Supply Networks in Developing Countries

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Supply Networks in Developing Countries: Sustainable and Humanitarian Logistics in Growing Consumer Markets

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Foreword

The book discusses research-based and evidence based upcoming issues in humanitarian logistics. These include new disaster occurrences, frameworks, and policies, the fourth industrial revolution, information technology, reverse logistics, supply chain modelling, and blockchains, and how these might be used to improve logistics for aid in underdeveloped nations. In light of the rising number of emergencies, as well as the complexity and size of international emergency disaster operations, it analyses challenges with the management of the humanitarian supply chains.

It presents research results on the logistics involved in providing humanitarian aid in light of the complexity and scope of emergencies and disasters that are growing. This book uses the research findings to propose the skills and information necessary to manage supply chains in both unpredictable and challenging contexts. It similarly further discusses the roles and duties of key stakeholders, including the victims of disasters, donors, relief agencies, non-governmental organisations (NGOs), governments, the military, the private sector, shipping/logistics companies, and academia. It outlines the duties and tasks of government agencies, NGOs, and academic institutions in preparing the various stakeholders with the information and abilities necessary to save lives in disasters and uncertain environments.

In circumstances that are frequently volatile, dangerous, unexpected, and unstable, supply chain management plays a crucial role in disaster planning and response. Insightful evidence-based advice and discussion of the major problems facing practitioners handling the logistics of disaster relief are provided in the book. It also based on broad literature review and research results, contains recommendations for best practices and global viewpoints on the nature of the logistical challenge facing humanitarians and the victims of the disaster.

Additionally, it suggests solutions for waste management and reverse logistics in times of disaster. This book is essential reading for all researchers and experts who need to understand and research on supply change management in times of emergencies. The main focusses identified in the research monograph is the need to pay attention to cooperation, coordination, and information exchange as three of the largest issues facing the humanitarian sector. Each chapter stands alone as a research chapter and connects its information to the supply chain as a whole. This makes it simple for the reader to select relevant chapters and get useful results that can contribute to their work.

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Chapter 1

Humanitarian Logistics, Identifying and Reacting to Disasters

1.1. Introduction

The research trends and findings in the field of humanitarian logistics will be reviewed in this chapter. This review will explain how development help and relief during disasters and emergencies are delivered while focussing on case studies in humanitarian logistics and aid during disasters and crises. Humanitarian supply networks' diversity and complexity are reflected in humanitarian logistics.

The development of the application of theoretical ideas in supply chain management and commercial logistics also serves as a backdrop for the discussion of the experience of the Developing World. The point being made is that the complex environment in which humanitarian interventions take place in the Developing World presents serious management and leadership challenges due to the variety of disasters that can occur there, to political and cultural diversity, to the inadequate and inadequately maintained infrastructure, as well as other resource requirements needed to support and manage humanitarian interventions in a sustainable manner.

Additionally, the effectiveness, efficiency, and success of interventions are influenced by the participation of continental, regional, international, civil society organisations, global humanitarian agencies, and opinion leaders, who also control the level of cooperation and collaboration. A multitude of actors and the complexity of humanitarian supply networks in the Developing World, like everywhere, present significant leadership and logistical management issues.

1.2. Humanitarian Logistic Background Review

There hasn't been a lot of in-depth research on supply chain management and humanitarian logistics. One can see certain holes and that it is still developing. It has mostly focussed on integrating logistics best practices from the private and commercial sectors and working out how to incorporate them into supply chains for humanitarian purposes. Numerous researchers, including Tomasini and Van Wassenhove (2005), have published in this field of study. Some even

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concentrate on the logistical tasks that multinational organisations can genuinely execute while aiding sizable non-governmental organisations (NGOs) in humanitarian efforts. Mbohwa (2008) explains how major NGOs, such as the Red Cross, United Nations International Children's Emergency Fund (UNICEF), and the World Food Programme (WFP), operate in Zimbabwe. He also identifies issues and offers remedies. The majority of research has concentrated on finding ways to reduce expenses while accelerating rescue efforts. Among others, they include Kleindorfer and Van Wassenhove (2004), Clark and Culkin (2007), Thompson (2008), Qiang, Nagurney, and Dong (2008), Van Wassenhove (2006), Thomas (2003b).

