

# ROLE OF HUMANITARIAN LOGISTICS ON SUPPLY CHAIN PERFORMANCE IN NON-GOVERNMENTAL ORGANIZATIONS IN KENYA: A CASE OF ACTED KENYA

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**Abstract:** The purpose of the study was to determine the role of humanitarian logistics on supply chain performance in non-governmental organizations in Kenya, the case of ACTED Kenya. The study was guided by four theories which were: Resource-based view theory, transaction cost theory, information processing theory and network perspective theory. The study adopted a descriptive research design and was a case study. The study involved 36 employees working in the procurement department, logistics department, ICT department and warehouse department who constituted the target population at ACTED Kenya, a non-governmental organization. All the 36 employees in the four departments were involved in the study making the study to employ a census technique in data collection. Employees of these four departments were issued with closed-ended questionnaires that contained research items on each variable. The validity of the instruments to be used in this study was established by conducting a pilot study. After collection of the raw data was complete, the questionnaires were checked for proper recording of the responses and completeness. The collected data was then coded and analyzed through the use of Statistical Package for Social Sciences SPSS version 21. Quantitative data were analyzed using both descriptive and inferential statistical techniques. Descriptive statistics included means, standard deviation, frequencies, and percentages while inferential statistics by means of correlation and regression analysis. A multiple regression models was developed and was used to guide the study. Findings were presented in narratives and tables. Multiple linear regression results have shown that four predictors can explain 72.25% of supply chain performance: inventory prepositioning, transport management, ICT integration and strategic partnership. The study established that inventory prepositioning, transport management, ICT integration and strategic partnership were significant determinants of supply chain performance at ACTED Kenya. The study concluded that the attainment of supply chain performance depended on the independent variables.

**Keywords:** humanitarian logistics, ICT department, non-governmental organizations, ACTED Kenya.

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## 1. INTRODUCTION

### Background of the study:

Natural disasters such as floods, drought, famine and man-made disasters such as wars and refugee crisis, has rapidly increased in number worldwide in the last decade. The year 2010 reported 385 natural disasters that claimed more than 297,000 lives, affecting over 217 million others and causing US\$ 123.9 billion in economic damages (Guha-Sapir, Vos, Below & Ponserre, 2011). When such disaster strikes, it becomes a challenge to deliver fast and efficient emergency supplies in at the right time, at the right place and exactly when needed. Thus the efficiency of humanitarian logistics

operations that account for 80% of relief operations is crucial in order to ensure a good responsive when a disaster occurs (Van Wassenhove, 2006). This significant increase in humanitarian disasters both globally and locally has put into task supply chain professionals to design and manage supply chains that will meet donor expectations and deliver value to those in need.

Bolsche (2014), defines humanitarian logistics as the process of coordinating an efficient and effective flow and storage of goods and services as well as related information from the point of origin to the point of consumption for the purpose of alleviating the suffering of vulnerable people due to disaster. The function encompasses a range of activities, including preparedness, planning, procurement, transport, warehousing, tracking and tracing, and customs clearance (Thomas & Kopczak, 2005). It also includes coordination and collaboration with supply chain members, third party service providers, and other humanitarian organizations. There is need to coordinate and manage disaster supply chain to ensure that humanitarian organizations gain from the benefits of having a supply chain system in place.

The supply chain involved in disaster relief operations is distinct as it is characterized uneven demand patterns and unexpected constraints. Furthermore, the humanitarian supply chain network are delicate and temporary making the management of the whole system challenging. The complex and uncertain nature of humanitarian logistics makes it difficult to centralize distribution, manage costs, and calculate needs as compared to commercial supply chains where demand is easily predicted.

A non-governmental organization is a not-for-profit body established to provide assistance to the vulnerable members of society. They operate in areas of emergency and areas where people are afflicted by conflict, disease, and poverty. These organizations fully rely on funds from donor including development partners, volunteers and government or government agencies. Non-government organizations are also known as relief organizations or humanitarian organizations. These terms will be used interchangeably to mean one and the same thing in this study.

#### **Statement of the problem:**

Over the last decade, humanitarian supply chains have become complex as different actors, processes, information, and decisions have to be mixed to serve the needs of the victims affected by a disaster (Blecken, 2010). Their systems are also composed of a series of stages in which materials and information flow through different steps to fulfill the needs of the recipient (Davidson, 2006). Attempting to manage complexity of supply chains in an unsystematic, piecemeal and non-strategic manner can result in sub optimal outcomes, waste of resources and loss of lives thus the effective planning of emergency, the management of supply chains in times of crisis is needed in reducing complexities in the supply chain in order to address and implement better responses (Tomasini & Wassenhove, 2009). The requirement to improve delivery of humanitarian aid has recently received increased attention due to the perceived failure of aid delivery systems following significant crises (Thomas & Kopczak, 2005).

