the researchers mapped logistical risks and identified 268 common risk factors across eight categories during five deployment stages. The study utilized a multi-criteria approach to validate collective judgments, providing practical recommendations for NGOs to enhance humanitarian deployment in dynamic and complex environments.

While the study offers a rigorous and systematic classification of logistical risks, its strength lies primarily in its quantitative breadth rather than contextual depth. The identification of 268 risk factors demonstrates comprehensiveness; however, it may also limit operational usability, as practitioners in the field often require prioritized and context-sensitive risk frameworks rather than extensive lists. Moreover, the reliance on structured methodologies may overlook informal coping mechanisms and adaptive behaviors commonly used by field actors. The study could be further strengthened by integrating real-time decision-making dynamics and examining how power relations, local partnerships, and security volatility influence risk prioritization beyond technical classifications.

In a similar context, Migdad et al. (2025) examined the systemic obstacles hindering emergency supply delivery in the Gaza Strip during the 2023–2025 crisis. Utilizing qualitative methodologies and field action research, the study identified key barriers such as crossing closures, looting, high transport costs, and Israeli restrictions. The findings emphasized that infrastructure destruction and limited storage capacity severely complicated aid distribution efforts despite organizational readiness. The study concluded with a call for secured humanitarian corridors and the regional pre-positioning of stocks to enhance future crisis response.

This study provides valuable context-specific insights into one of the most constrained humanitarian environments globally. Its major contribution lies in highlighting the interplay between political restrictions and logistical inefficiencies. However, the recommendations—such as humanitarian corridors and pre-positioning—while strategically sound, may be difficult to operationalize due to geopolitical constraints beyond humanitarian control. The study could benefit from a more critical exploration of alternative, locally driven solutions, such as decentralized supply networks or community-based distribution mechanisms. Additionally, it tends to frame constraints as external, with limited reflection on internal organizational adaptability, innovation capacity, or coordination failures among humanitarian actors.

Furthermore, Maghsoudi et al. (2025) explored supply chain disruptions and mitigation strategies in complex emergencies, taking Syria as a case study. By employing Causal Loop Diagrams (CLDs) and secondary data, the research highlighted the necessity of the "Agility, Adaptability, and Alignment" framework. The results underscored the importance of multi-actor coordinated responses and the flexibility to transition between aid modalities—such as cash, vouchers, and in-kind assistance—to maintain aid continuity in conflict-affected regions.

The study's conceptual strength lies in its systems-thinking approach, particularly through the use of Causal Loop Diagrams to capture interdependencies within humanitarian supply chains. The "Agility, Adaptability, and Alignment" framework provides a valuable strategic lens; however, its practical implementation may be challenging in fragmented governance contexts like Syria. The reliance on secondary data also raises questions about the timeliness and ground-level accuracy of the findings. Furthermore, while the framework promotes flexibility, the study does not sufficiently address institutional inertia, donor restrictions, or accountability mechanisms that may hinder tran-

sitions between aid modalities. A deeper examination of how these structural constraints affect the proposed framework would enhance its applicability.

Collectively, these studies provide a comprehensive analysis of field and logistical challenges in complex humanitarian environments. While Malhouni and Mabrouki (2024) focused on quantifying risks in African conflicts, Migdad et al. (2025) highlighted the unique political and infrastructural constraints in Gaza, and Maghsoudi et al. (2025) emphasized operational agility and strategic alignment. Together, they demonstrate that effective aid delivery in conflict zones requires innovative solutions, multilateral coordination, and high operational flexibility.

This study distinguishes itself from previous research by addressing one of the most complex and interwoven conflict environments of the twenty-first century. Warfare is no longer conducted solely through conventional means; rather, it increasingly relies on advanced technologies—most notably artificial intelligence—in tracking, surveillance, data analysis, and the precise monitoring of individuals' movements and battlefields. This technological shift has significantly reshaped the nature of risk, not only at the military level but also across humanitarian and logistical dimensions.

The significance of this study also lies in its focus on the direct consequences of this transformation, particularly the restriction and increasing complexity of supply chains. This has led to a substantial rise in the level of risk faced by humanitarian and logistics personnel. The threat is no longer limited to direct targeting; it has expanded to include the deliberate disruption of supply lines as a form of strategic pressure—and even as a non-conventional weapon used against civilians trapped in conflict zones. Such practices have intensified humanitarian crises and undermined the capacity of relevant actors to respond effectively.

Accordingly, this study goes beyond merely describing reality; it seeks to provide an in-depth analysis that links technological transformations in modern warfare with their direct implications for humanitarian and logistical security. It also highlights the urgent need to develop adaptive managerial models and flexible strategies capable of responding to this evolving and highly complex landscape of threats.

5. Theoretical Framework

5.1. Gaza Strip: Context and Challenges

Over the years, the Gaza Strip has endured repeated military escalations that have resulted in severe casualties, widespread destruction of housing units, and a continuing state of permanent vulnerability. Due to insufficient governmental capacity, humanitarian organizations, often coordinated by OCHA, have intervened to provide relief assistance and enhance community resilience (Abu Ramadan & El-Mougher, 2022).

The Gaza Strip faces a complex risk mix that includes recurring military hostilities, environmental and health crises, infrastructure fragility, restricted movement, poor coordination among actors, and the politicization of humanitarian work. Recurring military hostilities have led to the destruction of critical infrastructure and mass displacement, while environmental and health crises have included seasonal flooding due to weak drainage systems, water and sanitation crises, and the fragility of the health system, which was further exposed by the COVID-19 pandemic. Conflict zones are further characterized by infrastructure fragility, restricted movement, poor coordination among actors, and the politicization of humanitarian work (ALNAP, 2021).

Permanent evacuation is one of the most difficult forms of evacuation and usually occurs during wartime. In such cases, the evacuation order or decision is issued by the highest authority in the state or region, requiring the population and civilians to evacuate from the affected area. The evacuated area is often occupied or destroyed, which means that reconstruction and return may take several years (Al-Ramlawi et al., 2020). In the Gaza Strip, this type of prolonged displacement is closely connected with repeated military escalation, destruction of residential areas, and the inability of institutions to restore normal living conditions in the short term.