Thus, it is clear that there is a need for more research on improving supply chain systems, implementing green and reverse logistics, and exploring how the technologies of the Fourth Industrial Revolution may improve the efficacy of humanitarian operations. The effectiveness of logistics can also be measured in another study, and efforts can be made to make them as efficient and quick as feasible. As a result, there is still more work to be done in this area, notably implementation.

Humanitarian logistics can be fairly complex, thus it's surprising that manual techniques are still largely preferred over digital and quicker technologies. The majority of information technology (IT) resources are not being leveraged in a way that will increase and improve information availability, reporting, and learning (Thomas & Kopczak, 2005). Only a few assistance organisations, according to the research, have made an attempt to reduce humanitarian costs by developing high-performing logistics and supply chain operations. Since external conditions and the structure of funding have led to operations with high personnel turnover rates, dispersed technology, ill-defined manual processes, and a lack of institutional learning over time, it may be beyond the control of the majority of aid organisations. As a result, relief efforts are not as efficient, quick, or successful as they could be, and aid does not always reach victims (Thomas & Kopzack, 2005).

1.3. Humanitarian Supply Chains

The term 'humanitarian supply chain' refers to the network formed by the exchange of goods, services, money, and information between donors, recipients, suppliers, and other branches of humanitarian organisations with the aim of delivering tangible aid to recipients. Humanitarian supply chains may have features that don't normally belong in the category of humanitarian logistics. Non-logistics programme units are often in charge of maintaining contacts with donors, conducting needs analyses, arranging for the necessary supplies, and monitoring and assessing the effects of distributed resources. Units that implement programmes, manage funds with donors, oversee budgets, and coordinate activities with logistical units are all part of the humanitarian supply chain (Thomas & Kopzack, 2005).

The concept of humanitarian supply networks is based on the idea that disasters are becoming more common in the globe, necessitating the adoption and adaption of business and military supply network ideas and practices in response

to humanitarian operations. All nations and continents are impacted by this, and Africa is no exception. Many humanitarian calamities overwhelm the community's ability to respond, pushing it beyond its breaking point and rendering the status quo systems ineffective. As a result, the communities will be vulnerable and in need of outside help (Thomas & Kopzack, 2005).

Man-made disasters are more common in emerging nations. However, natural disasters can also occur and have a substantial negative impact on the region's physical infrastructure by destroying bridges, airports, and other forms of electrical and transportation infrastructure. Agile supply networks must be present or engaged when this happens. It's crucial to focus on quick response times in these circumstances. This might be challenging in the Developing World, especially when there is inadequate infrastructure and slow communication. The planning horizon for slow-onset disasters is essential in these African environments to allow logisticians to focus on cost-efficiency (Oloruntoba & Gray, 2006).

Stakeholders are all the various parties that are involved with and impacted by this industry. These can be put into groups: UN agencies providing relief (WFP, UNICEF, etc.) and private corporate funders including Fritz Institute, Aidmatrix, and American logistics aid networks; public government donors including U.S. Agency for International Development (USAID), Department for International Development (DFID), and others; and NGOs including CARE, World Vision, and Oxfam.

Donors, aid organisations, NGOs, governments, military, and logistics service providers are all stakeholders of the humanitarian supply chain. They can collaborate and share information in efforts to assist victims of natural or man-made disasters (Thomas & Kopzack, 2005).

Distribution of food, water, sanitation, shelter, and medical assistance are typical areas of operation. Sponsors and suppliers make up the inbound sides. They may provide sponsorship in the form of money, gifts, grants, or supplies like food and non-food products. These progress downward in the supply chain as information travels both ways. Customers, also known as beneficiaries, communities, or projects, are divided between relief and development. Typically, there aren't any or very few logistics-related operations. Reverse logistics begin once the project is finished (mostly packaging materials and vehicles).

1.4. Characteristics of Humanitarian Logistics

- Ambiguous goals, with humanitarian efforts frequently being spontaneous, unsolicited, and desperate on the part of donors, agencies, the media, and beneficiaries.
- High uncertainty and complexity that depends on assessment of ongoing changes in supply and demand; limited resources with high employee turnover in staff with heavy physical and emotional demands, limited funding with challenges relating to cash flow, and frequently multiple damaged infrastructure.
- Humanitarian interventions after a disaster are typically characterised by acute urgency.
- A highly politicised environment, from donations through distribution in the field.

