

Drivers and Challenges in Humanitarian Logistics

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Abstract

As the concept of humanitarian logistics evolves swiftly, the field of study is becoming increasingly popular. This study examines the research on humanitarian logistics to provide readers with a full overview of the subject. In order to successfully complete relief efforts in response to worldwide emergencies such as floods, earthquakes, wars, etc., it is critical to quickly deliver the right amount of goods, people, and financial resources to the locations required. This paper reveals how humanitarian logistics and supply chains play a key role in this regard. Effective distribution of humanitarian relief is a problem that is becoming more crucial in the context of disaster management as the frequency, severity, and impact of natural and man-made disasters rise. The preparedness and reaction phases of a catastrophe management system are the focus of the logistics branch known as humanitarian logistics. Humanitarian logistics is the process of coordinating, planning, and organizing relief efforts, carrying out and managing the efficient, cost-effective flow and storage of goods and materials, as well as accompanying information, from point of origin to point of consumption in order to alleviate the suffering of those who are less fortunate. In crisis management systems, humanitarian logistics is crucial, with an emphasis on the phases of readiness and reaction. From the point of origin to the point of consumption, the flow and storage of commodities, materials, and information must be planned, implemented, and controlled in a cost-effective and efficient manner. The basic purpose of humanitarian logistics is to alleviate the suffering of disaster victims who are most vulnerable. The range of humanitarian logistics includes a variety of tasks, such as planning, purchasing, shipping, storing, tracing and tracking customs clearance. The timely and efficient distribution of necessities including food, water, medication, and other resources to the afflicted communities depends on these operations. Humanitarian logistics also involves the mobilization and coordination of human resources, machinery, and equipment for relief operations. During the pre-disaster phase, humanitarian logistics systems are responsible for procuring, stockpiling, and maintaining necessary supplies and resources to be ready for immediate deployment in case of emergencies. In the post-disaster phase, these systems are responsible for rapidly transporting and distributing aid to the affected populations, providing assistance, and facilitating recovery efforts. Humanitarian logistics efficiency is critical to the success and efficacy of relief operations and initiatives.

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Received Date: July 04, 2023

Accepted Date: July 23, 2023

Published Date: July 30, 2023

Citation: Payush, Umesh Bhardwaj, Manisha. Drivers and Challenges in Humanitarian Logistics. NOLEGEIN Journal of Operations Research & Management. 2023; 6(1): 11–16p.

Keywords: Humanitarian Logistics, supply chains, organisations, revenue, funders

INTRODUCTION

Commercial Supply Chains Vs. Humanitarian Logistics Systems

It may be claimed that managing humanitarian logistics systems is very different from regulating their commercial counterparts in practice. This is primarily due to the various underlying demand characteristics present in each system [1]. Demand for the product is routinely forecasted in

commercial supply chains utilizing correct forecasting methodologies. (i.e., push production system) or client-initiated (i.e., pull production system). Therefore, managers of commercial supply chains make every effort to reduce uncertainty to the absolute minimum. However, because the time, location, and intensity of the crisis—and hence the precise aid requirements—are unknown until after the tragedy occurs, the type of demand in humanitarian logistics (HL) is highly unclear [2].

According to the aforementioned justifications, the following are the distinctive qualities of humanitarian logistics systems [3]:

1. Not-for-profit organizations have different goals than profit-making organizations, such as providing quick, life-saving reactions rather than increasing revenue and cutting costs.
2. Due to the various sorts of stakeholders, including governments, relief organizations, funders, and catastrophe victims, there are more complex trade-offs between the objectives.
3. Complex demand characteristics include:
 - a. Demand uncertainty in terms of location, timing, kind, and amount.
 - b. Surprisingly high demand, necessitates shorter lead times.
 - c. The stakes are high in terms of appropriate and timely delivery.
4. Because of the following factors, complex operational conditions exist:
 - a. The erratic nature of events in the aftermath of the accident.
 - b. A scarcity of resources (for example, equipment, transportation, food, water, and medical supplies)
 - c. Inadequate access to crucial infrastructure (such as communications and transportation)
 - d. An absence of qualified and experienced human resources
 - e. In disaster-affected areas, there is a lack of security.
5. It is frequently difficult for participating organizations in relief missions to coordinate.
6. Organizations that provide aid must conduct themselves with humanity, objectivity, and impartiality.
7. It is frequently challenging to keep a humanitarian perspective on operations in a politicized atmosphere.
8. Due to the absence of the final beneficiaries of the humanitarian logistics system's voice in the performance evaluation and appraisal process, there is no means to penalize unproductive organizations. Unlike in a commercial supply chain, where an inefficient member must pay for its own inefficiencies, in a humanitarian supply chain, because the people who will be affected are not directly participating in this process, they usually cannot sue for more than their actual damages. In most cases, they cannot sue for more than their actual damages.