5.2. Impact of Armed Conflict on Logistics

Armed conflicts exacerbate logistics management challenges by destroying vital facilities, disrupting emergency services, increasing insecurity, and weakening coordination mechanisms. The destruction of infrastructure, restrictions on movement, and lack of secure access routes directly affect the ability of humanitarian actors to deliver aid, manage storage, organize distribution, and maintain continuity of emergency services. This lack of security and coordination diminishes affected communities' capacity to recover and increases operational pressure on humanitarian logistics systems (CRED, 2019; ALNAP, 2021).

In the context of Gaza, armed conflict not only creates physical barriers to logistics operations, but also produces administrative, institutional, and coordination challenges. Humanitarian logistics therefore becomes more than a technical process of moving goods from one point to another; it becomes a crisis-management function that depends on security conditions, institutional coordination, information availability, access permissions, and the ability of organizations to adapt to rapidly changing field conditions.

5.3. Administrative Challenge Risks in Logistics Operations

Administrative literature categorizes logistics-related challenges into several key dimensions that can help facilitate effective response. Institutional and structural risks are characterized by weak governance, the lack of integrated strategic supply chain plans, and jurisdictional conflicts between international and local entities. These risks create uncertainty regarding authority, responsibility, and coordination, especially in complex humanitarian environments where many actors operate simultaneously.

Internal organizational risks are related to organizational structure, human resource shortages, and the lack of trained logistics experts. In conflict settings, these problems become more severe because organizations must operate under pressure, with limited staff, damaged facilities, and reduced administrative capacity (Daft, 2018; Northouse, 2022). External environmental risks include economic, political, and technological shifts that require constant adaptation by organizations working in unstable and rapidly changing environments (Dess et al., 2019).

Strategic and financial risks are reflected in difficulties related to strategy formulation and the heavy reliance on short-term emergency funding. This dependence on short-term funding weakens long-term sustainability and limits the ability of institutions to build resilient logistics systems (Porter, 2008; Slack et al., 2019). Information and infrastructure gaps also represent a major challenge, as the absence of unified information systems may lead to duplicated efforts, unequal distribution, or the neglect of certain areas and groups (ALNAP, 2021).

In addition to these risks, logistics operations in Gaza are affected by fragile infrastructure, insecurity and movement restrictions, weak coordination among actors, the politicization of humanitarian work, and limited funding for long-term development. These factors interact with one another and create a complex operational environment in which logistics actors must work under uncertainty, insecurity, and severe resource constraints.

5.4. Previous Responses and Lessons Learned

Previous experiences, particularly the escalations of 2014 and 2021, highlight the urgent need for more effective preparedness, coordination, and logistics planning. These experiences demonstrate the importance of establishing a unified displaced persons database and pre-positioned emergency stocks in order to improve the speed and efficiency of humanitarian response during future crises.

According to the Shelter Cluster Palestine (2024), a new coordination model has been proposed to improve the management of shelter-related logistics and humanitarian operations. This model

includes unified operations rooms under neutral supervision, security protocols to protect logistics convoys and supply routes, protected warehousing for safe storage, digital integration for real-time beneficiary tracking, and capacity building through joint training and the empowerment of local grassroots committees. These lessons provide an important foundation for developing a resilient administrative model capable of overcoming logistics obstacles in ongoing conflicts.

6. Applied Framework

6.1. Methodology

This study employs a descriptive-analytical approach to describe administrative challenges and analyze their impact on logistics supply operations. This approach is appropriate because the study seeks to understand how administrative, organizational, regulatory, security, and coordination-related risks affect logistics efficiency in shelter centers during conflict.

The study also uses a case study design focusing on shelter centers in the Gaza Strip during the period from 2023 to 2026. This design enables an in-depth examination of logistics operations within a specific conflict-affected context. In addition, the study incorporates a risk matrix for logistics operations, allowing administrative and operational risks to be identified, categorized, and assessed in relation to their potential impact on logistics supply processes.

6.2. Study Population and Sample

The study population consists of upper management and key actors involved in supply chain management within governmental and humanitarian organizations in the Gaza Strip. These actors were selected because they are directly involved in planning, organizing, coordinating, and implementing logistics supply operations under conditions of armed conflict, displacement, infrastructure destruction, and restricted humanitarian access.

The selection of the study sample was carried out using a purposive approach in order to ensure the inclusion of participants with direct expertise and practical involvement in logistics supply chain management within governmental, local, and international humanitarian organizations. While interview-based studies often include between 5 and 15 participants, this research expanded the sample to 18 participants to enhance the depth and diversity of perspectives. This broader sample size contributed to a more comprehensive understanding of the operational realities and challenges in the field.

No.	Sample Category	Number of Participants
1	Shelter Center Managers	4
2	Logistics and Supply Chain Officers in local and international organizations, e.g., UNRWA	2
3	Humanitarian Aid Coordinators	3
4	Administrative staff working in logistics supply chains for various entities	9
	Total Number of Participants	18

6.3. Research Tools

The study relied on two main research tools: interviews and document and report analysis. These tools were selected in order to combine field-based insights from practitioners with evidence derived from official reports, humanitarian documents, and previous literature.

6.3.1. Interviews

Interviews were conducted with personnel from governmental, local, and international humanitarian organizations specializing in logistics and supply chain management. A total of 18 interviews were conducted over a period of 12 days with members of the study sample. The interviews were designed to collect field-based data on administrative and logistical challenges, coordination problems, operational constraints, and the practical experiences of actors working in shelter-related logistics operations.

The interview preparation process followed several steps adapted from the Indeed Editorial Team (2025). First, the interview objectives were defined by clearly articulating the primary and secondary objectives of the interviews in alignment with the overall research problem. In the context of this study, the objectives were formulated to explore administrative and logistical challenges within humanitarian supply chains and to generate data capable of answering both the main and sub-research questions. Establishing these objectives provided a structured foundation that guided the development of interview questions and ensured that all collected data remained relevant, focused, and analytically useful.

