# AN EVALUATION OF FLOOD SUPPLY CHAIN MANAGEMENT STRATEGIES IN NAMIBIA

**Ernest Mugoni, Marondera University of Agricultural Science & Technology**

## ABSTRACT

*Humanitarian organisations such as Directorate of Disaster Risk Management (DDRM) play a significant role in meeting the basic needs of people in need of humanitarian aids. Much time of the humanitarian organisation's operations is spent on logistics and Supply Chain Management (SCM) activities. Supply chain challenges faced and therefore, worsen humanitarian operations by creating a lot of uncertainty among humanitarian organisations. This study was carried out to identify the challenges facing the humanitarian supply chain during a disaster situation, the perceived readiness during disaster preparedness and practices that can be adapted to overcome the challenges. The study adopted a quantitative approach supported by a survey to determine the challenges experienced and readiness of the DDRM. Data was successfully collected through questionnaires from 31 employees who were selected through random sampling techniques. From the findings, challenges facing DDRM as a humanitarian organisation were grouped into organisational challenges, financial challenges and deployment-related challenges. With organisational challenges, DDRM employees agreed that the organisation is facing challenges such as the role of the humanitarian supply chain not being recognised as well as the lack of assets and cumbersome administration procedures slowing down the supply chain. The participants also agreed that the stringent donor rules and guidelines inhibit efficient and effective supply chain management. The financial challenges identified were that there is a lack capital that is being invested in the supply chain preparedness activities by the Namibian government and even though these funds are available from international organisations this fund cannot be accessed for preparedness activities. This is because funds to procure items are only released after the disaster has occurred. In addition, the study identified that lack of preparedness has a direct impact on deployment of both personnel and materials. The findings from this study have also indicated that when it comes to deployment, DDRM employees are very positive and demonstrated high level preparedness. The employees are always prepared for deployment during an emergency, and as they believe that their families and friends support their participation in the deployment. However, the staff believes that there is a possibility of getting support from community members to assist with disaster management although this community members need to be identified and trained.*

**Keywords:** Disaster Relief, Effectiveness, Efficiency, Humanitarian Organisation.

## INTRODUCTION

Natural and human-made disasters are always coupled with a series of negative consequences which includes internal displacement of people, water and food shortage, inaccessibility, and break down of services and infrastructure damage/destruction (Hampton, 2000). The world we live in is plagued by various natural occurrences, which are commonly termed disasters. The damage these disasters inflict can cripple and ravage any economy. The



**Citation Information:** Mugoni, E., (2023). An evaluation of flood supply chain management strategies in namibia. *Academy of Strategic Management Journal, 22*(6), 1-34.

only way to stay afloat is through purposeful efforts of government and other organisational bodies that plan to alleviate and smoothens the rehabilitation of the disaster-stricken areas. In 2008, flooding occurred in Namibia, and this disaster was more specifically devastating, especially in the northern parts of the country. The researcher's primary motivation for pursuing this study was to analyse the flood disaster management strategies of the Directorate Disaster Risk Management (DDRM) in the Office of the Prime Minister (OPM) but focusing mainly on disaster preparedness. The directorate is mandated to be the one responsible for ensuring that appropriate interventions are implemented to mitigate disaster impacts on vulnerable populations (The Republic of Namibia, n. d).

According to Andjelkovic (2001), flood management is a broad spectrum of water resources activities aimed at reducing the potentially harmful impacts of floods on people, environment and economy of the region. Andjelkovic further claimed that total flood protection is unrealistic and unwise. The goal of flood loss prevention is the improvement of the quality of life by reducing the impact of flooding and flood liability on individuals, as well as by reducing private and public losses resulting from the flooding. The objectives of the urban flood management are to provide an answer to the question of how to deal effectively with the possibility of flooding in the urban environment and how to cope with the associated uncertainties. One notes that it is on this premise that the researcher sought to analyse the flood management strategies that are used in the Directorate Disaster Risk Management in the Office of the Prime Minister.

Bradford et al. (2012) embarked on a study of a similar focus in Europe. He highlighted the role of public perception in flood risk management. Besides following from the concept of Raaijmakers et al. (2008) that relates flood risk perception to three indicators of awareness, preparedness and worry. This paper links self-assessed measures of these indicators from individuals in at-risk communities across Europe to direct experience of previous floods as well as the demographic profile of the individual in terms of gender, education level and employment status. One notes that the DDRM in the OPM has formulated various strategies to curb the adverse effects of floods in Namibia. Thus, this paper aimed at uncovering and analysing these strategies and methodologies to test their integrity and success, and to make recommendations based on the strategy implemented in the international community.

There has been notable research conducted over the past 30 years that identifies conditions that are influencing relief operations and measures to curtail the adverse effects of flooding hampering the global community (Jha et al., 2011). Reaching displaced people in a humanitarian emergency or disaster is heavily dependent on the effectiveness and efficiency of a supply chain. According to Kovács & Spens (2011), an effective disaster response supply chain is demonstrated using three stages, preparedness, response and recovery. Humanitarian supply chains often face short deployment periods and challenging working environments (Menth & Stamm, 2015; Thomas & Kopczak, 2015; Kovács & Spens, 2011). One notes that the question that is rising is how the flood management strategies of the Directorate Disaster Risk Management in the Office of the Prime Minister in Namibia deal with preparedness, response and recovery.

Furthermore, humanitarian supply chains comprise a string of collaboration amongst donors, governments, international and locally based agencies, suppliers and many more other participants that co-ordinate the stream of supplies, services, finances and information to respond to beneficiary needs (Menth & Stamm, 2015). Kovács and Spens (2011) added that the flow of supplies and materials need to be cost-effective and subsequently, accurate planning and control



**Citation Information:** Mugoni, E., (2023). An evaluation of flood supply chain management strategies in namibia. *Academy of Strategic Management Journal, 22*(6), 1-34.

is crucial. Moreover, humanitarian logistics include a series of supply chain activities conducted throughout disaster operations for accomplishing co-ordinated logistics excellence (Balcik et al., 2010; Kovacs & Spens 2009).

One notes that these activities encompass task of moving (transporting) huge cargo, high volumes of supplies and materials, which are essential during relief operations (Tatham & Pettit 2010; Thomas & Kopczak 2005; Tomasini & Wassenhove 2009). It is critical that all the humanitarian events happening before and after a disaster be appropriately conducted to meet the demand of the distressed communities (Yilmaz et al., 2015). Factors influencing relief operations should be considered during such activities. More so, humanitarian organisations face various challenges during relief operations. These challenges need to be identified for the ideal supply chain best practices to be implemented. According to Balcik et al. (2010) several dominating problems, including the unpredictability of occurrences concerning timing, geographic location and magnitude, hamper the smooth relief during disasters.

Two key issues have been identified to impact on the success of any supply chain and they both related to each other. These are the flow of accurate information as well as effective and accurate demand management. Pettit & Beresford (2009) communicated that the flow of accurate information within any supply chain is a critical contributing factor and have strong influences on response efficiency. Besides, Whybark (2007) stated that in disaster relief circumstances inventory first requires "push" into strategic storage locations before "pull" systems are implemented to get to the precise area of need. During the disaster, there are many organisations supplying relief goods to the victims, including government agencies, private sector operators, NGOs, and international organisations. However, this study focused particularly on the structure of aid provided by the Directorate Disaster Risk Management in the Office of the Prime Minister in terms of preparedness.

The researcher noted that Namibia recorded devastating flood annually and in 2008 it was more destructive, which was caused by heavy rainfall, and water flowing from the neighbouring country of Angola. This affected rural areas and the extreme marginalised areas and people in the six (6) regions mainly Zambezi, Kavango, Oshana, Oshikoto, Ohangwena, and Omusati, respectively (Ocha, 2009). The following table summarises the history of natural disasters in Namibia during the period 1900 – 2013.

One notes that Table 1 shows how much Namibia is affected by disasters, hence the need to assess the management of the humanitarian supply chain to ensure efficiency and effectiveness in relief to minimise the damages it caused. The table illustrates the disaster types more common in Namibia. The same table also shows the total number of natural disasters that occurred in Namibia from 1900 to 2013 and the impact and damage it had caused. The researcher notes that Namibia is Sub-Saharan Africa's driest country and the second most sparsely populated country in the world. With over half the population relying on agriculture for sustenance, two-thirds of the estimated 1.95 million people live in the six (6) northern regions of the country. Many live-in areas that are remote and not easily accessible. The table below illustrates the magnitude of the impact of the 2008 flood on the population living in the affected regions.



**Citation Information:** Mugoni, E., (2023). An evaluation of flood supply chain management strategies in namibia. *Academy of Strategic Management Journal, 22*(6), 1-34.

| | | No. of Events | No. Killed | Total Affected | Damage (USD '000) |
|---|---|---|---|---|---|
| **Drought** | Drought | 7 | - | 1,083,200 | 51,000 |
| **Flood** | Unspecified | 1 | - | 5,000 | - |
| | Flash flood | 1 | 2 | 12,000 | - |
| | General flood | 11 | 262 | 1,082,450 | 20,490 |
| **Epidemic** | Bacterial Infectious Diseases | 3 | 30 | 511 | - |
| | Parasitic Infectious Diseases | 2 | 234 | 12,098 | - |
| | Viral Infectious Diseases | 1 | 10 | 47 | - |
| **Total:** | | 26 | 538 | 2,195,306 | 71,490 |

**FIGURE 1**
**IMPACT OF NATURAL DISASTERS IN NAMIBIA, 1900 – 2013**

**Source**: Country Case Study Report: How Law and Regulation Support Disaster Risk Reduction United Nations Development Programme (UNDP) June 2014

Figure 1 shows how the 2008 flood have affected different regions in Namibia. These impacts ranged from people displaced, number of deaths and schools affected just to mention a few disasters.

Table 1 shows how the 2008 flood have affected different regions in Namibia. These impacts ranged from people displaced, number of deaths and schools affected just to mention a few disasters.

**Table 1**
**DETAILS OF THE IMPACT OF THE FLOODS IN THE AFFECTED REGIONS (2008)**

| Region | Caprivi | Kavango | Ohangwena | Omusati | Oshana | Oshikoto | Total |
|---|---|---|---|---|---|---|---|
| Total population (2009) | 87,058 | 257,235 | 261,323 | 243,657 | 176,586 | 181,304 | 1,207,275 |
| People affected | 26,263 | 9,000 | 133,703 | 228,842 | 161,916 | 117,818 | 677,542 |
| Percentage of people affected | 30.2% | 3.5% | 51.2% | 93.9% | 91.7% | 65% | 65.1% |
| People displaced | 26,263 | 9,000 | 12,056 | 401 | 8,549 | 276 | 56,545 |
| People in relocation camps | 19,738 | 4,718 | 1,296 | 564 | 2,478 | 138 | 28,932 |
| Number of deaths | 3 | 0 | 22 | 32 | 48 | 0 | 105 |
| Schools affected | 29 | 7 | 63 | 107 | 83 | 39 | 328 |



**Citation Information:** Mugoni, E., (2023). An evaluation of flood supply chain management strategies in namibia. *Academy of Strategic Management Journal, 22*(6), 1-34.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Pupils affected | 6,571 | 2,366 | 24,355 | 39,163 | 15,301 | 6,014 | 93,770 |
| Health facilities affected | 4 | 2 | 10 | 10 | 5 | 1 | 32 |
| Health facilities closed | 1 | 0 | 0 | 0 | 4 | 1 | 6 |
| Small-to-medium enterprises | 0 | 28 | 387 | 250 | 350 | 53 | 1,068 |
| Farmers with crop fields affected | 2,790 | 968 | 5,671 | 4,392 | 3,437 | 7,496 | 24,754 |
| Hectares of crops field damaged | 2,854 | 36,241 | 10,117 | 15,652 | 6,900 | 17,323 | 53,208 |
| Livestock affected | 3,000 | 0 | 0 | 0 | 0 | 0 | 3,000 |
| Livestock killed/lost | 18 | 0 | 2,161 | 693 | 2,093 | 5,038 | 10,003 |
| Wildlife affected | 300 | 0 | 0 | 0 | 0 | 0 | 300 |
| Roads damaged | 2 | 2 | 5 | 12 | 8 | 4 | 33 |

The DDRM in the OPM plays a major role in addressing and responding to the issues of disaster management in Namibia. The DDRM utilise funds from the National Disaster Emergency Fund (NDEF) to fund the flood disaster response, in addition to the donations received through other governments and international communities. Graph 1.1 illustrates the scope of the significance of disaster that commonly occurred in the Southern African Region which Namibia is part. The figure indicated that Namibia is mainly affected by three disasters, which are drought, epidemic and flood. In 2009 flood affected over 350 000 people around the affected region.

