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Supply Chain Management in Humanitarian Relief Logistics

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Abstract
Hundreds of thousands people are affected by the disasters each year in Pakistan and millions of people are affected in all over the world. These disasters can be man-made like catastrophes, terrorism or may be natural in the shape of flood, earth-quick, tsunamis, & droughts etc. Through this study we have explore the use of supply chain management techniques and proposed how can overcome the barriers encountered by the logisticians during the humanitarian relief operations. Using grounded theory methodology and statistical analysis, the barriers is analyzed which is based on academic, organizational, and contemporary literature. Possible solutions to these barriers have been drawn from the available supply chain management literature. This work is different from others conventional studies because this study interacts the supply chain principles from different disciplines of nonprofit organizations to benefit humanitarian operations. It also serves to advance the body of knowledge so that future logisticians can build upon the concept. The result of the study has been puts forth a simple framework of supply chain management solutions with overcoming logistics difficulties during relief operations and it will explains why logisticians should consider this study into their use.

Introduction

1.1 Background

Pakistan is a lower middle-income country its ranks only 125 of 169 countries in the Human Development Index. Pakistan is located in a crisis-ridden region and has a high proportion of absolutely and extreme susceptibility to disasters, widespread social inequality, (armed) internal conflicts and heavy population and resource pressure impede the country's economic and social development. A disaster is any event which causes widespread human suffering, and may also be characterized as an event responsible for a breakdown in the normal functioning of a community that also overwhelms local response capability (PAHO, 2000:4 and PAHO, 2001:1. Logistics of emergency relief involves many activities same like the logistics processes involves in the private sector, but the modern and latest logistics practices just have recently been applied into disasters aid and recovery cycles. Now the humanitarian logistics gradually emerging with separate entity with its own discipline in supply chain and logistics management. In case of any emergency the hundreds of organizations including government, NGO's, and private companies donates the human resource, money, and material resources for provision the assistance to the disaster victim's communities.

1.2 Major Research Problem

The major research problem of this study is to identify the barriers in disaster operations or humanitarian relief logistics and to propose the best possible solution of these barriers in context of supply chain principles. This work is different from others conventional studies because this study will interacts the supply chain elements of different thoughts and disciplines including the private, nonprofit "NGO's, and the military sectors for cooping the benefits to humanitarian operations.

1.3 Problem Statement

Humanitarian supply chain management with respect to relief missions is difficult in term of the protecting the donors funding and an improved relief mission; here is not exist any standard model which should be used for supply chain management (SCM) techniques and provision of relief to populations which affected by disasters.

1.4 Objective of Research

Objective of this research is to provide the summarized possible solutions of the humanitarian relief logistics problems which faced by the humanitarian organizations, through the easily and understood framework. Some of the main barriers which face by the humanitarian organizations are unpredictable demand, poor infrastructure, difficulties with personnel resources, and the availability of the funds. For overcoming such problems we have some proposed solutions which related to or belongs to the private and military sector. Through the analysis the research will require to identify the critical relief resources and the barriers from multiple sectors. At the end of this research we will have standardized logistics policies with the application and practices with inn humanitarian organization.

1.5 Scope of the Study

In this study we will deal the solutions of HSCM problems, but it doesn't mean we attempt to solve the political and regional issues which acting as barriers in any aid process. In this study our focus is limited; we will propose that how we can improve the coordination of humanitarian aid delivery. Here is a possibility that the study may affected in subjective manner due to the authors interpretations, that what's type of logistics barriers exit in humanitarian logistics and which SCM methods were the possible solutions.

1.6 Plan of Study

Through subjective assessments analysis we will found that what relevant finding extracted in that literature. By this thesis we will expand our experience of the supply chain management and ongoing practices of humanitarian sector and will provide the tools to practitioners of humanitarian supply chain management, logistician. Although the use of the modern logistics techniques in humanitarian logistics era is the seed of the study questions, but until the data will not gathered the exact theory did not will appear. Supply chain management can overcome the certain barriers there is a preconceived idea but detail that how this disciplines could be pooled has left to engage on their own part of the Grounded theory methodology.

