FACTORS AFFECTING INVENTORY MANAGEMENT IN RELIEF ORGANIZATIONS: A CASE STUDY OF MEDECINS SANS FRONTIERES

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A RESEARCH PROJECT SUBMITTED TO THE SCHOOL OF MANAGEMENT AND LEADERSHIP IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF THE DEGREE OF BACHELOR OF MANAGEMENT AND LEADERSHIP OF THE MANAGEMENT UNIVERSITY OF AFRICA

JANUARY 2017
DECLARATION

Declaration by student
This research project is my original work and has not been presented for the award of a
degree in any other University or Institution, no part of this report should be reproduced
without my consent or that of the Management University of Africa

Name........................................Signature.................................. Date..........................

Declaration by Supervisor
This project has been submitted for examination with my approval as appointed
University Supervisor

Name........................................Signature.................................. Date..........................

Lecturer Supervising
DEDICATION

This research project is dedicated to my Late mother H.G.K Muisyo whose wisdom and guidance all through was un-marched. “Mum your legacy lives on”
ACKNOWLEDGEMENT

I would like to sincerely thank Medecins Sans Frontieres management team for agreeing to my proposal to conduct this research in their esteemed organization. My supervisor Dr Paul Machoka for his support and my colleagues and peers for their positive feedback and input.
ABSTRACT

This research project is on the factors affecting inventory management in relief organizations. It is a case study of Medecins Sans Frontieres, an international non-governmental organization that provides medical humanitarian support to those affected by conflict, man-made and natural disasters. The objective of the study is to determine factors that affect inventory management of medical supplies that have shelf life in relief organizations which operate in unpredictable environments. The population sample is 40 comprising staff who work for the organization in different departments and come into contact with inventory. The data was collected through questionnaires, interviews and through observing staff at work. The data was analyzed using qualitative & quantitative techniques and was presented using tables, graphs and charts. The study revealed that 61% of staff are qualified having college and university education, however 83.34% of staff generally do not agree that warehouse staff have formal training in the area of inventory management. The study also revealed that 72.23% of staff or of the opinion that the organization provides resources to respond to emergencies. The study revealed 55% of staff are of the opinion that the organization has sufficient warehouse structure and equipment. In addition the study revealed that 54% are of the opinion that tools in place to monitor the expiry dates of the medical supplies. Some of the recommendations from the study includes that the organization needs to recruit staff that have supply chain management/warehousing profile to ensure that the inventory is managed in a more efficient and effective way. A proper emergency plan should be developed, shared and updated to the staff regularly so that the staff are aware of their roles and how to respond more efficiently. During the development of the emergency plan it is important that staff are involved so that there is more ownership of the processes. There is need to monetize the inventory so that stock losses are captured in form of money and not a list and this will capture not only the attention of the warehouse staff but globally the decision makers within the organization. The warehousing strategy for the next few months should focus on ensuring that there is better visibility of stocks by regrouping them within the warehouse to ensure that the rate of output increases and the lead time for processing stock requests is reduced.
TABLE OF CONTENTS

DECLARATION..............................................................................................................ii
DEDICATION..................................................................................................................iii
ACKNOWLEDGEMENT..................................................................................................iv
ABSTRACT......................................................................................................................v
TABLE OF CONTENT..................................................................................................vi
LIST OF TABLES...........................................................................................................viii
LIST OF FIGURES..........................................................................................................ix
LIST OF ABBREVIATIONS............................................................................................x
OPERATIONAL DEFINITION OF TERMS .....................................................................xi
CHAPTER ONE .....................................................................................................................1
INTRODUCTION OF THE STUDY .....................................................................................1
1.0 Introduction..............................................................................................................1
1.1 Background of the study..............................................................................................1
1.2 Statement of the problem..............................................................................................2
1.3 Objectives of the study...............................................................................................2
1.4 Research questions....................................................................................................2
1.5 Significance of the study.............................................................................................3
1.6 Scope of the study.....................................................................................................3
1.7 Limitations of the study.............................................................................................3
1.8 Summary..................................................................................................................4

CHAPTER TWO ...............................................................................................................5
LITERATURE REVIEW....................................................................................................5
2.1 Introduction...............................................................................................................5
2.2 Review of theoretical literature..................................................................................8
2.3 Critical review..........................................................................................................23
2.4 Conceptual framework.............................................................................................24
2.5 Research Gaps..........................................................................................................25
2.6 Summary..................................................................................................................26
CHAPTER THREE .................................................................27
RESEARCH DESIGN AND METHODOLOGY .................................27
3.1 Introduction ..........................................................................27
3.2 Research design ....................................................................27
3.3 Target population ...............................................................27
3.4 Sample and sampling techniques ...........................................27
3.5 Data collection procedures ...................................................28
3.6 Data analysis methods ..........................................................28
CHAPTER FOUR ........................................................................29
DATA ANALYSIS, PRESENTATION AND INTERPRETATION ..........29
4.1 Introduction ..........................................................................29
4.2 Analysis of Findings .............................................................29
4.3 Summary of Data Analysis ....................................................41
CHAPTER FIVE ..........................................................................42
SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS ..42
5.0 Introduction ..........................................................................42
5.1 Summary of findings ............................................................42
5.2 Answers to Research questions ..............................................42
5.3 Conclusion ...........................................................................49
5.4 Recommendations ...............................................................49
5.5 Suggestions for further studies ..............................................50
REFERENCES ..........................................................................51
APPENDIX I: Introduction Letter ...............................................54
APPENDIX II: Budget ...............................................................55
APPENDIX III: Questionnaire ....................................................56
## LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 3.1</td>
<td>Target Population</td>
<td>27</td>
</tr>
<tr>
<td>Table 4.1</td>
<td>Response Rate</td>
<td>29</td>
</tr>
<tr>
<td>Table 4.2</td>
<td>Gender Distribution</td>
<td>30</td>
</tr>
<tr>
<td>Table 4.3</td>
<td>Respondents Age</td>
<td>31</td>
</tr>
<tr>
<td>Table 4.4</td>
<td>Respondents Education Level</td>
<td>32</td>
</tr>
<tr>
<td>Table 4.5</td>
<td>How Shelf Life of Medical Supplies affect inventory management</td>
<td>33</td>
</tr>
<tr>
<td>Table 4.6</td>
<td>How does effective &amp; qualified HR affect inventory management</td>
<td>35</td>
</tr>
<tr>
<td>Table 4.7</td>
<td>How do emergencies affect inventory management</td>
<td>37</td>
</tr>
<tr>
<td>Table 4.8</td>
<td>How warehouse structure &amp; equipment affect inventory management</td>
<td>39</td>
</tr>
</tbody>
</table>
LIST OF FIGURES

Fig 2.1 Conceptual framework.................................................................24
Fig 4.1 Response rate.............................................................................29
Fig 4.2 Gender distribution....................................................................30
Fig 4.3 Respondents age.................................................................31
Fig 4.4 Respondents education level........................................32
**LIST OF ABBREVIATIONS**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDI</td>
<td>Electronic Data Interchange</td>
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<tr>
<td>EOQ</td>
<td>Economic Order Quantity</td>
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<tr>
<td>FEFO</td>
<td>First Expiry First Out</td>
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<tr>
<td>HDRSC</td>
<td>Humanitarian Disaster Relief Supply Chain</td>
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<td>HR</td>
<td>Human Resource</td>
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<tr>
<td>IFRC</td>
<td>International Federation of Red Cross</td>
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<td>IHO</td>
<td>International Humanitarian Organization</td>
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<td>MSF</td>
<td>Médecins Sans Frontières</td>
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<tr>
<td>NGO</td>
<td>Non-Governmental Organization</td>
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<td>OCHA</td>
<td>Office of Humanitarian Affairs</td>
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<tr>
<td>SCM</td>
<td>Supply Chain Management</td>
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<tr>
<td>SKU</td>
<td>Store Keeping Unit</td>
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<tr>
<td>SOP</td>
<td>Standard Operating Procedures</td>
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<tr>
<td>UN</td>
<td>United Nations</td>
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<tr>
<td>UNHCR</td>
<td>United Nations High Commissioner for Refugees</td>
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<tr>
<td>UNEP</td>
<td>United Nations Environmental Programme</td>
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<tr>
<td>VED</td>
<td>Vital Essential Desirable</td>
</tr>
<tr>
<td>VMI</td>
<td>Vendor Managed Inventory</td>
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<td>WFP</td>
<td>World Food Programme</td>
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</tbody>
</table>
## OPERATIONAL DEFINITION OF TERMS

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency</td>
<td>A serious, unexpected and often dangerous situation requiring immediate action</td>
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<tr>
<td>Humanitarian aid</td>
<td>Humanitarian aid is assistance provided to save lives, alleviate suffering, and maintain human dignity</td>
</tr>
<tr>
<td>Inventory</td>
<td>A list for goods and materials, or those goods and materials themselves, held available in stock by a business</td>
</tr>
<tr>
<td>Relief aid</td>
<td>Humanitarian operation that mitigates the urgent needs of a population with sustainable reduction of their vulnerability in the shortest amount of me and with the least amount of resources</td>
</tr>
<tr>
<td>Resource</td>
<td>A source or supply from which benefit is produced. Typically resources are materials, energy, services, staff, knowledge, or other assets that are transformed to produce benefit and in the process may be consumed or made unavailable.</td>
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</tbody>
</table>
CHAPTER ONE
INTRODUCTION OF THE STUDY

1.0 Introduction

Many organizations working in this era have embraced the model of working efficiently. Relief organizations have not been left behind in this aspect. One of the ways of ensuring efficient operations in relief organizations is through proper inventory management. Inventory management which is the overseeing and controlling of the ordering, storage and use of components helps organizations to identify the optimum inventory to hold at any one time. Inventory as is often stated in academic books and journals is a necessary evil. No organization wants to keep inventory because of the cost of procuring the items and the holding cost, however no organization can be able to operate with absolutely no stock. Relief aid is assistance provided to save lives, alleviate suffering, and maintain human dignity. Humanitarian aid is often distinguished from development aid by being focused on the immediate relief of suffering caused by natural or man-made disasters. The case of Relief organization and how they manage inventory is particularly interesting as their operations are as a result of emergencies and are always uncertain, which makes inventory control highly unfavourable.

1.1 Background of the study

Médecins Sans Frontières (MSF) (or Doctors Without Borders), is a French-founded international humanitarian-aid non-governmental organization, and Nobel Peace Prize laureate, best known for its projects in war-torn regions and developing countries facing endemic diseases. Its headquarters are in Geneva, Switzerland. The organization is known in most of the world by its French name or simply as MSF.

MSF Kenya started its operations in 2008. MSF’s core activity is providing medical care, therefore 80% of MSF inventory are medical items. On its inception the number of medical stock items managed by MSF Kenya was 96 items.