1.5. Humanitarian versus Commercial Supply Chains

- In contrast to commercial supply chains, which prioritise increasing profit and return on investment, humanitarian logistics prioritise yield in order to ensure that recipients receive the greatest possible benefit.
- Client pleasure in contrast to beneficiary survival.
- Deliberate volunteering as opposed to corporate social responsibility.
- Success rather than importance.

The three phases of operations are planning, quick reaction, and reconstruction. Planning entails risk management and disaster prevention.

Crisis management (short-term management) is the immediate response. Continuity and planning form the reconstruction (long-term management)

1.6. Humanitarian Supply Chains

There are several supply chains for various services, including development initiatives, food distribution, in-kind gift distribution, and emergency relief or response. Usually, there are four generic supply chains:

1. A supply chain with continuous replenishment enables easy management of very predictable demand from well-known customers (e.g. predictable regular supply of chronic medication).
2. Regular demand patterns, which are fairly predictable and forecastable, and lean supply chain (although might be seasonal). These put efficiency first (e.g. food distribution), possibly given the demand is understood from prior
3. Agile supply chain – typically ad hoc (may be the consequence of marketing campaigns, new product launches, promotions, or unanticipated possibilities). Consider the calculation for service cost (projects for development to adapt to unanticipated/unplanned demand).
4. Fully flexible supply chain – unpredicted and unpredictable demand brought on by unidentified consumers who have extraordinary or urgent needs (e.g. responding to the nature and incidence of disasters in Africa).

1.7. Disasters

Numerous disasters, including epidemics, floods, wildfires, storms, earthquakes, volcanic eruptions, and landslides, have struck the world during 2015. Inflicting a terrible toll on developing nations in particular, where disasters divert attention and resources away from the development that is urgently needed to escape poverty, these have claimed tens of thousands of lives, resulted in material losses in the billions of dollars, and caused terrible losses. In terms of logistics, supply chains, and humanitarian assistance, the cost of managing disasters has significantly increased. The United Nations' (UN) humanitarian appeal was

US$3.7 billion in 2005; by 2016, it had increased to almost US$20 billion (*The Guardian*, 2017).

Human activities frequently cause or at least exacerbate the calamities of today. A lack of suitable institutional and legislative systems, poor environmental management, and inadequate land-use planning all contribute to increased risk and multiplied effects of catastrophes, some of which are natural but some of which are caused by human activity. Under extreme environmental disaster scenarios, it is also predicted that the Human Development Index for sub-Saharan Africa will decline by as much as 24% by 2050, highlighting the need for resilient humanitarian logistics and supply management systems as well as mitigation and adaptation strategies. According to estimates, if this isn't done, there might be over a billion people living in extreme poverty in the region (UNDP, 2013).

African nations are exposed to a variety of disasters, including civil unrest, population mobility (refugees and internally displaced people), earthquakes, cyclones, flooding, droughts, and diseases (Chatora, 2005). Particularly in sub-Saharan Africa, the effects of the HIV/AIDS pandemic as well as the malaria and tuberculosis epidemics put downward pressure on sustainable development. Extreme weather and climatic events have become more common, particularly in West and Southern Africa, which has led to natural disasters said to be caused by climate change (IPCC, 2012).

Between 1994 and 2013, more than one billion people, or 25% of the world's population, were affected by dry spells, with 41% of the world's drought disasters occurring in Africa (UNISDR, 2015). Only 5% of all disasters, however, were drought-related and required humanitarian assistance. The Horn of Africa saw its worst drought in 60 years in 2011, putting more than 13.3 million people at risk of famine and malnutrition. Famine resulted from the drought in Somalia, where decades of conflict had worn down the nation's capacity to cope. This resulted in a significant increase in the need for humanitarian aid, necessitating efficient logistics and supply management to lessen the effects of the catastrophe in addition to preventive measures like the creation of irrigation systems (USAID, 2012).