Once again, the year 2009 showed the devastating impact that natural disasters could have on human lives and livelihoods. After the relatively moderate year of 2008, natural disaster impact took a turn for the worse in 2009 in Namibia with more than 350 000 fatalities. One must note that trends and patterns in disaster occurrence are often significantly altered by single extreme events causing excessive human or economic losses. The graph above shows that numbers of disasters that occurred during in 2009, types of the most significant disasters took place in Namibia. The figure further indicated the total numbers of disaster-related deaths and maximum numbers of affected people by the food in 2009. This alone shows how Namibia is vulnerable to disasters.

The main goals for humanitarian organisations are the alleviation of suffering and prevention of loss of life and damages to property and ensuring suppliers of relief aid during emergence (Abidi et al., 2014). Moreover, in the past decade, humanitarian sectors encountered massive pressure from the frequency of disaster occurrence, that amount to millions of US dollars in goods for aid purposes (McLachlin, & Larson, 2011). The number of stakeholders



**Citation Information:** Mugoni, E., (2023). An evaluation of flood supply chain management strategies in namibia. *Academy of Strategic Management Journal, 22*(6), 1-34.

involved in the humanitarian supply management affects the operations of the relief organisation (Whipple, & Russell, 2007).

According to Thomas & Kopczak (2015), there has been extensive research on supply chains in various industries, their integration and coordination of partners and the value they may have in the supply chain. Besides, supply chains differ tremendously according to complexity, and there was no typically right or wrong way of handling humanitarian supply chains. Furthermore, Kabra et al., (2015) note that one cannot simply replicate an existing successful supply chain to their own as this has its specific circumstances and can therefore not be copied. The researcher believed effective supply chain techniques and strategies should be applied to appropriate situations.

It is noted that, in Namibia, more than 70% of people are affected by disasters every year (Ocha, 2009), flood and relief items become critical for lifesaving. Scores of these flood vulnerable people are found in the northern part of Namibia and the most populated area (NHIES, NSA, 2016). The researcher notes that, if this situation is not rectified it will lead to the aftermath of the 2008/9 flood which affected 350,000 people nearly 17% of the country's population, caused the death of 102 people, and displaced over 13,500 people, of which 9,200 displaced into temporary settlements (Ocha, 2009). Therefore, the purpose of this study was aimed at analysing the flood preparedness strategies of the Directorate Disaster Risk Management in the Office of the Prime Minister as well as streamlining flood preparedness modality to ensure eradication of suffering and loss of life, more so, recommendations were made to rectify these pertinent challenges. The objective of humanitarian logistics is to provide relief to areas affected by small or large-scale disasters, to minimise human suffering and prevent death. The main aim of this study was to analyse the flood preparedness strategies of the Directorate Disaster Risk Management in the Office of the Prime Minister.

## LITERATURE REVIEW

The section examines existing theories and concepts on Humanitarian supply chain and flood management. The conceptual framework was also discussed in this chapter.

### Humanitarian Logistics

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 alleviating the suffering of vulnerable people (Thomas & Kopczak, 2015). According to Wassenhove (2006), the functions encompass a range of activities, including preparedness, planning, procurement, transport, warehousing, tracking and tracing, and customs clearance.

The humanitarian supply chains must be both fast and agile and can respond to sudden disasters. A disaster response operation involves a trade-off of speed, cost, accuracy and transparency about the type of goods that are delivered and the quantities (Christopher, & Tatham, 2011). Several authors build on the idea of business logistics to improve the performance of disaster logistics. Wassenhove (2006) proposes a model for creating effective disaster management, which consists of five key elements which include clear communication, human capacity development, technology, coordination and logistics. All these are useful in disaster preparedness, response and recovery. The modern concept of supply chain management



**Citation Information:** Mugoni, E., (2023). An evaluation of flood supply chain management strategies in namibia. *Academy of Strategic Management Journal, 22*(6), 1-34.

(SCM) derived from the shipyards of Japan in the early 1950s and was subsequently developed in the car manufacturing industry, by Toyota in late 1950s (Gil et al., 2010). The five key elements mentioned above meant to create effective disaster management are the parameters that this paper used to assess the management of the Humanitarian supply chain in Namibia.

Furthermore, according to Van Wassenhove (2006), approximately 80% of the costs for humanitarian relief operations comprise of logistics costs. Therefore, efficiency and effectiveness in logistics are important in the operations of humanitarian organisations. In the commercial supply chain management, it is quite easy to predict demand, while in humanitarian logistics, the demand is always uncertain. There is a need for the availability of historical data that should be made available for decision makers (Thomas & Kopczak, 2015) with the commercial supply chain management. However, it is quite different from the humanitarian supply chain management, whereby no information on the demand for relief items when the disasters to strike (Tomasini and Van Wassenhove, 2009). It is very difficult to predict what the affected community may require in the first 24 hours after the disaster occurred which is the most critical stage in the disaster management (Kovács, & Spens, 2011).

Humanitarian supply chains are different from commercial ones because of ambiguous objectives, limited human and capital resources, high levels of uncertainty, and the politicised environment (Tomasini & Van Wassenhove, 2009). The researcher believes the above attribute on the assessment of humanitarian supply chains anchors on the premise that effective humanitarian logistics is the impetus to successful disaster management.

## Disaster Risk Management

The related literature review was done to establish what was already researched in similar studies. Figure 2 shows the different levels occurring in during a disaster relief and this includes preparedness, response and relief. However, this research only focuses on disaster preparedness.

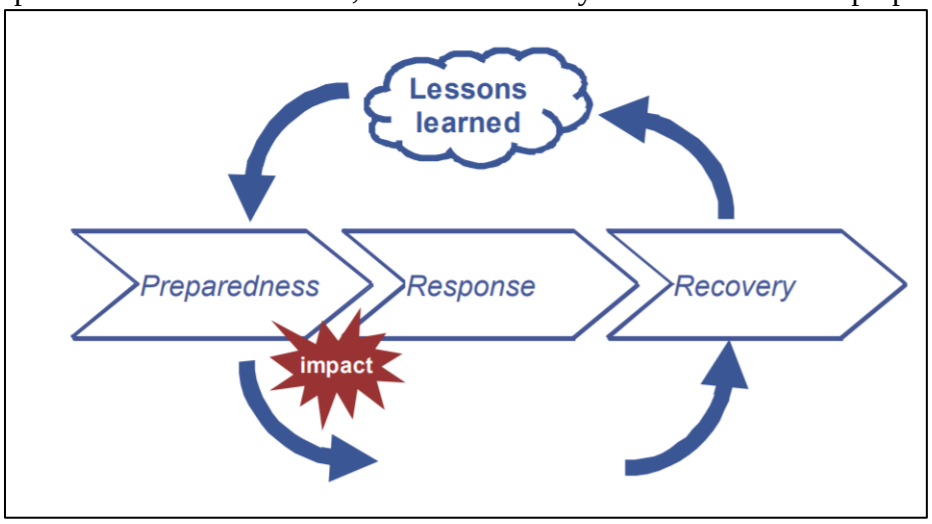


**FIGURE 2**
**DIFFERENT PHASES OF DISASTER RELIEF**

The purpose of the procurement process in humanitarian supply chains is to ensure that humanitarian organizations have the supplies required to meet the needs for relief (PAHO, 2001). Whybark (2007), state that the activities of procurement involve finding sources for



**Citation Information:** Mugoni, E., (2023). An evaluation of flood supply chain management strategies in namibia. *Academy of Strategic Management Journal, 22*(6), 1-34.

commonly needed items, which are located near potential disaster areas. According to Altay, et al., (2009), it is important to consider how these potential sources would trade-off with inventory since they represent relief capacity. Disaster inventories demand is highly uncertain in terms of timing and quantity (Menth, & Stamm, 2015; Thomas & Kopczak, 2015; Kovács, & Spens, 2011). In procurement starts with the procurement office developing emergency procedures and policies for the acquisition of resources to fulfil requests in support of emergency operations. Procedures will identify responsibilities of the Procurement Office, including but not limited to the chain of command, authorized purchase authority, all internal approval requirements, and financial approval of procurements.

However, literature has indicated various humanitarian supply chains models that are used to procure goods. According to Ertem et al., (2012), one of the most applied methods to procure the required relief items by several humanitarian organizations is using reverse auctions. Pham, Teich, Wallenius and Wallenius (2015) noted that a procurement auction is a mechanism by which the buyer (i.e. the auctioneer) announces a bid for the supply of specific goods or services. Pham et al. further added that the main idea for using auctions in the setting of disaster relief procurement is to utilize the inventory of available suppliers more efficiently for humanitarian aids. This bid is effective because it considers five bid attributes, which are price, quality, delivery time, quantity and probability of on-time delivery.

Since this study focuses on preparedness, post-disaster procurement is necessary because disasters are unpredictable (Balcik et al. 2010). The location, timing and severity of a disaster are unknown. Hence the relief organization prefers making procurement decisions after a disaster occurs. It is worth noting that in addition to using prepositioned inventories and post-disaster procurement auctions, part of relief items' demands can be satisfied via special supply contracts set by some suppliers at pre-disaster and in-kind donations. Some organisations do have contracts with suppliers to ensure that when a disaster strikes, they know where to get the necessary supplies (Balcik & Beamon, 2008). However, goods can also be acquired in many ways, such as in bulk or stored at the vendor until needed. Procurement can also be carried out using available financial resources or credit. The goal of procurement in relief operations is to enable orders to be placed and delivered on schedule at a good price. When possible, some governments and organizations prefer to buy locally to avoid delay times and try to help the local economy. However, some organizations prefer to use their regular suppliers to guarantee the quality and standardization of their supplies, or to get better prices.

## Disaster Preparedness Challenges and Best Practices

The Disaster Management Training Programme (DMTP, 1993), identified transportation and communication infrastructure as barriers to the effective delivery of aid. Physical infrastructure such as roads, bridges and airports are often destroyed. In addition, one notes that Word Fund Programme (WFP) transports food directly to sites where local partners distribute to beneficiaries, or to sites where government stakeholders take over the delivery to reach the final distribution site (Kabra et al., 2015). The major limitations that the humanitarian systems share in Sub-Saharan Africa are such as lack of resources, lack of appropriate strategies, lack of political commitment, and lack of reliable and timely information flow (Yilmaz, at el, 2015).

## Organisation Challenges



**Citation Information:** Mugoni, E., (2023). An evaluation of flood supply chain management strategies in namibia. *Academy of Strategic Management Journal, 22*(6), 1-34.

Developing economies accounted for two-thirds of global FDI in 2019, up from slightly under half in the previous year. The patterns of FDI contrasted significantly with those of new project activity, as developing nations have endured the most of the global investment crisis (Marandu et al., 2019). In emerging countries, the number of new Greenfield projects declined by 42 %, while the number of foreign project financing arrangements – critical for infrastructure decreased by 14 % (Chih et al., 2021). In developed economies, Greenfield investment fell by 19%, while foreign project financing rose by 8% (Muhammad et al., 2021).

a) **Identification of Roles in the SCM**

When it comes to roles in an SCM, different players play different roles before the disaster and after the disaster. Thus, all these roles should be determined in terms of administration, Information Technology (IT), Human Resources, communication and facility personnel.

**Administration personnel**: Administration plays a vital role in providing support services to all activities and staff in an emergency relief operation. In an emergency response, administration and programme support services need to be established first to mobilise the rest of the operation. The administration is responsible for providing the basic conditions for the emergency team to be able to work, including office and accommodation set-up, staff travel and logistics, provisioning of equipment and supplies, vehicle management, procurement and local government coordination. Also, the administration unit helps with the management of assets, and compliance with legal and donor requirements in the emergency. The administration should ensure compliance with key policies and procedures, while also allowing an acceptable level of flexibility to meet the emergency demands efficiently.

Many sub-units within administration play a coordinating role and together provide the needed support. Administration and support services oversee the business aspects of the emergency response and coordinate activities including procurement, logistics, inventory management, telecommunications and security within established policies and procedures.

**IT personnel**: In ensuring that information management is properly carried out, humanitarian organisations have been implementing IT systems like those used in commercial supply chains. Personnel who are employed as IT personnel need to know what role to play, which is the role of integrating the different activities through the provision of information, thus allowing the supply chain to operate more efficiently. Some of the implemented systems allow for the flow of accurate information and play a significant role in facilitating assessment, performance measurement and control systems (James et al., 2006, p.180). Some of the information systems that are used during disaster operations involve tracking the movement of supplies within the supply chain, thus allowing organisations to regulate and trace their movement (Turner and Muller, 2004). IT provides positioning systems that play an important role in making available tracking information, such as the quality, quantity and the geographical location of the supplies, and thereby improving supply chain visibility (Aldolfi, 2005:45).