It is crucial to emphasize that almost all of the concerns are substantial impediments to the effectiveness of any supply chain system, not just those used by humanitarian organizations (HO) [4]. For instance, a lack of adequate transportation infrastructure leads humanitarian relief teams to use a variety of transportation methods, from more expensive and sophisticated ones like cargo planes and helicopters to more basic ones like animals (such as elephants and donkeys) [5]. Although many HOs did not view logistics as being important until around ten years ago, they are now trying to apply many of the theories and techniques used in commercial supply chains that researchers have recommended [6]. As previously said, humanitarian logistics systems can teach commercial supply chains a lot about critical subjects like supply chain risk and disruption management. Therefore, it is crucial to continue conducting research in the area of supply chain management to map the implementation of best practices from one side to the other.

CHALLENGES OF HUMANITARIAN LOGISTICS CHAIN STRUCTURE

The three primary stages of the humanitarian logistics chain are supply acquisition and procurement, pre-positioning and warehousing, and transportation (Figure 1). Acquiring and purchasing the tools and supplies that are required is the initial step in any chain of humanitarian logistics [7]. Any relief organization must use different procurement methods, such as direct

purchasing and tenders, to acquire the supplies and equipment it needs from regional or international vendors [8]. The primary difficulties at this stage are lowering the cost of purchases (taking into account potential price increases in local markets following disasters), ensuring the availability of supplies during critical times, cutting lead times, and coordinating in-kind donations in relation to other purchased items [9].

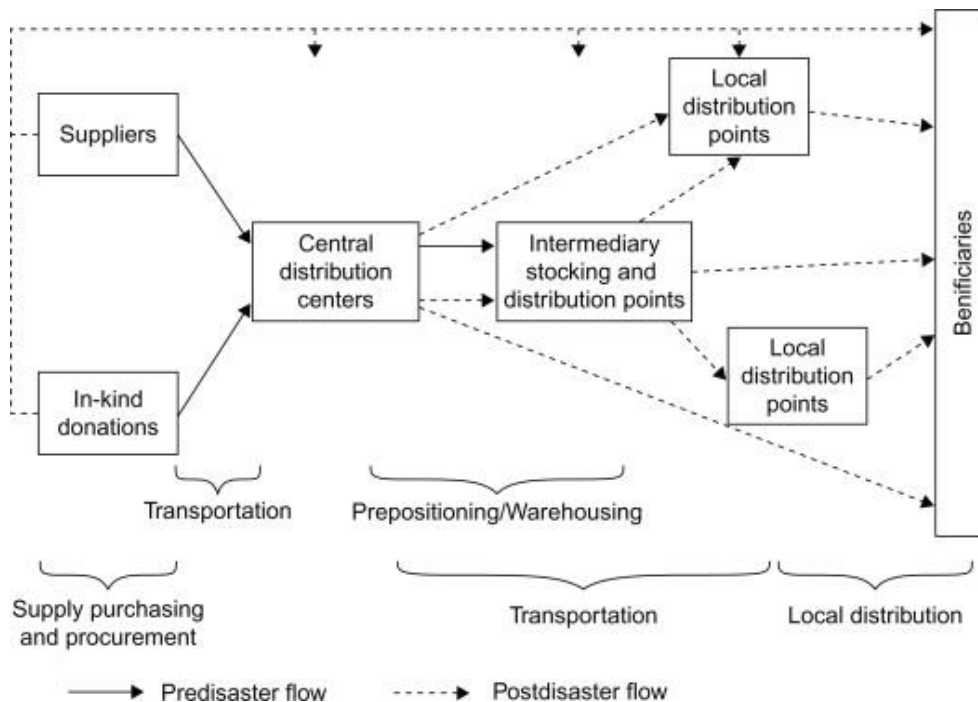


Figure 1. Logistics structure.

After purchasing the necessary materials and equipment for the pre-disaster and post-disaster periods, responsible relief groups are required to pre-position and store their products and equipment in appropriate locations, taking into account the location of disaster-prone areas. The high expenditures of setting up and running permanent warehouses, the expense of maintaining inventory, and potential item deterioration are challenges at this stage. Additionally, there is a significant chance that warehouses used for humanitarian logistics will be destroyed during disasters; thus, they should be strategically positioned and have increased catastrophe resistance. The final crucial step in any humanitarian logistics chain is transportation, during which, time, human resources, supplies, and other necessities are delivered to predetermined central distribution centres (CDCs), distribution intermediary sites, local distribution centres, and ultimate regions. Even though several types of preventive precautions and strategies have been taken into consideration, transport during the post-disaster phase is arguably the most challenging stage of humanitarian logistics. This is mostly due to the fact that following a disaster, transportation infrastructure and tools are frequently damaged and in bad condition. Additionally, the location, climate, and security issues in the impacted areas may limit the kinds of transport vehicles and how they are used.

In order to successfully respond to future crises, the challenging, weak, and further development areas in the HL context must be recognized. Lack of information flow, inadequate HL planning, and limited availability of relief supplies are just a few of the main problems that HL and the emergency supply chain must deal with. Furthermore, the majority of the incidents' government response systems were found to have flaws, including insufficient information management systems, insufficient planning, insufficient readiness for maintaining the humanitarian aid supply chain, insufficient training for officials, and insufficient concentrated efforts on maintaining humanitarian aid logistics supply as well as duplication of efforts between the public and private sectors. Due to a lack of

specific criteria or techniques for evaluating relief supply and logistics estimations, many governments around the world lack a framework for storing minimal reserves in warehouses or relief centers. The HOs are responsible for providing the required help at the appropriate time and cost to the appropriate area. The challenges, nevertheless, are numerous and complicated.