Second, the interview guide was carefully developed to include semi-structured questions that directly corresponded to the study's research objectives. The questions were formulated to encourage detailed, experience-based responses while maintaining flexibility to probe deeper into relevant issues. To ensure validity and clarity, the interview guide was reviewed by a panel of academics and specialists in crisis and disaster management, and their feedback was incorporated through necessary revisions. This process strengthened the reliability and relevance of the data collection instrument.

Third, ethical considerations were prioritized by obtaining informed consent from all participants prior to conducting the interviews. Participants were provided with clear information about the purpose of the study, the use of collected data, and their rights, including confidentiality and voluntary participation. Appropriate interview times and safe environments were arranged in coordination with participants, ensuring comfort and minimizing potential risks, particularly given the sensitive and complex operational context.

Fourth, the interviews were conducted systematically over a period of 12 days, following a structured yet flexible approach. Participants were first briefed on the purpose and scope of the interview in order to establish transparency and trust. Questions were then asked in a logical sequence without unnecessary interruption, allowing participants to fully express their perspectives and experiences. Responses were carefully documented using structured questionnaires, supplemented by field notes to capture additional contextual insights such as tone, emphasis, and emerging themes.

Fifth, following data collection, all responses were organized and transferred into pre-designed templates to facilitate systematic analysis. The analysis process focused on identifying patterns of agreement, recurring themes, and the frequency of responses across participants. This approach enabled the researcher to synthesize the data effectively and draw meaningful conclusions that directly address the study's sub-questions and overall research objectives.

6.3.2. Document and Report Analysis

Document and report analysis was used to examine reports and documents issued by local and international organizations operating in the humanitarian and logistics sectors. This tool was included in order to strengthen the study through documentary evidence and to compare field-based interview data with institutional reports and previous literature.

The document analysis process involved several steps. First, document collection was carried out by defining the research scope and gathering official sources and previous literature related to the subject (Creswell, 2018). Second, a general review and classification were conducted by categorizing documents according to type and excluding unreliable sources (Bowen, 2009). Third, structural

analysis was used to extract core data, including objectives, methodology, findings, and recommendations (Miles & Huberman, 2014). Fourth, thematic analysis was applied to link information to theoretical concepts and identify recurring patterns (Krippendorff, 2018). Fifth, comparative analysis was conducted by benchmarking results against previous studies or international standards (Patton, 2015). Sixth, scientific interpretation was used to formulate a framework linking findings to the study's assumptions and interpreting causes and effects. Finally, practical recommendations were formulated by designing proposed solutions and policies while ensuring that they uphold human dignity and social privacy (Sphere Association, 2018).

Numerous research and humanitarian documents and reports have addressed the reality of logistics operations in the Gaza Strip during the Israeli war extending from late 2023 to early 2026. This literature examined various dimensions of logistical work within a highly complex humanitarian context. Reports from the United Nations Relief and Works Agency, together with analyses and studies from specialized Palestinian and international research centers, focused on the administrative and organizational challenges facing the logistics system, such as poor planning, limited coordination among actors, and restrictions on resource movement.

These reports also highlighted the direct impacts of the intensified Israeli blockade, including the frequent depletion of essential materials, supply chain disruptions, and difficulties in storing and distributing humanitarian aid equitably and efficiently. This negatively affected the ability of humanitarian institutions to meet the growing needs of the affected population and ensure the continuity of essential services.

UNRWA Report No. 180 from July 2025 documents the escalation of hostilities following the collapse of the ceasefire, noting new displacement waves, the destruction of civilian infrastructure, and a near-total cessation of incoming supplies (UNRWA, 2025). Another UNRWA statement from July 2025, concerning 6,000 aid trucks at Gaza's borders, confirms that the current aid distribution mechanism was "not functioning at all," with thousands of trucks stranded at the borders.

The report titled *The Future of Humanitarian Aid in Gaza in the Absence of UNRWA*, published in January 2025, analyzes the entry of 1,500 aid trucks following the ceasefire and expresses concerns over potential renewed disruptions in aid flows. The Palestine Emergency Information Center report from 2025, titled *Logistical Suffocation through Import Restrictions*, emphasizes near-total reliance on the Kerem Shalom crossing, which accounted for 83.4% of trucks. The report also states that 21,379 trucks entered during the period from October to December 2025, consisting of 62% humanitarian aid and 38% commercial goods. According to this report, any disruption at the crossing leads to near-total paralysis of goods flow, a situation described as "dangerous logistical suffocation" (PEIC, 2025).

The Palestinian Center for Israeli Studies report from 2024, titled *Humanitarian Aid Distribution and the Logistics of Death*, highlights the direct targeting of aid distribution teams and describes the transformation of logistics into a battlefield. The report refers to the killing of seven World Central Kitchen workers during aid distribution, the use of aid as a political and military weapon, and the disruption of distribution operations, which forced residents to rely on airdrops and increased risks for relief teams (PCIS, 2024).

Taken together, the reviewed documents show that logistics operations in the Gaza Strip were affected by a combination of administrative, organizational, infrastructural, security, political, and access-related constraints. These documents also support the need for a more resilient administrative and logistics model based on improved coordination, protected supply routes, secure warehousing, real-time beneficiary tracking, pre-positioned stocks, and stronger local capacity.

6.3.3. Participation Rates and Roles of Key Actors in Logistics Operations

The participation rates and roles of key actors in logistics operations reflect the multi-actor structure of humanitarian logistics in the Gaza Strip. The available data indicate that international organizations, regional and international governmental entities, international non-governmental organ-

izations, and local institutions all contribute to logistics operations, although their roles, funding shares, and operational responsibilities differ significantly (FTC, 2026; Logistics Cluster, 2025; United Nations, 2024).