MSF Kenya operations grew bigger with the opening of a project in Africa’s largest refugee camp in dadaab in 2009. The medical stock items grew from 96 items to well over 500 items with an approximate volume of 168 cbm after the hunger emergency in north eastern Kenya 2011.
This amount of inventory would normally require very elaborate system, structures and human resource so as to be able to manage efficiently however the emergency operations of MSF Kenya means uncertainty in stock holding at any particular time.

1.2 Statement of the problem

The core function of MSF is to provide medical emergency humanitarian aid. When MSF responds to emergencies, there have been reported cases of stock rupture, high stock range, dead stock, insufficient storage space and expired medical supplies. The above issues mean that the organization medical operations are sometimes hampered with and in some cases money is tied up in non-moving stock. MSF Kenya finds it difficult to balance between optimizing resources which in this case is the inventory and still being able to respond to operational needs which are emergencies.

1.3 Objectives of the study

The general objective of the study is to determine the factors that affect inventory management in relief organizations.

1.3.1 Specific Objectives

The objective of the study was to:-

I. To determine the effect of warehouse human resource on inventory management
II. To determine the effect of infrastructure that is warehouse, machinery and equipment on inventory management.
III. To determine the effect of emergencies on inventory management
IV. To determine the impact of medical supplies shelf life on inventory management.

1.4 Research Questions

I. How does effective, qualified warehouse Human Resource affect inventory management?
II. How has warehousing structure and equipment affected inventory management?
III. How do emergencies affect inventory management?
IV. How does shelf life of medical supplies affect inventory management?
1.5 Significance of the study

The study is aimed at finding out the factors affecting inventory management in relief organizations. Control of such a large volume of inventory can be a big challenge in emergency context.

In the authors opinion it is difficult for relief organizations to strike a balance between what volume of inventory to keep at each specific time. This is because they operate in emergency context which are in their nature unpredictable. In addition, medical supplies have a defined shelf life which compounds the problem since in most cases the commodities can expire before being consumed.

1.6 Scope of the study

The study was confined within MSF which is located in (Nairobi). The departments and sections that were under study include: Logistics, Supply, Medical, Administration and Finance.

MSF provided a suitable case study due to its operations in emergency context, the huge volume of medical inventory which have shelf life that the organization holds.

1.7 Limitations of the study

It was difficult to have access to key strategic and confidential company information in the organization under study.

Some of the procedure documents provided were not updated thus the researcher was unable to relate some of the activities he was observing to what was actually documented. Most employees were unsure of the confidentiality of the response given and considered it a breach of contract signed between them and the employer.

The employees feared reprimands from their supervisors and managers if they found out that they were willingly giving out organization information.

The organization was skeptical of how the information that was provided would be used by the researcher.

Some of the staff that could provide first-hand information were always on the move responding to various emergencies.
1.8 Summary

The research study is on factors affecting inventory management in relief organizations. The case study is Médecins Sans Frontières a humanitarian organization that provides medical assistance. The objective of the study is to see how relief organization can be able to balance between the unpredictability of emergencies and managing drugs which have shelf life.
CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction
According to Lyson (2003), Inventory control refers to the technique used to ensure that stock of supplies are kept at levels which provide maximum service at minimum costs.

According to Gordon (1996), Inventory control is the management of raw materials, partially completed goods and services and completed but unshipped goods. Ideally, to minimize inventory carrying costs managers maintain inventory only sufficient for completing the final product. Operations managers must know current levels of inventory, the rate with which the inventory can be replenished and the rate with which inventory is depleted to control inventory size and cost.

According to Rankin, Dias, Quick, Battersby, Garnett, Sallet & Turnbull (1997), Inventory management is the heart of the drug supply system; in fact, the non specialist might say that inventory management is drug management. That would be simplistic, but it is true that without a healthy inventory management system, the drug supply system as a whole will not be viable. Inventory management for drug supply sounds easy, all that might be done is to order, receive, store, issue and then reorder a limited list of items. In reality, the task is difficult and in many countries poor inventory management in the public drug supply system leads to waste of financial resources, shortages of essential drugs, and a decrease in quality of patient care.

According to Rankin et al (1997), ‘Sick’ inventory management systems generally feature subjective, ad hoc decisions about order frequency and quantity, in accurate stock records, and lack of systematic performance monitoring. These problems are directly related to ineffective management. In many cases there are no systematic rules and procedures to guide staff, a problem compounded by a lack of understanding of the basic issues of proper inventory management.

According to Lucey (2002), The objective of inventory control is to maintain stock levels so that combined costs are at minimum. This is established by two factors, when to order and how many to order. Detailed stock control uses time and resources and can cost a considerable amount of money.
Because of this it is important that the effort is directed where it can be cost effective (that is there is little point in elaborate and costly recording and control procedures for an item of insignificant value). It is therefore worthwhile carrying out a so called pareto or ABC analysis. It is often found that a few items account for a large proportion of the value and accordingly should have the closest monitoring. A typical analysis of stock items could be as follows: Class A – 80% of value 20% of items (close day to day control), Class B – 15% of value 30% of items (Regular review) and Class C – 5% of value 50% of items (Infrequent review). Such a review can be used to ensure that resources are used to maximum advantage. Detailed selective control will be more effective than a generalized approach which will treat all items identically.

According to Martin (2011), The advent of globalisation has encouraged companies to rationalise production into fewer locations, this has led to a trend towards the centralisation of inventories. Making use of the well-known statistical fact that consolidating inventory into fewer locations can substantially reduce total inventory requirement, organisations have been steadily closing national warehouses.

According to Rushton, Croucher & Baker (2010), The prime objective of most warehouses is to facilitate the movement of goods through the supply chain to the end consumer. However as part of this movement, it is often necessary to hold inventory, particularly where the demand for the product is continual. In most cases goods are offered for sale on a continual basis and therefore they need to be ‘pulled’ through the supply chain based on customer demand. Mostly the supply lead time is greater than the demand lead time. Where goods are ‘pulled’ through the supply chain, this can only be achieved without inventory where the supply can take place within the lead time offered to the customer. For example, if goods are offered to customers on a next-day-delivery lead time, it is often the case that materials cannot be sourced, goods manufactured and transport undertaken within this timescale.

In this situation, the goods must be supplied from inventory. Inventory is therefore often beneficial to smooth variations between supply and demand. Even when the full cost of inventory is taken into account, it may be more cost effective to build up inventory so as to reduce costs elsewhere in the supply chain.
Examples of this may be to enable manufacturing economies of scale, to obtain purchasing discounts for large quantity orders, to build seasonal stock in advance, and to cover for production shutdowns. Also, inventory may be held just in case specific undesired events occur in the future, as with humanitarian aid supplies (eg tents and blankets) and power station spares (eg steam turbine rotors).

According to Rushton, Croucher & Baker (2010), Warehouses are key components of many supply chains, and their roles and objectives should be determined by the overall context within which they operate.

They should integrate closely with the other components in the supply chain. They are expensive and should be well designed and effectively managed, as the way they operate will have an immediate impact on both customer service and costs.

According to Daria, Umberto, Alessandro & Fabio (2013), Historical data indicate that the total number of natural disasters has dramatically risen over the last ten years. They are even expected to increase another fivefold over the next 50 years, as ascribable to many different factors like global warming, population growth rate, urbanization, residential densification, economic and financial global contingencies, natural resources immoderate use and depletion, etc. Due to these reasons, offering timely and necessary aid to those in need through efficient humanitarian supply chains is a major challenge and logistics acts as a strategic role. Indeed, one of the most critical tasks during the humanitarian operations, after a natural catastrophe, is to manage and execute all the logistics activities effectively and efficiently, especially in distribution

According to Hilary, Kate & Stephen (2013), In humanitarian supply chain work, there are high rates of turnover personnel. Humanitarian disaster literature tends to place a greater emphasis on victims and survivors with less focus on workers, possibly as a result of high staff turnover rates. As the body of humanitarian supply chain research increases and the supply chain processes, systems and technology within the supply chain are questioned, harnesses and improved, a possible dehumanization of humanitarian response may occur. People in humanitarian supply chains are more noticeable, working in the public eye in what may be traumatic circumstances.
Finally according to Martin (2011), Materials handling equipment, vehicles and other equipment involved in storage and transport add considerably to the total sum of fixed assets. Many companies have outsourced the physical distribution of their products partly to move assets off their balance sheet. Warehouses, for example, with their associated storage and handling equipment represent a sizeable investment and the question should be asked: ‘Is this the most effective way to deploy our assets?’

2.2 Review of theoretical literature

2.2.1 Human Resource

According to Rushton, Croucher & Baker (2010), Warehousing staff normally are apportioned 45 to 50 per cent of logistics cost, with half of this often represented by order picking and packing staff. In terms of staffing, the efficiency of the order picking operation is particularly significant. Order picking represents a key objective of most warehouses: to extract from inventory the particular goods required by customers and bring them together to form a single shipment – accurately, on time and in good condition. This activity is critical in that it directly impacts on customer service, as well as being very costly.

According to Martin (2011), Supply chains are as much about people as anything. Leading companies actively seek to develop the skills and capabilities that will enable success.

According to Gemma & Tim (2015), Equipping your staff with new skills and developing their existing ones are absolutely crucial in the ever changing world of work. Some managers worry that if they spend money on training and developing staff then they will leave. There is only one greater risk than training your people and them leaving and that is you not training them and them staying. Some organizations put on a catalogue of learning opportunities and it’s down to managers and staff to identify which ones are of interest. Before training you need to understand what organizations priorities are for example if your organization plans to increase sales targets by 100% next year, you may decide you need to focus on developing your sales function. Training can be accomplished through e-learning, mentoring /coaching and organizations mandatory training.
According to Luk & Alfonso (2010), in addition to unknown demand and supply, humanitarian supply chains face high uncertainties related to available resources. Low volunteer skills, high rotation of personnel, and poor local infrastructure add to the challenging operating conditions of humanitarian supply chains.

IHO actually hire staff when a disaster occurs, and then let them go afterwards due to financial constraints. This leads to a situation where multiple organizations are competing to hire the same staff in the event of a disaster.

According to Christopher Sandwell (2011) the findings from a survey noted that Tsunami relief efforts were adversely impacted by the lack of available trained and experienced field logisticians. This is because the work of humanitarian logisticians is stressful, which together with the absence of any real career path makes for high staff turnover rates.

Further suggestions is that humanitarian organisations do not acknowledge logistics as a professional discipline in its own right, however research in recent times have shown competencies that commercial logistics managers of the future should possess.

In terms of formal logistics training, the importance of professionalising standards in emergency planning has been noted. There are suggestions that a framework for a suitable qualification that would recognise emergency planning as a specialist area and establish an international set of standards, which could help emergency management amongst humanitarian organisations.