**Human resources**: Human Resources play a significant role when it comes to disaster preparedness. In line with Bruce (2012), emergency management preparedness often falls squarely in HR's lap. Bruce continued to explain that preparing for emergencies involves determining the role of (and how to manage) unions, vendors, and contractors, especially on a multi-employer site. All these falls under Human Resource management roles. All workplaces should have in place a contingency plan for any type of emergency or disaster. This can be a plan



**Citation Information:** Mugoni, E., (2023). An evaluation of flood supply chain management strategies in namibia. *Academy of Strategic Management Journal, 22*(6), 1-34.

for evacuation, communication, payroll, personnel records, and shelter (Epstein Becker Green Law, 2010). Castro (2011) describes how actions can be taken from a preventative standpoint. She states that it is very important to train employees on how to act and how to create crisis procedures. Human Resource managers also need to manage employees when they are deployed, and sometimes, there is no network. Thus, the employees can't communicate to the employers. Thus, one plan of action for employers to expedite and improve this process can be to create a place online or on their Websites for employees to "check-in" or a toll-free phone number that the employees can call from any location (Barron, 2005). This is a common practice at the state of Iowa.

**Communication**: Media play a key role as watchdogs during an emergency, and they tend to focus on where the relief supply system fails rather than on where it succeeds. However, Oloruntoba & Gray (2006) explain that this tendency can be reversed by adopting an effective communication strategy for the press. This strategy has been useful at the World Health Organization. The communication strategy at the World Health Organisation includes abundant information, Humanitarian Supply Management and Logistics in the Health Sector press releases, press kits, and the like, so that the media end up as partners in getting important messages out (World Health Organization, 2011). Through this strategy, the organization can give roles to the media to be one of the most effective mechanisms for providing feedback to donors about the real needs on the ground and the importance of abstaining from sending unwanted donations. Those in charge of supply management cannot wait until the media ask for reports but they must take the initiative by determining as soon as possible the content of the information that will be released, the way it will be presented (press releases, press conferences, interviews), how frequently they will be issued, which media outlets must be targeted, and who will act as official spokesman (World Health Organization, 2011). In this way, the organization will be playing a proactive role in information dissemination, rather than letting journalists set the agenda.

### b) **Coordination of Supply Chain Activities**

Coordination is defined as the act of managing and mediating interdependencies between activities (Balcik, at el, 2010). In the area of disaster research, there is a focus on coordination as an issue that emerges when various stakeholders require interacting to respond to an emergency. Coordination is one of the identified, as a challenge given the lack of profit incentives in the humanitarian supply chain; moreover, it operates in an environment with vague command and control where priorities are constantly changing (Kovacs & Spens 2009). Coordination improves aid efficiency, through reduction of duplication of effort, and eventually yields to better results to beneficiaries (Yilmaz et al., 2015). The coordination among humanitarian organizations is critical during the response to a disaster (Menth, & Stamm, 2015).

In California, each school has an incident command system, and everyone is trained to know what to do in emergencies. This is achievable because the School District Administration Emergency Management Center provides education in all areas and is the unit that will help in an emergency. Moreover, trainees of this unit come together under certain groups to do their duties in case of disaster and emergencies. These groups are Operations, Planning & Intelligence, Finance & Administration, Liason, Logistics, Personal Information Office (PIO) and Management. Each group is represented in a different colour; members of the groups wear waistcoats in the colours of their groups during their extraordinary tasks. Managers are



**Citation Information:** Mugoni, E., (2023). An evaluation of flood supply chain management strategies in namibia. *Academy of Strategic Management Journal, 22*(6), 1-34.

represented by black colour, Command group by orange, Planning & Intelligence group by blue and Finance & Administration group by green. This is an example of how coordination is done in California.

Kovács & Spens (2011) argue that in the city of Austin, Texas, mass community education and empowerment of residents in disaster preparedness for all types of hazards, including first aid tips and what to do in case of flash floods, wildfires, severe weather, pandemic flu or accidents involving hazardous materials. This includes getting the message out in as many languages as residents speak, through all available local and national media, including social media. In the same city, there is also the use of solar-powered electronic billboards that can relay updates and information every 10 minutes (Menth & Stamm, 2015).

On that hand, coordination is the communication flows among the supply chain network and affected communities (Maon et al., 2009). This means that to enhance the response awareness, inform and guide to response planning, should ensure decision-making activities have effective coordination. Kabra et al., (2015) illustrated the lack of effective coordination and communication restrains the affected people from getting significant logistical assistance when the disaster strikes. Harvey (2013) said that the coordination of information among actors enhances and improve the effeteness of response. Different recommended various solution on improving the disasters response efficiency and among them, coordination stand out to the key solution. Hence, communities that are affected by disasters suffer much due to lack of proper coordination and communication (Balcik, at el, 2010). The efficiency can be improved between actors in the supply network by making use of information technology (IT) Harvey, (2013) stated. However, disaster disrupts almost everything including communication infrastructures, and lack of consensus on the relations between coordination, communication and cooperation outlines the need to work together term coordination using IT (Thomas & Kopczak, 2015).

b) **Legal framework**

In the USA, the legal framework for preparedness and responses is in place with sector-specific policies or provisions (Kovács, & Spens, 2007). According to Kabra et al., (2015); Hirono, (2013); Menth & Stamm, (2015).Recruitment and training of people with capability in planning is very critical in relief operations. Lesson learnt from previous disasters can be knowledge management in the form of capturing, codifying and transferring knowledge about the challenges faced by logistics operations is a critical success factor (Kovács, & Spens, 2007).

c) **Lack of Assets**

Disaster response is a challenging task due to the high levels of uncertainty and limited resources in every situation (Yilmaz, at el, 2015). Transportation is a crucial element of disaster relief operations (Balcik et al., 2010), especially during pre and post-disaster transportation. The challenges are emanating mostly from the destruction of infrastructure, inadequate transportation services, with a bulk of supplies shipped into the affected area (Yilmaz et al., 2015).

Humanitarian organisations do not generally operate vehicle fleets (Balcik, at el, 2010; Kovacs & Spens 2009). As a result, the organisation typically outsources the transport services from third-party logistics. However, due to sudden demand, transport may not be easily available and accessible. Transportation infrastructure within an affected country or region may be poor even before the disaster occurred (Balcik, at el, 2010). The geographical landscape of the regions



**Citation Information:** Mugoni, E., (2023). An evaluation of flood supply chain management strategies in namibia. *Academy of Strategic Management Journal, 22*(6), 1-34.

can be contributing factors that present challenges in reaching affected populations (e.g., the geographically dispersed Kavango Region and sand road terrain). Another challenge for relief organizations is in obtaining sufficient information regarding affected areas such as transport infrastructures conditions (Yilmaz, at el, 2015). This is because communication and information technologies that would support regional transportation may not be available. Even the basic needs of responding agencies, such as reliable local maps for general orientation accessibility immediately following a disaster is not easy (Balcik, at el, 2010).

d) **Lack of Accountability**

Accountability is very important and significant effort is needed to ensure that every contribution is distributed properly and reported transparently. According to Pujawan, Kurniati and Wessiani (2009) in a government organisation where hundreds of organizations are involved in the fields, and tens of thousands of organizations and individuals contribute as donors, and it is very difficult to trace how each of those contributions is used to alleviate sufferings. However, if it was in commercial supply chains, accountability can be maintained more easily. In addition to the annual financial audit, accountability is maintained through standard and controlled business processes. One of the best practices in a commercial organisation that is lacking in government organisations is the use of Enterprise Resource Planning (ERP) and web-based supply chain that make it easier to record and trace any transaction. However, Namibia could also join the Humanitarian Accountability Partnership (HAP), which is a multi-agency initiative to improve the quality and accountability of humanitarian action (Satterthwaite, 2011).

e) **Lack of Transparency**

Importantly, Balcik et al. (2010) explained that in the humanitarian supply chain management environments faced with the challenges of accountability and transparency, due to lack of command and control. Humanitarian organisations are not driven by making a profit, thus ensuring accountability, transparency and ethics are their core goals. Thus, quite often, international aid agencies are unwilling to let local authorities take control of the Humanitarian logistics supply chain activities due to lack of perceived transparency and accountability (Khan et al., 2019).

f) **Record keeping**

On the other hand, to address the difficulties arising from lack of information and information asymmetry, groups like the UNJLC have worked to standardize the exchange of information on topics that concern most actors. In disaster response, the exchange of information is very crucial (Tomasini and Van Wassenhove, 2005). Information management enhances the ability to increase visibility and foster transparency in the humanitarian supply chain (Thomas & Kopczak, 2015). According to Maon et al., (2009), coordination and information sharing can bring about positive impact on accountability, and facilitate reduce on suspicions of theft, losses, and aid manipulation. Moreover, having systematical visibility of the relief items in the supply chain can result in a positive relationship among the network actors (Tomasini & Van Wassenhove, 2003).



**Citation Information:** Mugoni, E., (2023). An evaluation of flood supply chain management strategies in namibia. *Academy of Strategic Management Journal, 22*(6), 1-34.

Moreover, the flow of accurate information within the supply chain is a key factor influences response efficiency (Kabra et al., 2015). On the other hand, accurate demand chain management that determines the success of relief operation (Balcik, at el, 2010). According to Yilmaz, Chan, Moon, Roeder, Macal, and Rossetti, (2015) illustrated that the first stage after a disaster happens characterised by a sense of stress whereby affected communities usually have inadequate resources available to conduct appropriate response operations. Thomas & Kopczak (2015) stated that disaster normally occurs without any warning; this means not enough time to conduct needs assessments. Therefore, these leads to difficulties in accurately determining the number of affected people, their geographic location, and type of and the number of relief supplies required (Kovacs & Spens 2009). None demand information availability leads the humanitarian organisation to transfer supplies to the affected areas within the hope that such supplies will be adequate to meet the needs of those affected by the disaster (Kovacs & Spens, 2007). In many cases this cause overload of the supply chain with unwanted and inappropriate supplies, humanitarian relief organisations respond by pushing supplies into the supply chain, while no accurate information on the actual affected people's needs (Yilmaz, at el, 2015). The flow of the information from the affected area, to assist appropriate aid supplied in the area of need.

g) **Lack of Performance Indicators**

According to Lisanza et al., (2013) one of the best practices is that an organization need to have a fully integrated SCM function that consists of joint planning, all activities reporting into one unit normally with the use of IT and the efficient coordination and metrics reports. This will result in better organizational performance with indicators such as on-time delivery, maximum resource utilization, reduced lead time and quicker decision making.

h) **Inability to Anticipate Goods And Services**

According, Kovacs and Spens, (2009) during relief operation, there is little time to establish a relationship with suppliers, engaging in contracts negotiation and relationship building suppliers. This is centrally humanitarian supply chain whereby everything in the process is urgent due to the need of affected people. Moreover, after the disasters strike, the entire supply chain is disrupted (Yilmaz, Chan, Moon, Roeder, Macal, and Rossetti, 2015). This means that there will be a sort of chaotic supply network; items send to wrong people, wrong items received from all over the world and some of these items are not needed at all at that time (Kabra et al., 2015). This disruption of global supply network makes humanitarian supply management more complex (Thomas & Kopczak, 2015).

Relief organizations can procure supplies locally and globally (Balcik et al., 2010) and each option has advantages and disadvantages, in terms of expected logistics costs, lead-time and supply availability (Kovacs & Spens 2009). For example, although local supplies may not be available in the quantity and quality needed, local procurement has shorter lead times and has lower logistics costs. However, strong post-disaster demand and local competition for supplies may inflate local market prices, thereby increasing the unit cost of local supplies (Balcik, Beamon, Krejci, Muramatsu, and Ramirez, 2010; Kovacs & Spens 2009). The challenges of global procurement in the post-disaster environment stop primarily from the time-consuming



**Citation Information:** Mugoni, E., (2023). An evaluation of flood supply chain management strategies in namibia. *Academy of Strategic Management Journal, 22*(6), 1-34.

processes involved (e.g., competitive bidding and customs clearance) and transportation capacity requirements for shipping large quantities of bulk supplies (Kovacs & Spens, 2009).