International organizations, particularly United Nations agencies, represent the largest funding and operational group, contributing approximately 60% of total funding. Within this group, WFP accounts for 25%, UNRWA for 19.4%, UNICEF for 9.9%, and WHO for 3.9%. Their main roles include leading the logistics sector, distributing aid, and providing health and educational support. Regional and international governmental entities contribute approximately 31% of funding distributed among several countries and actors, including the UAE with 18.4%, the European Commission with 6.8%, Germany with 6.1%, and the Egyptian Red Crescent. Their roles include direct funding, facilitating cross-border aid transit, and managing the Al-Arish Hub. International NGOs contribute approximately 9%, including various organizations with 6.2%, NRC with 1.5%, and ICRC with 1.3%, mainly through additional logistical support and access to hard-to-reach areas. Local institutions, including the Palestine Red Crescent Society and the local private sector, play an essential implementation role, particularly in field distribution and providing commercial trucks for supply transport, although their contribution share is not numerically specified.

Table 1. Participation Rates, Funding Contributions, and Roles of Key Actors in Logistics Operations

Category	Partner Entities	Funding/Contribution Share	Main Role
International Organizations, UN	WFP, 25%; UNRWA, 19.4%; UNICEF, 9.9%; WHO, 3.9%	60% of total funding	Leading the logistics sector; aid distribution; health and educational support.
Regional and International Government Entities	UAE, 18.4%; European Commission, 6.8%; Germany, 6.1%; Egyptian Red Crescent	31% of funding, distributed among several countries	Direct funding; facilitating cross-border aid transit; managing Al-Arish Hub
International NGOs, INGOs	Various organizations, 6.2%; NRC, 1.5%; ICRC, 1.3%	9%	Additional logistical support; accessing hard-to-reach areas
Local Institutions	Palestine Red Crescent Society, PRCS; local private sector	Not numerically specified, but essential in implementation	Field distribution; providing commercial trucks for supply transport

6.3.4. Logistics Supply Operations Risk Matrix

A logistics supply operations risk matrix was developed based on the researchers' observations, the results of interviews with the study sample, and the analysis of official documents issued by the relevant authorities. The matrix identifies the main types of risks affecting logistics supply operations, their sources, expected impacts, probability and impact levels, overall risk value, intervention entities, and required coordination mechanisms.

Table 2. Risk Matrix of Logistics Supply Operations in Gaza Shelter Centers.

Risk Type	Nature of Risk	Risk Source	Expected Impact	Probability	Impact	Value	Intervention Entities	Required Coordination
Administrative/ Operational	Weak operational capacity	Human resource shortages	Distribution delays and reduced efficiency	High	High	High	Competent governmental and local/ international humanitarian entities	Coordination for hiring and training local and international staff
Administrative/ Technical	Weak planning and distribution	Absence of accurate information systems	Estimation errors and resource waste	Medium	High	High	Information Management Teams	Establishing a shared database and information exchange
Institutional	Role conflict and dispersed authority	Poor coordination among humanitarian entities	Overlapping roles and dispersed authority between local and international entities	High	High	Very High	UN, international organizations, and relevant government bodies	Shared coordination mechanisms, periodic meetings, and a unified operations room
Financial/Operational	Funding and operational resource shortages	Financial and operational challenge risks	Suspension or reduction of services	High	High	Very High	Donors and humanitarian institutions	Coordination with donors and developing financial contingency plans
Administrative/ Institutional	Weak long-term vision	Absence of integrated strategic plans for supply chain management	Haphazard response and loss of sustainability	High	Medium	Medium	International organizations and relevant government bodies	Preparation of joint strategic plans
Logistical	Transport and storage deficit	Weak infrastructure	Delayed arrival of supplies	High	High	Very High	International organizations and relevant government bodies	Infrastructure rehabilitation and developing alternative transport solutions
Political/Security	Prevention of supply entry	Blockade and crossing closures	Supply halt and acute shortages	Very High	Very High	Very High	UN, Red Cross, and international mediators	Coordination with political entities

Institutional	Resource mismanagement	Corruption and poor governance	Aid leakage and loss of trust	Medium	High	High	Internal regulatory bodies of each institution	Shared monitoring and accountability mechanisms
Security	Direct threat to staff safety	Targeting of humanitarian workers	Staff withdrawal and suspension of activities	Medium to High	Very High	Very High	UN and human rights organizations	Security protocols and coordination with international bodies and the Red Cross

7. Study Findings

7.1. Interview Results

Axis I: Key Strategies for Managing Logistics Operations for Shelter Centers during Conflict

Despite the complex conditions resulting from the ongoing conflict and blockade, several strategies and initiatives have been implemented or initiated to sustain logistical supply chains and enhance community resilience. These strategies can be classified into three main levels: governmental and institutional efforts, the role of international and humanitarian organizations, and community and local initiatives.

At the governmental and institutional level, local emergency committees, particularly in major cities, are activated during military escalations or natural disasters in order to coordinate and manage logistics supply chains. Although a comprehensive national disaster management plan is lacking, certain sectoral plans, such as plans for urgent supply transport, have been developed through internal efforts or with international support. However, these efforts remain limited by funding shortages, weak coordination, and insufficient training and resources, which reduce their overall effectiveness.

International and humanitarian organizations play a pivotal role in supporting logistics during crises in Gaza. UNRWA provides logistical support, including food aid, water tankers, and shelter supplies. UNDP supports infrastructure rehabilitation and institutional capacity building. WHO and ICRC support emergency health services and pandemic preparedness, while UNICEF and WFP provide logistical support related to clean water and food security for displaced persons. Despite their relative effectiveness, these efforts face significant challenges, including recurrent crises that keep the focus on immediate relief rather than the development of long-term sustainable infrastructure, restricted access to affected areas during active crises, and financial dependency on politically unstable international funding.

Community and local initiatives also represent an important part of the logistics response. In-kind and cash donations from the local community form a vital resource during emergencies, especially through youth and community-led initiatives. Local institutions also organize awareness programs and educational campaigns on managing supplies and preventing looting. Although these initiatives are limited in resources, they play a critical complementary role. They reflect a high level of community readiness, but they require institutional support, continuous training, and integration into national and regional strategic plans.