Droughts frequently affect South Africa (WFF, 2016), and the nation is currently dealing with its worst drought in more than 35 years. This comes after several years of insufficient precipitation, the worst of which was in 2015, since 1904. As a result of the ongoing decline in dam levels brought on by the lack of rainfall in 2016, numerous cities nationwide were left almost completely dry. As a result, many South African provinces were labelled 'states of calamity' due to the drought.

1.8. Armed Conflict

A second major factor in the displacement of people and the creation of refugees has been armed conflict in Africa, which is thought to account for 30% of all refugees globally. A total of 18 million people are a cause for concern, primarily because of conflict in the Central African Republic (460,000 people have been displaced into neighbouring countries and 411,000 have been internally displaced), Southern Sudan (1.9 million people internally; 630,000 people in Uganda;

338,800 people in Ethiopia; 297,168 people in Sudan; 88,391 people in Kenya; 66,672 people in the Democratic Republic of the Congo, and 4,915 people in the Central African Republic), Burundi (409,000 people), Nigeria Mali (140,000 in neighbouring countries and 37,000 domestically displaced), Somalia (1.5 million internally displaced and 1 million in neighbouring countries), and Sudan (2.7 million internally displaced and 200,000 in neighbouring countries) (UNHCR, 2016]). In addition to internal displacement in Nigeria, there have been internal displacements in Cameroon (192,900), the Lake Region of Chad (82,260), and Niger (184,230). At the end of 2016, there were also 715,000 stateless persons living in Africa (UNHCR, 2017a).

1.9. Xenophobia

Xenophobia is an opposition to and hostility towards foreigners (Mcdonald & Jacobs, 2005). It is any form of fear involving a person or group that the person with the phobia perceives as being distinct from them. (Anon, 2013). This is clearly present within South Africa's population groups. Such xenophobia in South Africa has resulted in catastrophes that have severely damaged property, businesses, and ways of life. It is evident that early intervention is necessary before the xenophobic crisis reaches disaster levels as a result of the fact that many victims received assistance with transportation back to their home countries (Lawyers for Human Rights, 2015). However, South Africa has created adaptable and quick supply chains for humanitarian aid to support the phase of responding to xenophobic attacks. While it is important to closely monitor how swiftly and effectively humanitarian groups can respond to xenophobic humanitarian disasters, they tend to focus on saving lives, providing food and shelter to people who have lost their homes, and providing victims with essential health treatment (Schwarz & Kessler, 2010).

However, the biggest xenophobic attacks in South African history occurred in 2008, resulting in 62 fatalities and the expulsion of 35,000 people (Steinberg, 2008). Unfortunately, there is no assurance that similar eruptions won't occur again in the future. In conclusion, xenophobia constantly creates a risk that it may lead to humanitarian catastrophes in South Africa.

By dealing with some of the reasons for xenophobia, it is possible to address the remedies to humanitarian catastrophes caused by xenophobia. The primary ones are: the inability of the government to uphold law and order and to combat violent crimes (Cronje, 2008); foreign nationals accepting poverty-level wages; the failure of South Africa's foreign policy to condemn election fraud and dictatorship in other African countries leading to 'economic refugees'; corruption in immigration leading to fake work and residency permits; porous borders; the perception that foreigners are gaining access to South African women and jobs at the expense of locals (Mnyaka, 2009); and poor service delivery by all levels of government (Cronje, 2008).

That so, some people disagree with the claim that immigrants steal American employment. For instance, Nkosi (2010) claimed that some foreigners are well educated and skilled, but Steinberg (2010) said that some foreigners are simply

grabbing employment rather than filling up gaps in the country. As an illustration, it is reported that due to a lack of teachers with these skills, more than 600 teachers were recruited from Zimbabwe to teach mathematics, science, and technology courses in the province of Limpopo.

1.10. Natural Disasters

Humanitarian unrest can also result from wildfires. Africa has numerous areas that are prone to drought, and wildfires have forced many people to flee their homes while also destroying their possessions. In South Africa, in particular, wildfires are now a major issue. Unchecked fires are damaging homes, pastures, farms, land, soil, forests, animal life, and shrub fields in addition to endangering human lives, health, and the environment. Additionally, wildfires use a significant amount of water, ruin livelihoods, raise insurance rates, endanger some species, and slow down economic growth. The dry summer and winter months are when the fires happen.