2. Literature review

2.1 Supply Chain Management

Supply chain management first defined by Keith Oliver in 1982. Oliver describes in 1982 the Supply Chain theory as "Supply chain management (SCM) is the method of planning, implementing, and controlling the operations of the supply chain with the aim to fulfill the customer needs in an efficient way". Supply chain management process covers the all material either in cargo space, stock work in process, finished goods from starting point to the consumption point. We can say that the process of planning of material management, capital flow management, information and services management for controlling the business environment is known as supply chain management.

2.2 Humanitarian Logistics & Supply Chain Management:

The logistics a word has been derived from the Medieval latin "logisticus" of computation and from Greek word logistikos which means expert in computation and from logizesthai means to compute from' logos', reckoning, reason. So it's means more things to the more peoples.

For various humanitarians the logistics definition is open for interpretation in their own way. A counseling group of humanitarian logistics under the Fritz Institute has made efforts for developing g a general definition of humanitarian logistics. They defines that "the process of planning, implementing and controlling the efficient, cost-effective flow of and storage of goods and materials as well as related information, from point of origin to point of consumption for the purpose of meeting the end beneficiary's requirements" (Thomas and Mizushima, 2005) . The humanitarian logistics means the mobilization of the knowledge, resources, skills and peoples in the disaster prone areas.

2.3 Disaster Management Cycle:

Here are more than a few stages, though, for the majority, the literature concurs on the survival of the subsequent phases:

- Mitigation
- Preparation
- Response
- Rehabilitation
- Development

Table 1 Descriptive form of Disaster Management Cycle.

	Transition phase	Key elements/ Activities	Dealing approach	Key performance elements	Key performance measurement
Before the disaster	Preparation phase	Vulnerability Mitigation & Preparedness	Preparation of Strategic planning	This one is the lean type of strategy and need the following elements. Coordination, Collaboration, Resource mobilization, planning & Knowledge management.	Need the Resources
During the disaster	Emergency Response Phase	Response to disaster prone communities.	Execution of short term project management	This one is the agile type of strategy and deal with; Demand management Information management Supply management Fulfillment management	Demands resources output Flexibility.
After the disaster	Rehabilitation & Reconstruction phase.	Recovery of the disaster prone communities' infrastructure.	Long term project management and completing	This one is demands lean type of strategy with Collaboration, Coordination, Resource planning, Knowledge management Improvement.	Needed resources output Flexibility.

2.4 Problems of humanitarian supply chain management.

In Pakistan there are some major issues which badly impact on the supply chain operations of any emergency or humanitarian relief missions. The logistician should control the impacts of factors which confronted directly to the operations which are with in his span of control; however it should consider effects of below mentioned barriers on the his organizations, partners and targeted relief beneficiaries.

1. Uncertainty 2. Poor Infrastructure 3. Communication 4. Human Resource.
5. Restricted Funds 6. Government Policies 7. Environmental Factors 8. Situational Factors
9. Inventory Shrinkage 10. Religious & Ethnicity 11. Social Economic Factors
12. Government Policy. 13. Poor Infrastructure.

2.5 Identified Research Gap:

The main identified gap is the need of a reference checklist which can help to operate the whole system effectively rather than controlling individual parts. Although the logistics processes are same in the corporate sector but in case of emergency responses modern practices have been involved. - it is concluded that humanitarian are slowly mapping out their won disciplines and supply chain management systems. Humanitarian logistics is more focused on process and systems involved in mobilizations, and skills, knowledge and resources required to help vulnerable communities affected by natural disasters. But still it includes many activities similar to private sector logistics in the systems approach, "all functions or activities need to be understood in terms of how they affect, and are affected by, other elements and activities with which they interact.

2.6 Distinction of this Study:

This study is different from others conventional studies because this study will interacts the supply chain principles from different of nonprofit "NGO", to benefit humanitarian operations. It also serves to advance the body of knowledge so that future logisticians can build upon the concept.

In this study we will analyze the some of the barriers facing humanitarian organizations are situational factors like, socio economics, Political, governmental, environmental factors unpredictable demand, degraded infrastructure, difficulties with personnel, and funding issues. The solutions will be purposed that will be based on SCM methods used in other humanitarian organizations.