According to Hilary, Kate & Stephen (2013), in humanitarian supply situations, many people involved are from different organizations and backgrounds with different conceptualizations of disaster management work practices. Diverse backgrounds in terms of culture, experience, expectations and expertise for example add myriad challenges. Humanitarian supply chain workers, employees, managers and volunteers are operating in areas where people are suffering from trauma. Additionally the relief workers face administrative burdens and role performance complexities. Balancing their roles and tasks are important parts of response operations. Routines and objects can guide their behaviour in disaster response work practices. Practice based perspective to work sees human activity as central to knowledge, it is considered to be embedded in practice. Knowledge is thus socially constructed, culturally embedded and multidimensional.
Viewing knowledge as being embedded in practice means acquiring tacit knowledge becomes critical. Although often considered unteachable, tacit knowledge can only be produced in practice thus learning by doing, for instance gaining experience as an apprentice is often suggested as the way to acquire tacit knowledge.

According to Rushton, Croucher & Baker (2010), Human resource need motivation. For motivational financial schemes, it is important to distinguish between schemes that provide an incentive, reward or bonus, because they can have a varying impact on workforces. The main differences are: *Incentives* stimulate better performance in the future because they are payments for the achievement of previously set and agreed targets. Incentives tend to have the most direct impact on employee behaviour and motivation because the conditions of payment are known in advance. *Rewards* recognize good performance in the past. They are likely to have a less direct impact on behaviour and motivation due to the level of uncertainty of the amount of the pay-out. *Bonuses* are rewards linked to performance but paid out in a lump sum.

According to Christopher (2011), Humanitarian organisations can be distinguished from their private counterparts in that they adopt a normative technique for gaining worker compliance, rather than remuneration or coercion. This normative technique uses shared ideology as both a recruitment and management tool. Examples of shared ideology can be found in “The Code of Conduct” for the International Red Cross and Red Crescent Movement. In relation to recruitment, the dynamic nature of humanitarian organisations is more likely to appeal to the “can do” and “want to make a difference” mentality of the same people who share their ideological principles and values. However, it is argued these pragmatic tendencies often lead workers to ignore, circumvent and sometimes abuse management systems. It is also suggested that the culture of “action” is endemic, leading to many traditional management tools and techniques being ignored, such as basic financial planning and recruitment. It is argued that by protecting this unity they avoid development opportunities, at both individual and organisation levels.

### 2.2.2 Warehousing

According to Rushton, Croucher & Baker (2010), Warehousing typically accounts for about 20 to 30 per cent of logistics costs, whilst the carrying costs for the inventory within them account for a further 18–20 per cent.
Together, these represent a very significant sum for many companies. The warehouse itself costs 25 per cent, including rent or depreciation on the building. These figures demonstrate the importance of the effective use of both building space and design for operation of warehouses.

According to Rushton, Croucher & Baker (2010), The holding of inventory is not the only role of a warehouse. Some warehouses act as cross-dock or trans-shipment points and, in these situations, there is no reserve storage function. Such warehouses include parcel sortation centres. Where inventory is required, then the decision needs to be taken as to the optimum point in the supply chain to hold it. This may be related to the ‘decoupling point’ concept, whereby strategic inventory is held to enable ‘lean’ manufacturing or supply to be undertaken upstream in the supply chain, whilst an ‘agile’ response may be given to volatile downstream marketplaces. Holding inventory upstream enables the form and location of goods to be postponed as long as possible, thus reducing inventories, whilst holding the inventory downstream is often necessary to be able to respond rapidly to customer demands.

The combination of global supply chains (which tend to have long lead times) and increasingly volatile markets has resulted in substantial strategic inventory holdings becoming necessary. This trend has been further compounded by product range proliferation, resulting in inventories of many different product lines being required. Thus, although great steps have been taken to improve supply chain management, particularly as regards the minimization of inventory, overall inventory levels have tended to remain fairly static in recent years.

The holding of inventory is just one of a variety of roles that a warehouse may perform. Thus, with the increasing emphasis on the movement of goods through the supply chain, many of the roles may be related to the speed of movement as well as to inventory holding. *Inventory holding point*; This is commonly associated with the decoupling point concept and may involve the holding of substantial inventory; *Consolidation centre*. Customers often order a number of product lines rather than just one, and would normally prefer these to be delivered together. The warehouse may perform the function of bringing these together, either from its own inventory holdings or from elsewhere in the supply chain;
**Cross-dock centre.** If goods are brought from elsewhere in the supply chain (eg directly from manufacturers or from other warehouses) specifically to fulfil a customer order, then they are likely to be cross-docked.

This means that the goods are transferred from the incoming vehicle to the outgoing vehicle via the goods-in and –out bays, without being placed into storage; **Sortation centre.** This is basically a cross-dock centre, but this term tends to be used for parcel carrier depots, where goods are brought to the warehouse specifically for the purposes of sorting the goods to a specific region or customer.

The main functional areas of a cross-dock operation are as follows: **Receiving.** Goods may be received in a condition ready for immediate dispatch to the customer or may require labelling or some other form of activity; **Sortation.** The goods then need to be sorted to their destinations. This may be undertaken manually or by the use of high-speed sortation equipment. In the case of the latter, the incoming goods may be already bar-code-labelled by the sender so that they can be put directly on to the sortation machine and sorted into specific customer orders or destinations; **Marshalling and dispatch.** The goods are then marshalled into vehicle loads and loaded on to the vehicles. In the case of parcels, the warehouse may be equipped with boom conveyors that extend directly into the vehicles.

According to Rushton, Croucher & Baker (2010) It may be necessary to have different supply chains activities setup because of the nature of the products. Examples include:

**Temperature regime:** There are three main temperature regimes for medicines and food products, namely frozen (about −18 to −25°C), chilled (about +2 to +8°C) and ambient (normal outside) temperatures. These often form the basis for segmented supply chains, although it is quite common to find chilled and ambient goods combined. In fact, it is possible to combine all three in a single supply chain that comprises multi-temperature.

**Warehouses Bulk:** Some products are well suited to bulk handling (eg liquids, powders and granules) and therefore require specialist storage, handling and transport facilities.

**Hazard:** Hazardous goods may require a separate supply chain so that all the necessary safety measures can be implemented.

**Contamination:** Even where goods are not hazardous, they may be able to contaminate other products (eg by their smell). **Pilferable goods:** Certain goods may be the target of opportunistic or planned robberies and therefore require greater security. **Value:**
The value of goods may be important for segmentation purposes as this affects how costly it is to hold inventory in the supply chain. For example, goods that is low in value may be held at multiple locations close to the customers, whereas high value goods may be centralized so as to reduce safety stocks.

According to Gupta, Jain & Garg (2007), In the advent of advanced medical technology and drugs, the expenditure on health care delivery is increasing disproportionately as compared to the resources available. The drugs consume approximately 60% of total consumable budget. In a study from a large state funded hospital, control measures for expensive drugs have resulted in 20% savings. Of all the inventory control systems ABC and VED matrix is most suitable for medical stores. Hence the coupling of ABC and VED matrix for drug inventory in a hospital. ABC analysis popularly known as "Always Better Control" is a very useful approach to material management based on Pareto’s principle of "Vital few and trivial many" based on the capital investment of the item. According to Pareto’s theory 10% items consume about 70% of budget (Group A). The next 20% consume 20% of financial resources (Group B) and remaining 70% items account for just 10% of budget (Group C) VED analysis is based on the criticality of an item. “V” is for vital items without which a hospital cannot function, “E” for essential items without which an institution can function but may affect the quality of the services and “D” stands for desirable items, unavailability of which will not interfere with functioning.

According to Emmett (2011), Stock control for this fast moving item is assumed to be managed according to the classic economic order quantity (EOQ). Within the EOQ framework, a proactive strategy means that the organizations batch sizes are increased prior to an anticipated demand surge. On the other hand, a reactive strategy means that no modifications to the EOQ are entertained until after a demand surge begins. Clearly, a proactive strategy is more appropriate for altruistic performance metrics. However, the appropriate response for cost-based performance is not quite so obvious. For instance, if the organization initiates a proactive strategy and no demand surge occurs, then additional holding costs are inherited. But if holding costs are inexpensive, a proactive strategy might be less risky than a reactive strategy given the uncertainty in whether or not a pre-storm demand surge will
occur. Thus it seems reasonable to expect the proactive strategy to outperform the reactive strategy with respect to cost-based measures in some instances, and vice versa. According to Luk & Alfonso (2010), Logistics restructuring is another SCM best practice that could be used in humanitarian logistics. The IFRC decentralized into Regional Logistics Units. By creating offices and warehouses closer to the beneficiaries (Panama, Dubai, Kuala Lumpur), the IFRC logistics improved effectiveness. Each office has a different geographical scope and designs its operations based on the specific needs of the area (e.g., transport providers, suppliers, goods specifications). The key for logistics restructuring is better network design. Ultimately, restructuring could help make better decisions, improve supply chain efficiency, and achieve sustainability. Partnerships can also be valuable to humanitarian logistics. The Humanitarian Resource Network is a concept of inter-agency warehousing in strategic locations around the world. In this model, the agencies share the running cost of the facilities with the support of the private sector.

2.2.3 Operations

According to Fritz (2006), Humanitarian aid is required in situations where people’s lives and livelihoods are put at risk to a point where their own coping mechanisms fail to provide adequate protection. Situations that require humanitarian assistance have been occurring throughout history and have increased over time. Each situation however is surrounded by geopolitics (the political, social, and economic environment of its geographical location). According to Adriana et al (2013), Natural disasters (such as floods, droughts, earthquakes, hurricanes, and famine) and man-made disasters (such as wars, conflicts, and refugee crises) have increasingly impacted communities and nations around the world in recent decades, and forecasts suggest that the trend will continue (EM-DAT – Emergency Events Database, 2011). Emergency relief phase involves responding to the specific disaster situation. The main objective of this phase is to provide the necessary aid to meet the immediate, short term needs of people affected by the specific disaster. During emergencies, the focus is on getting the right type of aid as quickly as possible to the people requiring it. In this phase, there is the need to acquire resources. These resources, e.g. vehicles, helicopters,
Humanitarian aid may be required to respond very quickly to a situation requiring an immediate response (rapid onset); examples of these are natural disaster situations such as earthquakes and floods. In these situations, speed of initial response is very important particularly of rescue equipment and personnel and the provision of supplies of food, water and shelter, over a short period of time.

Other situations are not as immediate (slow onset) which means more planning time is available or that aid can be provided gradually over a longer period of time. Examples of slow onset are drought and secondary effects of war. A slow onset situation can be triggered by political destabilisation and economic decline.

There are then situations which are regularly found (endemic) which means there will be experience of how to respond and information on ‘best practice’ for responding to these situations. Often the geographical area where the situation is likely to occur is known. An example would be seasonal meningitis outbreaks.