According to OCED 2014 report, Kenya was classified as a fragile state in 2013 because of the increase in the number of natural and manmade disasters over the years, an average of 1,944,784 people a year have been affected by natural disasters over the last 10 years, drought having the most tremendous impact (CRED, 2014). Between 2003 and 2012, Kenya received the US \$14.6 billion in official development assistance making it the 15th largest recipient, hence the need of NGOs in Kenya to improve their operations so that they can be able to save more lives and prevent human suffering.

Humanitarian organizations are under pressure to respond to emergencies in organized, timely, efficient and appropriate manner. For decades, supply chain performance had been a significant area of attraction for researchers. However, studies have established the factors affecting supply chain performance in manufacturing and commercial organizations whose focus is to deliver value to customers in order to make a profit (Reichhart & Holweg, 2007). The focus on the industrial supply chain is the final customer, who is the input source of funds for the entire chain. On the other hand, in humanitarian supply chains, the end user rarely participates in a business transaction, having little control over supplies. The humanitarian supply chain bases its focus on providing relief aid in the forms of food, water, medicine, shelter, and supplies to areas affected.

A number of studies have been conducted on humanitarian Supply Chain management. According to Choi, Beresford, Pettit and Bayusuf, (2010), collaboration is seen as a key the differentiator in supply chain and in achieving integration and collaboration in the supply networks, the importance of having close supplier relationships is widely acknowledged and collaborative binding can help to lower purchase costs. However, the study was based on individual structural elements of the supply chain.

Abdifatah's (2012) study on supply chain management practices and their impact on performance among humanitarian organizations in Kenya revealed that maintenance of proper supplier relation, effective and efficient internal operations, continuous improvement, flexibility in processes of production, technology usage to hasten humanitarian work, inter-organization collaboration and internal operations simplicity to be some of the practices prevalent among non-governmental organizations in Kenya. However, the study did not focus on humanitarian logistics which is a critical element of supply chain performance. Also, a survey by Nyamu (2012) on the impact of supply chain management challenges of humanitarian organizations in Kenya concluded that: delays in the delivery right product, poor integration of information, and demand uncertainty amongst others as the effects of supply chain challenges on the performance of humanitarian organizations. This study, however, did not offer humanitarian logistics as a solution for achieving supply chain performance.

Supply chain performance has been treated as a corporate and manufacturing domain, yet in humanitarian response, it remains the most critical component of life-saving efforts. Quite a number of studies are focused on commercial supply chains with the aim of improving efficiency and profit making and thus little is known about supply chain performance in humanitarian organizations.

These studies have left a glaring gap on the role of humanitarian logistics on supply chain performance in non-governmental organizations. This study will be an effort to examine these factors and address this gap.

## **2. LITERATURE REVIEW**

### **Resource Based View Theory**

The resource-based view of the firm (RBV) draws attention to the firm's internal environment as a driver for creating high performance and emphasizes that if a company utilizes its resources and capabilities well, it will have a competitive advantage. One of the critical insights of the resource-based view is that not all organizational resources are a potential source of high performance (Hitt, 2011). However, in order to be competitive, resources must be valuable by being capable of creating an excellent customer service: allowing the firms to implement strategies that will enable it to meet customer's needs more efficiently and effectively, rare and in high demand (Kairu, 2015).

Resource Based View approach is useful in employing various systems in controlling inventories in the organization through optimal utilization and allocation to improve on performance (Sulastri, 2006). The source of high organizational supply chain performance lies mainly in how it exploits its resources to offer an excellent customer service. Excellent customer service leads to loyal and trusting customers.

### **Transaction Cost theory**

Generally, transaction cost theory is accepted as a useful framework for analyzing transport and outsourcing decisions. This theory was developed by Hobbs in 1996. According to the author, transaction costs reduced by outsourcing logistics include examples as decentralized order processing, working capital, assets and overhead. The application of transaction cost theory provides a justification for the establishment of alliances between organizations and their service providers (Iyer, 2011).

It should be noted that the resource profile of organizations has a tendency to influence the extent to which all or part of the logistics process is outsourced, as Banomyong and Supatn (2011) discussed with respect to the outsourcing of information technology from a manufacturer's perspective.

