



ROLE OF HUMANITARIAN LOGISTICS IN DISASTER MANAGEMENT IN SRI LANKA



SYNDICATE GROUP 12

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DEDICATION

We dedicate this dissertation to our family, friends, officers, instructors, and all those who supported, gave encouragement, and provided insight for us throughout this project. We also pay special gratitude to our loving parents without whom we would not be here today. We appreciate all the troop commanders, squadron commanders and all other military officers who were always behind us, guiding us on the right path forward and encouraging and showing us that anything is possible with hard work and integrity.

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AIM

The aim of this project is to provide awareness and sufficient education on the role played by humanitarian logistics during disaster management in Sri Lanka.

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ABSTRACT

Sri Lanka has faced many natural disasters in the past including floods, landslides, tsunamis, droughts, and cyclones. The country is also vulnerable to current and anticipated effects of climate change. Humanitarian logistics is a branch of logistics that specializes in arranging the transportation and warehousing of goods to impacted areas and individuals during natural disasters or complicated situations. Because disaster relief operations are fraught with unpredictability and complication, they must be effectively managed to identify and execute improved solutions. As a result, disaster management is a critical component in ensuring that relief operations are carried out successfully, and it starts with strategic process design. It has four key stages namely mitigation, preparation, response, and reconstruction.

The process of humanitarian logistics is complicated by the presence of several performers at diverse places. To be more precise, the process brings together funders, local/international assistance groups, local governments, and recipients. Different stakeholders need to play different and specific roles in the management of a disaster. Some of the challenges identified are lack of use of new technologies, lack of skilled staff, training and development and absence of proper transparency. However, to overcome the challenges identified certain recommendations are provided. Some of the key recommendations are developing a professional humanitarian logistics community, collaboration amongst organizations, performance management, investing in standardized training and certification opportunities, in-kind donations management and humanitarian operations evaluation.

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CHAPTER 1**INTRODUCTION****RECENT DISASTERS IN SRI LANKA**

1. Sri Lanka is a lower middle-income country with an estimated total population of 23 million people. Sri Lanka has faced many natural disasters in the past including floods, landslides, tsunamis, droughts, and cyclones. The country is also vulnerable to current and anticipated effects of climate change. Sri Lanka was among the three most affected countries in the 2017 estimate in terms of weather-related loss events, ranking second highest on the Climate Risk Index which measures fatalities and economic losses occurring because of extreme weather. Some of the major disasters that occurred in Sri Lanka has been listed below.

SER	DISASTER	YEAR	EFFECTS
(a)	(b)	(c)	(d)
1.	Sri Lankan Civil war (fig 1.1)	1983 to 2009	70 000+ deaths
1.	Indian Ocean Tsunami (fig 1.2)	2004	30 000+ deaths
2.	Landslides (Aranayaka - Samasarakanda, fig 1.3)	2016	37 deaths 350 000+ affected
3.	Southwest Monsoon Flood (fig 1.4)	2017	220+ deaths 15 Districts affected
4.	Meethotamulla Dump Case (fig 1.5)	2017	26 deaths 145+ houses buried
5.	Covid-19 (fig 1.6)	2020	13 000+ deaths 524 000+ infected
7.	X-press Pearl (Chemical pollution) (fig 1.7)	2021	Uncountable loss of marine life
8.	Flood (Central Province and southern province, fig 1.8)	2021	245 000+ affected 10 Districts

Table 1.1 Major Disasters in Sri Lanka



Figure 1.1 Sri Lankan Civil War



Figure 1.2 Tsunami



Figure 1.3 Aranayaka Landslide



Figure 1.4 Southwest Monsoon Flood 2017



Figure 1.5 Meethotamulla Dump Case



Figure 1.6 Covid-19



Figure 1.7 X-Press Pearl



Figure 1.8 Central Province Flood 2021

HUMANITARIAN LOGISTICS AND DISASTER MANAGEMENT

2. Humanitarian logistics is a branch of logistics that specializes in arranging the transportation and warehousing of goods to impacted areas and individuals during natural disasters or complicated situations. However, this definition just considers the actual movement of products to their final destinations; humanitarian logistics is considerably more complex, requiring forecasting and resource optimization (Apte, 2009).