3. Conceptual Framework

The full conceptual framework is representing finding of humanitarian relief organizations barriers and possible proposed solutions of these barriers in respective way through literature review. The entire barriers are written

down in main and subcategory of along the horizontal axis and the best possible solutions is proposed in main body of the table. In table the problems solutions is presented and numbered the references through which the author can make indication but if that is the remedy then it will be found in the body of the table. If needs further clarification in depth about the solution, then it may be found in references which indicated positively.

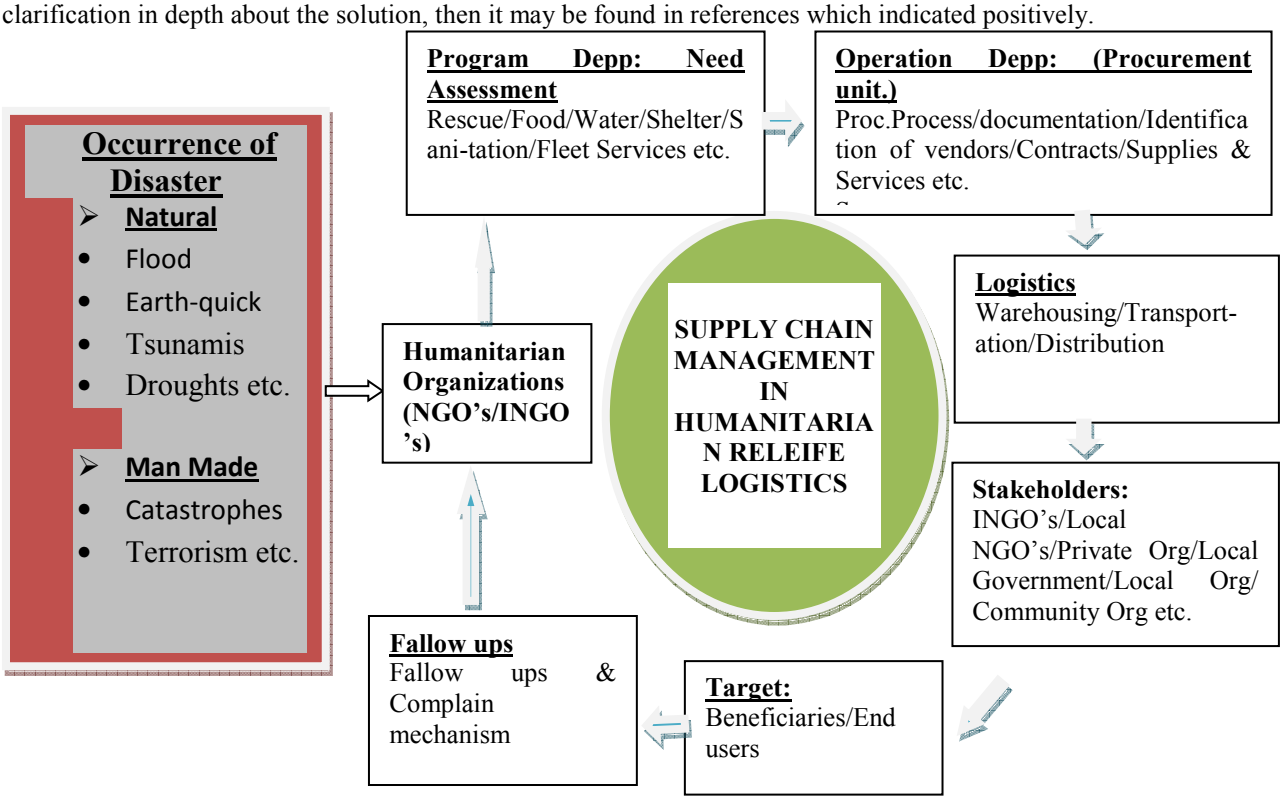


Figure 1 Humanitarian Supply Chain Management Cycle:

As stated above in the diagram we will focus the resources and ways which are immediately required after disaster. In the present study the humanitarian organization kick a start through search to find and serve the necessities of life (food, water, electricity, temporary shelter, medical aid, and sanitation). Every class may consist of a mixture of personnel, supplies, and equipment's. So it's the responsibility of operations department to expedite procurement, organize the warehousing, fleet and distribution up to the beneficiaries with objective to save the life's and precedes the necessities with in a limited time. The significance of logistics to humanitarian reaction cannot be unseen; lacking the fast enterprise of supply and delivery channels for relieve resources, the adversity will surely be additional lengthened and harmful for the exaggerated population.