Axis II: Key Administrative Risks and Challenges Facing Field Teams in Shelter Centers during the Conflict

The most prominent administrative challenges affecting logistics supply operations for shelter center teams during the war in Gaza can be grouped into planning, organizational, and regulatory or oversight challenges.

Planning challenges include the absence of pre-set contingency plans and the lack of proactive strategies specifically designed to manage a crisis of this magnitude. Inaccurate data also represents a major obstacle, especially due to the shortage of precise information regarding available logistics resources and the actual number of displaced persons. In addition, logistics supply plans were largely limited to temporary and reactive solutions for each crisis, instead of addressing the root causes of supply shortages. Continuous escalation also created unpredictable displacement patterns, making it difficult to forecast the number of displaced persons and to estimate the essential resources required for logistics operations.

Organizational challenges were also significant. The fragmentation of actors, including international organizations, local NGOs, and government bodies, led to overlapping responsibilities and weakened coordination efforts. Institutions also faced structural collapse due to the geographic division of the Gaza Strip into North and South and the massive displacement of residents from Gaza City and the northern governorates to the South. Inadequate staffing further weakened logistics operations, as the urgent demand for logistics personnel forced the recruitment of unqualified staff, negatively affecting the overall management of supply operations.

Regulatory and oversight challenges included weak monitoring mechanisms, deficient follow-up procedures, and violations or irregularities during logistics supply operations. The absence of effective legal frameworks meant that there was insufficient accountability for mismanagement. In addition, the political weaponization of logistics supplies as a leverage tool rendered international oversight limited and ineffective.

Axis III: Relationship between Administrative Risk Challenges and the Effectiveness of Logistics Supply in Gaza Shelter Centers

The relationship between administrative risk challenges and the effectiveness of logistics supply in Gaza's shelter centers during the period from October 2023 to January 2026 is inverse. As administrative challenges increase, the efficiency of logistics supply decreases. In particular, challenges related to administrative planning and coordination have a direct negative impact on the speed, flexibility, and agility of the logistical response.

Axis IV: Efficiency Level of Logistics Operations Directed to Displaced Persons in Shelter Centers

The efficiency level of logistics operations directed to displaced persons in shelter centers can be examined through storage, transport, and distribution. In terms of storage, logistics operations were affected by limited capacity due to the extensive destruction of warehouses and storage facilities. There were also preservation issues, especially the insufficient capacity to maintain food and medical supplies for extended periods. As a result, humanitarian actors often relied on makeshift solutions, such as temporary storage within schools or non-specialized buildings that lacked proper conditioning.

In terms of transport, logistics operations faced severe operational obstacles caused by continuous shelling and road blockages. Acute fuel shortages also severely restricted truck movements, while logistical bottlenecks made it difficult to facilitate aid entry through crossings due to strict political and security restrictions.

In terms of distribution, the main problems included imbalance, overcapacity, and coordination gaps. Distribution was often inequitable, with some centers receiving larger quantities than others based on geographic proximity rather than actual need. Severe overcrowding in shelter centers far exceeded their designated carrying capacity, while weak coordination between local and international entities resulted in significant delays in aid delivery.

Axis V: Data-Driven Analytical Framework for a Resilient Administrative Model to Overcome Logistics Supply Obstacles in Ongoing Conflicts

The proposed Resilient Logistics Management Model, RLMM, is not presented merely as a procedural recommendation, but as an analytical framework grounded in the empirical findings of this study. The model represents a systematic translation of identified administrative risk challenges into

structured operational phases. These challenges include weak strategic planning, fragmented and informal coordination, limited resources, low human resource capacity, weak community engagement, and the absence of centralized operational control mechanisms. Accordingly, each phase of the framework corresponds directly to a specific category of observed gaps, positioning the RLMM as an evidence-based construct designed to enhance resilience in logistics supply operations within conflict-affected environments such as the Gaza Strip.

The strategic design of the RLMM consists of four phases: proactive readiness, agile execution, community integration, and sustainable recovery. The first phase, proactive readiness, refers to the pre-crisis stage and emerges directly from the study's findings highlighting weak preparedness levels, the absence of proactive risk identification, and the lack of unified data systems. The empirical evidence demonstrated that planning processes are largely reactive and constrained by fragmented information flows. In response, this phase integrates three core components: risk mapping, pre-positioning, and the establishment of a unified database. Risk mapping addresses the identified gap in anticipating logistical bottlenecks, while pre-positioning responds to the observed delays in supply availability during crises. The development of a unified digital platform for beneficiary data directly addresses the fragmentation of information and supports coordinated decision-making across actors.

The second phase, agile execution during conflict, is analytically derived from the documented inefficiencies in operational coordination and the absence of centralized command structures during crisis response. The findings revealed that coordination among actors is largely informal, leading to duplication, delays, and operational fragmentation. Consequently, this phase introduces the concept of a joint operations room as a centralized coordination mechanism linking governmental bodies, UN agencies, and NGOs. In addition, dynamic routing reflects the observed need to adapt logistics pathways in response to security constraints such as road closures and access limitations. The establishment of secured corridors directly responds to the risks associated with disrupted supply chains and unsafe delivery conditions.

The third phase, community integration at the field level, is grounded in the study's findings regarding weak community participation and limited awareness among affected populations. The empirical results indicated that the absence of structured community engagement reduces the effectiveness of last-mile distribution and limits accountability. Therefore, this phase translates these gaps into actionable components by emphasizing grassroots empowerment through local committees, which enhances distribution efficiency at the field level. Furthermore, the introduction of market-based support mechanisms reflects the need for adaptive response strategies when local markets are partially functional. Real-time accountability measures are incorporated to address the documented risks of aid leakage and weak monitoring systems.