Applying transaction cost theory, higher asset specificity favors the hierarchy decision. The amount of the transaction costs may be used as an indicator for the decision of outsourcing (Pettit & Beresford, 2005). When asset specificity and uncertainty are low, and transactions are relatively frequent, transactions will be governed by markets outsourcing. High asset specificity and uncertainty lead to transactional difficulties with transactions held internally within the firm-vertical integration. Transaction cost theory rests on two fundamental behavioral assumptions about the transaction partners involved: bounded rationality and opportunism. By hypothesizing that firms seek to minimize costs, the theory of transaction cost analysis attempts to predict which activities are internalized and which are transacted via market exchanges (Dewsnap & Hart, 2014).

### **Information Processing Theory:**

Galbraith's information processing theory offers a plausible means to investigate the underlying mechanisms to enable supply chain agility (Mani, Barua, & Whinston, 2010). However, some studies leverage the findings of existing studies and lack a theoretical lens when examining the ways in which supply chain performance is enabled by the information

processing capabilities. This theory “states that organizations are structured around information and information flows in an effort to reduce uncertainty” (Fairbank, Labianca, Steensma & Metters, 2006). This theory identifies 3 concepts: information processing capability, information processing needs and the fit between capability and needs to optimize performance (Premkumar, Ramamurthy & Saunders, 2005). The information processing needs are forms of uncertainty and information processing capabilities are levels of IT support to reduce this uncertainty. The third concept means the impact of the interaction between the two on performance (Premkumar et al., 2005). Information processing involves information dissemination, generation, interpretation and memory (Wang, Ahmed, & Rafiq, 2008). Dissemination is the diffusion and sharing of information in the organization, which is similar to the strategic process of sense giving, which is to inform the strategic change information to all stakeholders (Rouleau 2005). Generation is acquiring new market information. Interpretation is the process by which the meaning of the information is understood, which mirrors sense-making as a capability of translating information into knowledge (Malhotra 2001). Memory is the process of storing and codifying knowledge. As generation and memory are inherent parts of information processing, we, therefore, perceive interpretation and dissemination as the most relevant dimensions in the context of sense-making and sense giving. The social and personal constructs of sensemaking and the strategic process of initiation in a sense giving enhance information processing capabilities.

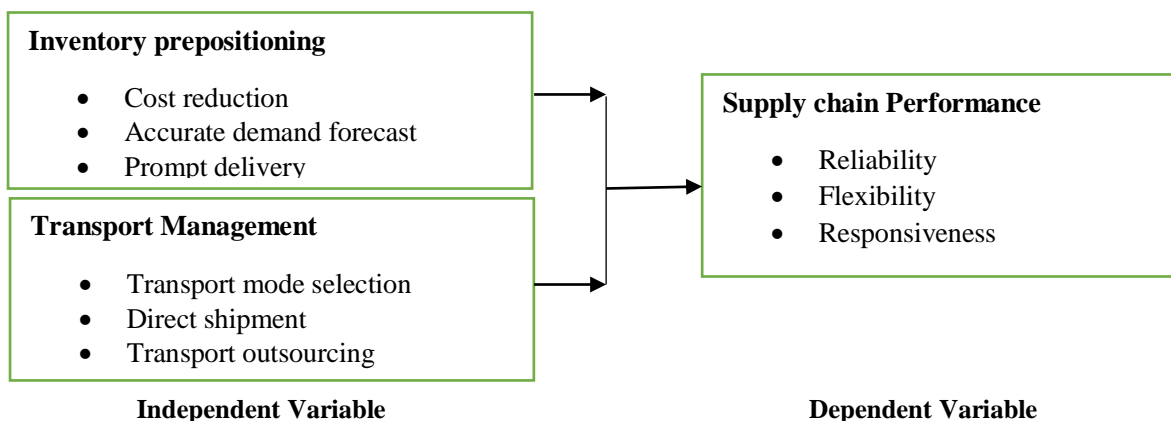
**Network Perspective Theory:**

The performance of a firm depends not only on how efficiently it cooperates with its right partners and in this case the customer, but also on how well these partners collaborate with their own business partners. Network perspective theory can be used to provide a basis for the conceptual analysis of reciprocity in cooperative relationships (Provan et al., 2007). A firm’s continuous interaction with other players becomes an essential factor in the development of new resources (Haakansson & Ford, 2002). Relationships that combine the resources of two or more organizations tend to achieve more advantages than through individual efforts. Such a combination can be viewed as a quasi-organization (Gummesson, 2011). The value of a resource is based on its combination of other resources, which is why inter-organizational ties may become more important than possessing resources per se. Thus, the resource structure determines the structure of the supply chain and becomes its motivating force.