3. Even if there is debate among writers on the structure and terminology of the phases, disaster management is frequently defined as a process with many stages. Mitigation, preparation, response, and reconstruction are all steps in the recovery process. The catastrophe management cycle is made up of these four parts. With an emphasis on logistics and supply chain management, logisticians are primarily involved in the preparation, response, and reconstruction processes, which collectively make up the humanitarian logistics stream (Kovács and Spens, 2011).

4. In the aftermath of disasters, humanitarian logistics is crucial. During the Response and Recovery stages, this is the case. Humanitarian logistics is a subfield of supply chain management that deals with natural and man-made calamities. To respond to a crisis, a country needs an emergency readiness and contingency plan that includes an emergency needs assessment and operational planning (Schwarz and Kessler, 2010).

5. Humanitarian logistics, according to most experts, plays a big role in the efficiency of humanitarian assistance efforts. Approximately 80% of all disaster relief operations are devoted to humanitarian logistics (Shafiq and Soratana, 2019).

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DISASTER CLASSIFICATION

6. Disasters have become an inescapable part of life in many parts of the globe, including Sri Lanka. As a tiny island in the Indian Ocean, Sri Lanka is primarily impacted by two monsoons, and because of these two monsoons, we frequently suffer dangers such as floods, droughts, and low-pressure systems. From refugee camps and catastrophe displacement sites to border crossings and conflict zones, the coronavirus is wreaking havoc on emergency response in vulnerable populations throughout the world, including Sri Lanka. Landslides, cyclones, windstorms, coastal erosion, sea surge, and sea level rise are among the numerous dangers we confront (SLCDMP, 2014).

7. Sand and gem mining, indiscriminate coral, and deforestation are the primary man-made catastrophes in Sri Lanka. Aside from that, several health problems, such as chronic kidney disease with unclear origin and other non-communicable diseases (NCDs), are becoming a calamity in modern Sri Lanka. Property devastation, damage, and loss of life have been caused by both man-made and natural catastrophes. Even though Sri Lanka is not prone to large-scale catastrophes such as earthquakes and tornadoes, the vulnerability of people living in informal settlements exacerbates the impact of disasters in the nation (Carter, 2008).

8. The administration of humanitarian assistance operations requires several important stakeholders with comparable responsibilities who have a shared interest. The government, military, relief agencies, funders, non-governmental organizations (NGOs), and private sector firms are among the major actors, with logistical service providers taking the lead (Modh, 2010). However, humanitarian missions face several unique obstacles. Effectiveness in the humanitarian supply chain is critical for saving both time and money, which means saving more lives and assisting more people in alleviating their suffering. However, in Sri Lankan culture, voluntarism along with informal care and supporting structures played a critical part in reducing the degree of suffering experienced by the afflicted people by assisting one another. (L'Hermitte, Tatham and Bowles, 2014)

9. Since disaster relief efforts are characterized by considerable uncertainty and complexity, they need to be properly managed to address and implement better responses. Thus, disaster management is a key factor that drives successful execution of relief efforts, and it begins with strategic process design.

DISASTER MANAGEMENT CYCLE

10. Disaster management is often described as a process composed of several stages, even though there is disagreement among authors as to the structure and nomenclature of the stages. However, for the most part, the literature concurs on the existence of the following phases.

- a. Mitigation.
- b. Preparation.
- c. Response.
- d. Recovery.

11. These four phases constitute the disaster management cycle. With the focus on logistics and supply chain management, the process that involves logisticians mainly concerns the preparation, response, and reconstruction; together these constitute humanitarian logistics stream.