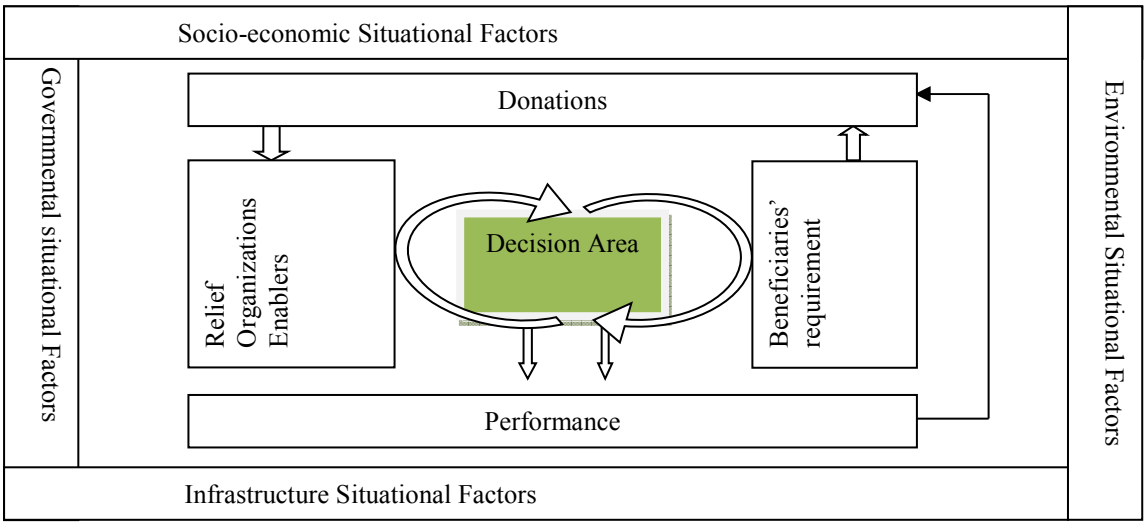
3.2 Determinants of Humanitarian Relief Logistics

From conclusions remarks it necessary for the efficient supply network to have well-coordinated and collaborative communication network between vendor to beneficiaries and other relevant stake holders.

3.3 Conceptual Model

The problems and barriers will break down by major categories and subcategories along the horizontal axis and the proposed solutions will reference in the main body of the table. These factors cannot be modified by the relief organizations, yet their impact can be reduced depending on the organizations' abilities to handle them.

Figure 2 Conceptual Model:



The aim of the framework presented above is to develop an understanding of the way local situational factors influence the performance of humanitarian logistics. While the effectiveness of a process in a business environment can be measured by the value it creates in the context of humanitarian logistics, effectiveness should be determined by its fit with the beneficiaries' requirements, in other words, timely delivery of the right relief items. Similarly, efficiency can be defined as the quantity of relief items delivered within a given budget.

4. Research Methodology

4.1 Nature of the Study

As the supply chain management in humanitarian logistics is on developing stage so that's way the techniques and methodologies which implied are qualitative in nature; the barriers identified and has been proposed the best possible solution for humanitarian supply chain management. For tying together the information about humanitarian supply chain management the techniques for analysis is implied Grounded theory. At the end the recommendations will be made or adapted on the basis of non-partisan applications.

4.2 Types of the Data

All of the data is secondary and some of the portion is primary type of data collected through different studies articles & organizations literatures, and personal interviews. After collection of the data I have responded the analyses on basis of the OLS & grounded theory.

4.3 Samples

In this study we choose the sample of eight organizations which are the largest and most prolific. During the emergency responses these samples organizations serves as the lead agency or coordinator of smaller or local organizations in their niche area.

CARE International, Oxfam, World Food Program (WFP), International Committee of the Red Cross (ICRC), Catholic Relief Services (CRSDoaba FoundationEdhi Foundation.