The fourth phase, sustainable recovery after escalation, reflects the study's identification of long-term structural weaknesses within the logistics system, particularly in infrastructure, human capacity, and strategic continuity. The findings showed that the absence of recovery-oriented planning undermines system resilience and perpetuates vulnerability across repeated crises. In response, this phase integrates infrastructure rehabilitation to address damaged logistics assets, capacity building to overcome human resource deficiencies, and strategic alignment to ensure that emergency response mechanisms are embedded within long-term development frameworks. This phase extends the analytical framework beyond immediate crisis response toward sustainability and institutional resilience.

The RLMM should therefore be understood as an evidence-based analytical construct that synthesizes empirical observations into a phased operational logic, rather than a purely prescriptive or theoretical proposition. Each component of the model is directly traceable to a corresponding administrative risk identified in the study, ensuring both conceptual validity and practical relevance. By structuring the framework across interconnected phases of readiness, execution, community integration, and recovery, it captures the full lifecycle of logistics operations in conflict settings and provides a coherent analytical lens for understanding and improving system performance under conditions of instability.

The implementation logic of the analytical framework is inherently embedded within its analytical structure, as each phase represents a sequential yet flexible response to specific categories of risk. Rather than functioning as rigid procedural steps, these stages operate as adaptive layers that can be activated based on the evolving dynamics of conflict. This phased logic enables decision-makers to align interventions with real-time conditions while maintaining a consistent strategic direction grounded in empirical evidence. Accordingly, the framework supports both immediate operational responsiveness and long-term system transformation, making it suitable for complex and protracted crisis environments.

7.2. General Analysis of Results

The general analysis of results shows that logistics supply strategies in the Gaza Strip varied in their effectiveness, but collectively formed a multi-level support network. Nevertheless, the lack of centralized coordination diminished their potential impact. The governmental level shows the existence of core emergency bodies, but also reveals the absence of a comprehensive plan and weak institutional capabilities. The international level provides financial and technical support and diverse expertise, but remains affected by over-reliance on aid and occasional delays in response. The community level demonstrates the vitality of local initiatives and a deeply rooted culture of cooperation, but is limited by a lack of training and weak integration with higher-level plans.

Table 3. Strengths and Weaknesses of Logistics Supply Strategies by Governance Level.

No.	Dimension	Strengths	Weaknesses
1	Governmental Level	Existence of core emergency bodies	Absence of a comprehensive plan; weak capabilities
2	International Level	Financial and technical support; diverse expertise	Over-reliance on aid; occasional delays in response
3	Community Level	Vitality of initiatives; deeply rooted culture of cooperation	Lack of training; lack of integration with high-level plans

Administrative risk challenges constituted a major obstacle to achieving logistical efficiency, leading to slow response times and inequitable distribution of aid. Operational efficiency remained low because every stage of the supply chain faced structural, security, and logistical hurdles. Logistics management in the Gaza Strip during the conflict was therefore multi-level but fragmented. Administrative risks were the primary barrier to efficiency, while the proposed model provides an integrated vision for overcoming these obstacles through centralized governance, local capacity building, and financial sustainability, thereby strengthening resilience against future crises.

The proposed administrative model addresses the weaknesses highlighted in the study and manages the administrative risks associated with logistics operations. It offers a practical framework that integrates governance, technology utilization, and community participation in order to ensure a more effective and equitable response.

The variation in the effectiveness of logistics supply strategies in the Gaza Strip can be interpreted through the lens of coordination and crisis management theories, which emphasize that multi-actor systems achieve optimal performance only when governed by a clear and centralized coordination mechanism. Although the existing strategies at governmental, international, and community levels collectively form a multi-layered support network, their fragmented nature significantly reduces their overall effectiveness. From a theoretical perspective, this fragmentation reflects a governance deficit commonly observed in conflict-affected humanitarian systems, where overlapping mandates and the absence of a unified command structure hinder systemic efficiency.

At the governmental level, the presence of core emergency bodies indicates a foundational institutional structure. However, the lack of a comprehensive strategic framework suggests limited alignment with principles of integrated disaster governance. In the humanitarian logistics literature, such gaps are often associated with reduced absorptive capacity and weak system responsiveness in

crisis contexts. Similarly, reliance on international actors for financial and technical support reflects a dependency dynamic frequently discussed in resource dependence theory. External support is essential, but when it is not well coordinated, it may unintentionally weaken local system autonomy and responsiveness.

At the community level, the strong culture of cooperation represents an important form of social capital, which, according to resilience theory, is a key driver of community-based disaster response. However, the lack of training and weak integration with formal high-level planning structures limits the transformation of this social capital into structured operational capacity. This disconnect highlights a common gap in humanitarian systems between grassroots initiatives and institutional logistics frameworks.

The administrative risk challenges identified in the study can be understood as structural constraints rather than isolated operational issues. Within the broader literature on humanitarian logistics, such risks, particularly those related to governance fragmentation, resource scarcity, and security instability, are recognized as key determinants of inefficiency, often resulting in delayed response times and inequitable aid distribution. Accordingly, the observed low operational efficiency across storage, transportation, and distribution stages reflects systemic rather than merely procedural weaknesses.

In this context, the proposed administrative model can be theoretically situated within integrated disaster management frameworks, which advocate for the convergence of governance, technology, and community participation within a unified system. The emphasis on centralized coordination, capacity building, and financial sustainability aligns with contemporary approaches to building resilience in conflict-affected environments. Therefore, rather than merely addressing operational deficiencies, the model represents a structural intervention aimed at transforming a fragmented logistics system into a more coherent and adaptive governance framework capable of responding effectively to future crises.

8. Discussion

8.1. Empirical Findings

The study findings, within the context of shelter centers in the Gaza Strip, indicate that administrative plans and arrangements for logistics supply operations do exist; however, their scope remains limited, and their practical impact remains weak. The implementation of these plans faces significant challenges and risks associated with the complex humanitarian and security conditions resulting from the ongoing conflict, which directly affect the efficiency of shelter center management in terms of resource availability and logistics infrastructure. In this local context, coordination among different actors is characterized by informality and lack of sustainability, with a clear weakness in institutionalization and continuity. At the level of the relevant literature on humanitarian logistics in conflict-affected settings, studies indicate that the effectiveness of logistics operations is highly influenced by political and security stability, as well as by the level of institutional readiness and the ability to coordinate among stakeholders. This aligns with the findings of the present study, which show that administrative challenges in the areas of planning, organization, and control constitute key factors affecting logistics performance, particularly in unstable environments.