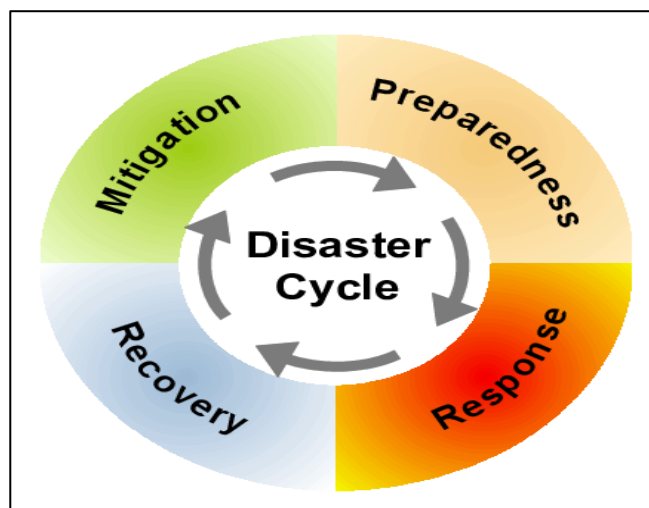


Figure 1.9 Disaster management cycle

DISASTER MITIGATION

12. The mitigation and readiness phases of the disaster management cycle are heavily influenced by developmental factors. Inappropriate development procedures can lead to increased disaster susceptibility and a lack of emergency preparedness. Reduce hazards, prevent disasters, and prepare for emergencies are the goals of a development-oriented disaster management method (Modh, 2010).

13. Mitigation operations minimize or eliminate the likelihood of catastrophes occurring, as well as the consequences of inevitable disasters. Building codes, vulnerability analysis updates, zoning, and land use management, building use restrictions and safety requirements, preventive health care, and public education are all examples of mitigation strategies. (Chandes and Pache, 2010)

14. Mitigation will be contingent on adequate measures being incorporated into national and regional development plans. Its effectiveness will also be determined by the availability of data on hazards, emergency risks, and countermeasures. The mitigation phase, and indeed the entire disaster management cycle, entails the development of public policies and strategies that either modify disaster causes or minimize disaster consequences on people, property, and infrastructure (SLCDMP, 2014).



Figure 1.10 Disaster management cycle

DISASTER PREPAREDNESS

15. Disaster preparedness involves planning how to respond. This comes after mitigation as preparedness mainly focuses on what procedures are to be followed in the event of a disaster. This involves warning system usage to alert people and the trainings given to establish a faster reaction to evacuate in such an event (Carter, 2008).

16. Preparedness also involves the planning of evacuation routes, identification of safe refuge sites and the military response to a disaster. Preparedness come with mitigation as the mitigation process considers the planning process, such as during rebuilding, establishing easy escape routes etc. (L’Hermitte, Tatham and Bowles, 2014)

DISASTER RESPONSE

17. Disaster response is the second phase of the disaster management cycle. It consists of a number of elements, for example; warning/evacuation, search and rescue, providing immediate assistance, assessing damage, continuing assistance and the immediate restoration or construction of infrastructure (Modh, 2010).

18. The aim of emergency response is to provide immediate assistance to maintain life, improve health and support the morale of the affected population. Such assistance may range from providing specific but limited aid, such as assisting refugees with transport, temporary shelter, and food, to establishing semi-permanent settlement in camps and other locations. It also may involve initial repairs to damaged or diversion to infrastructure. (Negi and Negi, 2020)

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19. This phase has two main objectives; they are consecutive and constitute two sub-phases.
 - a. The first objective is to immediately respond by activating the “silent network” or “temporary networks,”
 - b. The second objective is to restore in the shortest time possible the basic services and delivery of goods to the highest possible number of beneficiaries; this is the restore sub-phase.

COMMON OBJECTIVES OF RESPONDERS

- a. Saving and protecting human life.
- b. Relieving suffering.
- c. Containing the emergency – limiting its escalation or spread and mitigating its impacts.
- d. Providing the public and businesses with warnings, advice, and information.
- e. Protecting the health and safety of responding personnel.
- f. Safeguarding the environment.
- g. As far as reasonably practicable, protecting property.
- h. Maintaining or restoring critical activities.
- i. Maintaining normal services at an appropriate level.