The network theory (NT) contributes profoundly to an understanding of the dynamics of interorganizational relations by emphasizing the importance of “personal chemistry” between them parties, the build-up of trust through positive long-term cooperative relations and the mutual adaptation of routines and systems through exchange processes. Through direct communication, the relationships convey a sense of uniqueness, ultimately resulting in supply chains as customization to meet individual customer requirements. The parties gradually build up mutual trust through the social exchange processes. A network does not seek an optimal equilibrium, but is in a constant state of movement and change. Links between firms in a network develop through two separate, but closely linked, types of interaction: exchange processes (information, goods and services, and social processes) and adaptation processes (personal, technical, legal, logistics, and administrative elements) (Powell, 2003).

Network theory is descriptive in nature and has primarily been applied in SCM to map activities, actors, and resources in a supply chain. The focus has been on developing long-term, trust-based relationships between the supply chain members. This is theory will play a significant role in explaining the significance of the customers in this dynamic business environment and more so in the supply chain. These networks provide ways for Humanitarian Organizations to gather information, deter competition, and even coordinate in setting operational policies (Karanja et al., 2015).

**Conceptual Framework:**



**Research Gaps:**

From the literature review, it is evident that the main focus has so far been on the role of logistics on supply chain performance within the private, i.e., commercial supply chains and public sector companies and not within the humanitarian aid sector. Humanitarian organizations also need to integrate their SCM activities in order to deliver to the beneficiary within the required time and at the least possible cost in order to save more lives. The existing literature has majorly focused on supply chain challenges on performance humanitarian organization without acknowledging the role it can play to enhance the performance of humanitarian/ non-governmental organizations.

Disaster supply chains, therefore, are one of the environments that need the performance of the supply chain due to the high degree of uncertainty that must be dealt with as well as the complexities that result from high levels of stress and uncertainty. According to Christopher (2000), the original essence of the disaster management is swiftness and agility should be the heart of humanitarian supply chain.

The studies have also majorly focused on supply chain management challenges facing humanitarian organizations in Kenya without clearly providing adequate solutions to overcome this. The focus of studies has also been on establishing supply chain management practices being implemented by humanitarian organizations without focusing on humanitarian logistics as a key factor in achieving supply chain performance. This, therefore, creates a significant research gap on the role of humanitarian logistics on supply chain performance in Non-Governmental organizations in Kenya.

**3. DATA ANALYSIS AND RESULTS**

The purpose of this study was to determine the role of humanitarian logistics on supply chain performance in non-governmental organizations in Kenya (case of ACTED Kenya). It further examined: (1) the effect of inventory prepositioning on supply chain performance in NGOs. (2) The role of transport management on supply chain performance in non-governmental organizations in Kenya. (3) The role of ICT integration on supply chain performance in NGOs. (4) The role of strategic partnership on supply chain performance in the NGO. Therefore, this chapter entails data analysis and results obtained from the survey. The approach involves a description of the demographic data of the respondents, analysis of how the independent variables affected the dependent variable and finally present the linear regression model stated in the previous chapter.

**Inventory Prepositioning on Supply Chain Performance:**

In order to make sense of the data obtained from the census cross-tabulation based on percentages were used. Table 3.1 shows the percentage of participants who reported on the effectiveness of inventory prepositioning on supply chain management at ACTED Kenya.

Effect inventory prepositioning on supply chain performance	Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
Reduces cost with pre-negotiated agreements with suppliers	0.0%	5.6%	27.8%	41.7%	25.0%
Enables the organization to timely anticipate disaster in advance	2.8%	8.3%	22.2%	27.8%	38.9%
Allows for prompt delivery in emergencies	0.0%	0.0%	36.1%	16.7%	47.2%

Table 3.1: Effect of Inventory prepositioning on Supply Chain (Source: Author, 2017)

From the results, 5.6% of the staff at ACTED Kenya disagreed with the prepositioning of inventory in reducing supply cost. Further, 27.8% reported to not observing any effect of inventory prepositioning on reducing the cost of supply in the NGO. However, 41.7% and 25.0% agreed and strongly agreed respectively that prepositioning had helped the organization in reducing cost with pre-negotiated agreements with suppliers. In general, 66.7% (41.7+25.0) of the participants reported that prepositioning help in cutting the cost of supply based on pre-negotiated agreements with suppliers.