Although government agencies such as the

- U.S. Office of Foreign Disaster Assistance (OFDA) and the
- European Commission's Humanitarian Aid Office (ECHO)

4.4 Variables

Following is the variables which are considered in this study.

Uncertainty, Poor Infrastructure, Communication, Human Resource, Restricted Funds, Government Policies, Environmental Factors, Situational Factors, Inventory Shrinkage, Religious & Ethnicity

4.5 Estimation Techniques

We divided this study into two parts; in first part we have validated the problems/variables through statistical techniques "OLS" (Ordinary least square method).

In second part we have applied technique of grounded theory for extracting the analysis and putted results with possible solutions of supply chain management problems which extracted and validated in statistical techniques.

5. Data analysis

In this paper first step of statistical results we use SPSS software for data analyses using the questionnaire on Likert scale. We used the OLS (Ordinary least square method) for finding out the regression analysis.
SCM-HRL=B0+B1UN+B2PI+B3COM+B4HR+B5RF+B6GP+B7EF+B8SF+B9IS+B10RE+e

5.1 Descriptive Statistics

The descriptive statistics is the term given to the analysis of data that helps describe, show or summarize data in a meaningful way and presents the patterns which might emerge from the data.

Table 2 **Descriptive Statistics**

	N	Minimum	Maximum	Mean	Std. Deviation
SCMHRL	0				
UN	8	4.00	5.00	4.5000	.53452
PI	8	3.00	5.00	4.3750	.74402
COM	8	3.00	5.00	4.2500	.70711
HR	8	3.00	5.00	4.0000	.75593
RF	8	3.00	5.00	4.2500	.70711
GP	8	3.00	5.00	4.3750	.74402
EF	8	3.00	5.00	3.7500	.70711
SF	8	4.00	5.00	4.1250	.35355
IS	8	3.00	5.00	3.8750	.64087
RE	8	2.00	4.00	3.2500	.70711

Explanation:

Uncertainty (UN) descriptive statistics shows that the minimum value in Likert scale questioner founds 04, and the maximum value is 05. The average of uncertainty is 4.5 and the standard deviation value between supply chain management in humanitarian relief logistics is .53452. So on the poor infrastructure (PI) is also showing the mean 4.375- and the standard deviation is .74402.

We can view the entire variable in this way; and may ask that the effect of these variables on supply chain management in humanitarian relief logistics is very extensive.

Through above regression analysis we extracted the result that all the variables have an extensive impact on the humanitarian supply chain management so the need special attention for reducing the intensity of the impacts. The impacts can be changed in favor of humanitarian supply chain management organizations if organizations equipped with sufficient good possible solutions; all possible solutions will be mentioned later on in the coming chapter through pocket references.

Table: 3 Correlation among variables

Correlations

		SCMHRL	UN	PI	COM	HR	RF	GP	EF	SF	IS	RE
Pearson Correlation	SCM-HRL	1.000	-.539	-.290	-.204	-.508	.611	.226	-.339	.339	.112	-.204
	UN		1.000	.898	.378	.354	.000	-.180	.756	-.378	.209	-.378
	PI			1.000	.339	.000	.068	-.032	.747	-.204	.112	-.475
	COM				1.000	.000	-.143	-.475	.143	-.714	.079	-.143
	HR					1.000	.267	-.508	.535	.000	-.295	.000
	RF						1.000	-.204	.429	.429	-.236	-.429
	GP							1.000	-.339	.339	.412	.339
	EF								1.000	.143	-.394	-.429
	SF									1.000	-.552	-.143
	IS										1.000	.079
	RE											1.000

Explanation:
As mentioned above the correlation between the supply chain management in humanitarian relief logistics and with uncertainty (UN) is.-539, its means the greater the uncertainty will harm the SCM in HRL. The correlation of SCM-HRL with poor infrastructure is -.290 and with communication (COM) is -.204, with human resource (HR) is -.508, restricted funds (RF) .611 and so on with all other variables. Through above analysis we come to know that; almost all variables have an extensive impacts on dependent variable (Supply chain management in humanitarian relief logistics), they need a serious attention for a strong and powerful relief operations & utilization of optimal resources.