TYPES OF RESPONDERS

- a. Rescue
- b. Relocation.
- c. Provision Food and Water.
- d. Provision Emergency Health Care.
- e. Prevention of Disease and Disability.
- f. Repairing Vital Services e.g., Telecommunications, Transport.
- g. Provision Temporary Shelter.

DISASTER RECOVERY

20. Recovery is the permanent construction or replacement of severely damaged physical structures, the full restoration of all services and local infrastructure, and the revitalization of the economy (including agriculture). This period includes the phases of rehabilitation and reconstruction, which aim to reestablish the living conditions of the population affected by the disaster and promote the changes needed to reduce the risk of future disasters (Modh, 2010).

21. This phase also aims to address the problem from a long-term perspective. The effects of a disaster can continue for a long period of time, and they have severe consequences on the affected population. In addition, disasters can also have long-term effects on the management of companies. For example, immediately after a disaster, transportation companies may undergo a modal shift from road to rail that prevails long after the occurrence of the disaster (Carter, 2008).

22. About humanitarian logistics stream, it is interesting that the transition between the stages involves the shift in focus from speed to cost reduction in terms of operational performance. Each stage of the process has a specific objective that can be achieved through the application of two supply chain principles: agility and leanness. Agility is usually defined as the ability to respond to unexpected changes when an unpredictable demand is combined with short lead times.

23. Leanness usually refers to doing more and better with less when demand is relatively stable and predictable. Briefly, while agility focuses on effectiveness and speed, leanness focuses on efficiency and cost saving. In consideration of their specific objectives, agility and leanness may be applied to the stages of humanitarian logistics.

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24. In humanitarian supply chains, effectiveness ensures that we save time, and time saved means more lives saved; efficiency ensures that we save costs, and costs saved means more lives helped. The objective of the restoring sub-stage (as part of the response phase) is saving as much time as possible, and it can be achieved through agility. The objective of the reconstruction phase is saving as many costs as possible, and it can be achieved through leanness.



Figure 1.11 Disaster reconstruction



Figure 1.12 Disaster reconstruction

CHAPTER 2

THE ROLE OF HUMANITARIAN LOGISTICS IN DISASTER MANAGEMENT

IMPORTANCE

25. Logistics is central to disaster relief for several reasons. First, it serves as a bridge between disaster preparedness and response, between procurement and distribution, and between headquarters and the field. Second, it is crucial to the effectiveness and speed of response for major humanitarian programs, such as health, food, shelter, water, and sanitation. It can be one of the most expensive parts of a relief effort (Thomas, 2008).

26. Third, since the logistics department handles tracking of goods through the supply chain, it is often the repository of data that can be analyzed to provide post-event learning. Logistics data reflects all aspects of execution, from the effectiveness of suppliers and transportation providers to the cost and timeliness of response, to the appropriateness of donated goods and the management of information. Thus, it is critical to the performance of both current and future operations and programs.

27. Humanitarian logistics is a branch of logistics, which specializes in organizing the delivery, and warehousing of supplies during natural disasters or complex emergencies to the affected area and people. However, this definition focuses only on the physical flow of goods to final destinations, and humanitarian logistics is far more complicated and includes forecasting and optimizing resources, managing inventory, and exchanging information.

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28. Humanitarian logistics plays an integral role in disaster relief for several reasons. First, humanitarian logistics contributes immensely to mitigating the negative impact of natural disasters in terms of loss of life and economic costs. They occur in four different ways:

- a. Losses of buildings, highways, and other infrastructure.
- b. Losses in output and reductions in employment and tax receipts.
- c. Losses due to the increase in the price of consumable and construction materials.
- d. Losses of millions of lives because of the scarcity of food and accidents.

THE PROCESS OF HUMANITARIAN LOGISTICS

29. The process is complicated with the involvement of various actors in different locations. To be more specific, the process connects various actors, including, donors, local/international aid organizations, local governments, and beneficiaries. There are three fundamental flows in this process: the flow of material, the flow of money, and the flow of information.