The results also reveal, within the study context, that the operational efficiency of storage, transportation, and distribution activities targeting internally displaced persons in shelter centers is low and insufficient to meet basic needs. This is closely linked to weak human resource capacity, which represents one of the most critical administrative risk factors affecting performance. At the same time, this is consistent with the broader literature on humanitarian logistics management, which emphasizes that weak institutional and human capacities significantly reduce the effectiveness of humanitarian response in emergency situations. Furthermore, the study confirms that the weakness of the logistics supply system in the Gaza Strip

is strongly associated with political and security instability, which limits the ability of institutions to effectively plan and implement logistics operations. At the local institutional level, poor coordination is attributed to overlapping roles and the multiplicity of actors operating in the absence of a centralized coordination mechanism, in addition to limited resources that negatively affect the quality and timeliness of humanitarian response.

At the community level, the findings indicate that community participation in logistics supply operations represents an important element for enhancing community resilience; however, this potential remains underutilized due to limited awareness. The study also shows that, although the use of technology in humanitarian contexts is widely emphasized in the literature, its application in Gaza is constrained by existing restrictions, as well as by challenges related to funding, maintenance, and human capacity limitations, in addition to risks associated with the use of technological systems in conflict environments.

8.2. Descriptive Insights

From a descriptive and analytical perspective, the overall situation of logistics supply operations in Gaza Strip shelter centers reflects a structurally fragile system shaped by the accumulation of administrative risks. The operational environment is characterized by high levels of complexity and instability, which significantly limit the effectiveness of pre-existing administrative plans and reduce their practical impact during crises. A clear gap emerges between planning and implementation, driven primarily by resource shortages, weak institutional capacities, and the absence of structured coordination frameworks.

The current coordination practices among institutions rely largely on informal arrangements, making them inherently unstable and vulnerable to disruption under crisis conditions. This lack of formalization contributes to inefficiencies, duplication of efforts, and weak integration across actors. Consequently, the overall performance of logistics operations remains suboptimal, particularly in terms of meeting the essential needs of internally displaced populations. Human resources emerge as a central point of weakness within this system, as limited skills and competencies directly affect planning quality, operational execution, and oversight effectiveness.

Moreover, the absence of centralized leadership exacerbates institutional fragmentation, resulting in overlapping mandates and reduced operational coherence. While technological resources are acknowledged as critical enablers in emergency response, their utilization remains constrained due to political restrictions, technical limitations, and insufficient funding. Collectively, these factors contribute to a systemic condition in which logistics supply operations struggle to achieve efficiency, sustainability, and resilience in the face of ongoing conflict.

8.3. Normative Recommendations

Based on the empirical findings and descriptive analysis, the study highlights the urgent need to adopt a comprehensive and structured approach to improving logistics supply management in shelter centers across the Gaza Strip. First and foremost, enhancing coordination among all relevant stakeholders is essential through the establishment of formal and clearly defined mechanisms that ensure consistency, accountability, and sustainability in joint operations. In this regard, establishing a centralized joint operations room is strongly recommended to oversee logistics supply activities and internally displaced persons shelter management, thereby improving response speed and strengthening operational integration among involved actors.

In parallel, there is a critical need to invest in capacity building, particularly by strengthening the competencies of human resources through targeted training and continuous professional development in logistics and administrative management. Addressing resource constraints is equally important and requires a strategic reallocation of funding priorities aimed at enhancing local capacities and reinforcing logistics infrastructure. At the operational level, improving the efficiency of storage,

transportation, and distribution systems should be prioritized through the adoption of advanced management practices and effective monitoring and evaluation mechanisms.

Furthermore, promoting community awareness and engagement is essential to increasing participation in logistics supply operations, thereby contributing to the development of more resilient communities. The study also emphasizes the importance of adopting sustainable technological solutions to support administrative and logistics functions, while simultaneously addressing challenges related to maintenance, funding limitations, and technical expertise.

Ultimately, improving logistics supply management in conflict-affected settings requires a holistic and integrated approach that combines effective coordination, capacity building, community engagement, and technological support within a unified and resilient administrative framework.

8.4. Comparing the Current Study with Previous Literature

The current study aligns with previous literature in its focus on logistical and operational challenges within complex humanitarian environments. Similar to previous studies, it seeks to diagnose the obstacles hindering aid delivery in conflict zones and emphasizes the importance of multilateral coordination, operational flexibility, and the development of proactive plans to ensure the continuity of humanitarian support. It also shares with previous research a reliance on qualitative and analytical methodologies, such as interviews, document analysis, and multi-criteria models, in order to generate practical recommendations.

However, differences emerge in the scope and tools of the research. For instance, Malhouni and Mabrouki (2024) focused on the Congo and Central Africa and identified 268 quantitative risk factors. Migdad et al. (2025) addressed Gaza during a specific conflict period, highlighting political and security obstacles such as border closures and Israeli restrictions. Meanwhile, Maghsoudi et al. (2025) used Syria as a case study to illustrate supply chain disruptions through causal loop diagrams, stressing agility, adaptation, and alignment.

From an analytical perspective, while the studies agree on the need for innovative solutions and effective coordination, they differ in their analytical lens, ranging from field risks and political hurdles to supply chain disruptions and institutional administrative challenges. The current study is distinctive because it focuses specifically on the administrative and institutional challenges of managing logistics for shelter centers.

The uniqueness of the current study lies in its focus on shortages in data, planning, and personnel, alongside weak institutional coordination. It also proposes the establishment of joint operations rooms and the enhancement of technical and human capacities. The study demonstrates that, while a logistics system exists in Gaza's shelter centers, it remains ineffective due to war-related challenges, resource scarcity, and informal coordination, which ultimately undermine planning, organization, and oversight.