The primary culprits include abandoned campfires, the 'imbawula' heating stoves, which are most commonly seen in remote villages, lightning, fire debris, cigarette stumps, and fireworks (Forsyth et al., 2010). With a fire in the Table Mountain region affecting 500 people and necessitating the treatment of 52 elderly people for smoke inhalation, wildfires have also resulted in the loss of lives and the evacuation of properties. Six helicopters and two planes were required to put out the fire, which also destroyed or damaged a hotel lodge, homes, old wine vineyards, and offices. In June 2017, the Western Cape saw the biggest wildfire disaster in South Africa, which was primarily brought on by lightning. A total of nine people died, over 1,000 homes were destroyed, and 10,000 more were forced to flee their homes (Wild Fire Today, 2017).

1.11. Flooding

In general, the Emergency Events Database shows that 43% of the recorded catastrophes between 1994 and 2013 – which affected around 2.5 billion people – were caused by flooding. In addition to causing deaths, injuries, water contamination, property destruction, and a disruption in electricity supply, floods also leave 4 million people in Madagascar without enough food due to the locust swarms that follow them. Floods destroyed Morocco in 2014, while Malawi saw its worst floods in 50 years in 2015, with around 300 fatalities, 230,000 displaced residents, and 638,000 people affected. Flooding in Ethiopia followed the country's worst drought in decades, destroying whatever crops that had survived.

1.12. Climate Change

Climate variability and climate change worsen the situation in such cases making logistical operations extremely challenging. In some cases, helicopters and airfreight become the only viable rescue methods. In early 2017, Cyclone 'Dineo' brought torrential rains to South Africa with the subsequent floods causing

damage to both property and the environment as well as 10.2 million people in need of food aid. Similar events in 2017 have severely impacted Madagascar and Sierra Leone (*The Guardian*, 2017).

1.13. Disasters and Sustainable Development in Africa

The African Ministerial Statement to the World Summit on Sustainable Development emphasised that the continent's efforts to achieve sustainable development are seriously hampered by the rising frequency of natural disasters in Africa (UNEP, 2001, para. 16). Africa's inability to foresee, monitor, manage, and prevent natural calamities makes this situation worse. Therefore, it is very concerning how prepared the continent is for disasters (Marjanovic & Nimpuno, 2003).

The difficulties include mismanagement of government-controlled reserves, slow NGO accreditation, economic decline and low recipient purchasing power, currency devaluation and inflation, high HIV infection rates, malnutrition, a shrinking labour force, unpredictable weather patterns, and dispersed populations. One of the biggest obstacles was specifically the worry that genetically modified grains will annihilate traditional crop kinds and endanger the viability of agriculture in the destination countries. It was thought that the long-term effects of importing genetically modified food into the local economy would have been worse than the short-term benefit of feeding hungry people in Southern Africa.

In order to lessen vulnerability and meet basic needs, Principle 8 of the Red Cross Code of Conduct emphasises the need to pay special attention to environmental issues in the design and management of humanitarian relief operations (IFRC, 2012). However, many humanitarian response operations still have a detrimental influence on the environment, and relief and recovery efforts can occasionally worsen the damage already done (UNEP, 2012). Unsustainable humanitarian efforts can lead to overexploitation of the environment and already-stressed natural resources.

Basic humanitarian operations can result in unsustainable practices such as the improper management and disposal of fuel, waste oil, tyres, chemicals and waste from operations based on logistics, or the procurement of goods made using unsustainable practices, all of which have the potential to reverse and overshadow the original intended good intentions. However, considering that the operation's goal is to meet urgent humanitarian needs, which is a matter of life or death, this component is frequently overlooked. This issue can be solved by creating more environmentally friendly supply chains and humanitarian operations that work to meet immediate needs without endangering the community's long-term social, economic, and environmental stability.

Other common sustainability issues are boreholes that run dry because of overpopulation and extensive deforestation, as well as displacement camps that were intended to provide temporary relief but instead last for years or decades (Encyclopedia of the Earth, 2009). In other words, failing to address risks, like the use of forests as a source of cooking wood, can undermine humanitarian efforts, leading to more casualties, displaced people, dependence on aid, and increased