- a. The flow of material: - the flow of products from donors to beneficiaries, including food, blankets, medicines, and water, and the reverse flow of returned products after disasters.
- b. The flow of information: - includes demand forecasts, order transmissions, and order status reports, to ensure preparedness and communications.
- c. The flow of money: - includes checks, cash, and payment documents such as Letters of credit, invoice, and commercial contracts.

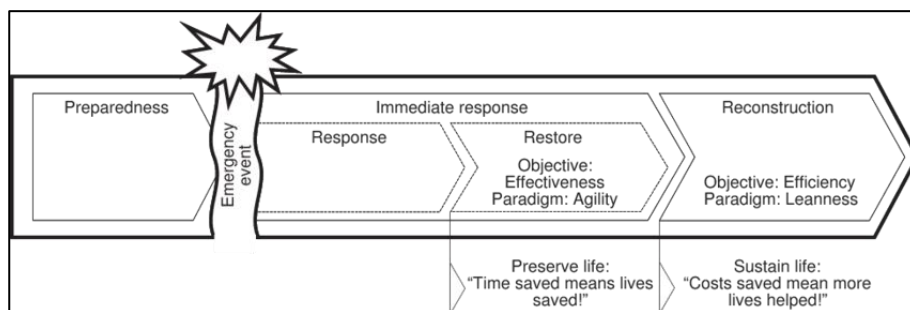


Figure 1.13 Process of humanitarian logistics

THE ROLE OF DIFFERENT STAKEHOLDERS IN HUMANITARIAN LOGISTICS

30. Different stakeholders need to play different and specific roles in the management of a disaster. Various parties are involved in the humanitarian supply chain for both natural and man-made disasters.

THE ACADEMIC COMMUNITY

31. The academic community plays a significant role in humanitarian logistics education and research. Education, research, and the development of a knowledge base for sharing best practices are the primary functions of the academic community. Disaster education aims to provide knowledge, skills, motivation in individuals and groups to take actions to reduce their vulnerability to disasters. Even, educating vulnerable people makes effective actions for other people or communities.

THE GOVERNMENT

32. The governments play a very important role in the preparedness and response to disasters as well as they have been playing a key role during all the disasters experienced earlier. There is a need for conducting mock drills and the national and the state governments all have different responsibilities. As an example, Food shortages in developing countries can lead to starvation, which can have a long-term impact on people's lives. Therefore, government have different responsibility to prevent that kind of situation.



Figure 1.14 Sri Lanka Army in HL

NON-GOVERNMENT ORGANISATIONS

33. Non-governmental organizations (NGO) play an important role in any economy, particularly creating countries, which has been acclaimed overall. They also play an important role in disaster preparedness and response. NGOs are active in disaster relief and the protection of victims. Offering new smaller scale credits or rescheduling their instalment programs for recovery are examples of post-catastrophe exercises. One classic example of an NGO is the Asia Pacific Alliance for Disaster Management.



Figure 1.15 – NGOs actions in Sri Lanka



Figure 1.16 – NGOs actions in Sri Lanka

LOCAL COMMUNITY AND DISASTER-AFFECTED COMMUNITIES

34. The preparedness and management of disasters is not only the responsibility of the government and private sectors but also of the local community and the disaster victims. There is a need for them to work together to improve the efficiency of disaster management. That will increase disaster preparedness and emergency response capabilities at the local level. Communities are equally responsible for ensuring that the ecology does not become vulnerable because of human activity (SLCDMP, 2014).

DONORS

35. In the developing economy, especially in the catastrophe administration segment, donors play a key role, both on a national and local level. Over the years, foreign and local funders have played a huge role in disaster prevention and mitigation, primarily United Nations Development Program (UNDP), United Nations Educational, Scientific and Cultural Organization (UNESCO), and The World Bank with other sources of assistance.