A disaster situation is sometimes referred to as a complex emergency. The UN Office for the Coordination of Humanitarian Affairs (OCHA) official definition of a complex emergency is: ‘A humanitarian crisis in a country, region or society where there is a total or considerable breakdown of authority, resulting from internal or external conflict and which requires an international response that goes beyond the mandate or capacity of any single UN agency and/or the ongoing United Nations country programme.’

According to Jamison, Steven, Paul, Edward & Clay (2012), The HDRSCs function in the presence of high levels of uncertainty about disaster timing and location, victims’ needs, donors’ contributions, infrastructure and even relief group composition. In a post-disaster environment, some information is simply not available, while other information may be available but may not make it to the organizations that need it. HDRSCs are different because they involve all the stages of the supply chain life cycle from preplanning to termination/transformation. At each stage, demands and desired outcomes change. During the initial stage of a disaster relief operation, responding just after the disaster has occurred, the critical performance attribute is typically speed. Most importantly, speed can translate into a reduction in lives lost and in human suffering, but it is required in the face of high demand uncertainty. Consequently, relief organizations often “push” available supplies into the disaster area as rapidly as they can.
Yet, speed is difficult to attain for several reasons, including obtaining adequate supplies, finding sufficient shipping capacity and getting to the disaster site. Experience, inventory availability, access and capability often dictate what will be moved rather than knowledge of needs. Within days, as infrastructures are stabilized and people are moved out of harm’s way, the supply chain quickly shifts to focus on efficiency and security (protecting those affected by the disaster and safeguarding supplies from looting) in long-term recovery efforts. Response efforts become more demand driven, using information about damage and needs, to “pull” supplies to the victims. Private sector firms may also need to change their supply chain priorities over time, but rarely so quickly and radically as a disaster relief supply chain.

According to Alessandra, Silvia & Alessio (2012), the agile principle is used when unpredictable demand is combined with a short lead time. The concepts of emergency and humanitarian logistics have been linked to the agile principle in several academic contributions. The focus on agility from the supply-chain perspective emerged in 2001. Supply-chain agility is usually defined as the ability to respond to unanticipated changes. The main objectives of an agile supply chain are to respond quickly to short-term changes in demand (or supply) and to smoothly handle external disruptions. An agile supply chain is the most appropriate response to the extreme conditions faced by humanitarian emergency; it must be effective and respond as quickly as possible, it requires a massive and periodic employment source and has a high cost level. In humanitarian supply chains, the effectiveness ensures that we are saving time and time saved means more lives saved; the efficiency ensures that we are saving costs and costs saved mean more lives helped.

2.2.4 Warehouse Equipment

According to Rushton, Croucher & Baker (2010) Equipment has a 10 to 15 per cent costs on logistics. This includes rental or depreciation, equipment maintenance and running costs. Probably the most widely used form of storage fixture and can accommodate a very extensive range of stock. Shelves are just as convenient for packaged goods and it is most suitable for loose items such as nuts and bolts small components e.t.c. For additional security or protection from dirt or damage for valuable tools or instruments, medical supplies, stationery, clothing e.t.c lockable doors can be provided this is according Jessop and Morrison (1994)
According to Jessop and Morrison (1994) Bins metal or plastic bins are convenient for some stores, particularly loose components. They can be made in various sizes, provided with handle and label holders and fitted into shelves especially designed for that purpose. This type of equip is especially suitable for random storage. The trays in the shelves can be arranged either flat or sloping downwards towards the front so that their contents are more readily visible. A popular type of bin is supplied as a flat paper board profile which can be folded and slotted together to make a rigid bin

According to Rushton, Croucher & Baker (2010), A picker uses Trolleys and roll-cage pallets; between shelving or pallet racking in order to access the goods. A trolley normally has a shelf, or shelves, on which to place the goods or it may be in. Roll-cage pallets are normally taller and have wire mesh on three sides, with or without a mesh door on the fourth side. Roll-cage pallets may form a common unit load for both picking and transport, and are often used, for example, in the food retail industry for this purpose. The roll-cage pallets may therefore be moved directly to the marshalling area after picking ready for loading on to the vehicles. This type of picking is normally conducted at ground level or on mezzanine floors. Although these are manual methods, high pick rates can be achieved in appropriate circumstances and the whole picking operation can be very effective; Powered order picking trucks. These are electrically powered trucks that have forks, often carrying two wooden pallets or three roll-cage pallets, on to which picked goods may be placed. They are often also known as low-level order picking trucks.

According to Tom (2011), It is common to use forklifts for picking from ground floor pallet locations, either from the ground level of wide-aisle adjustable pallet racking or from pallets placed in a forward pick area. Some trucks are fitted with a step or elevating platform and are also suitable for picking from the pallets placed on the first beam level of racking; Free-path high-level picking trucks; Goods may be picked from upper levels of racking, or from high-level shelving, by means of free-path high-level picking trucks. These trucks have an elevating cab position so that the picker is lifted to the ideal height for picking. These typically operate in narrow-aisle environments, but some are also designed to operate in reach truck, or wider, aisles. Some narrow-aisle trucks can operate for both pallet put-away and retrieval as well as for order picking.
High-level picking is suitable where, for example, goods may need to be picked from any pallet in the warehouse (eg where there is typically only one or two pallets per SKU). However, picking rates are lower than for ground-level picking and pick effectiveness may be further restricted by only one truck being able to pick in a narrow aisle at a time.

*Fixed-path high-level picking trucks*; these are similar to free-path trucks, except that they run on a bottom rail and are also guided by a top rail – thus being similar to an AS/RS crane operation. These tend to be faster in operation than free-path trucks. They are suitable, for example, for picking from high-level shelving where a multitude of SKUs may be stored in small quantities. *Pick cars*; this is essentially a special fixed-path high-level picking truck that straddles a horizontal conveyor running the length of the aisle. An additional section of conveyor runs on a trolley in the aisle and is hinged so that it elevates to the position of the picking cab as this rises and falls. The picker places the picked cases onto the conveyor and can therefore pick without interruption in that aisle. The cases are taken away by the conveyor to the next stage of the operation (eg sortation or packing). This equipment provides faster pick rates than conventional high-level trucks. However, it is fairly complex and there are relatively few examples of this type of installation.

*Conveyors*; A number of picking operations make use of conveyors. For example, pedestrian pickers may select the required items from pallet locations, shelving or flow racks and place them on to conveyors to be taken away for subsequent packing and collation into customer orders. Systems are often classified as ‘pick-to-tote’, whereby the goods are placed in plastic tote bins on the conveyor, or ‘pick-to-belt’, where the goods are placed directly on to the conveyor belt.

According to Rushton, Croucher & Baker (2010) When loading and unloading takes place from the rear of the vehicle, then it is normal for a *pallet truck* (either hand or powered) to be used. *Fork-lift trucks*; For side-unloading (eg of curtain-sided vehicles), a counter balanced fork-lift truck is normally used.

These may be fitted with side-shifts so that the pallet can be accurately positioned on the vehicle. Another form of attachment that is often used is one that enables two pallets (side by side) to be lifted at a time. Conventional counterbalanced fork-lift trucks may also be used for end-unloading and -loading, particularly if pallets are stacked two high on a vehicle.
Dock levellers. These are normally permanently fitted at each bay and form a gentle slope up or down to match the bed heights of each vehicle. A truck, such as a powered pallet truck, can then be driven directly on to the vehicle for end-unloading or -loading. As vehicle bed heights may vary considerably, the dock leveller needs to be long enough to accommodate all vehicles that may be expected on that bay. The dock leveller is sunk into a pit and operated by a hydraulic ram. Doors; can be installed that retract above the opening when in use. They are frequently fitted with windows so that warehouse staff can see whether there is a vehicle on the bay. Dock shelters and seals. Some form of weather protection is common to prevent draughts and dust from entering the warehouse around the vehicle. Bumpers. These are used to reduce the shock load exerted on the building structure when vehicles reverse up to the bay. Lights on swivel arms are required to provide adequate illumination inside the vehicles, particularly at night. Warning lights. Red and green lights may be fitted to the outside and inside of the loading bay. These act as an indication to the driver as to whether the vehicle is ready to be driven away, thus reducing accidents of trucks being driven into the vehicle at the exact moment that the driver decides to pull away.

2.2.5 Logistics

According to Luk & Alfonso (2010), The demand for humanitarian aid is extraordinarily large. There are roughly two billion people below the poverty line (World Bank, 2010) and 1 billion people hungry (WFP, 2010), of which 100 million urgently need food. Sadly, 25% of children below the age of 5 in developing countries are malnourished and 6.6 million children under 5 starve every year (WFP, 2010). During the last 10 years, over 35 major conflicts and around 2500 disasters have affected billions of people (UNEP, 2010). As a result of conflicts, the total number of refugees is estimated to be above 43 million (UNHCR, 2009). The impact of disasters is expected to increase 25% by 2015 due to global warming and pandemics. Humanitarian logistics is very different from commercial and military logistics.

Both demand and supply are unknown and dynamic. Humanitarian logistics must balance equity and efficiency, yet it is hard to measure impact. Many IHO did not have information regarding how much of their prepositioned inventory survived the earthquake.
In addition to unknown demand and supply, humanitarian supply chains face high uncertainties related to available resources. Low volunteer skills, high rotation of personnel, and poor local infrastructure add to the challenging operating conditions of humanitarian supply chains. A successful humanitarian operation mitigates the urgent needs of a population, with a sustainable reduction of their vulnerability in the shortest amount of time, and with the least amount of resources. The basic building blocks of successful humanitarian operations are preparedness, response, and collaboration. Successful response implies quickly building a supply chain. Responding is a less difficult task if the response system is well prepared. Preparedness benefits significantly from coordination. Humanitarian logistics face multi-echelon inventory problems under high uncertainty. Uncertainty may require redundancy, e.g., sending goods through different routes or storing them in different places to ensure availability. Although highly desirable, prepositioning is not always possible due to budget constraints. Negotiating vendor-managed inventory (VMI) can ensure that aid items are always available from the suppliers.

Bullwhip effects are common for several reasons. Unsolicited donations have little visibility and little coordination within the response system. In humanitarian supply chains, the bullwhip effect caused primarily by problems in demand forecasting and lack of information integration. The effect can be mitigated by real-time sharing of demand and supply information. For instance, the lack of communication among the different agencies resulted in most of them appealing for large amounts of tents at the same time during the Gujarat earthquake response in 2001. In the end, there was an excess of tents (duplication of efforts), while other needs had not been met. Push-based supply chains are common in humanitarian logistics. Donors push their surplus via unsolicited donations. It is common to observe distribution of end-of-life (and sometimes perished) items. Bottlenecks are easily created when pushing goods into an area. For instance, unsolicited donations occupied very scarce warehouse space in the Haiti airport during the relief operation. Sometimes push-based supply chains in humanitarian operations are well-intended, sometimes they are borderline criminal.
The IFRC’s decentralization into regional logistics units where relief items are prepositioned allows for a clear push–pull boundary from which goods can be pulled as needed by beneficiaries after the onset of a disaster.