In deciding the storage location of the inventories is crucial to the time and cost of transportation concerning the potential demand points (Menth, & Stamm, 2015; Thomas & Kopczak, 2015; Kovács, & Spens, 2011). The political influence can also affect the plans for inventory location (Whybark 2007). Indeed, ownership may also dictate the physical location

(Kovács & Spens, 2009). The trade-off between sources of supply and owned inventory comes into play here. According to Whybark (2007), the physical location of the inventory primary to take into consideration to have access to inventory for shipping when required.

Inventories, such as food and medicine, have expiry dates to be taken into consideration (Kovács & Spens, 2009). This process has implications in day-to-day inventory management. The expiry dates are time bound and need for monitoring inventories constantly in order to ensure that they are still useful when required (Balcik, at el, 2010). Location of inventories is important because the inventories must be accessible as removals are scheduled (Thomas & Kopczak, 2015). According to Van Wassenhove (2006), humanitarian logistics requires rigorous equipment that can be erected and dismantled fast to enable them to adapt and prepare for unexpected extremely.

Thomas and Kopczak (2015) elaborated that disasters situation change swiftly from time to time, meaning that logisticians in this sector most of the time, work in the conditions with poor institutional systems. The benefits of disaster relief inventories include saved lives, restored infrastructure, recovered livelihood opportunities and other humanitarian outcomes (Kovács & Spens, 2011).From preparedness, design, procurement, transportation, inventory, warehousing, distribution and recipient satisfaction (Van Wassenhove, 2006). In short, all logistics operations have to be designed in a systematic way that they get the right goods to the right place and distributed to the right people at the right time.

Managing the emergency supply is essentially a network consisting of various actors Thomas & Kopczak, (2015). The network supports three main types of flows that require careful design and close coordination Thomas and Kopczak, (2015): Material flows, which symbolise physical materials and products flows from the point of origin to the point of consumption as well as making provision for the reverse logistics for products returns to national and regional warehouse after the crises is over.

### i) **Lack of Staff Training In Disaster Management**

Rendering to Thomas and Kopczak, (2015) human resources must be mobilized, and they come in the form of professional humanitarian workers, volunteers, firemen, ambulance workers, police or military staff. On the worlds of Menth and Stamm, (2015), rresources have different levels of training, skills, and affiliation. Thus, along with Kabra et al., (2015) recruitment and training of people with capability in planning are very critical in relief operations. Training varies across organizations and within every organization. Governmental agencies such as DDRM in Namibia are used to having fulltime staff. However, Hirono (2013) added that NGOs have full-time staff and also short-term contracts to cope with increased needs. There is a need for specialized courses for disaster-management professionals to be provided in many countries by universities, regional organizations, nongovernmental organizations and international organizations.



**Citation Information:** Mugoni, E., (2023). An evaluation of flood supply chain management strategies in namibia. *Academy of Strategic Management Journal, 22*(6), 1-34.

### j) **Stringent Donor Rules and Guidelines**

Harvey (2013) illustrated that most national humanitarian response systems are heavily dependent on donor funding, because of fewer government commitments to allocate adequate resources or fund from the national budget. One of the major response constraints is inadequate to fund. The budgetary constraints normally associated with humanitarian action happen in many disasters' cases (Hirono, 2013). According to Kabra et al., (2015), in most cases, early funding decisions did not rely on the specific need requirements. This is the result of numbers of constraints such as slow assessments process, overlapping, poorly sharing of information. Mozambique acquired 25 partners, for example, in 2009 through Memorandum of Understandings (MoU) to support disasters through pooled funds. However, donor fragmentation was still a problem as donors where still channelling funds according to their defined priorities (Schäferhoff et al., 2015). Harvey (2013) stated that humanitarian response must be organised to meet assessed needs. Poor quality and limited use of assessments are among the major underlying cause of many of the shortcomings (Menth & Stamm, 2015). Thus, to ensure that donors do not put stringent donor rules and guidelines on the funds they provide, Schäferhoff et al. (2015) suggested that donors prefer performance-based funding. Donors are increasingly requiring that programs achieve quantitative targets before renewing aid. When an organisation is performing, then donors will not put stringent donor rules and guidelines as they trust that the organization will produce results.

## Funding Challenges

### a) **Lack of Funds Investment in Supply Chain Activities**

One note that the main challenge of humanitarian agencies has is getting adequate resources on time to be able to respond to disaster Kabra et al., (2015). This affects the planning of the humanitarian response to complement local efforts on the optimisation of the impacts Kabra et al., (2015); Hirono, (2013); Menth, & Stamm, (2015). The humanitarian response often delayed by several months and the assistance is unpredictable and unreliable as it based on the voluntary contribution of relief aids (Hirono, 2013). According to Kabra et al., (2015), the problem of delay could be addressed by bringing forward the need's assessment as a priority. Furthermore, Kabra et al., (2015); Hirono, (2013); Menth, & Stamm, (2015) stated that the overall humanitarian response systems are not data, or evident driven and assessment can help to reduce response time by establishing a strategic storage location in the disasters affected area (Menth, & Stamm, 2015). The lack of a warehouse management system (WMS) is a significant challenge on the response time. Hence there are no real-time status reports of stocks, for better supply chain visibility and faster decision-making (Thomas & Kopczak, 2015). The effectiveness of humanitarian aid to address critical food shortages depends not only on how much assistance is provided but when it is delivered and in what form Hirono,(2013).Hirono,(2013); Kabra et al., (2015) illustrated that humanitarian response needs to be timely, reliable and predictable so that governments and households can consider it in their economic planning.

More so, relief actors operate in an environment that does not necessarily seem to be friendly (Balcik, & Beamon, 2008). Moreover, it is very difficult to control relief operations in term of its intensity (Harvey, 2013 and Hirono, 2013). Geographical differences, national policies, culture and lack of infrastructures among the prevailing barriers affect HSCM



**Citation Information:** Mugoni, E., (2023). An evaluation of flood supply chain management strategies in namibia. *Academy of Strategic Management Journal, 22*(6), 1-34.

(Tomasini and Van Wassenhove, 2005). Unpredictability in disaster relief affects response coordination efforts (McLachlin & Larson, 2011).

b) **Unavailability and Inaccessibility of Funds within the Organisation**

Before the response to a disaster begins, an organisation obtains and sets into motion resources, be it financial or human resources. However, financial planning can help mitigate the effects of disasters. Kabra et al., (2015) said that the government should generously allocate funds and dispersed them quickly. According to Thomas and Kopczak, (2015), allocation of enough financial resources, and having financial resources to prepare, respond to start the operations and ensure that they run as smoothly as possible. If financial resources are not available as in the case of Namibia, alternative funds should be sourced for additional financial resources like what is being done in South Asia? Moeiny and Mokhlesi (2013) wrote that in South Asia when the response operation is underway, organisations allocate available resources and begin requesting additional funds via the appeals process. Moeiny further explained that the request is made through an appeal for disasters that can be carried out by a single organisation acting alone or through broker organisations such as Global Impact. The media plays a vital role in promoting appeals to the broader public, thereby increasing the visibility of the organisations operating on the ground and what they need.

Another strategy that can be implemented is to have a separate fund that is always available to fund national disasters. According to Bruce & Justin (2011), the Disaster Relief Fund (DRF), sometimes referred to as the President's Disaster Relief Fund is managed by the Federal Emergency Management Agency (FEMA). The DRF is the primary account used to fund a wide variety of programs that provide grants and other support to assist state and local governments and certain nonprofit entities during disaster recovery. In most cases, funding from the DRF is released after the President has issued a declaration although there are, however, some activities that may be funded by the DRF without a presidential declaration, mainly those supported by the Disaster Readiness and Support Account (Bruce & Justin (2011). Moreover, through this account, certain recovery elements are already in place when the President issues a declaration. Furthermore, some donor organisations prefer that a government or an organisation should approach them with funding requests through proposals instead of just waiting for an event to happen (Schäferhoff et al., 2015).

c) **Funds only Available After Disaster**

In government institutions, funds are mostly available after a disaster. One of the primary reasons is that disasters are challenging to predict and putting a speculative number in the budget may reduce the budget's credibility & usefulness. Projecting the government's expected cost need not be an exercise in illusion. According to Anderson (2016), one of the strategies that have worked for most countries is that since they have spent significant sums on recovery from various "unexpected" loss events. This experience provides a convenient database for extrapolating expected costs from such activities. Thus, the government can use this as a baseline to budget for disasters and have the funds committed before a flood. Better budgeting techniques will help state and local government prepare for disastrous expenses. Contingency budgeting is also another form of budgeting for preparing for disasters and ensuring that funds are available before the flood.



**Citation Information:** Mugoni, E., (2023). An evaluation of flood supply chain management strategies in namibia. *Academy of Strategic Management Journal, 22*(6), 1-34.

The decision to budget before disasters must also overcome the fear of misuse of those resources by policymakers. Anderson (2016) noted that if funds are earmarked annually for disaster response, but actual losses are less than budgeted amounts, it may be challenging to avoid reprogramming the funds for other purposes. One way to reduce the risk that "unused" earmarked funds will be "raided" is for the gov't to purchase insurance from private reinsurers. With the periodic payment of premiums, no unspent balances are available. Similarly, gov't may obtain insurance using catastrophic bonds where, for example, the insurer purchases low-risk bonds equal in value to the amount of insured coverage and assigns them to a trustee. The insurer is entitled to the interest on the bonds & the insurance premium unless or until the covered loss occurs. In that case, the bonds are sold & the proceeds paid to the insured gov't. But no fund balances are available to the insured gov't before the disaster.

d) Unwillingness in Funding something that Might not Happen

Schäferhoff et al. (2015) further claimed that some donors are not willing to fund something that might not happen. Thus, forecast based financing is a strategy that can be used to allow donors to fund what they don't know might happen. Forecast-based financing is an innovative approach that triggers humanitarian action and funding for preparedness, based on forecasts of extreme weather and climate conditions (OECD, 2016). The OECD further explains that humanitarian responders, meteorological services and communities agree on specific preparedness actions that are worth carrying out once a forecast reaches a certain threshold of probability. Each action is allocated a budget and funds are disbursed automatically once the threshold is reached, according to predefined standard operational procedures. This requires weather data to be accurately measured and accessible for forecast-based financing to be most effective in likely situations, but not certain (Coughlan de Perez et al., 2014). Such innovative financing is gaining traction, and alongside ongoing pilot projects, such as Germany's partnership with the IFRC, the World Food Programme (WFP) has also developed the Food Security Climate Resilience Facility- a multilateral, multi-year, replenishable fund that combines preparedness, resilience building and early action, based on weather forecasts (WFP, 2015). According to OECD (2012), some pooled funds require funds to be used within a certain time frame that may not be adequate for the context.

## Deployment Challenges

### a) **Unclear Segregation on Deployment Duties**

In some organisations there is a "lack of clarity in the mechanisms of the declaration of emergency in the disaster areas and legal implications of this announcement", a "lack of a unified national legal framework for disaster risk reduction and response (Al-Dahash et al., 2016)".

### b) **Staff Not Ready For Deployment**

According to Srivastava (2010), psychological distress is defined as a severe and problematic emotional, cognitive, physical or interpersonal reaction to difficulties. Distress is of enough intensity to disrupt a person's normal life patterns. It can be distinguished from psychological stress, which is considered as a more benign response to difficulties that an individual is able to relieve through every day coping responses. Members of UNHCR's since 2012, are offered psychological help to prepare them for a disaster, and this preparation is a



**Citation Information:** Mugoni, E., (2023). An evaluation of flood supply chain management strategies in namibia. *Academy of Strategic Management Journal, 22*(6), 1-34.

course offered to all staff assigned to any duty stations. Similarly, Rubin et al. (2016) noted that staff needs to be motivated; they need to readjust as well as be ready for the overall outcome.

c) **Lack of Decentralisation**

In general, decentralization involves "authority being spread out from a smaller to a larger number of actors" as well as from a central authority to a less central authority. According to Messer (2003), specific local institutional responses have taken place within project frameworks that sought to coordinate local government and civil society contributions with those of DRM experts. Responding to disasters and reducing their risks, thereby require local capacity, both within and outside local governments (UNDP, 2015). Decentralized systems also "prepare for and respond to disasters more effectively relative to more centralized systems" (Ainuddin et al., 2013). This section concerns the central government's allocation of resources to local authorities' increased disaster responsibilities. Local capacity issues and local actors' hesitance toward having disaster authority delegated to them will also be discussed.

d) **Lack of Awareness on Disaster Preparedness In Community And Community To Assist**

The culture of the community mostly in Africa is such that they tend to help people during difficulties. However, according to Al-Dahash et al. (2016) the lack of knowledge and understanding of the people who try to help the disaster responders makes it a very difficult situation. This affects the proper implementation of the plans that have been prepared for use during the disaster response. A study by Al-Dahash et al. (2016) have indicated that in Iraq a lack of society's awareness' is a major reason for citizens' irresponsible intervention. This is supported by the gap in implementing "community capabilities audit" and "community preparedness and training", despite their high level of importance, as illustrated.

g) **Inadequate Transportation Models**

According to Perry et al. (2003), in order to meet the emergency demands, resources (personnel, facilities, equipment, transport and materials) are needed by emergency response organisations. Therefore, the planning process needs to identify the demands that a disaster would impose upon those organisations.