Figure 1.17 Logos of donors

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**CATEGORIES OF HUMANITARIAN LOGISTICS RELATING TO DISASTER
MANAGEMENT**

36. There are two main categories of humanitarian logistics in disaster management,
- a. Programs: Front line activities in relief and development
 - b. Support services; Back room, finance, technology, and communication.

DISASTER RELIEF AND DEVELOPMENT PROGRAMS

37. The Sustainable Development Goals (SDGs), otherwise called the Global Goals, were taken on by the United Nations in 2015 as a general source of inspiration to end destitution, secure the planet, and guarantee that by 2030 all individuals appreciate harmony and success. The 17 SDGs are coordinated—they perceive that activity in one region will influence results in others, and that development should adjust social, monetary, and natural supportability. (Salam and Khan, 2020)

38. Nations have resolved to focus on progress for those who're uttermost behind. The SDGs are intended to end neediness, yearning, Acquired Immuno-Deficiency Syndrome (AIDS), and oppression ladies and young ladies. The imagination, ability, innovation, and monetary assets from all of society is important to accomplish the SDGs in each unique situation.

39. Back room, finance, technology, communication these are the support service that provide their assistance in conducting, initiating, and carrying out disaster management, relief, and development program.

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SOFTWARES USED IN HUMANITARIAN LOGISTICS

40. Humanitarian Logistics is defined as the process of planning, implementing, and controlling the efficient, cost-effective flow and storage of goods and materials, as well as related information, from the point of origin to the point of consumption for the purpose of alleviating the suffering of vulnerable people. Diverse software used in humanitarian logistics helps to effectively mobilize people, resources, and expertise to and helps vulnerable communities to be safe from disasters.

HUMANITARIAN LOGISTICS SYSTEM

41. The Fritz Institute created Humanitarian Logistics System (HLS) to address the supply chain requirements of humanitarian organizations. From contribution through delivery, HLS monitors the flow of supplies, information, and funding, offering a variety of advantages, including:

- a. Improved coordination among humanitarian assistance groups
- b. Increased aid chain velocity
- c. Increased timeliness of information for decision-makers in the field
- d. Improved institutional memory throughout the relief process
- e. Increased contribution return

42. The Technology Museum of Innovation (San Jose, CA) designated Fritz Institute a Tech Laureate in November 2004, a distinguished honor presented yearly in appreciation of social entrepreneurs that utilize technology to benefit humanity.

43. The Fritz Institute offers a royalty-free license to humanitarian aid groups to utilize HLS for disaster relief, health and social initiatives, and support to individuals affected by war or natural catastrophes.

SUMA SYSTEM

44. There are three layers to the system:

- a. SUMA central
- b. SUMA field unit
- c. Managing the Warehouse

SUMA CENTRAL

45. SUMA central is meant to work in areas where national authorities are coordinating the response to a catastrophe or emergency.

46. The primary responsibilities at this level are:

- a. Designating parameters for the field units to utilize, such as receiving, locations, shipping directories, defining the main user, and so on.
- b. Establishment of Field Units.
- c. Incorporation of data supplied by the field units (consolidation).
- d. Facilitating discussions and preparing reports to assist in the decision-making process and improve inter-institutional cooperation.
- e. Upkeep of the system tables (listings)

FIELD UNIT

47. The following are the key activities completed at this level: Sorting and identifying supplies using labels, categorizing them as urgent – immediate distribution, low distribution property and non-property.

- a. Organizing supplies into categories, subcategories, and objects.
- b. Item-by-item inspections (consultations).
- c. Compiling reports on the contents of supplies recorded at the Field Unit.
- d. Providing proof of delivery receipts to the recipients.

CONSOLIDATING DATA ON DISKETTES FOR TRANSMISSION TO CENTRAL

48. Manual forms are used by the SUMA field unit if computers fail or when the data collection procedure requires it. The warehouse management module is a tool that keeps track of the goods that come in and go out of storage facilities or warehouses. These warehouses also get a diskette with information from the Field Units and/or Central Level, in addition to the supplies (Modh, 2010).