It became evident that sophisticated supply systems would be essential to delivering food, housing, and medical supplies throughout the nation as HOs mobilised to offer assistance in this destruction and confusion. Because the majority of natural disasters are unanticipated, demand for essential products during these crises is likewise unpredictable. HL is challenging since it needs to be gradually flexible and able to function under tight restrictions. As a result, effective emergency supply chain management requires careful planning, preparation, response, and crisis management. Mobilization of resources, effective command and control, the ability to plan and organize the effort logically and rapidly, dealing with psychological variables in crisis situations, and the ability of logistics to match up with relief activities are all critical aspects influencing the effectiveness of any disaster management endeavor. Additionally, there is a need to increase comprehension in this area. On the ground, logisticians typically lack formal training and have learned their trade through experience. To increase humanitarian logisticians' knowledge and capabilities, capacity-building programs and processes based on competencies must be designed and maintained as well as appropriate training and accreditation. For the majority of HSCM tasks to be managed effectively, trained and educated logisticians are essential.

None of the organisations can deal with and resolve the aforementioned problems by themselves. In terms of shared specialised pools and workshops, increased agency cooperation is necessary. Agencies should offer opportunities for their employees to work with NGOs. The corporate community can create a pool of logistical experts and make them on-demand and urgently available to the humanitarian sector. Because of the seasonal nature of HL service demand as well as the fact that they are only necessary in an emergency, logistics experts from the private sector could work with field-based NGOs both before and after a disaster. When communities are affected by natural disasters or developmental challenges, professionals from various professions work together to support social rebuilding. For substantial and long-lasting transformation to occur in disadvantaged communities, cross-disciplinary collaboration and community involvement are essential. Local communities can improve their capacity to prepare for and react more effectively to the logistical problems they face after a natural disaster. At the municipal and village levels, this is especially true. Oloruntoba (2005) further emphasized the vital importance to include indigenous people in HL operations in the wake of any disaster [10]. To end the crisis and lessen its effects, communication and information technology investment is essential. Non-governmental organizations need to become aware of the crucial roles that logistics and supply chain management may play. Global communications is a serious issue that calls for cooperation between NGOs and the commercial sector. Furthermore, block chain can be stated to be crucial in tackling the issues related to HLSCM, among many other technological solutions, notably those relating to trust, collaboration, and coordination.

CONCLUSION

It was discovered that when managing any disaster situation, humanitarian operations face a number of HL-related obstacles. Transportation, infrastructure, warehousing, purchasing, last-mile connectivity, logistics activity coordination, partner collaboration and trust, safety and security concerns, political issues, budget management, need evaluations, etc. are some of the hurdles. The study also emphasised how these difficulties affected disaster relief efforts in previous significant disaster situations. Numerous disaster scenarios have shown that there are insufficient laws, rules, regulations, policies, and preparedness plans in place to handle such catastrophes. As a result, it amplifies and emphasizes the crucial roles that preparation and response play in disaster management. The stages of mitigation and preparation are crucial, and they come with expenses that are far larger than those of recovery and reconstruction.

Governments and citizens would be able to independently manage preparedness and response efforts thanks to the roles and engagement of local people. This would require a systematic change in command, control, and training across the entire spectrum of logistics and supply chains. Increased community involvement in disaster preparedness and response would improve the HSC's effectiveness and efficiency. It is essential to plan ahead for the development of long-term relationships with suppliers, the prepositioning of warehouses, and training of staff to handle the challenges presented by the HSC. A quicker and more efficient HL response during disaster occurrences will be made possible by decentralizing operational decision-making closer to disaster-prone locations. Due to the regular occurrence of disaster events, it is essential to develop effective and efficient disaster management solutions.

Although no crisis event can be averted, the harm can be reduced through careful planning and effective logistical humanitarian efforts. In order to successfully plan and manage any catastrophic crisis, including state governments, HOs, and policymakers, it is important to identify hurdles in various scenarios and activities. This will ultimately save millions of lives. This study also aids in identifying and appreciating the many problems that come with HL, aiding in the design of strategic strategies and the identification of operational goals. Finally, this will help to highlight the significance of collaboration among HSC participants as well as its repercussions. This study examined the difficulties encountered in disaster relief operations by various humanitarian participants over the course of several decades in a variety of scenarios, and it comprehensively presented the overall HL difficulties that could become a barrier for any HO in managing any upcoming disaster events. Numerous players involved in the management of humanitarian relief are hampered by barriers to efficient logistical planning and execution. The results of this study can therefore be used as a reference for the stakeholders to get ready for any disaster-related events and to plan the logistical operations and necessary resources in order to quickly respond to the situation while minimizing the negative effects. The problems mentioned in this study can also be used as a guide for successfully integrating HLSC and dealing with the difficulties.

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