**Practices to Resolve Preparedness Challenges**

Considering some of the challenges explained above that are encountered during humanitarian disaster operations, it is necessary that a framework of supply chain practices is identified and adopted that will ensure that disaster operations are conducted effectively and efficiently. When disaster strikes, it measures the responsiveness of the system, more especially the credibility of various stakeholders to work as a team (Kovács, & Spens, 2011). According to Thomas and Kopczak (2015), the functions of the responsiveness system encompass a range of activities, including preparedness, planning, procurement, transport, warehousing, tracking and tracing, customs and clearance. Another study by da Costa et al., (2012) have indicated that there are four main practices (Transport, storage and handling, distribution and performance evaluation) that should be applied in humanitarian supply. However, when the U.S. responds to a foreign disaster deploying civilian or military assets their best practices involves the push and



**Citation Information:** Mugoni, E., (2023). An evaluation of flood supply chain management strategies in namibia. *Academy of Strategic Management Journal, 22*(6), 1-34.

pull model where aid sent is determined by needs and aid should not be "pushed" out (Tatham & Rietjens, 2016). From the analysis performed by different researchers, humanitarian logistics is based on the type of aid provided by an organisation. The practices by Thomas and Kopczak (2015) will be adopted in this research. These practices can assist the researcher in making sound recommendations to improve the current Namibian predicament Figure 3.

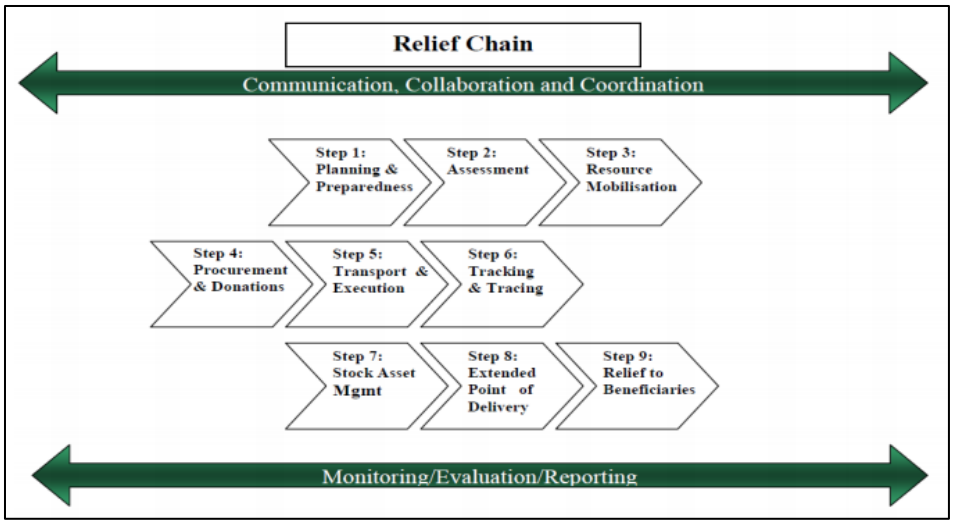


**FIGURE 3**
**HUMANITARIAN LOGISTICS STEPS**

This step is including some pre- disasters logistical procedures and activities which should take place. According to Thomas and Kopczak (2010), a plan includes what tasks are to be done, what part of the organization will be responsible, and how to procure needed resources. Thomas et al., further added that the country must also have a national or regional plan based on the vulnerabilities of the infrastructure, the logistical support in the area, and governmental emergency response abilities. The Namibian government has a National Disaster Risk Management Plan (NDRMP) aimed at ensuring disaster risk management throughout all its phases; prevention, preparedness, response, and recovery for all hazards (The Republic of Namibia, 2011).

As stated by Menth and Stamm, (2015) usually, governments have their own national and local plans, including organizations, responsibilities, priorities, and main actions to take in case of disasters. In Namibia, the NDRMP is intended primarily for disaster managers at national, regional and local levels, including non-state actors such as civil society organizations, development partners, private sector and parastatals, and other actors involved in disaster risk management in Namibia (The Republic of Namibia, 2011). Humanitarian organizations also have their own set of plans, which are usually coordinated with governmental plans but can also operate independently.

Eriksson (2010) explains that preparedness is related to making the system of response ready to respond to catastrophic events. It is not possible to be completely prepared to face the impact of a flood. However, planning and preparedness allow for a far more effective response. Early warning system has gained popularity in ensuring proper planning and preparedness when tackling natural disasters such as floods. Early warning systems are means by which people



**Citation Information:** Mugoni, E., (2023). An evaluation of flood supply chain management strategies in namibia. *Academy of Strategic Management Journal, 22*(6), 1-34.

regularly receive relevant and timely information before a disaster in order to make informed decisions and take.

**Assessment**: According to Fujita and Eizo, (2014), the tornado early alert warning system that alerts residents in San Marcos, Texas, to take cover and precautionary measures saves more life. This early warning system does not only provide warnings to the resident's hen ever there is, but it also provides an alert at the National level to ensure that they effectively carry out the pre-disasters logistical procedures and activities which should be taken place. However, in Namibia, the NDRMP is hard to implement and carry out pre- disasters, logistical procedures and activities. The reason being that there has been complaining in Namibia that there is a need for the establishment of an effective flood early warning system to provide alerts before the flood. Thus, an early alert warning system is something that Namibia should consider as a strategy to prepare for disasters such as floods.

Menth and Stamm, (2015) stated that in Hays County, Texas, proactive identification and monitoring of high-risk, hazardous and dangerous flooding points and deployment of appropriate flood warning technology to mitigate fatalities. This is accomplished through the implementation of different elements that include:

Risk knowledge: Establish a system/agreement to collect and share data, figures, etc. on flood risks and vulnerability in the area. Monitoring and warning service: Establish sensors measuring water levels at relevant sites in local waterways and link them to the local database.

Meth and Starmm further claimed that all this is accomplished through conjunction with the DPS Emergency Management, Texas National Guard, State of Texas, as well as, other local and state entities exercised the strategic deployment of regional and state. This shows that the planning for disasters is necessary at the organizational, national and international levels. Currently, in Namibia, the monitoring and Risk Knowledge of flood disaster is mandated under the Ministry of Agriculture, Water and Forestry as well as the Ministry of Works and Transport although the warning services and deployment of appropriate flood warning technology to mitigate fatalities is performed by DDRM.

## Theories

To be able to understand and determine the research gap, the research has adopted the below theories to inform and guide the researcher on addressing the study objectives. The study was based on the resource base theory and relief coordination theory.

## The Resource-Based Theory

The resource-based view of the organisation attract attention to the organisation's internal environment as a driver for making extraordinary performance and underscores that if an organisation employs its internal resources and abilities appropriate, will have a comparative advantage (Rungtusanatham et al., 2003). According to Eisenhardt & Martin (2000), Resource-based theory embraces that an organisation should put into consideration a set of resources that are heterogeneously spread through it is structure, Humanitarian Organisations with persistent differences between them. This theory advances that an organisation must secure a well-organised group of material and flow of the right type of resources from its operating situation to stay significant and have an optimum performance (Rungtusanatham et al., 2003). In this theory,



**Citation Information:** Mugoni, E., (2023). An evaluation of flood supply chain management strategies in namibia. *Academy of Strategic Management Journal, 22*(6), 1-34.

resources refer to physical or tangible properties that include plants, material, equipment; as well as intangible resources such as knowledge, expertise, and other organisational belongings.

In the view of this theory, competitive advantage may affect from having shared ownership of or access to, unique/expensive assets like transport, innovations, and barriers to resources. These resources can empower Humanitarian Organisations to have an advantage for competitiveness in humanitarian operations. These include organising resources and reassuring responsibility; arranging a functional detachment of workforce in the field; negotiating and upholding a functional structure with a multitude of political authorities and on condition that leadership (Minear, 2002).

Analysts and scholars, furthermore, repeatedly recommend that synchronisation is essential to improve service transfer success. Indeed, although effectiveness is infrequently defined, it is most often given as the reason why achieving coordination among service providing agencies is important (Minear, 2002). Strength to lessen reduplication, often framed as securing or improving organisational competence, is also regularly obtainable as logic for why humanitarian organisations should pursue to coordinate their support operations (McEntire, 1997).

## Relief Coordination Theory

This theory speculates that it is imaginable to coordinate the efforts of different organisations and the methodical and prearranged of the direction of activities (Kehler, 2004).The humanitarianism and war project suggestions a more precise and often mentioned description of the model as managing information; communication through the many social networking platforms (Scott, 2017). Specifically, it was arguing that successful and effective coordination in each crisis depends on the extent to which specific capacity and contextual conditions were present (Scott, 2017). In addition, it was advised that the often-touted coordination by command approach or top-down style of coordination, should not be assumed by the humanitarian organisation Kehler (2004) as the writings propose, this concept is argumentative among nongovernmental organisations.

Relief Organisations have consequently depended on outsourcing to improvement the right of entry to other organisation's valuable resources in the competitive market (Xu & Beamon, 2006). With the developing requirement for funds, humanitarian organisations searching and providing such services become commonly modified towards one another and more value-dependent (Saab et al., 2008). The theory, accordingly, suggests that coordination enables firms to be accessible to complementary resources and create much more competitive resource bundles, providing them with a competitive advantage (Kehler, 2004).

## Namibia Relief Distribution situation overview

The relief distribution in Namibia is complicated due to the geographical size of the country. Namibia faced with many barriers to effective delivery such as reduced response rate, Physical infrastructure such as roads, bridges and airports often destroyed (OPM Report, 2011). The limited capacity for disaster preparedness at all level could have contributed to the delays in response (Ocha, 2009). According to the OPM Report, (2011), Namibia managed to mitigate the impacts of disasters on the past years. However, the flood disaster response requires an integrated approach by all stakeholders to facilitate a holistic service delivery, which is lacking



**Citation Information:** Mugoni, E., (2023). An evaluation of flood supply chain management strategies in namibia. *Academy of Strategic Management Journal, 22*(6), 1-34.

in the current set up (OPM Report, 2011). Balcik at el, (2010) stated that different actor's collaboration enhances disaster response when they have a common central general goal, which is helping to alleviate human suffering, under operational constraints. Balcik at el, (2010); Tomasini and Van Wassenhove, (2005) explained that communication challenges persist, and hider relief operations on several occasions.

One of the examples of the communication is language barriers, for instances meeting, are held in the official national language (English) which may not widely be used in the affected areas in Namibia (OCHA, 2013). To ensure the effectiveness of the supply chain in the distribution of relief materials in the country, the Namibian Government has over the years passed some laws regarding the management of disasters, including drought. Some of these Namibian laws are discussed below with another world law.

## Gap Analysis

The gap identified in research that this study aimed at filling is that apart from previous studies on humanitarian logistic used indicated above in relief functions, none has looked at all this factor in the Namibia context. Secondly, although some of the studies have been carried out in developing countries such as Kenya and Zimbabwe, it was not good to imagine that disaster preparedness issues apply in all developing countries, including Namibia. Finally, in theory, adopted for this study that was the relief coordination theory, it highlights the variables that influence that successful and effective coordination in each crisis depends on the extent to which certain capacity and contextual conditions were present. In imagining enhancing this theory, this study proposed to investigate further the possible facilitating conditions that influence the effectiveness of the relief logistics. In particular, the study questions the challenges faced DDRM, thus disturbing their relief operation.

# RESEARCH METHODOLOGY

**Research philosophy**: In simple terms, a research philosophy is a belief about how data about a phenomenon should be collected, analysed and used. Research philosophy can be positivism, interpretivism or realism. The researcher took the positivism approach to the study. The research adopted the principles of positivism to undertake the role of the objective analyst to make detached interpretations about the data collected on flood disaster preparedness in a seemingly value-free manner. This was through the identification of the phenomena of disaster preparedness through how they are perceived by the employees under the DDRM. Positivism philosophy is concerned with how the social world can be understood in an objective way. In this research philosophy, the researcher is an objective analyst and, based on it, dissociates themselves from personal values and works independently (Hughes & Sharrock, 2016). Thus, positivism determined the reality/facts associated with the challenges facing the Supply Chain Management (SCM) at the DDRM in terms of disaster preparedness.