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CHAPTER 3

CHALLENGES OF HUMANITARIAN LOGISTICS

49. Humanitarian logistics plays an integral role in disaster relief for several reasons. First, humanitarian logistics contributes immensely to mitigating the negative impact of natural disasters in terms of loss of life and economic costs. It helps to implement processes and systems involved in mobilizing people, resources, skills, and knowledge to help vulnerable people affected by natural disasters and complex emergencies. Hence, it is vital to understand the challenges involved with humanitarian logistics. Some of the key challenges identified through research are as below.

- a. High costs of logistics
- b. Failure to identify the importance of humanitarian logistics
- c. Lack of transparency
- d. Lack of professional staff in Sri Lanka
- e. Insufficient use of new technologies
- f. Unsatisfactory training and development related to humanitarian logistics

HIGH LOGISTICS COSTS

50. In Sri Lanka despite a trend toward more use of financial transfers for humanitarian responses, procurement and logistics generally account for a significant portion of the cost, including the creation and administration of inter-organizational contracts (SLCDMP, 2014). When participants in transactions update their own records and ledgers to reflect one and the same transaction, work is frequently duplicated.

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FAILURE TO RECOGNIZE THE IMPORTANCE OF HUMANITARIAN LOGISTICS

51. The current surge in interest in humanitarian operations, as well as a growing appreciation of their relevance, has resulted in logistics focusing much more closely on humanitarian issues. From the initial acquisition to the distribution of aid to recipients, HL encompasses a wide range of tasks. Inadequate planning, ineffective operations, and a lack of teamwork are all major factors that have had a direct and negative impact on HL operations.

LACK OF TRANSPARENCY

52. Corruption and fraud are the result of a lack of transparency. There's a chance that lack of openness in the supply chain may lead to corruption and fraud, which will make delivering humanitarian relief more difficult. Untrustworthy parties have fewer opportunities to deceive with a single shared ledger.

LACK OF PROFESSIONAL STAFF IN SRI LANKA

53. Sri Lanka is confronted with a complicated and frightening array of possible threats. Weather is responsible for 70% of all disasters, and climate change is expected to exacerbate this trend. Many people are affected by natural catastrophes, such as flooding, tropical cyclones, and drought. Individuals who are most vulnerable are those who are unable to appropriately defend themselves from emergencies owing to poverty, a lack of information, or other disadvantages. In this setting, children, particularly those in the country's northern regions ravaged by civil war, require special attention.

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INSUFFICIENT USE OF NEW TECHNOLOGIES

54. Technology's influence in disasters can be predicted in such a way that it lowers risk and aids in vulnerability reduction. Progress in natural hazards science and technology, as well as related coping strategies, has allowed for substantial improvements in the integrated approach to the problem of natural catastrophes in recent years. Understanding the mechanisms of natural hazards arising from atmospheric, geological, hydrological, and biological sources, as well as analyzing how these hazards become disasters, is aided by science and technology.

UNSATISFACTORY TRAINING PROGRAMS AND EVENTS

55. To better mitigate disaster risks and build a more disaster-resilient society, the Sri Lankan government needed to take decisive and systematic action. To that end, the Ministry of Disaster Management and Human Rights was established in response to a May 2005 act of the Sri Lankan Parliament that designated disaster management as a national mission.

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CHAPTER 4

STRATEGIES TO OVERCOME CHALLENGES OF HUMANITARIAN LOGISTICS

56. Looking at the recent periods in Sri Lanka, there is a lack of knowledge among Sri Lankans about humanitarian logistics. In many cases, conflicts among business workers, such as the failure to use systematic remedies in emergencies, are largely based on the lack of existing knowledge and neglect of humanitarian logistics (Daud and Hussein, 2016). To overcome these barriers strategic approaches are important. These strategic approaches will be helpful to moving forward to improve humanitarian logistics in Sri Lanka.