2.8% and 8.3% of the participants strongly disagreed and disagreed respectively with the proposition that inventory prepositioning enables the organization to timely anticipate disaster. Moreover, 22.2% reported not observing any change on anticipation of disaster as a result of inventory prepositioning. However, 27.8% and 38.9% of the participants agreed and strongly agreed respectively that inventory prepositioning had enabled the NGO to anticipate disaster. From the results, the observation is that 66.7% of the participants support the proposition that disaster anticipation has since improved with inventory prepositioning.

From table 3.1 above, 36.1% of the staff reported that inventory repositioning has no effect in allowing for prompt delivery in emergency situations. However, 16.7% and 47.2% of the staff agreed and strongly agreed respectively that prompt delivery in an emergency situation had been enabled by inventory repositioning in the organization. Generally, 63.9% of the participants indicated that inventory repositioning has allowed for prompt delivery of emergency services. Therefore, from the analysis repositioning of inventory has significant positive effect on supply chain performance.

**Role of Transport Management on Supply Chain**

In the literature review, chapter management of transportation was reported by several studies as very significant in supply chain management. In further supporting or declining such proposition the researcher developed a five-point Likert questionnaire. The responses are as indicated in table 3.2 below.

Role transport management on supply chain performance	Disagree	Neutral	Agree	Strongly agree
The organization selects the most suitable mode of transport based on the urgency of the disaster.	0.0%	13.9%	38.9%	47.2%
Direct shipment has an effect on supply chain performance	2.8%	19.4%	50.0%	27.8%
Transport outsourcing has led to a decrease in transport operating cost and fast response to demands	0.0%	5.6%	27.8%	66.7%

Table 3.2: Role of Transport Management on Supply Chain Performance (Source: Author, 2017)

Transport management in terms of selection of the mode of transport has not improved the performance of supply chain as reported by 13.9% of the staff from ACTED Kenya. However, 38.9% agreed, and 47.2% strongly agreed that selection of the mode of transport based on the urgency of the disaster had played a significant role in the supply chain performance at ACTED Kenya. In general, 86.1% of the participants supported the proposition that selection of the mode of transport based on the emergency situation plays an important role in supply chain performance.

2.8% of respondents stated that direct shipment has no effect on supply chain performance and 19.4% reported no difference in performance. Besides, 50.0% and 27.8% agreed and strongly agreed that direct shipment had played an important role in the performance of the supply chain management in an NGO. Moreover, 77.8% of the participants support direct shipment as having a significant positive effect on the performance of supply chain in an NGO.

In addition, 5.6% of the staff was not sure on whether transport outsourcing has led to a decrease in transport operating cost and led to fast response to demand in the organization. But, 27.8% and 66.7% agreed and strongly agreed that outsourcing of transport had enabled the organization to respond quickly to emergency demand and at the same time reduce transport operating costs. Therefore, from the results, more than fifty percent of transport management operations play a significant role in supply chain performance.

**4. SUMMARY OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS**

**Summary of the Findings:**

This study sought to establish the role of humanitarian logistics on supply chain performance in a non-governmental organization in Kenya, a case of Acted Kenya. The specific objectives that guided the study included to establish the effect of inventory repositioning on supply chain performance in non-governmental organizations; to determine the role of transport management on supply chain performance in non-governmental organizations; to assess the role of ICT integration on supply chain performance in non-governmental organizations and to find out the role of strategic partnership on supply chain performance in non-governmental organizations. This study employed a case study research design to achieve these objectives. The study population comprised of 36 staff at Acted Kenya and specifically in Procurement Department, Warehouse Department, ICT Department, and the Logistics Department.

These departments are directly or indirectly involved in humanitarian logistics planning, delivery, and operations. This study used a census due to the small target population. The sample size was 36 respondents .A structured questionnaire containing close-ended questions was used to collect primary data for this study. The questionnaires were distributed using the drop-and-pick later method to the respondents. A pilot study was carried out among ACTED Kenya staff who did not take part in the main study. Data collected were analyzed using descriptive and inferential analysis methods. A multiple linear regression analysis was used to analyze the role of inventory repositioning, transport management, ICT integration and strategic partnership on supply chain performance. SPSS version 21 was used to aid in data analysis. Data analysis results were presented using charts and tables.