2.2.6 Personal traits
According to Jurgen and Andrea (n.d) four personal traits intelligence, knowledge, personality and interests (PPIK) have an effect on performance in an inventory management task. The findings were that intelligence and knowledge are good predictors of inventory management performance. The study relates a comprehensive picture of the psychological state of participants to their performance in an inventory management task. Based on the set of personal traits offered by PPIK theory, it investigated what characteristics good decision-makers in the area of inventory management possess. Intelligence and knowledge stand out as predictors of performance: both are persistently positively related to outcomes of the experiment in the regression models. The findings suggest that persons that deal with inventory management tasks will benefit from being intelligent and having acquired knowledge in the wider field of that domain. From the perspective of PPIK theory, testing in how far both can be substitutes of each other and whether intelligence must be invested in order to accumulate knowledge and how this relates to performance in inventory management tasks is an open question.

There were no findings that related inventory management with regard to the personality of participants. Therefore, it is assume no restrictions exist regarding the personality of inventory managers to be successful in practice. The results concerning the participants’ interests seem to indicate that technical/practical interests are beneficial, while a too entrepreneurial spirit is not advisable. Whether this means that individuals that favour entrepreneurial activities cannot achieve good inventory performance in principle is difficult to say at the moment. Probably, the exact nature of the task is important for their actual result, since entrepreneurial persons might not feel challenged by the task at hand with a repetitive set of decisions to be made.

2.2.7 Inventory control
Kariuki (2012) conducted a study involving an assessment of the factors influencing effectiveness of inventory control; The key findings from the study revealed that: delays in procurement of goods, frequent stock-outs and uncertain change of prices were some of
the effects of long bureaucratic procurement procedure. According to the study inadequate and untimely dispatch of funds had an effect in inventory control. The study also revealed that unavailability of stationeries/stores records, lack of specific time or date for both posting stores records, lack of adequate qualified and well trained staff hinders effective performance. The researcher recommended that too much red tape and rigid rules and policies should be avoided; current inventory control practices and procedure need to be reviewed and redesigned. Only qualified and adequate personnel should be are involved in stock control while adequate funds should be dispatched on timely manner.

The study found that long bureaucratic procurement procedures caused delays in procurement of goods, which resulted in frequent stock-outs /under-stocking, poor inventory management, uncertain change of prices were some of the effects of long bureaucratic procedure which have a negative effect on effectiveness of inventory control. The study found that lack of a fully computerized system for posting inventory data was one of the factors that affect the effectiveness of inventory control to a great extent. The study also revealed that lack of adequate Stationeries and / stores records used in stock control, specific time or date for posting stores records had a direct effect on inventory control. In regard to issuing and receiving of goods, the study reveals that this activity was commonly done by different personnel, an activity that may have a negative effect on: poor stock control recording, misappropriation of stock, discrepancies during reconciliation of stock balances and lack of responsibility for actions related to stock control.

The study revealed that number of staff involved in stock control activities was not adequate, there was no specific time in which the stock taking exercise was set to take place, discrepancies between actual and physical stock balances is evident. The staff attributed the discrepancy between the physical stock balance and balances reflected in stock control record to be attributing factor for theft and pilferage, frequent stock out of some crucial items and poor planning.

The findings showed funds allocated for procurement of various goods and services were not received on as and when required. According to the study this may have an effect in inventory control in that it may cause failure to achieve the set targets/ goals, under
stocking of goods leading to poor customer service; poor staff morale and poor utilization of both human and physical resources.

The study established that, the skills mix of staff working in the inventory control sections showed considerable variation. The personnel had attended formal education but attained different level of educational qualifications. Half of staff indicated that they did not have additional professional qualifications in purchasing and Supplies. Post-employment training was not a common means for preparing staff before deployment to inventory. Those who had undergone the training did not receive formal certification despite being reported to be very essential in ensuring efficient and effective performance

2.3 Critical review

Most organizations cannot seem to be able to get the right balance for inventory during emergencies when dealing with medical materials. Most fall under the category of either overutilization or underutilization of the resource due to uncertainties. Despite this knowledge none of the studies has actually come up with a model to show clearly what kind of resources different organizations would require based on its operations. Considering that most organization are fully behind the cost cutting concept, most organizations over utilize the inventory management resources during the onset of emergencies since the main goal at that particular time is to save lives.

Logistics and supply chain management have conventionally been forecast-driven rather than demand-driven. In other words, the focus has been to look ahead over a planning horizon and to predict demand at a point in time and then to build inventory against that forecast. As markets become more volatile and turbulent so too have they become harder to predict. The risk of over- or under-stocking increases. The challenge today is to enable supply chains to become demand driven as a result of better visibility of real demand. Real demand occurs at the end of the supply chain and if that information can be captured and shared upstream then the dependency on inventory reduces. But how can this be done effectively in institutions that operate primarily during emergencies.
The nature of relief organizations is complex due to uncertainties. The uncertainties in themselves provide huge challenges in efficient inventory management. This is compounded further when the organizations core activity is medical care which means that the type of inventory has a shelf life and cannot be utilized once it has expired. The researcher wanted to know the impact of qualified human resource in managing inventory.

The role of warehousing which includes equipment, warehouse set up and its impact on inventory control.

The researcher wanted to find out the impact of emergencies operations on inventory management.

Finally what impact stock control of expiring of medical supplies has on overall inventory management.
2.5 Research gaps

Few academic publications address inventory management from the perspective of humanitarian relief. Among existing studies, the emphasis has been coordination of emergency supplies for post-disaster relief and recovery activities.

The first appears to be a qualitative study from the medical literature that describes the complexities of logistics decisions at hospitals during emergency situations, and delineates the characteristics of an effective humanitarian logistics plan from a health care manager’s perspective. The earliest quantitative studies were inspired by Operation Lifeline Sudan, a long-term humanitarian aid effort initiated by the United Nations in 1989 for victims of civil war in south Sudan. The first of these quantitative studies was a cost minimizing order policy for a continuous review inventory system with regular and emergency replenishment options. Then a qualitative comparison of humanitarian and commercial inventory systems was presented which was followed by another series of quantitative studies that explored proactive inventory ordering strategies in preparation for a probable disaster relief or supply chain disruption scenario by introducing an insurance policy framework based on variations of the newsvendor problem. Other studies incorporated hurricane predictions into a dynamic inventory model with forecast updates of an observed storm’s forecast where the inventory policy specified the optimal timing and quantity of a one-time proactive ordering decision. All of the quantitative inventory control studies cited above target demand surges that occur either during or following a natural or man-made disaster.

The exception was incorporating hurricane predictions into a dynamic inventory model with forecast updates. But their focus was the planning periods leading up to the first day of the hurricane season, and the resulting inventory policy leveraged updated hurricane count predictions to adjust the target stock level.
2.6 Summary
The studies that we have looked at all agree that the nature of relief organizations which are faced with uncertainties make it difficult to manage inventory. One study stated that inventory management is the heart of the drug supply system and without a healthy inventory system, the drug supply system as a whole would not be viable and this would lead to waste of financial resources, shortages of essential drugs, and a decrease in quality of patient care. Inventory management in commercial and relief organization is not a stand-alone activity and requires investment in resources.

Human resource had been highlighted as a key element in proper inventory management. Not just any human resource as one of the study indicated but skilled and well trained human resource. For the longest time in many organization supply chain and in particular warehousing and stores management was not viewed as a serious activity which required sufficient, able and dedicated resources.

But as time has passed organization have realized the importance of warehousing and inventory management as a tool that not only supports operations but greatly helps in decision making. However there still remains a gap in quantifying the number of staff required to perform tasks within the warehouse.

What is clear is that gaining a greater understanding of issues facing relief workers and preparing them for this context is necessary to reducing costs and retaining experienced staff and knowledge.

Other resources include tools that can be used to manage inventory such as an adequate warehouse, machines/equipment and installations and fittings that are functional within the warehouse. We cannot also forget to mention tools such as stock cards, computerized systems that help in managing actual movement of the inventory.

Agile systems are considered effective and despite costing slightly more they are best suited for emergency context as the overall goal is to save as many lives as possible as fast as possible.

Therefore a good balance has to be maintained between resources availed and nature of operations in order to be able to manage inventory effectively.
CHAPTER THREE
RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction
This chapter looked into methods that were used in gathering data for the study of effect of resource optimization on inventory management at MSF Kenya.

3.2 Research design
The study adopted descriptive research design. Descriptive research is a scientific method of investigation in which data is collected and analyzed in order to describe a specific phenomenon in its current status. It employs the quantitative methods during an investigation and uses survey design as the overall strategy for collecting and analyzing data.

3.3 Target population
The target population in this case is all the people who are in contact with inventory processes in the organization. That is all the people who are concerned with the day to day movement of inventory.

Table 3.1 Target population

<table>
<thead>
<tr>
<th>Category of Population</th>
<th>Population</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logistics</td>
<td>18</td>
<td>45</td>
</tr>
<tr>
<td>Supply</td>
<td>12</td>
<td>30</td>
</tr>
<tr>
<td>Medical</td>
<td>7</td>
<td>17.5</td>
</tr>
<tr>
<td>Finance</td>
<td>3</td>
<td>7.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>40</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Source: Author (2017)

3.4 Sample and sampling techniques
The researcher employed census sampling. This is because the target population is defined that is homogeneous, the population size is known, a sampling frame is available and the population is relatively small.
3.5 Data Collection procedures
The researcher used questionnaires as the tool for data collection. Questionnaires issued to the target population were both structured and open ended. This approach was to ensure that only relevant material was collected and used as a guide so that the target population did not go outside the scope.

The research had to refer mainly to guidelines and inventory tools that were available in each department/section. The study adopted census as the sampling design due to the small number of the target population. But, with very specific interest on stock control manuals and tools

3.5.1 Validity and Reliability Test
The guidelines and tools provided a basis on the day to day running of the section. The tools provided for inventory management are standardized and provided clear guidelines on how different staff could use the modules provided to perform different functions. The research also used semi–structured questionnaires as well as interviews and observing the staff at work.

The questionnaires were administered to the persons concerned individually.

The researcher started by observing each individual in the population performing their day to day task. At the end of each observation the researcher had a one on one interview with the employees based on what he had observed and what the guideline quoted. He then provided the employees with questionnaires which he collected on completion of entry.

3.6 Data analysis methods
According to Mugenda (2003), Data obtained from the field in raw form is difficult to interpret. Such data must be cleaned, coded, keypunched into a computer and analyzed. It’s from the results of such analysis that researchers are able to make sense of the data.