**Research Approach**: These differences in positivism and interpretivism mean that different research approaches can be employed, with positivism researchers using deductive approaches. In the case of this study on the SCM) at the DDRM in terms of disaster preparedness, the researcher used a deductive approach. The researcher will administer positivism also known as a quantitative survey, and the responses were analysed to test objective, the survey data was suited



**Citation Information:** Mugoni, E., (2023). An evaluation of flood supply chain management strategies in namibia. *Academy of Strategic Management Journal, 22*(6), 1-34.

to a deductive approach as the data to be collected was analysed to answer the objections that were generated based on theories of disaster preparedness.

**Research Design**: This research is based on quantitative research techniques. The objective of quantitative research is in explaining a phenomenon by collecting numerical data that are analysed using mathematically based methods (Muijs, 2010).' Thus, this study used a quantitative research approach to investigate the challenges facing the Supply Chain Management (SCM) at the DDRM in terms of disaster preparedness. This was a survey research design. Surveys are conducted to gather the information that reflects the population's attitudes, behaviours, opinions and beliefs that cannot be observed directly.

**Research Strategy**: Blumberg (2008) also defined research design as the strategy and structure conceived in a bid to acquire solutions to research problems and a blueprint for collection, measurement and data analysis. The survey is a widely used method in business research and allows access to significantly high numbers of participants. The surveys consisted of both open-ended questions and close-ended questions.

**Target population**: The population of this study consisted of all employees under the Directorate of Disaster Risk Management (DDRM). Since the population was small, there was no need for sampling rather the whole population of 50 employees was used as participants. The study targeted all the employees that deals with relief logistics, financial and management activities daily within the organisation as set out in Table 2.

**Table 2**
**DDRM STAFF**

| Participants | Population |
|---|---|
| Directors, DD, Subdivision. Heads | **8** |
| Officers | **23** |
| Accountants, Logistics and procurement officers | **19** |

**Response**: Out of a total of 50 participants that have been randomly selected to participate in the research only 31 respondents have been considered from this research. This was because 10 of the respondents have not returned the questionnaires and nine (9) questionnaires have been discarded as they were not filled in correctly.

**Questionnaires**: The data collection tool that was used by the researcher was self-administered questionnaires. A questionnaire, which has a rating and Likert scale, was used during data collection. Self-administered questionnaires were considered appropriate for this study because of the need to collect reasonable data and easily place them into different categories and still achieve the purpose of the study. The design of the questionnaire used during this study was guided by the research objectives through close-ended questions.

Reliability and validity were ensured in this research. Reliability refers to the degree to which the results obtained by measurement and procedure can be replicated (Bolarinwa, 2015). The reliability of the questionnaire was evaluated through a reliability test that was obtained through a pilot study. For this purpose, the researcher took a small sample to administer the questionnaire among the selected sample, and the research tabulated the data. Moreover, after some time, the same questionnaire was administered among the same set of respondents. Data that obtained from both the count will be compared. If the response of both sets is almost the same, say 95% responses are same then the researcher can declare that the 95 % reliability is the same and acceptable.



**Citation Information:** Mugoni, E., (2023). An evaluation of flood supply chain management strategies in namibia. *Academy of Strategic Management Journal, 22*(6), 1-34.

**Data analysis**: For close-ended questionnaires, the response analysed using the Microsoft Excel through descriptive statistics. The descriptive statistics found relations within the data collected. The flood management strategies were ranked using the 5 Point-Likert scale. For open-ended questionnaire's, content analysis used to analyse the data where the collected textual data was evaluated and coded. The coded data was then analysed using statistical methods. Data presentation was done using graphs, pie charts and tables. The researcher used bar charts to present data because they help facilitate comparison.

**Research ethics**: The researcher ensured that the research results were handled in strict confidence, and research participants were kept anonymous. The researcher also ensured that participants' rights to decline to participate and to withdraw from the research once it has started, as well as the anticipated consequences of doing so, were respected. The researcher adhered to the ethical research principles as set out in the NUST research and ethics policy. The researcher always upholds research integrity and ensuring that the basic ethical principles are adhered to, namely complying with the principles of informed voluntarily consent privacy, confidentiality and security. The researcher has conducted the study following recognised research; ethical principles constitute good research practice.

## RESULTS AND DISCUSSION

This section investigates the challenges identified by respondents during disaster preparedness. The challenges focus mainly on the organizational funding and deployment challenges. All the opinions have been measured based on a five-point Liker scale having items like strongly disagree, disagree, not sure (neither agree nor disagree), agree, and strongly agree Table 3.

**Table 3**
**ORGANISATIONAL CHALLENGES**

| Organizational Challenges | Strongly Agree | | Agree | | Not Sure | | Disagree | | Strongly Disagree | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **value** | **%** | **value** | **%** | **value** | **%** | **value** | **%** | **value** | **%** |
| The role of the supply chain management in humanitarian operations is not recognised by DDRM | 2 | 6.5 | 20 | 64.5 | 1 | 3.2 | 7 | 22.6 | 1 | 4.8 |
| Coordination of supply chain activities by the DDRM is not well-organised | 2 | 6.5 | 17 | 54.8 | 3 | 9.7 | 7 | 22.6 | 2 | 9.5 |
| Supply chain is not integrated into the organisation systems support | 0 | 0.0 | 14 | 45.2 | 3 | 9.7 | 13 | 41.9 | 1 | 4.8 |
| The legal framework within the DDRM has not been implemented | 1 | 3.2 | 9 | 29.0 | 9 | 29.0 | 11 | 35.5 | 1 | 4.8 |
| Decentralisation to regions of specific roles has not yet been implemented. | 3 | 9.7 | 14 | 45.2 | 6 | 19.4 | 7 | 22.6 | 1 | 4.8 |
| lack assets (e.g., storage space, vehicles, rescue equipment) | 3 | 9.7 | 23 | 74.2 | 4 | 12.9 | 1 | 3.2 | 0 | 0.0 |



**Citation Information:** Mugoni, E., (2023). An evaluation of flood supply chain management strategies in namibia. *Academy of Strategic Management Journal, 22*(6), 1-34.

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Lack of accountability amongst employees regarding the procurement, storage and during transportation of goods and services | 4 | 12.9 | 11 | 35.5 | 5 | 16.1 | 10 | 32.3 | 1 | 4.8 |
| Obstacles such as the cumbersome administrative procedures' cause delays in preparing for emergencies | 2 | 6.5 | 21 | 67.7 | 2 | 6.5 | 3 | 9.7 | 3 | 14.3 |
| It is difficult to keep record of supplies during distributions | 8 | 25.8 | 23 | 74.2 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| It is difficult to establish goals and performance indicators of distribution | 9 | 29.0 | 16 | 51.6 | 2 | 6.5 | 3 | 9.7 | 1 | 4.8 |
| Inability to anticipate goods and services such as food , medicine, shelters etc. required during a disaster | 10 | 32.3 | 18 | 58.1 | 0 | 0.0 | 1 | 3.2 | 2 | 9.5 |
| Lack of transparency of information across the supply chain | 8 | 25.8 | 15 | 48.4 | 2 | 6.5 | 3 | 9.7 | 3 | 14.3 |
| Lack of staff training in disaster management | 4 | 12.9 | 17 | 54.8 | 4 | 12.9 | 5 | 16.1 | 1 | 4.8 |
| Stringent donor rules and guidelines inhibit efficient and effective supply chain management | 9 | 29.0 | 19 | 61.3 | 0 | 0.0 | 2 | 6.5 | 1 | 4.8 |

Majority which is 20 (64, 5 %) of the respondent agreed that the role of the supply chain management in humanitarian operations is not recognized by DDRM (4.4 mean score) while 23 (74%) agrees that a lack asset of (e.g., storage space, vehicles, rescue equipment) is another challenge in DDRM. With regards to Christopher and Tatham, (2011) humanitarian supply chains must be both fast and agile and can respond to sudden disasters. However, if the role of the supply chain management in humanitarian operations is not recognized as in the case of DDRM then the disaster response operation will suffer. Moreover, 21 (67.7%) participants indicated that Obstacles such as the cumbersome administrative procedures' cause delays in preparing for emergencies Table 4.

**Table 4**
**FUNDING CHALLENGES AFFECTING DDRM**

| Funding Challenges | Strongly Agree | | Agree | | Not Sure | | Disagree | | Strongly Disagree | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **value** | **%** | **Value** | **%** | **value** | **%** | **value** | **%** | **Value** | **%** |
| Lack of funds investment in supply chain activities | 1 | 3.2 | 25 | 80.6 | 2 | 6.5 | 2 | 6.5 | 1 | 3.2 |
| Unavailability of funds within the organisation that can be accessed for preparedness activities | 3 | 9.7 | 26 | 83.9 | 1 | 3.2 | 1 | 3.2 | 0 | 0.0 |
| Funds to procure items are only released after the disaster has occurred | 4 | 12.9 | 20 | 64.5 | 5 | 16.1 | 0 | 0.0 | 2 | 6.5 |



**Citation Information:** Mugoni, E., (2023). An evaluation of flood supply chain management strategies in namibia. *Academy of Strategic Management Journal, 22*(6), 1-34.

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Some donor funds require funds to be used within a certain time frame that may exclude preparedness. | 4 | 12.9 | 18 | 58.1 | 7 | 22.6 | 1 | 3.2 | 1 | 3.2 |
| Misappropriation of funds during preparedness phase | 1 | 3.2 | 3 | 9.7 | 7 | 22.6 | 16 | 51.6 | 4 | 12.9 |
| Lack of will to fund something that might not happen making it difficult to have the funds available pre-disaster. | 10 | 32.3 | 18 | 58.1 | 0 | 0.0 | 2 | 6.5 | 1 | 3.2 |

Another financial challenge is that 26 (83.9%) agreed that the uunavailability of funds within the organisation that can be accessed for preparedness activities for efficient and effective supply chain management. If financial resources are not available as in the case of Namibia, an alternative would be to request for additional financial resources like what is being done in South Asia. Moeiny and Mokhlesi (2013) wrote that in South Asia when the response operation is underway, organizations allocate available resources and begin requesting additional resources via the appeals process. Moeiny further explained that the request is done through an appeal for disasters that can be carried out by a single organization acting alone or through broker organizations such as Global Impact. The media plays a vital role in promoting appeals to the wider public, thereby increasing the visibility of the organizations operating on the ground and what they need.

Funds to procure items are only released after the disaster has occurred is another challenge agreed up by 20 (64 %) of the respondents. Some organisations have overcome this challenge. One of the primary reasons is that disasters are difficult to predict and putting a speculative number in the budget may reduce the budget's credibility & usefulness. Projecting the government's expected cost need not be an exercise in illusion. According to Anderson (2016), one of the strategies that have worked for most countries is that since they have spent significant sums on recovery from various "unexpected" loss events. Thus, the Namibian government can use this as a baseline to budget for disasters and have the funds committed before a disaster. Contingency budgeting is also another form of budgeting for preparing for disasters and ensuring that funds are available before the disaster. Anderson (2016) noted that if funds are earmarked annually for disaster response, but actual losses are less than budgeted amounts, it may be difficult to avoid reprogramming the funds for other purposes. Similarly, gov't may obtain insurance using catastrophic (Cat) bonds where, for example, the insurer purchases low-risk bonds equal in value to the amount of insured coverage and assigns them to a trustee. The insurer is entitled to the interest on the bonds & the insurance premium unless or until the covered loss occurs. In that case, the bonds are sold & the proceeds paid to the insured gov't. But no fund balances are available to the insured gov't before the disaster.

**Table 5**
**DEPLOYMENT CHALLENGES**

| Deployment Challenges | Strongly Agree | | Agree | | Not Sure | | Disagree | | Strongly Disagee | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **value** | **%** | **value** | **%** | **value** | **%** | **value** | **%** | **value** | **%** |



**Citation Information:** Mugoni, E., (2023). An evaluation of flood supply chain management strategies in namibia. *Academy of Strategic Management Journal, 22*(6), 1-34.