3. Regression Analysis:

In statistics, **regression analysis** is a statistical process for estimating the relationships among variables. It includes many techniques for modeling and analyzing several variables, when the focus is on the relationship between a dependent variable and one or more independent variables (or 'predictors').

Table 4 Regression Analysis

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.286	.000		1.32	.567
	PI	-.393	.000	-.393	-1.75	.002
	COM	.036	.000	.034	.953	.021
	HR	-.679	.000	-.689	-1.051	.123
	RF	.893	.000	.849	1.115	.003
	SF	-.88	.000	.000	1.351	.001
	IS	.179	.000	.154	1.721	.321
	RE	-.036	.000	-.034	-.951	.351

a. Dependent Variable: SCMHRL

Explanation
Poor infrastructure (PI) has significant effect on the dependent variable. Communication (COM) also has an a significant effect on the dedpendent variables, so all other variables mentioned categorically and has an a significant impact on the dependent variables except the human resource, inventory shrinkage and religious and ethnicity has an insignificant effect on the depended variable. But it does not mean that the variables which are insignificant have no effect; it may be associated with selection of samples & quite possible that the organizations which interviewed have an excellent trained human resource with a proper development plan.

5. Grounded Theory Analysis Method:

After statistical analysis of variables/problems it's come to be proved that all twelve or thirteen variables have an extensive impact on supply chain management in humanitarian relief logistics; now in this second part we will makes analysis using the grounded theory and then we will extract the results proceeding a best possible solutions of all these problems/variables.

- Grounded theory involves the below mentioned trends in its analysis here the steps is summarized. The first step of data analysis is the "open coding" means the categorization of data by giving a specifically name through close coordination and examination phenomena.
- The second step is the "Axial Coding". The Axial coding deals with detailed coding like about the development of subcategory more about it that what is the cause, what is the dimensions of this cause, the condition and the consequences of the such phenomenon and the report of any response to the situation.

For discovering the cause and effects relationship it's necessary that the individual category should be analyzed and evaluated formally. Through this analysis may uncovered the more serious and critical areas.

5.1 Submissions Supply Chain Management in Emergency Disaster Relief.

Major problems covered during open coding research phase is the uncertainty, communication problem, poor infrastructure, human resource personal, political instability, and the other problems or obstacles category. All above categories further refined in the sub categories through axial coding phase. In axial coding here addresses

the individual aspects of main categories which pose to the more specific problems about humanitarian logistics manager. In the open coding the possible potential solutions were uncovered which comes to be known through axial coding

5.1.1 Uncertainty

Within the category of uncertainty, there are subcategories for unpredictable supply, unpredictable demand, and inconsistent processes. Unpredictable supply problems include issues such as inconsistent quantity, quality, and lead time. Potential SCM methods for dealing with supply problems are to obtain materials, equipment and labor locally, or procure safety/anticipatory stocks to protect against demand surges. Collaboration is another valuable tool for coping with supply uncertainty.

5.1.2 Infrastructure.

Within the category of infrastructure, these problems can be addressed by purchasing supplies and services locally, collaborating with a military partner, and investing in transshipment/direct shipment. Partners should seek out alternative transportation methods to reduce the burden on the degraded system.

5.1.3 Communications.

Problems from the communications category are varied and include the lack of standard terminology; principles of SCM that can be applied to this problem include using an LIS and common database to standardize information transfer. Standard tracking technology such as barcodes and radio frequency identification tags feed into the LIS. A common database makes the process more understandable for partners as they can see system capacities across the network. This is especially true when the partners are exercising CPFR. They can anticipate a demand and form a unified reaction because the doctrine and implantation tools are readily understood and accessible. However collaboration may have to be facilitated by other means such as reassigning roles of partners, or appointing a single coordinator and chain of command.

5.1.4 Human Resources.

Human resources play an important part in the success of the relief mission. Personnel problems can be addressed using SCM techniques such as automating as much data transfer as possible, i.e. reduce manual input to the data system. A robust LIS will make this easier, however m. Accurate information is one key to getting the right aid at the right time. Employees compensation should include incentives for properly accounted for and damage free movement of aid. High turnover can be addressed by recognizing and rewarding work that is beneficial to the entire supply chain. This reinforces the team concept.