CREATING A PROFESSIONAL HUMANITARIAN LOGISTICS COMMUNITY

57. By forming a professional humanitarian logistics community, humanitarian logisticians will be able to share their knowledge and experience on common concerns, as well as establish a consistent and effective voice with all players in the sector. They will be able to form a strategic framework considering the past events and the company will be able to face the challenges without any fear.



Figure 4.1 Humanitarian logistics community

COLLABORATION AMONG ORGANIZATIONS

58. Governments should take the lead in defining what key resources the region requires and bringing NGOs and other associated organizations together. Alliances between for-profit and non-profit organizations, as well as between non-profit groups, should be explored, but these alliances should be formed before a tragedy strikes. Information sharing and organization specialization are two further ways for facilitating collaboration that may lessen competition among firms.



Figure 4.2 Alliance between Asia Pacific Alliance for Disaster Management and government

PERFORMANCE MEASUREMENT

59. Humanitarian activities are part of a cycle of continual improvement that necessitates measurement. All learned lessons should be discussed and documented after a disaster. It is critical to keep track of the results of humanitarian activities to ensure that supplies reach those who need them. Humanitarian organizations should be judged not just on their efficiency and efficacy, but also on how well they reach out to the public. It will also empower humanitarian logisticians with the tools they need to show and enhance the performance of humanitarian supply networks.

INVESTING IN STANDARDIZED TRAINING AND CERTIFICATION

60. Adequate education is required for humanitarian logistics to be recognized as a profession. Structured courses, seminars, conferences, and training camps could all be part of an educational program that focuses on problem-based, practical methods. It is critical to educate and train the entire community, and all stakeholder groups should be responsible for creating public awareness.



Figure 4.3 Disaster management training and development program

IN-KIND DONATIONS MANAGEMENT

61. Consolidate donations so that they can be sorted and redistributed or reassign them to local groups who are prepared to handle them. These organizations can either identify usable things or sell part of them to raise money for humanitarian efforts. For in-kind contribution processes, always enforce planning, communication, and teamwork. For example, a practice is known as "donations in the contract" can help supply chain operations become more stable. Rather than delivering all they have and asking receiving organizations to sift and handle donations, "donations under contract" are only physically transmitted when requested by the receiving organization and under the contract's provisions.



Figure 4.4 Donations

HUMANITARIAN OPERATIONS EVALUATION

62. Humanitarian activities are part of a cycle of continual improvement that necessitates measurement. All learned lessons should be discussed and documented after a disaster. It's critical to keep track of the results of humanitarian operations; avoid techniques like "truck and dump," which fail to document whether supplies reach individuals in need. Humanitarian organizations should be judged not just on their efficiency and efficacy, but also on how well they reach out to the public.

DEMAND ANALYSIS

63. Create a basic framework for modeling demand using historical data, previous experiences, and the most likely scenarios. Begin with a disaster design, which includes the sort of disaster, its scale, location features, and other identifying criteria.

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CONCLUSION

64. Humanitarian logistics plays an integral role in disaster relief for several reasons. First, humanitarian logistics contributes immensely to mitigating the negative impact of natural disasters in terms of loss of life and economic costs. Second, humanitarian logistics is considered the repository of data that can be analyzed to provide post-event learning. Developing logistics warehousing to store all essential goods plays a crucial role in disaster response planning. Logistics support for humanitarian operations is characterized by a number of features, which include the uncertainty of demand, the priority of response speed over costs, a large number of stakeholders and the complexity of coordinating their actions, the need to negotiate with the governments of sovereign states and various authorities, the phase structure of activities, etc. on these features, to improve the logistics processes in the humanitarian sphere, it is quite possible and advisable to use the tools, methods and technologies developed within the framework of business logistics. Service providers in Sri Lanka can provide technological support and logistics staff and managers. They also provide specific services that may no longer be available on the ground immediately after a disaster has occurred, such as electricity supply, engineering solutions, banking support, and postal services. Challenges in implementing humanitarian logistics process and the solutions should be adopted by the authorities and the public is discussed so far in Sri Lankan context.

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