Since the researcher used descriptive methodology the most appropriate way of analyzing the data collected was by using frequency distribution. Essentially the data collected was tabulated and compiled according to the responses from the questionnaires whether structured or open ended.
CHAPTER FOUR
DATA ANALYSIS, INTERPRETATION AND PRESENTATION

4.1 Introduction
This chapter presents the results of the study. It interprets and presents this information in the form that is easily understood by the readers.

4.2 Analysis of Findings
4.2.1 Response Rate

Table: 4.1 Response Rate

<table>
<thead>
<tr>
<th>Category</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respondents</td>
<td>36</td>
<td>90</td>
</tr>
<tr>
<td>Non respondents</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>40</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Source: Author (2017)

The researcher issued the sampled population with 40 questionnaires. The respondents who gave back the questionnaires formed the majority at 90 percent. These were mostly staff in logistics and supply. They formed 75 percent of the total sample of respondents. The respondents who did not give back the questionnaires were 10 percent.

Fig: 4.1 Response Rate

Source: Author (2017)
Table: 4.2 Gender Distribution

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>30</td>
<td>83</td>
</tr>
<tr>
<td>Female</td>
<td>6</td>
<td>17</td>
</tr>
<tr>
<td>Total</td>
<td>36</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Author (2017)

Fig: 4.2 Gender Distribution

Source: Author (2017)

From the study findings the gender distribution of the respondents sampled indicates that there are 83% were male and 17% were female. This is due to the nature of operations.
Table: 4.3 Respondents Age

<table>
<thead>
<tr>
<th>Age</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-24 years</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>25-34 years</td>
<td>14</td>
<td>39</td>
</tr>
<tr>
<td>35-44 years</td>
<td>16</td>
<td>44</td>
</tr>
<tr>
<td>45-54 years</td>
<td>4</td>
<td>11</td>
</tr>
<tr>
<td>55-65 years</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>36</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Source: Author (2017)

From the study findings 6% of the respondents are aged between 18-24 years old, 39% are aged between 25-34 years old, 44% are aged between 35-44 year, 11% are aged between 45-54 years while none of the respondents was aged 55-65 years. This shows the organization has an experienced work force.

Fig: 4.3 Respondents Age

Source: Author (2017)
Table: 4.4 Respondents Education Level

<table>
<thead>
<tr>
<th>Education Level</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secondary</td>
<td>5</td>
<td>14</td>
</tr>
<tr>
<td>Certificate</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>Diploma</td>
<td>10</td>
<td>28</td>
</tr>
<tr>
<td>Degree</td>
<td>12</td>
<td>33</td>
</tr>
<tr>
<td>Master</td>
<td>6</td>
<td>17</td>
</tr>
<tr>
<td>Phd</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>36</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Source: Author (2017)

Fig: 4.4 Respondents Education Level

Source: Author (2017)

From the study findings 14% of the respondents have secondary education, 8% have certificate 28% have diplomas, 33% have university degrees, 17% have master degree while none has Phd. Majority of the staff have tertiary level education which means that they are more than capable to perform their day to day tasks effectively.
Table 4.5: How does shelf life of medical supplies affect inventory management

<table>
<thead>
<tr>
<th>How does shelf life of medical supplies affect inventory management</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Not Sure</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>The organization uses FEFO method in issuing stocks</td>
<td>5</td>
<td>13.9</td>
<td>15</td>
<td>41.7</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>16.7</td>
<td>0</td>
<td>0.0</td>
<td>10</td>
</tr>
<tr>
<td>10 27.8</td>
<td>15 41.7</td>
<td>2 5.6</td>
<td>3 8.3</td>
<td>6 16.7</td>
<td>10</td>
</tr>
<tr>
<td>27.8</td>
<td>24 66.7</td>
<td>0 0.0</td>
<td>2 5.6</td>
<td>0 0.0</td>
<td>10</td>
</tr>
<tr>
<td>27.8</td>
<td>10 27.8</td>
<td>9 25.0</td>
<td>14 38.9</td>
<td>2 5.6</td>
<td>1 2.8</td>
</tr>
<tr>
<td>Value of near to expire items is known &amp; documented monthly</td>
<td>24 66.7</td>
<td>0 0.0</td>
<td>2 5.6</td>
<td>0 0.0</td>
<td>10</td>
</tr>
<tr>
<td>27.8</td>
<td>10 27.8</td>
<td>9 25.0</td>
<td>14 38.9</td>
<td>2 5.6</td>
<td>1 2.8</td>
</tr>
<tr>
<td>Value of losses due to expiry is known and documented</td>
<td>10 27.8</td>
<td>9 25.0</td>
<td>14 38.9</td>
<td>2 5.6</td>
<td>1 2.8</td>
</tr>
<tr>
<td>There exists a stock rotation mechanism to avoid expiries</td>
<td>0 0.0</td>
<td>15 41.7</td>
<td>11 30.6</td>
<td>6 16.7</td>
<td>4 11.1</td>
</tr>
</tbody>
</table>

**Source: Author (2017)**

From the study findings 55.56% of the respondents strongly agree & agree that warehouse uses FEFO. While this may be the majority the organization needs to improve the systems to ensure warehouse staff issue shortest expiry medical supplies first.

From the study findings 52.68% of the respondents strongly either not sure strongly disagree or disagree that there are tools in place for expiry alerts.

Despite some tools being available staff need to be more proactive in giving warnings for items that are about to expire.
From the study findings 66.67% of the respondents strongly agree that the value of near expiry items is known and documented. This is a good indicator that monetizing the inventory creates attention and therefore causes action to be taken.

From the study findings 52.78% of the respondents either strongly agree or agree that value of expired items is known and recorded. This shows that more needs to be done by the organization to ensure staff are sensitized to the volume of losses as a result of expiry.

From the study findings 58.34% of the respondents are either not sure, strongly agree or disagree that there is a stock rotation mechanism in place to prevent expiry. 30.56%. This indicates that there is belief among staff that more can be done to ensure that medical supplies do not expire in the warehouse where as they could be utilized somewhere else.
Table 4.6: How does effective and qualified HR affect inventory management

<table>
<thead>
<tr>
<th>How does effective and qualified HR affect inventory management</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Not Sure</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff have undergone formal training in the area of inventory management</td>
<td>0 0.0</td>
<td>6 16.7</td>
<td>10 27.8</td>
<td>15 41.7</td>
<td>5 13.9</td>
</tr>
<tr>
<td>The organization ensures that all staff in the warehouse are trained regularly</td>
<td>16 44.4</td>
<td>10 27.8</td>
<td>3 8.3</td>
<td>4 11.1</td>
<td>3 8.3</td>
</tr>
<tr>
<td>There is a policy and procedure for inventory management and it is well known by staff</td>
<td>12 33.3</td>
<td>0 0.0</td>
<td>11 30.6</td>
<td>3 8.33</td>
<td>10 27.8</td>
</tr>
<tr>
<td>There is a designated staff that has custody over emergency stock</td>
<td>1 2.8</td>
<td>2 5.6</td>
<td>3 8.3</td>
<td>25 69.4</td>
<td>5 13.9</td>
</tr>
<tr>
<td>The number of staff available marches with the volume of warehouse activities</td>
<td>2 5.6</td>
<td>9 25.0</td>
<td>22 61.1</td>
<td>0 0.0</td>
<td>3 8.3</td>
</tr>
</tbody>
</table>

Source: Author (2017)

From the study findings 83.34% of the respondents either are not sure, strongly disagree or disagree that staff have undergone formal training in the area of inventory management. This can have an impact in the manner in which work is executed since SCM and indeed inventory management has been professionalized.

35
From the study findings 72.22% of the respondents either strongly agree or agree that organization provides regular training for staff in the warehouse. This is a good indicator that the organization takes the training and development of staff seriously for improved output.

From the study findings 66.67% of the respondents are either not sure, strongly disagree or disagree that policies and procedures exists and are well known by the warehouse staff. This shows that generally that staff are not aware that standard operating procedure exist in inventory management and should be followed for more efficient service.

From the study findings 91.66% of the respondents either are not sure, strongly disagree or disagree that there is designated staff for emergency stock. This shows that despite the organization core activity being dealing with emergency, no HR has been specifically allocated to deal with emergency stock when the need arises

From the study findings 69.44% of the respondents are either not sure or disagree that the volume of inventory marches with the human resource available. This indicates that HR is stretched to the limits in the warehouse
Table 4.7: How do emergencies affect inventory management

<table>
<thead>
<tr>
<th>How do emergencies affect inventory management</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Not Sure</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>The top ten priority items during emergencies are known and easily accessible</td>
<td>7 19.4</td>
<td>5 13.9</td>
<td>10 27.8</td>
<td>6 16.7</td>
<td>8 22.2</td>
</tr>
<tr>
<td>There is an emergency plan that exists is known by the staff and is updated</td>
<td>0 0.0</td>
<td>10 27.8</td>
<td>6 16.7</td>
<td>0 0.0</td>
<td>20 55.6</td>
</tr>
<tr>
<td>There are adequate resources in place when responding to emergencies</td>
<td>15 41.7</td>
<td>11 30.6</td>
<td>0 0.0</td>
<td>6 16.7</td>
<td>4 11.1</td>
</tr>
<tr>
<td>The emergency stock is pre packed and ready to be shipped within 48 hours</td>
<td>0 0.0</td>
<td>19 52.8</td>
<td>9 25.0</td>
<td>5 13.9</td>
<td>3 8.3</td>
</tr>
<tr>
<td>There is staff who has access to inventory after hours in case of emergency</td>
<td>0 0.0</td>
<td>10 27.8</td>
<td>16 44.4</td>
<td>4 11.1</td>
<td>6 16.7</td>
</tr>
</tbody>
</table>

Source: Author (2017)

From the study findings 66.67% of the respondents either are not sure, strongly disagree and disagree that top ten priority items during emergencies are known and easily accessible. This shows that there is need for more effort in enlightening staff on the critical items during emergencies and to facilitate their accessibility.

From the study findings 72.23% of the respondents either are not sure or disagree that an emergency plan exists, is known by staff and is updated. This indicates that the organization needs to have in place a formal emergency plan and this plan needs to be communicated frequently so that staff are aware of their role and expectations when emergency strikes.
From the study findings 72.23% of the respondents either strongly agree or agree that resources are available when responding to emergencies. This indicates that the organization has put in place mechanisms that ensure that it is able to provide the necessary resources to respond during emergencies.

From the study findings 52.78% of the respondents strongly agree that emergency stock is prepacked and ready to ship within 48 hours. This indicates that more could be done by the organization for emergency preparedness by having ready and packed material to respond in the shortest time possible.