5.1.5 Governmental Influence

The collaboration with donors might also convince the Government that placing stipulation on funds restricts efficient operations and ultimately hurts the relief operation. To draw attention away from the tendency of partners to compete for funds, the organizations should focus on matching complimentary core competencies and approaching the relief mission in an integrated manner. Pooling resources is a good SCM technique.

5.1.6 Other.

Some miscellaneous obstacles affecting the logistics system are specific dietary requirements, packaging requirements, shrinkage and theft, and documentation requirements. Specific dietary requirements can be anticipated through contingency planning and dealt with by purchasing from the local economy or creating safety stocks of generic dietary staples such as flour, maize, cooking oil, etc. Likewise, packaging requirements can be identified during contingency planning and coordinated in advance with suppliers. As an alternative, packaging requirements can be reduces if supplies can be procured locally. Shrinkage and theft can be addressed by pulling inventories out of the field into a more secure central location or using an LIS for tracking, tracing, and accountability.

6. Finding & Results

As discussed above each of the barriers has been illustrated with more than one possible solutions; the summary of these results is stated below.

Table 5 Summary of Barriers Solutions.

Barriers	Possible Solutions from Supply Chain Management
Uncertainty Noted By*:	
Unpredictable Supply	Local supply Safety/anticipatory stock Product inspections Change location of facilities Construct distribution centers outside of vulnerable areas Risk pooling Create parallel logistics and administrative processes Invest in redundant routes and delivery methods Transshipment Direct shipment Forecasting Exchange demand, supply, and inventory information Community vulnerability maps Reallocate the roles partners play in the network Improve reliability of supply and production quantity/quality Collaboration Collaborative planning forecasting and replenishment (CPFR) Collaborate with military partner Collaborate with a third party logistics provider (3PL)
Unpredictable Demand	Use local source information Forecasting Exchange demand, supply, and inventory information Pre- and post-disaster assessment Cluster sampling Community vulnerability maps Implement a logistics information system Safety/anticipatory stock Local supply Risk pooling Invest in faster transportation
Inconsistent Process	Establish a clear chain of command Utilize a senior coordinator Change or reduce the parties involved Reallocate the roles partners play in the network Eliminate non-value added activities Coordinate and redesign policies Jointly define network objectives and performance indicators Collaboration Utilize an LIS Safety/anticipatory stock Transshipment Direct shipment Collaborate with a 3PL
Infrastructure	
Degraded Infrastructure	Local supply Collaborate with military partner Transshipment Direct shipment
Capacity Exceeded	Local supply Increase frequency of processes Collaboration and joint capacity planning Facilitate system management using an LIS Collaborate with military partner Transshipment Direct shipment
Communications	
No Standard Terminology	Utilize an LIS Develop a common database Standardize bar coding/radio frequency tags Collaboration
Lack of Inst. Learning or Recording Best Practices	Utilize an LIS for data management
Lack of Information Sharing	Utilize an LIS Develop a common database CPFR
Poor Coordination	Utilize an LIS Develop a common database Reallocate the roles partners play in the network Establish a clear chain of command Utilize a senior coordinator Collaboration
Information Reliability (Infrastructure or Quality)	Establish an information system Develop a common database Invest in formal training
Inadequate Performance Measures/ Doctrine	Jointly define network objectives and performance indicators Use a common LIS
Human Resources	
Inadequate Training	Eliminate or reduce human interventions Align employee incentives with network objectives Utilize an LIS Invest in formal training
High Employee Turnover	Align employee incentives with network objectives
Politics	
Earmarking / Donor Influence	Collaborate with other organizations to fill gaps in aid/funding
Competition for Funds	Collaborate with partners to focus on core competencies and integrated mission approach
Other	
Dietary Rqmts.	Local supply
Packaging	Local supply, product reengineering
Shrinkage/Theft	Invest in centralized warehousing (16) Use an LIS for control and accountability (30)
Documentation	Collaborate with a 3PL Collaborate with the host government