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Lack of understanding of responsibilities by the DDRM deployment team (Unclear segregation on deployment duties) | 5 | 16.1 | 20 | 64.5 | 4 | 12.9 | 2 | 6.5 | 0 | 0.0 |
| Staffs are not prepared to be deployed on short notice to attend to emergency | 0 | 0.0 | 8 | 25.8 | 12 | 38.7 | 8 | 25.8 | 3 | 9.7 |
| Uncertainty in the demands constrains the delivery of the right products and quantity | 4 | 12.9 | 26 | 83.9 | 0 | 0.0 | 1 | 3.2 | 0 | 0.0 |
| Decentralisation is not ensured through the delegation of authority and resources to local levels | 7 | 22.6 | 14 | 45.2 | 0 | 0.0 | 6 | 19.4 | 4 | 12.9 |
| It is hard to coordinate and manage multiple players along supply chain with all the goods that need to be delivered in the disaster area. | 4 | 12.9 | 22 | 71.0 | 1 | 3.2 | 4 | 12.9 | 0 | 0.0 |
| Lack of capacity/ awareness on disaster preparedness within the effected community | 6 | 19.4 | 22 | 71.0 | 0 | 0.0 | 3 | 9.7 | 0 | 0.0 |
| Lack of material handling equipment such as Forklift, shelves , Automatic Guided Vehicles, Pallet Jacks etc. in the warehouses | 11 | 35.5 | 17 | 54.8 | 1 | 3.2 | 1 | 3.2 | 1 | 3.2 |
| Lack of community members to assist as volunteers during Loading and offloading | 8 | 25.8 | 22 | 71.0 | 0 | 0.0 | 0 | 0.0 | 1 | 3.2 |
| Inadequate transportation modes present challenges in accessing affected areas | 6 | 19.4 | 11 | 35.5 | 3 | 9.7 | 8 | 25.8 | 3 | 9.7 |
| Geographic characteristics of the affected region present challenges in assessing affected populations | 1 | 3.2 | 5 | 16.1 | 14 | 45.2 | 6 | 19.4 | 5 | 16.1 |
| Lack of capacity from the deployment team in the ability to provide quality logistics services during deployment | 8 | 25.8 | 22 | 71.0 | 1 | 3.2 | 0 | 0.0 | 0 | 0.0 |
| Lack of inventory management system | 17 | 54.8 | 14 | 45.2 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| Lack of inventory tracking system along the supply chain (Lack of inventory | 19 | 61.3 | 12 | 38.7 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |



**Citation Information:** Mugoni, E., (2023). An evaluation of flood supply chain management strategies in namibia. *Academy of Strategic Management Journal, 22*(6), 1-34.

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| visibility) | | | | | | | | | | |
| Lack of storage facility in the affected area | 21 | 67.7 | 8 | 25.8 | 2 | 6.5 | 0 | 0.0 | 0 | 0.0 |
| Stealing of relief items | 22 | 71.0 | 9 | 29.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |

Table 5 shows the views from the participants on the factors that can affect them being deployed to a natural disaster. Lack of understanding of responsibilities by the DDRM deployment team (Unclear segregation on deployment duties) was strongly agreed upon by 20 (64%) participants. Twenty 22 (71%) participants agreed that it is hard to coordinate and manage multiple players along supply chain with all the goods that need to be delivered in the disaster area. Coordination is one of the identified, as a particular challenge given the lack of profit incentives in the humanitarian supply chain; moreover, it operates in an environment with vague command and control where priorities are constantly changing (Kovacs & Spens 2009). Coordination improves aid efficiency, through reduction of duplication of effort, and eventually yields to better results to beneficiaries (Yilmaz et al., 2015). The coordination among humanitarian organizations is critical during the response to a disaster (Menth, & Stamm, 2015). Participants 21(71%) agreed that the lack of community members to assist as volunteers during Loading and offloading during a disaster is another challenge. The culture of the community mostly in in Africa is such that they tend to help people during difficulties. However, according to Al-Dahash et al. (2016) the lack of knowledge and understanding of the people who try to help the disaster responders makes it a very difficult situation. This affects the proper implementation of the plans that have been prepared for use during the disaster response. Thus, there is a need for DDRM to have a volunteer disaster management plan. With this plan, the community members can be trained to assist during disasters.

From this research, 22 (71%) of the respondents have agreed that stealing of relief items is a common practice during deployment. This is specifically supported by the fact that 19 (61.3 %) of the participants strongly agreed that there is a lack of inventory tracking system along the supply chain (Lack of inventory visibility within DDRM.

## Perceived Readiness and Preparation Of DDRM Employees

This section looks at the opinions of the respondents on how they perceive the readiness and preparation with regards to a disaster Table 6.

**Table 6**
**PERCEIVED READINESS AND PREPARATION OF DDRM EMPLOYMENT**

| Perceived readiness | Strongly Agree | | Agree | | Not Sure | | Disagree | | Strongly Disagree | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **value** | **%** | **value** | **%** | **value** | **%** | **Value** | **%** | **value** | **%** |
| **I am always prepared for deployment during a disaster.** | 1 | 3.2 | 16 | 51.6 | 4 | 12.9 | 5 | 16.1 | 5 | 16.1 |
| **My family and/or friends support my participation in the deployment** | 3 | 9.7 | 15 | 48.4 | 8 | 25.8 | 3 | 9.7 | 2 | 6.5 |



**Citation Information:** Mugoni, E., (2023). An evaluation of flood supply chain management strategies in namibia. *Academy of Strategic Management Journal, 22*(6), 1-34.

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **My supervisors and co-workers support for deployment** | 3 | 9.7 | 14 | 45.2 | 10 | 32.3 | 2 | 6.5 | 2 | 6.5 |
| **I am confident in my capacity to effectively respond to the deployment mobilization process.** | 7 | 22.6 | 15 | 48.4 | 4 | 12.9 | 3 | 9.7 | 2 | 6.5 |
| **I am confident in my ability to provide quality care during deployment.** | 6 | 19.4 | 22 | 71.0 | 0 | 0.0 | 1 | 3.2 | 2 | 6.5 |
| **I feel prepared to deal with unexpected situations that may occur during deployment.** | 5 | 16.1 | 17 | 54.8 | 6 | 19.4 | 0 | 0.0 | 3 | 9.7 |
| **If an event was to occur in the next 3 months, and I am asked to deploy, I am likely to go.** | 3 | 9.7 | 5 | 16.1 | 14 | 45.2 | 6 | 19.4 | 3 | 9.7 |
| **DDRM have good relationship with key suppliers** | 3 | 9.7 | 5 | 16.1 | 14 | 45.2 | 6 | 19.4 | 3 | 9.7 |
| **DDRM have an inventory pre-positioning strategy in place** | 1 | 3.2 | 4 | 12.9 | 3 | 9.7 | 12 | 38.7 | 11 | 35.5 |

When it comes to disaster preparedness, the DDRM 16 (51.6%) employees perceive that they are always prepared for deployment during a disaster and 15 (48 %) believe that their family and/or friends support their participation in the deployment. It's good to see that majority of employees of DDRM are always ready for deployment because According to Srivastava (2010) a serious and problematic emotional, cognitive, physical or interpersonal reaction disrupt a person's normal life patterns when people needs to be deployed. However, 14 (45.2 %) of the staff are not sure if DDRM have good relationship with key suppliers. This is worrying because According, Kovacs and Spens, (2009) during relief operation, there is little time to establish a relationship with suppliers, engaging in contracts negotiation and relationship building suppliers. This is centrally humanitarian supply chain whereby everything in the process is urgent due to the need of affected people Table 7.

**Table 7**
**FEATURES AND LIMITATIONS OF LITERATURE**

| Authors | Category | Features | Limitation |
|---|---|---|---|
| Patey (2017) | Economy (Resources) | Discussed the importance of China's national oil company investments in Sudan oil company. | There is a lack of data to ensure the effectiveness of the study. |
| Gangi & Mohammed (2017) | Economy (Market) | Highlighted the present situation of entrepreneurship development in Sudan. | Authors presented the literature without empirical evidence. |
| Yesuf (2017) | Economy (Efficiency) | Reported the insights of the development and the present environment of Islamic financial industries in Sudan. | Author highlighted the key information of Islamic financial industry. However, there is a limited number of data related to finance |



**Citation Information:** Mugoni, E., (2023). An evaluation of flood supply chain management strategies in namibia. *Academy of Strategic Management Journal, 22*(6), 1-34.

| | | | |
|---|---|---|---|
| | | | industries. |
| Shay (2018) | Policy framework | Outlined the political framework of Sudan. Moreover, the relationship between Sudan and Turkey was presented. | There is a lack of discussion of the role of FDI in Sudan development. |
| Yahia et al. (2018) | Economy (Market) | Applied the autoregressive distributed lay bounds test for evaluating the effect of FDI inflows in Sudan between 1976-2016. | The outcome of the study was evaluated in terms of exchange rate and trade openness to domestic investment. |
| De Waal (2019) | Policy framework | Analyzed the political framework of Sudan. | The study did not offer any recommendation for political market place framework. |
| Ille (2018) | Policy framework | Discussed the multiple dimensions of North Sudan. | Lack of empirical evidence. |
| Bertoncin et al. (2019) | Economy (Resources) | Analysis was based on the land, irrigation, and the political ecology of the country. | Lack of information related to the role of FDI in land and irrigation projects. |
| Adam (2021) | Policy framework | Highlighted the effect of FDI on domestic investment. | Covered the challenges of Sudan in using FDI to develop domestic products. |
| Bakari (2017) | Economy ( Market) | Investigated the relationship between domestic investments, exports, imports, and economic growth in Sudan. | Outcome suggested that the present environment is not sufficient for economic growth in Sudan. However, there is no discussion related to the impact of FDI in the economic growth. |
| Chevrillon-Guibert et al. (2020) | Policy framework | Discussed the practices of power and negotiations under the Al-Ingaz regime between 2010 and 2019. | Presented the political instability of Sudan. Nonetheless, there is a lack of empirical evidence. |
| Mohamed (2018a) | Business facilitation | Analysed the effect of the FDI inflows using econometric methods of integration between 1978 and 2015. | Recommended the government to enable necessary infrastructure to attract foreign aids and investment |
| Ahmed (2020) | Economy (Resources) | Discussed the benefits of foreign exchange earnings in the agricultural development. | Emphasized the policies related to resources must be revisited in order to achieve a better outcome. |
| Sirag et al. (2018) | Economy (Efficiency) | Investigated the effect of FDI on economic growth in Sudan. Discussed the financial development between 1970 and 2014. | Stated that the government should employ FDI in the productive sectors. |
| Abdelkreem & Sisay (2021) | Economy (Market) | Discussed the impact on economic growth in Sudan, Kenya, and Ethiopia. Authors emphasized that FDI and inflation rates affected economic growth in Kenya and Sudan. | Limited discussion related to FDI and economic growth. |
| Chih et al. (2022) | Economy and Policy framework | Employed a spatial dependency framework and examined the role of trade and natural resource endowment in determining FDI on economic growth. | Presented the positive effect of FDI on economic growth on Sub – Sahara Africa. |
| (Ibrahim & Acquah, 2021) | Economy (Finance) | Examined the relationship among FDI, economic growth and financial sector in Africa. | Discussed the overall effect of FDI in African countries. No discussion on the role of FDI on specific sectors. |
| Liang et al. (2021) | Policy framework | Discussed the relationship between FDI and economic growth of 113 developing countries. | Authors employed data of pre-pandemic era. No discussion about post pandemic scenario. |
| Aluko | Policy | Outlined the relationship between FDI | Demanded a set of effective policies to |



**Citation Information:** Mugoni, E., (2023). An evaluation of flood supply chain management strategies in namibia. *Academy of Strategic Management Journal, 22*(6), 1-34.