From the study findings 72.22% of the respondents either are not sure, strongly disagree or disagree that there is staff that have access to inventory after working hours in case of emergency. Despite control mechanism taking precedent in this issue, the organization needs to have more flexibility to ensure emergencies are responded to in shortest time with minimal red tape.
Table 4.8: How does warehouse structure and equipment affect inventory management

<table>
<thead>
<tr>
<th>How does warehouse structure and equipment affect inventory management</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Not Sure</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>There are adequate equipment that help in the movement of items in and out of the warehouse</td>
<td>15</td>
<td>41.7</td>
<td>3</td>
<td>8.3</td>
<td>10</td>
</tr>
<tr>
<td>The warehouse capacity is sufficient for the level of inventory</td>
<td>12</td>
<td>33.3</td>
<td>7</td>
<td>19.4</td>
<td>17</td>
</tr>
<tr>
<td>There are enough cold chain equipment to store &amp; monitor temperature sensitive drugs</td>
<td>2</td>
<td>5.6</td>
<td>20</td>
<td>55.6</td>
<td>14</td>
</tr>
<tr>
<td>There exists a proper layout plan of the inventory storage facility</td>
<td>15</td>
<td>41.7</td>
<td>11</td>
<td>30.6</td>
<td>7</td>
</tr>
<tr>
<td>The stocks are tidy, easily accessible and zones are defined</td>
<td>6</td>
<td>16.7</td>
<td>12</td>
<td>33.3</td>
<td>10</td>
</tr>
</tbody>
</table>

Source: Author (2017)

From the study findings 50% of the respondents either strongly agree or agree that there is adequate equipment that helps to move stock in and out of the warehouse, the other 50% are either not sure, strongly disagree or disagree that there is adequate equipment that helps to move stock in and out of the warehouse.
This indicates that the organization should invest in additional equipment that helps in the efficient movement of cartons from one point to the other in a warehouse and reduce overall time taken to process items from stock.

From the study findings 52.77% of the respondents either strongly agree or agree that the warehouse capacity is enough for the level of inventory. These results indicate that additional space may be required in the future to increase the storage capacity in case the activities increase.

From the study findings 61.12% of the respondents either strongly agree or agree that there is enough cold chain material. This indicates that the cold chain material that is used to store temperature sensitive drugs is sufficient at least in the meantime.

From the study findings 72.23% of the respondents either strongly agree or agree that there is a proper layout plan for the storage facility. This shows that the warehouse mapping is known for direction purposes and staff can find their way around the facility.

From the study findings 50% of the respondents either strongly agree or agree that the stocks are tidy, easily accessible and zones were defined, the other 50% are either not sure, strongly disagree or disagree that stocks are tidy, easily accessible and zones were defined. Despite the stores being tidy there is still more that can be done to ensure that stocks are easily accessible and visible.
4.3 Summary of Data Analysis

The organization needs to improve the systems in place so that there are expiry alerts to ensure that staff issue stock on FEFO basis. In case the short expiry items cannot be consumed the organization needs to have a stock rotation policy to make sure less items expire in the warehouse.

The organization provides opportunities for training and development of staff however it has so far not ensured that only professionals in SCM are employed in the warehouse. In addition, the organization needs to march the human resources to the volume of work in the warehouse and give specific responsibilities to staff within the warehouse to manage emergencies. The staff need to continuously be informed of the SOP in place.

The organization needs to have an emergency plan that is updated frequently and shared among the staff so that the staff are aware of their various roles and responsibilities when emergency happens. The organizations needs to ensure that items are prepared in the warehouse are ready to respond within the shortest period and that they ensure that they give responsibility to staff to access the warehouse outside working hours.

The organization warehouse is well planned although more focus should be put on ensuring that the stocks are visible. Despite the warehouse equipment being sufficient in the current context, they is possibility that they will be fully stretched with increased activities and therefore might require more investment of the same to be put in place.
CHAPTER FIVE
SUMMARY OF FINDINGS CONCLUSION AND RECOMMENDATION

5.0 Introduction
This chapter presents the various summaries derived from the findings and conclusion and recommendation that were drawn by the researcher form this study.

5.1 Summary of findings
Within the organization, the level of education of the respondents indicated that the organization has qualified staff as shown by the majority of the respondents having college and university qualification.

Most of the respondents agree that the organization promotes training and development of staff even when they may not be professionals in the areas with which they perform their tasks.

Majority of the respondents believe that despite the organization providing resources to respond to emergencies, it needs to have a well-defined plan that is regularly updated and communicated to the staff.

There are tools in place to monitor the expiry dates of the medical supplies however strict rules and improved systems along the supply chain need to be put in place to ensure that at all time items are issued on FEFO basis.

Majority of the respondents agree that the capacity of the warehouse and the tools in place are enough to sustain the warehouse operations, however more needs to be done to ensure better accessibility and visibility of the stock by improving the arrangement.

5.2 Answers to research questions
5.2.1 What is your educational level?
From the study findings 13.89% of the respondents have studied up to secondary level, 8.33% have studied up to certificate level, 27.78% are diploma holders, 33.33% are degree holders and 16.67% have studied up to master’s level.

This shows that within the organization there is a mix in terms of the staff and this mix is depends staff responsibilities and tasks performed.

5.2.2 How many years have you worked for this organization?
From the study findings 59% of the respondents had worked for between 0-5 years while 41% have worked for more than 5 years.
This indicates that a majority of the staff have experience and knowledge of the organizations operations which assist in faster response to emergencies.

5.2.3 Would you say that the organization uses FEFO method in issuing stocks?
From the study findings 13.89 of the respondents strongly agree that warehouse uses FEFO, 41.67% agree that the organization uses the FEFO while issuing stocks. 16.67% are not sure if the warehouse issues shortest expiries first. 27.78% disagree that the warehouse issues the short expiry first. This shows that the organization needs to improve the systems to ensure warehouse staff issue shortest expiry medical supplies first.

5.2.4 Would you say there are tools/software in place to alert on the near to expire items?
From the study findings 41.67% of the respondents strongly agree that there are tools in place for expiry alerts, 5.56% agree that there are tools in place for expiry alerts. 8.33% are not sure if the tools exist. 16.6% strongly disagree that there are tools in place for expiry alerts while 27.78% disagree. Despite some tools being available staff need to be more proactive in giving warnings for items that are about to expire.

5.2.5 Would you say that the value of near to expire items is known and documented monthly?
From the study findings 66.67% of the respondents strongly agree that the value of near expiry items is known and documented, 5.56% are not sure whether there is knowledge of expiry and records while 27.78% disagree that there is neither knowledge nor records of near expiry.
This is a good indicator that monetizing the inventory creates attention and therefore causes action to be taken.

5.2.6 Would you say that the value of losses due to expiry is known and documented?
From the study findings 27.78% of respondents strongly agree that value of expired items is known and recorded, 25% agree that value of expired is known and documented, 38.89% are not sure whether value of expired is known and recorded. 5.56% strongly disagree that the value of expired is known and documented while 2.78% disagree that value of expired is known and documented. This shows that more needs to be done by the organization to ensure staff are sensitized to the volume of losses as a result of expiry
5.2.7 Would you say that there exists a stock rotation mechanism to avoid expiries?
From the study findings 67% of the respondents agree that there is a stock rotation mechanism in place to prevent expiry. 30.56% are not sure that such a mechanism is in place, 16.67% strongly disagree that the mechanism exists while 11.11% disagree that the mechanism exists. This indicates that there is belief among staff that more can be done to ensure that medical supplies do not expire in the warehouse where they could be utilized somewhere else.

5.2.8 Would you say that staff have undergone formal training in the area of inventory management?
From the study findings 16.67% of the respondents agree that staff have undergone formal training in the area of inventory management, 27.78% are not sure whether staff have undergone any kind of training. 41.67% strongly disagree that staff have undergone formal training in inventory management while 13.89% disagree that staff have undergone the training in inventory management. This can have an impact in the manner in which work is executed since SCM and indeed inventory management has been professionalized

5.2.9 Would you say that the organization ensures that all staff in the warehouse are trained regularly?
From the study findings 44.44% of the respondents strongly agree that organization provides regular training for staff in the warehouse, 27.78% agree that the organization provides regular training, 8.33% are not sure whether the organization provides warehouse staff opportunities for training. 11.11% strongly disagree that the organization provides staff with training while 8.33% disagree that the organization provides staff with regular training.
This is a good indicator that the organization takes the training and development of staff seriously for improved output.

5.3.1 Would you say that there is a policy and procedure for inventory management and it is well known by staff?
From the study findings 33.33% of the respondents strongly agree that policies and procedures exists and are well known by the warehouse staff, 30.56% are not sure whether the procedures exists and are known. 8.33% strongly disagree that procedures exists and are
known by staff while 27.78% disagree that the procedures exists and are known by staff. This shows that generally that staff are not aware that standard operating procedure exist in inventory management and should be followed for more efficient service.

5.3.2 Would you say that there is a designated staff that has custody over emergency stock?

From the study findings 2.78% of the respondents strongly agree that there is designated staff for emergency stock, 5.56% agree that there is designated staff for emergency stock, 8.33% are not sure whether there is designated staff for emergency stock. 69.44% strongly disagree that there is designated staff for emergency stock while 13.89% disagree that there is designated staff for emergency stock. This shows that despite the organization core activity being dealing with emergency, no HR has been specifically allocated to deal with emergency stock when the need arises

5.3.3 Would you say that the number of staff available marches with the volume of warehouse activities?

From the study findings 5.56% of the respondents strongly agree that the volume of inventory marches with the human resource available, 25% agree that the volume of inventory marches with the human resource, 61.11% are not sure whether the volume of inventory marches with the human resource while 8.33% disagree whether the inventory marches with the human resource. This indicates that HR is stretched to the limits in the warehouse

5.3.4 Would you say you know the top ten priority items during emergencies are known and easily accessible?

From the study findings 19.44% of the respondents strongly agree that top ten priority items during emergencies are known and easily accessible, 13.89% agree that the top ten priority items during emergencies are known and easily accessible, 27.78% are not sure whether top ten priority items during emergencies are known and easily accessible. 16.67% strongly disagree that top ten priority items during emergencies are known and easily accessible while 22.22% disagree that top ten priority items during emergencies are known and easily accessible. This shows that there is need for more effort in enlightening staff on the critical items during emergencies and to facilitate their accessibility
5.3.5 Would you say there is an emergency plan that exists, is known by the staff and is updated

From the study findings 27.78% of the respondents strongly agree that an emergency plan exists, is known by staff and is updated, 16.67% are not sure whether there is an emergency plan, that it is known by staff and updated. 55.56% disagree that there is an emergency plan, that it is known by staff and it is updated. This indicates that the organization needs to have in place a formal emergency plan and this needs to be communicated frequently so that staff are aware of their role and expectations when emergency strikes.