Table 6.. Pocket Reference

		Barriers																				
		Uncertainty			Infrastructure		Communications							Human Resource		Politics		Other				
		Unpredictable Supply	Unpredictable Demand	Inconsistent Process	Degraded Infrastructure	Capacity Exceeded	No Standard Terminology	Lack of Inst. Learning or Recording Best Practices	Lack of Information Sharing	Poor Coordination	Information Reliability (Infrastructure Quality)	Inadequate Performance Measures/Doctrine	Inadequate Training	High Employee Turnover	Earmarking / Donor Influence	Competition for Funds	Dietary Requirements	Packaging	Shrinkage / Theft	Documentation
POSSIBLE SOLUTIONS	Safety / Anticipatory Stock	X		X																		
	Product Inspections	X																				
	Forecasting	X	X																			
	Create Parallel Logistics and Administrative Processes	X																				
	Invest in Redundant Routes and Delivery Methods	X																				
	Change Location of Facilities	X																				
	Construct Distribution Centers Outside of Vulnerable Areas	X																				
	Reallocate the Roles Partners Play in the Network	X		X						X												
	Eliminate Non-Value Added Activities			X																		
	Improve Reliability of Supply and Production Quantity / Quality	X																				
	Eliminate or Reduce Human Interventions												X									
	Coordinate and Redesign Policies			X																		
	Change or Reduce the Parties Involved			X																		
	Increase Frequency of Processes					X																
	Local Supply	X	X		X	X											X	X				
	Use Local Source Information		X																			
	Utilize a Senior Coordinator			X						X												
	Establish a Clear Chain of Command			X						X												
	Community Vulnerability Maps	X	X																			
	Rolling Assessments	X	X																			
	Cluster Sampling / Other Technologies		X																			
	Collaboration	X		X			X			X												
	Collaborative Planning, Forecasting, and Replenishment	X							X													
	Collaborate with a Military Partner	X			X	X																
	Collaborate with a Third Party Logistics Provider (3PL)	X		X																		X
	Joint Capacity Planning					X																
	Collaborate with Partners to Fill in Gaps in Aid / Funding														X							
	Collaborate to Focus on Competencies and Integrated Mission Approach															X						
	Jointly Define Network Objectives and Performance Indicators			X								X										
	Implement a Logistics Information System (LIS) and Use It	X	X	X		X	X	X	X	X	X	X	X									
	Develop a Common Database						X		X	X	X											
	Standardize Bar Coding / Radio Frequency Tags						X															
	Use an LIS for Control and Accountability																			X		
	Invest in Formal Training										X		X									
	Align Employee Incentives with Network Objectives												X	X								
	RiskPooling (Centralization)	X	X																	X		
	Product Reengineering																	X				
	Prepositioning																					
	Invest in Faster Transportation		X																			
	Collaborate with the Host Government																					X
	Transshipment	X		X	X	X																
	Direct Shipment	X		X	X	X																C

The logistician can make use of above methods to improve the quality of service provided to the populations in need. As we have become habitual in the traditional practices, so it may take time to adapt supply chain management techniques with in an existing organizational structure.

7. Conclusions

Managing humanitarian relief chain is critical, in terms of securing donor funding and improving the relief mission. The aims of this research were to identify elements of good practice in humanitarian relief supply chain and to develop a guiding framework for designing supply chain system for humanitarian aid. The proposed framework can be used as a basis to improve supply chain system in the relief sector. Our samples focused organizations Oxfam, Care International, ICRC, Doaba Foundation and UN agencies WFP, OFDA, and ECHO have a strong operations policies and dedicated structures; Care International claims to response anywhere in the world within 17 hours of disaster. These have lots of exposure in the field of emergency but INGO's and NGO's have non-sustainability in staff; due to projects based or missions based they always face challenges in relocation of staff toward effected countries, expat staff always not fit to the local scenario particularly in hazel of emergency.

Ultimately in emergency response the purpose of humanitarian SCM is to save the lives & provision of basic necessities to effected papulation. UN agencies and INGO's have more capacity and network but if they cater through local organizations and civil societies they can cater the more population efficiently with utilization of optimal resources. At yet Pakistan local NOG's and civil societies had been builds up there capacity they had learned & developed the policies, through which they can operate SCM more efficient rather than International organizations and agencies.

8. Recommendations:

Being a logistician and research scholar we recommend operating the operations with all above considerations and pocket references; in further studies should struggle to extract the solutions by collecting more data in future studies.

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