### **Inventory Prepositioning effect on supply chain performance:**

The first objective was to establish the effect of inventory prepositioning on supply chain performance in non-governmental organizations in Kenya. To achieve the objective the study analyzed data on inventory prepositioning on supply chain performance.

The study revealed inventory prepositioning reduces cost with a pre-negotiated agreement with suppliers, inventory prepositioning enables an organization to timely anticipate disaster in advance and quickly respond to sudden changes in demand for humanitarian assistance, and it was clear that inventory prepositioning allowed for prompt delivery in emergencies.

The results revealed that inventory prepositioning affect supply chain performance at ACTED Kenya. The results have also shown that inventory prepositioning positively and significantly affected supply chain performance at ACTED Kenya.

### **Transport management effect supply chain performance:**

The second objective of the study was to determine the role of transport management on supply chain performance in non-governmental organizations in Kenya. The study revealed that ACTED Kenya selected the most suitable mode of transport based on the urgency of the disaster. The study also revealed direct shipment plays a significant role in supply chain performance. The organization outsources transport which has led to decrease in transport operating cost and fast response to demand.

The findings revealed that transport management affects supply chain performance at ACTED Kenya. Transport management was also found to positively and significantly affect supply chain performance.

### **Conclusions;**

The study aimed to establish the role of humanitarian logistics on supply chain performance in non-governmental organizations. The study established that all the four humanitarian logistics dimensions significantly and positively affect supply chain performance through inventory prepositioning, transport management, ICT integration and strategic partnership, ACTED Kenya has been able to achieve performance in their supply chain in terms of flexibility, responsiveness, and reliability.

### **Inventory prepositioning on supply chain performance:**

The first variable was to establish to establish the effect of inventory prepositioning on supply chain performance in non-governmental organizations in Kenya. From the findings of the study, it was concluded that inventory prepositioning has a significant influence on supply chain performance. Acted Kenya by prepositioning inventory was able to; timely anticipate disaster in advance and quickly respond to sudden changes in demand for disaster relief, reduces their logistics cost through pre-negotiated agreements with the supplier and promptly deliver emergency supplies in affected areas.

### **Transport management on supply chain performance:**

The second variable was to determine the role of transport management on supply chain performance in non-governmental organizations in Kenya. From the study findings, it was concluded that transport management has a significant influence on supply chain performance. ACTED Kenya through effective transport management practices was able to; select the most suitable mode of transport based on the urgency of the disaster, perform direct shipment especially for items that had to be delivered in the shortest time possible and outsource transport that has led to a decrease in transport operating cost and fast response to demand.

### **Recommendations from the Study:**

1. Humanitarian logistics is key to supply chain performance of non-governmental organizations as it accounts for about 80% of the relief operations.
2. Its importance cannot be overlooked due to cost savings and operational efficiencies that can be realized through proper planning, collaboration, and holistic analysis of the relief effort.
3. The chain of activities affected directly or indirectly and facilitated by proper humanitarian logistics is intricate and far-reaching.
4. These activities can be unified towards faster, more efficient delivery of aid by employing the humanitarian logistics dimensions as explained in this research.

From the study conclusions, the following recommendations are made

### **Inventory prepositioning on supply chain performance:**

NGOs dealing with relief operations in Kenya should be encouraged to be preposition their inventory strategically to achieve prompt deliveries with the aim of enhancing their ability to deliver sufficient items in the shortest time possible hence save lives as well as reduction of logistics cost. This practice should also enable them to timely anticipate disaster in advance and quickly respond to sudden changes in demand for disaster relief.

### **Transport management on supply chain performance:**

The NGOs should be encouraged to select the most suitable mode of transport based on the urgency of the disaster. Faster and more costly transportation permits maintenance of lower inventory levels kept as a result of a more responsive system (Coyle et al., 2003). They should also be able to implement direct shipment by delivering emergency supplies directly to the affected areas thus permitting rapid response to emergency/unpredictable demand. Finally, outsourcing of transport should be encouraged as it leads to a decrease in transport operating cost and fast response to demand while improving service delivery and allowing the organization concentrate on its core activities.

### **Recommendations for Further Research:**

The study sought to establish the role of humanitarian logistics on supply chain performance in Kenya a case of ACTED Kenya. The study variables were limited to inventory prepositioning, transport management, ICT integration and strategic partnership explained 72.25% variations in service delivery in humanitarian organizations. The research recommends that other variables accounting for 27.75% need to be identified and their influence assessed as well.

A similar research in non-governmental organizations in Kenya will also need to be carried out over time to see if they validate, support or contradict the findings of this particular study.

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