| | | | |
|---|---|---|---|
| (2020) | framework | and globalization using the Dumitresu-Harlin Panel Granger Causality test. | promote FDI in multiple sectors in African countries. |
| Hongxing et al. (2021) | Economy (Market) | Highlighted the relationship among FDI, trade, energy consumption, and economic growth. | Lack of empirical evidence to display the relationship between FDI and economic growth. |
| Ahmad et al. (2021) | Economy (Resource) | Conducted a study in ten selected Muslim countries between 2005 and 2019. | Lack of empirical evidence. |
| Batrancea et al. (2021) | Business facilitation | Performed a panel data analysis on the determinants of economic growth in 34 African countries. | Lack of post – Pandemic data. |
| Aluko (2021) | Business facilitation | Discussed the relationship between the international tourism and FDI in Africa | Presented data between 1995 and 2016. No discussion about the effect of COVID-19 on the tourism. |
| Irshad & Ghafoor, (2022) | Business facilitation | Highlighted the importance of infrastructure of lower income countries to attract FDI in Africa. | Limited information is presented on FDI inflows and economic growth. Moreover, there is no discussion related to Pandemic and its effect on lower income countries. |
| Bahizi et al. (2021) | Economy (Trade) | Examined the role of FDI on economic growth in the East Africa community between 1970-2017. | Presented the larger dataset regarding the economic growth and financial performance. However, there is a lack of discussion on the present scenario. |
| Shittu et al. (2022) | Business facilitation | Discussed the nexus between natural resources, FDI, and economic growth in the Middle East and North Africa (MENA) region. | Highlighted the growth effect of the natural resources and institution quality in the MENA region. Lack of discussion in the post – Pandemic environment. |
| Tinta et al. (2021) | Economy (Resources) | Investigated the relationship between economic growth, financial development, and renewable energy in Sub-Sahara Africa (SSA) countries. | Highlighted the economic growth of 48 countries between 2000 and 2019. Lack of discussion on the FDI inflows. |
| Mtiraoui (2021) | Business facilitation | Studied the interaction among four indicators such as FDI, institution, Pandemic, and economic growth. | Suggested that the institution quality may attract FDI and stimulate growth in the Pandemic period. |
| Ali et al. (2021) | Economy (Resources) | Discussed the effect of financial indicators and economy growth in low-income countries. | Outlined the financial performance of 12 low – income countries during 1980-2016. |
| Miao et al. (2021) | Policy framework | Examined the role of China's FDI and domestic governance quality in African country's economic growth. | Utilized a larger dataset of 44 African countries between 2003 and 2017. |
| Ojo (2021) | Policy framework | Examined the role of FDI and social instability in 20 SSA countries. | Discussed the effect of the FDI inflows between 1989 and 2019. |

## CONCLUSION

The study revealed the challenges facing supply chain management procedures at DDRM. Supply chain management challenges can be classified in terms of organisation, financial and deployment challenges. The primary organisational challenges includes the role of the supply chain management in humanitarian operations is not recognised by DDRM, the lack assets (e.g., storage space, vehicles, and rescue equipment) the obstacles such as the cumbersome administrative procedures' cause delays in preparing for emergencies and how difficult it is to keep record of supplies during distributions. The respondents also agreed that the stringent donor rules and guidelines inhibit efficient and effective supply chain management. The respondents



**Citation Information:** Mugoni, E., (2023). An evaluation of flood supply chain management strategies in namibia. *Academy of Strategic Management Journal, 22*(6), 1-34.

also agreed that it was hard to coordinate and manage multiple players along with all the items that need to be delivered as well as keeping complete track, control and accountability of humanitarian programs and outcomes.

Financial challenges were identified as lack of capital investment in supply chain activities, the unavailability of funds within the organisation that can be accessed for preparedness activities and realising of funds to procure items only released after the disaster has occurred. In addition, the study identified the deployment challenges during the preparedness. The deployment challenges identified include the lack of understanding of responsibilities by the DDRM deployment team (Unclear segregation on deployment duties), the difficulties on how hard it is to coordinate and manage multiple players along the supply chain with all the goods that need to be delivered in the disaster area. Another deployment challenge identified is the lack of capacity/ awareness on disaster preparedness within the affected community as well as their unwillingness to volunteer during disasters. Lack of capacity from the deployment team in the ability to provide quality logistics services during deployment is also another challenge.

To really understand the challenges, the research also looked at how the employees perceived readiness and preparation at DDRM in the event of a disaster. DDRM employees are very positive when it comes to preparedness. The employees understand that they are always prepared for deployment during an emergency, and as they believe that their family and friends support their participation in the deployment. However, of the staff are not sure if DDRM has a good relationship with key suppliers and this is worrying because, during relief operation, there is little time to establish a relationship with suppliers, engaging in contracts negotiation and relationship building suppliers.

The study concludes that SCM in humanitarian organisations such as DDRM are faced by numerous challenges such as uncertainty in demand during emergencies, high cost of supplies during an emergency and diminishing donor funding. The problems are threatening the future of humanitarian supply chain process during emergencies in DDRM. The ’organisation’s employee is, therefore opting to engage in sustainable humanitarian operations as well as to take part emergency operations if they are accorded the right support.

## REFERENCES

Abidi, H., de Leeuw, S., & Klumpp, M. (2014). Humanitarian supply chain performance management: a systematic literature review. Supply Chain Management: An International Journal, 19(5/6), 592-608.

Ainuddin, S., Aldrich, D. P., Routray, J. K., Ainuddin, S., & Achkazai, A.(2013). The need for local involvement: Decentralization of disaster management institutions in Baluchistan, Pakistan. International Journal of Disaster Risk Reduction, 6, 50–58.

Al-Dahash, H., Thayaparan, M., & Kulatunga, U. (2016). Challenges during disaster response planning resulting from war operations and terrorism in Iraq.

Altay, N., Prasad, S. and Sounderpandian, J. (2009), “Strategic planning for disaster relief logistics: lessons from supply chain management”, International Journal of Services Sciences, Vol. 2 No. 2, pp. 142-61

Anderson, B. (2016). Budgeting for Disasters.

Blecken, A. (2010). Humanitarian Logistics -Modelling Supply Chain Processes of Humanitarian Organisations.Stuttgard: Haupt Publisher.

Blecken, A., & Hellingrath, B. (2008). Supply chain management software for humanitarian operations: review and assessment of current tools. *Proceedings of the 5th ISCRAM*, 342-351..

Bolarinwa, O. A. (2015). Principles and methods of validity and reliability testing of questionnaires used in social and health science researches. Nigerian Postgraduate Medical Journal, 22(4), 195.



**Citation Information:** Mugoni, E., (2023). An evaluation of flood supply chain management strategies in namibia. *Academy of Strategic Management Journal, 22*(6), 1-34.

Bradford,R.A., O'Sullivan ,J.,van der Craats , M., Krywkow, P. Rotko , J. Aaltonen , M. Bonaiuto , S. De Dominicis , K. Waylen , and K. Schelfaut. (2012). Risk perception – issues for flood management in Europe. *Nat. Hazards Earth Syst. Sci., 12*, 2299–2309.

Castro, M. (2011). When disaster strikes: How HR can prepare your workforce for the crisis.

Coughlan de Perez, E., van den Hurk, B. J. J. M., Van Aalst, M. K., Jongman, B., Klose, T., & Suarez, P. (2015). Forecast-based financing: an approach for catalysing humanitarian action based on extreme weather and climate forecasts. Natural Hazards and Earth System Sciences, 15(4), 895-904.

Da Costa, S. R. A., Campos, V. B. G., & de Mello Bandeira, R. A. (2012). Supply chains in humanitarian operations: cases and analysis. Procedia-Social and Behavioral Sciences, 54, 598-607.

Eisenhardt, K. M., & Martin, J. A. (2000). Dynamic capabilities: what are they?. Strategic management journal, 21(10-11), 1105-1121.

Eriksson, K. (2010). Preparing for preparedness-shaping crisis planning processes in local authorities. Lund University.

Ertem, M.A., Buyurgan, N., Rossetti, M.D., 2012. Multiple-buyer procurement auctions framework for the humanitarian supply chain management. International Journal of Physical Distribution & Materials Management40:202- 227.

Harvey, P. (2013). International humanitarian actors and governments in areas of conflict: challenges, obligations, and opportunities. Disasters, 37(s2).

James, D, Pettit, S.L and Beresford, A. (2006) 'Critical success factors for emergency relief logistics', Interdisciplinary Journal, 51, pp. 177-184.

Jha, A., Lamond, J., Bloch, R., Bhattacharya, N., Lopez, A., Papachristodoulou, N., ... & Barker, R. (2011). Five feet high and rising: cities and flooding in the 21st century. The World Bank.

Kabra, G., Ramesh, A., & Arshinder, K. (2015). Identification and prioritization of coordination barriers in humanitarian supply chain management. International Journal of Disaster Risk Reduction, 13, 128-138.

Kehler, N. (2004). Coordinating humanitarian assistance: a comparative analysis of three cases.

Khan, M., Lee, H. Y., & Bae, J. H. (2019). The Role of Transparency in Humanitarian Logistics. Sustainability, 11(7), 2078.

Kovács, G., & Spens, K. M. (2011). Trends and developments in humanitarian logistics a gap analysis. International Journal of Physical Distribution & Logistics Management, 41(1), 32-45.

Lisanza, K., Chirchir, M. K., & Richu, S. W. (2013). Supply Chain Management Integration and the Performance of International Humanitarian Organizations in East Africa. Project Research presented to the University of Nairobi, School of Business.

Lyons, K., & Oh, C. (2015). SOA4DM: applying an SOA paradigm to coordination in humanitarian disaster response. In Software Engineering (ICSE), 2015 IEEE/ACM 37th IEEE International Conference on (Vol. 2, pp. 519-522). IEEE.

Maon, F., Lindgreen, A., & Vanhamme, J. (2009). Developing supply chains in disaster relief operations through cross-sector socially oriented collaborations: a theoretical model. Supply chain management: an international journal, 14(2), 149-164.

McLachlin, R., & Larson, P. D. (2011). Building humanitarian supply chain relationships: lessons from leading practitioners. Journal of Humanitarian Logistics and Supply Chain Management, 1(1), 32-49.

Menth, M., & Stamm, J. L. H. (2015). An agent-based modeling approach to improve coordination between humanitarian relief providers. In Winter Simulation Conference (WSC), 2015 (pp. 3116-3117). IEEE.

Messer, N. M. (2003). The role of local institutions and their interaction in disaster risk mitigation: A literature review. Food and Agriculture Organization, United Nations.

Minear, L. (2002). The humanitarian enterprise: dilemmas and discoveries. Kumarian Press. New Age International (P) Ltd.

Oloruntoba, R., & Gray, R. (2006). Humanitarian aid: an agile supply chain? Supply Chain Management: an international journal, 11(2), 115-120.

PAHO (2001), Humanitarian Supply Management in Logistics in the Health Sector, Pan American Health Organization, Washington, DC.

Perry, R. W., & Lindell, M. K. (2003). Preparedness for emergency response: guidelines for the emergency planning process. Disasters, 27(4), 336-350.

Pettit, S & Beresford, A. 2009. Critical Success Factors in the context of Humanitarian Aid supply chains. International Journal of Physical Distribution and Logistics Management, 39(6): 450-468.



**Citation Information:** Mugoni, E., (2023). An evaluation of flood supply chain management strategies in namibia. *Academy of Strategic Management Journal, 22*(6), 1-34.

Rubin, G. J., Harper, S., Williams, P. D., Öström, S., Bredbere, S., Amlôt, R., & Greenberg, N. (2016). How to support staff deploying on overseas humanitarian work: A qualitative analysis of responder views about the 2014/15 West African Ebola outbreak. European journal of psychotraumatology, 7(1), 30933.

Rungtusanatham, M., Salvador, F., Forza, C., & Choi, T. Y. (2003). Supply-chain linkages and operational performance: A resource-based-view perspective. International Journal of Operations & Production Management, 23(9), 1084-1099.

Satterthwaite, M. L. (2011). Indicators in crisis: rights-based humanitarian indicators in post-earthquake Haiti. NYU Journal of International Law and Politics, 43, 11-26.

Schäferhoff, M., Fewer, S., Kraus, J., Richter, E., summers, L. H., Sundewall, J., ... & Jamison, D. T. (2015). How much donor financing for health is channelled to global versus country-specific aid functions?. The Lancet, 386(10011), 2436-2441.

Scott, J. (2017). Social network analysis. Sage.

Srivastava, K. (2010). Disaster: Challenges and perspectives. Industrial psychiatry journal, 19(1), 1.

Tatham, P., & Christopher, M. (Eds.). (2018). *Humanitarian logistics: Meeting the challenge of preparing for and responding to disasters. Kogan Page Publishers*.

Wisetjindawat, W., Ito, H., Fujita, M., & Eizo, H. (2014). Planning disaster relief operations. Procedia-Social and Behavioral Sciences, 125, 412-421.

World Health Organization (2011). Humanitarian Supply Management and Logistics in the Health Sector.

Xu, L., & Beamon, B. M. (2006). Supply chain coordination and cooperation mechanisms: an attribute-based approach. Journal of Supply Chain Management, 42(1), 4-12.

**Received:** 07-Sep-2023, Manuscript No. ASMJ-22-13264; **Editor assigned:** 09-Sep-2023, PreQC No. ASMJ-22-13264(PQ); **Reviewed:** 24-Sep-2023, QC No. ASMJ-22-13264; **Revised:** 27-Sep-2023, Manuscript No. ASMJ-22-13264(R); **Published:** 30-Sep-2023



**Citation Information:** Mugoni, E., (2023). An evaluation of flood supply chain management strategies in namibia. *Academy of Strategic Management Journal, 22*(6), 1-34.