5.3.6 Would you say there are adequate resources in place when responding to emergencies?

From the study findings 41.67% of the respondents strongly agree that resources are available when responding to emergencies, 30.56% agree that resources are available when responding to emergencies, 16.67% strongly disagree that resources are available when responding to emergencies while 11.11% disagree that resources are available when responding to emergencies. This indicates that the organization is able to provide the necessary resources to respond during emergencies.

5.3.7 Would you say that the emergency stock is pre-packed and ready to be shipped within 48hrs?

From the study findings 52.78% of the respondents strongly agree that emergency stock is pre-packed and ready to ship within 48hrs, 25% are not sure whether emergency stock is pre-packed and ready to ship within 48 hours, 13.89% strongly disagree that stock is pre-packed and ready to ship while 8.33% disagree that emergency stock is pre-packed and ready to ship within 48 hours. This indicates that more could be done by the organization for emergency preparedness by having ready and packed material to respond in the shortest time possible.

5.3.8 Would you say that there is staff who has access to inventory after hours in case of emergency?

From the study findings 27.78% of the respondents agree that there is staff that have access to inventory after working hours in case of emergency, 44.44% are not sure whether there is staff who have access to the inventory after working hours in case of
emergency. 11.11% strongly disagree that there is staff that has access to inventory after working hours in case of emergency while 16.67% disagree that there is staff who has access to inventory after working hours in case of emergency. Despite control mechanism taking precedent in this issue, the organization needs to have more flexibility to ensure emergencies are responded to in shortest time with minimal red tape.

5.3.9 Would you say that there are adequate equipment that help in the movement of items in and out of the warehouse?

From the study findings 41.67% of the respondents strongly agree that there is adequate equipment that helps to move stock in and out of the warehouse, 8.33% agree that there is adequate equipment to move stock in and out of the warehouse, 27.78% are not sure whether there is enough equipment to move stock in and out of the warehouse. 13.89% strongly disagree that there is enough equipment to move stock in and out of the warehouse while 8.33% disagree that there is adequate equipment to move stock in and out of the warehouse. This indicates that the organization should invest in additional equipment that helps in the efficient movement of cartons from one point to the other in a warehouse.

5.4.1 Would you say that the warehouse capacity is sufficient for the level of inventory?

From the study findings 33.33% of the respondents strongly agree that the warehouse capacity is enough for the level of inventory, 19.44% agree that the warehouse capacity is enough for the level of inventory while 47.22% are not sure whether the warehouse capacity is enough for the level of inventory. These results indicate that additional space is required to increase the storage capacity.

5.4.2 Would you say that there are enough cold chain equipment/monitoring tools to store & monitor temperature sensitive drugs

From the study findings 5.56% of the respondents strongly agree that there is enough cold chain material, 55.56% agree that there is enough cold chain material while 38.89% are not sure whether there is enough cold chain material. This indicates that the cold chain material that is used to store temperature sensitive drugs is sufficient.
5.4.3 Would you say that there exists a proper layout plan of the inventory storage facility

From the study findings 41.67% of the respondents strongly agree that there is a proper layout plan for the storage facility, 30.56% agree that there is proper layout plan for the storage facility, 19.44% are not sure whether there is proper layout plan for the storage facility while 8.33% disagree that there is proper layout plan for storage facility. This shows that the warehouse mapping is known for direction purposes and staff can find their way around the facility.

5.4.4 Would you say the stocks are tidy, easily accessible and zones are defined

From the study findings 16.67% of the respondents strongly agree that the stocks are tidy, easily accessible and zones were defined, 33.33% agree that stocks are tidy, easily accessible and zones were defined, 27.78% are not sure whether stocks are tidy, easily accessible and zones were defined. 8.33% strongly disagree that stocks are tidy easily accessible and zones were well defined while 13.89% disagreed that stocks are tidy, easily accessible and zones were well defined. Despite the stores being tidy there is still more that can be done to ensure that stocks are easily accessible and visible.
5.3 Conclusion

Some of the conclusions that were drawn from the study includes:-

Although some of the staff have not been through any formal training in warehousing or supply chain management, the organization ensures that staff undergo trainings so that they are able to improve their competence in warehousing skills. This is a positive aspect about the organization as it indicates the institution’s willingness in the learning and development of staff. Learning and development of staff not only increases the competencies but ensures that staff are motivated to carry out their day to day task and assist the organization in achieving its overall goal.

The organization provides resources to be able to respond to emergencies however, most of the staff do not have knowledge of the emergency plan neither are they fully aware of what items are priority when emergency cases occur. This could be an impediment when operations have to respond to an emergency as the staff would not be aware of the different roles they have to play in order to make the response a success. This can lead to frustration both to the staff and the organization for not meeting the expected objectives.

Staff agree that there is a system in place to alert the short expiry items, although this system is not fully functional. Staff are of the opinion that the organization should put in place strict measures that would ensure that only FEFO method is used in issuing stocks.

Staff are of the opinion that not much is done in terms of stock rotation in order to ensure that less items expire while in the warehouse.

The organization has sufficient equipment as well as warehousing space that met the volume of the stock. However there is no clear visibility of how items are stored within the warehouse since most items are not regrouped. Regrouping in the warehouse can be the defining factor between how fast staff in the warehouse are able to process orders. Visibility and traceability of stocks within the warehouse is one of the key elements of a warehouse that follows good distribution practices and the organization should strive to achieve this.

5.4 Recommendation

5.4.1 Human Resource

Some of the recommendations from the study includes that the organization needs to recruit staff that have supply chain management/warehousing profile to ensure that the
inventory is managed in a more efficient and effective way. The recruitment process should be open to the general public so that it can attract various individuals with supply chain experience and expertise. Once the people with relevant expertise are recruited inducting them to the specific working and context of the organization becomes easy.

5.4.2 Operations
A proper emergency plan should be developed, shared and updated to the staff regularly so that the staff are aware of what is expected of them and how to respond more efficiently. During the development of the emergency plan it is key that staff are involved so that there is more ownership of the processes. It is clear that once staff have knowledge and ownership of the emergency process, then response rate to this emergencies will be within the organization preferred time of 48 hours.

5.4.3 Inventory Control
There is need to monetize the inventory so that stock losses are captured in form of money and not a list and this will definitely capture not only the attention of the warehouse staff but globally the decision makers within the organization. Staff must start viewing inventory as money because everyone is sensitive to money and does not want to loose money, then staff will ensure that no losses are observed within the organization as a result of items expiring.

5.4.4 Warehousing
The warehousing strategy for the next few months should focus on ensuring that there is better visibility of stocks by regrouping them within the warehouse to ensure that the rate of output increases and the lead time for processing stock requests is reduced. Visibility is an important element in the warehouse as it not only makes the process of work much easier but it also provide a better a faster way of management making spot checks within the warehouse that greatly helps with control.

5.5 Suggestions for further studies
The study did not go too much into details of human resource requirements in terms of characteristics or traits that are necessary for staff that work in the warehouses especially in the humanitarian context. Inventory management requires specific set of skills and traits that if staff do not possess they tend to struggle while performing their day to day tasks, this calls for further studies in this area.
REFERENCES


51
Daria Battini., Umberto Peretti., Alessandro Persona & Fabio Sgarbossa (2013)

*Application of humanitarian Last mile distribution model* (Department of Management and Engineering (DTG), University of Padova, Vicenza, Italy)


_**ABC and VED Analysis in Medical Stores Inventory Control.**_ MJAFI Vol 63, No.4 pp 325 -326
APPENDIX I
INTRODUCTION LETTER

Paul Ndivo,
P.O Box 38032 00625,
1st October, 2015

Logistics Coordinator,
MSF Kenya
Nairobi
Re: Request to Conduct Research Study In MSF Kenya

Dear Sir,

This is in reference to the above. Am currently pursuing a course In Purchasing and Supplies Management. It is a requirement that we carry out research study before completion of the said course. My study is on FACTORS AFFECTING INVENTORY MANAGEMENT IN RELIEF ORGANIZATIONS, the case study being MSF Kenya. I would appreciate if you gave me permission to conduct the said research in your esteemed organizations.

Yours faithfully,

Paul Ndivo
APPENDIX II

BUDGET

<table>
<thead>
<tr>
<th>Activity</th>
<th>Amount (kes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport by bus</td>
<td>5,500.00</td>
</tr>
<tr>
<td>Lunch</td>
<td>4,200.00</td>
</tr>
<tr>
<td>Printing and photocopies</td>
<td>2,900.00</td>
</tr>
<tr>
<td>Binding</td>
<td>2,660.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>15,260.00</strong></td>
</tr>
</tbody>
</table>
APPENDIX III
QUESTIONNAIRE

Part A

1. Name:

........................................................................................................................................
........................................................................................................................................
........................................................................................................................................

2. Sex:
Male  □
Female □

3. What is your age?
(18-24) □
(25-34) □
(35-44) □
(45-54) □
(55-65) □

4. What is your educational level?
(Secondary) □
(Certificate) □
(Diploma) □
(Degree) □
(Masters) □
(Phd) □

5. What is your position?
........................................................................................................................................
........................................................................................................................................
........................................................................................................................................

6. How many years have you worked for this organization?
........................................................................................................................................
........................................................................................................................................
........................................................................................................................................
<table>
<thead>
<tr>
<th>Question</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Not Sure</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>The organization uses FEFO method in issuing stocks</td>
<td></td>
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<tr>
<td>There are tools/software in place to alert on the near to expire items</td>
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<tr>
<td>The value of near to expire items is known and documented monthly</td>
<td></td>
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<tr>
<td>Value of losses due to expiry is known and documented</td>
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<tr>
<td>There exists a stock rotation mechanism to avoid expiries</td>
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<tr>
<td>Staff have undergone formal training in the area of inventory management</td>
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<tr>
<td>The organization ensures that all staff in the warehouse are trained</td>
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<td>regularly</td>
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<td>There is a policy and procedure for inventory management and it is well</td>
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<td>known by staff</td>
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<tr>
<td>There is a designated staff that has custody over emergency stock</td>
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<tr>
<td>The number of staff available marches with the volume of warehouse</td>
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<td>activities</td>
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<tr>
<td>The top ten priority items during emergencies are known and easily accessible</td>
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<td>There is an emergency plan that exists, is known by the staff and is updated</td>
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<td>There are adequate resources in place when responding to emergencies</td>
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<td>The emergency stock is prepacked and ready to be shipped within 48hrs</td>
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<td>There is staff who has access to inventory after hours in case of emergency</td>
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<td>There are adequate equipment that help in the movement of items in and out of the warehouse</td>
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<td>The warehouse capacity is sufficient for the level of inventory</td>
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<td>There are enough cold chain equipment/monitoring tools to store &amp; monitor temperature sensitive drugs</td>
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<td>There exists a proper layout plan of the inventory storage facility</td>
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<td>The stocks are tidy, easily accessible and zones are defined</td>
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