9. Conclusions

The study concludes that logistics strategies in Gaza vary in effectiveness across governmental, international, and community levels. While they provide a multi-level support network, including United Nations funding estimated at 60%, the absence of a comprehensive plan and centralized coordination reduces overall efficiency, hindering rapid response and equitable distribution.

Administrative risk challenges, such as weak planning, organization, and oversight, constituted the greatest obstacles to effective logistics supply management. These challenges led to slow response times and inequitable distribution, particularly in shelter centers where management suffers from infrastructure deficits and informal coordination.

The efficiency of supply chain stages, including storage, transport, and distribution, remains low due to structural, security, and logistical hurdles. Coupled with limited human resources, the system fails to meet the basic needs of displaced persons.

The multiplicity of actors and overlapping roles further complicate logistics management in the Gaza Strip. International organizations, which account for approximately 60% of funding and leadership, and regional entities, which account for approximately 31%, dominate the humanitarian logistics system, while local institutions handle field distribution without clearly defined numerical shares. This reflects a fragmented system further exacerbated by political and security instability.

The proposed model represents an integrated framework for addressing systemic weaknesses through centralized governance, local capacity building, technology utilization, and community participation. The creation of a joint operations room is particularly important for ensuring sustainability and equity in responding to future crises.

The root causes of systemic failure stem from overlapping roles, limited resources, and security restrictions, including those imposed by the Israeli side. These findings indicate the need to redirect funding toward local capacities, training, and awareness in order to strengthen community resilience.

9.1. Recommendations

The study recommends setting up a permanent central coordination body by forming a single organization that brings together emergency committees, government agencies, and non-governmental organizations. This body should have clear responsibilities for regularly updating plans and sharing information openly, thereby addressing the problems of informal and unreliable coordination. The study also recommends creating a unified digital database through the development of a detailed online platform containing information on shelter centers, available resources, and each group's duties. Such a platform would close the gap between planning and action and allow quick responses even when supplies are limited.

Building human and technological capacities is also essential. This should include ongoing training workshops for shelter staff on logistics, planning, and teamwork, as such training directly addresses the weak skills that slow down storage, transport, and aid delivery.

The study further recommends integrating Gaza's unique conflict-related logistics needs and disaster risk reduction measures into national policies and main strategies. This would help create strong, official, and lasting systems capable of supporting logistics management beyond immediate emergency response. Stable donor funding for logistics should also be secured. Donors should be encouraged to provide reliable funding focused on infrastructure, shelters, and coordination, with strict monitoring of expenditure in order to address shortages and strengthen accountability.

The study recommends strengthening partnerships between public institutions, private actors, and non-governmental organizations through formal memoranda of understanding that clearly define roles during disasters. This would reduce overlapping work and confusion caused by the involvement of many different groups. Establishing 24/7 joint operations centers is also recommended. These technology-based control rooms should operate continuously in order to provide instant coordination during crises and accelerate response in difficult and unstable conditions.

Finally, the study recommends boosting community awareness and adopting best practices. Awareness campaigns should be launched to raise readiness and encourage local involvement, while successful disaster management models from other contexts should be adapted to Gaza's specific situation. Regular reviews should also be conducted to support continuous improvement and strengthen the resilience of logistics supply operations in shelter centers.

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Appendices

Appendix 1. List of Interview Participants.

Job Title	Interview Date	Years of Experience	Interview Type
Emergency Committee Administrator	18/12/2025	9	In-person Interview
Local Emergency Committee Administrator	28/12/2025	9	In-person Interview
Shelter Center Manager	30/12/2025	7	via WhatsApp
Shelter Center Manager	25/12/2025	4	via WhatsApp
Shelter Center Manager	18/12/2025	10	In-person Interview
Local Emergency Committee Official	27/12/2025	6	In-person Interview
Administrative Officer - Municipalities	27/12/2025	9	In-person Interview
Administrative Officer - Social Development	26/12/2025	10	In-person Interview
Administrative Officer - Medical Services	25/12/2025	13	In-person Interview
Administrative Officer - Civil Defense	25/12/2025	8	via WhatsApp
Administrative Officer - Popular Committees	25/12/2025	7	via WhatsApp
Administrative Officer - Ministry of Telecom	18/12/2025	15	In-person Interview
Administrative Officer - Ministry of Public Works	29/12/2025	20	via WhatsApp
Administrative Officer - Ministry of Education	29/12/2025	9	via WhatsApp
Administrative Officer - Ministry of Interior	25/12/2025	10	via WhatsApp
Administrative Officer - Ministry of Health	01/12/2025	8	In-person Interview
Administrative Officer - UNRWA	30/12/2025	7	via WhatsApp
Administrative Officer - UNRWA	30/12/2025	5	In-person Interview

Appendix 2. Interview Schedules

Table 1. Administrative Risk Challenges Facing Logistics Personnel

No.	Question	Required Answer	Key Observations
1	What are the most prominent organizational and planning risk challenges that hindered the coordination of efforts between agencies supervising logistics supply for shelter centers?	Listing of points	
2	To what extent did the absence of specialized human resources contribute to the disruption of the centers' administrative structure?	Situation assessment	
3	How would you describe the administrative decision-making process in light of communication outages and data scarcity during the crisis?	Open-ended question	

Table 2. Logistics Supply Operations

No.	Question	Required Answer	Observations
1	What are the main risk challenges you faced in securing supply chains (transport, storage, distribution) from October 2023 to the present?	Open-ended question	
2	How is damage or acute shortages in commodity stock within shelter centers managed?	Situation assessment	
3	What criteria are followed to ensure equitable distribution in light of severe overcrowding and centers exceeding their carrying capacity?	Listing of points	

Table 3. Future Vision and Solutions

No.	Question	Required Answer	Observations
1	To what extent have your current strategies succeeded in providing logistical support services?	Causal/ Explanatory	
2	Based on your experience, what are the "Alternative Administrative Models" that were innovated in the field to overcome the blockade or conflict?	Open-ended question	
3	What are your proposals to enhance the resilience of logistics supply in future crises?	Listing of points	