Effectiveness of Warehouse Management in Save the Children Ethiopia

A Case of Gambella Emergency Office

Thesis Submitted in Partial Fulfillment of the Requirements for the Award of Master of Art (M.A) Degree in Logistic and Supply Chain Management

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Declaration

I, the under signed, declare that this thesis entitled "Effectiveness *of Warehouse Management in Save the Children Ethiopia: A Case of Gambella Emergency Office*", is my original work and to the best of my knowledge has not been presented for a degree by any other person, and that all the sources of material used for the thesis have been duly acknowledged.

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Statement of Certification

This is to certify that the thesis carried out by Anteneh Berhanu Fisseha on the topic entitled: "Effectiveness *of Warehouse Management in Save the Children Ethiopia: A Case of Gambella Emergency Office*" is his original work and is suitable for submission for the award of Masters of Art Degree in Logistics and Supply Chain Management.

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Thesis Approval

This is to certify that the thesis carried out by Anteneh Berhanu Fisseha, entitled: "*Effectiveness of Warehouse Management in Save the Children Ethiopia: A Case of Gambella Emergency Office*" and submitted in partial fulfillment of the requirements of the Degree of Master of Art in Logistics and Supply Chain Management complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

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Abstract

The study aimed to evaluate the effectiveness of warehouse management in Save the Children Gambella Emergency Office. The study is a descriptive type which utilized quantitative and qualitative data. Both primary and secondary data were collected for this study. Primary data were collected with questionnaires, semi-structured interview and observation. As the number of employees in the office is below 100, the researcher of the study included the whole population in the study. A total of 77 questionnaires were distributed to employees and thanks to their collegial support, 74 of it were filled and returned. Frequency tables, percentages, mean and standard deviation were used to analyze the data with the application of SPSS 21. The finding of the study showed that Save the Children Gambella Emergency Office have major gaps in inventory control, materials handling, record keeping and application of information technology for warehouse services. The quality inspection practices of the warehouse have shown relatively higher rating than the other four factors mentioned above.

Key Words: Warehouse, Warehouse Management, Inventory Control

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List of Acronyms

SC - Save the Children

SCEGEO -Save the Children Gambella Emergency Office

SCM -Supply Chain Management

UNHCR -United Nations High Commission for Refugees

WMS -Warehouse Management System

Chapter One: Introduction

This chapter is introductory chapter to the study on Effectiveness of Warehouse Management in Save the Children Ethiopia. It incorporates points that give insight about the topic of the study and its significances and limitations.

1.1 Research Background

This research report mainly dealt with the assessment of effectiveness of warehouse management in Save the Children Ethiopia Gambella Emergency Office (SCEGEO), which has been taken as a case study.

Annually, 500 disasters affect some 200 million people and take the lives of around 75,000 people (Van Wassenhove 2006). Since the start of violence in Juba on 15 December 2013, more than 1.5 million South Sudanese have been displaced. Currently the total number South Sudanese refugees and asylum-seekers in Ethiopia (both in Gambella and Assosa as of 30 November 2016) have reached 328,145 (UNHCR, 2017).

The increasing complexity and magnitude of global emergency relief operations create a critical need for effective and efficient humanitarian supply chain management processes (Beamon and Kotleba 2006). Humanitarian supply chains are fundamentally different to commercial ones when it comes to strategic goals, demand characteristics and environmental factors (Balcik & Beamon, 2008). The field of Humanitarian logistics applies the knowledge of supply chain management in humanitarian contexts to overcome the difficulties associated with disaster relief (Thomas & Mizushima, 2005).

There are a number of specific challenges faced by the field of humanitarian logistics. First of all, humanitarian supply chains must usually operate in highly uncertain environments. Knowledge about the demand for humanitarian relief (in terms of the magnitude and type of materials and services needed) is fairly unpredictable. The same characteristic applies to the infrastructure and resources available. For example, the available infrastructure may be significantly damaged or disrupted, while the location of relief facilities may change not only from one disaster to the next but also during a single disaster.

With respect to the procurement process, procedures are difficult to enforce as integrity is lacking. Tracking and tracing of shipments is typically done manually using spreadsheets and, furthermore, in most cases there are no central databases of history on prices paid, transit times, or quantities purchased and received (Thomas 2003). The need of humanitarian relief

organizations to avoid waste and to improve the efficiency and effectiveness of their logistics systems is also fostered by requirements from donors. As explained by Lindenberg (2001), not only are resources becoming tighter in humanitarian organizations, but also these organizations are facing increased pressure for greater accountability and better program quality.

Long (1997) argued that information systems are the most important factor in determining the success of a relief logistical efforts and emphasized the uniqueness of each relief operation. Ratliff (2007) also made the claim that there is a very limited number of information and decision technologies that clearly fit the needs of humanitarian relief organizations. Reports (e.g., reports to donors on quantities of relief items delivered for a given operation) are typically done manually and contain a fairly limited amount of information.

As indicated by Van Wassenhove (2006), the provision of supplies is the most expensive part of a humanitarian effort and is largely dependent on supply chain management functions such as procurement (the acquisition of goods and/or services),Warehousing and transportation. Estimates indicate that logistics activities account for 80 percent of relief operations (Trunick 2005), reinforcing the idea that supply chain management is an important factor in humanitarian operations.

Warehouses are the final point in the supply chain represents approximately 20-24 per cent of total logistics costs (European Logistics Association and A.T. Kearney Management Consultants, 2004). The efficiency and effectiveness in any distribution network in turn is largely determined by the operation of the warehouses. Reduction in material handling, increase accuracy levels, improvement in service consistency & availability, increase speed of service are the main decision criteria in warehousing management (Hackman et al., 2001). This shows that effective and efficient management of any organization requires that all its constituent elements operate effectively and efficiently as individual sub units and together as an integrated whole entity.

Warehouses are primarily for receiving, storing, picking and shipping goods (Hatton, 1990 & Dawe, 1995). Warehousing refers to the activities involving storage of goods on a large-scale in a systematic and orderly manner and making them available conveniently when needed. In other words, warehousing means holding or preserving goods in huge quantities from the time of their purchase or production till their actual use or sale.

According to Fritz Institute, 2016 warehouse management is defined as the process that relates to the setting up and management of local, country, regional and global warehouse facilities in relation to supply chain plan. De Koster et al. (2007) broaden the ambit of warehouses for storing or buffering products at and between points of origin and points of consumption. Warehouse

Management is not just managing within the boundaries of a warehouse today; it is much wider and goes beyond the physical boundaries. Inventory management, inventory planning, cost management, IT applications & communication technology to be used are all related to warehouse management. The container storage, loading and unloading are also covered by warehouse management today.

Warehouse management today is part of SCM and demand management. Warehouse management does not just start with receipt of material but it actually starts with actual initial planning when warehouse design and process design within the warehouse. Warehouse Management monitors the progress of products through the warehouse. It involves the physical warehouse infrastructure, tracking systems, and communication between product stations. Warehouse management deals with receipt, storage and movement of goods to final customer. In the multi-level distribution, there are levels of warehouses, starting with the Central Warehouse(s), regional warehouses serviced by the central warehouses and satellite warehouses serviced by the regional warehouses and so on.

It incorporates planning inbound receipt procedures, material handling and storage formalities and outbound delivery procedure. This study focuses on the second part warehouse management functions. This includes quality inspection, materials handling and inventory control and record keeping. Under inspection the verification can be done physically or by going through the documents received. Saxena,2003 defined material handling as the art & science involving the moving, packaging and storing of substance in any form. The inventory control function covers the recording of physical stock balance and various transactions, which affects the balance.

The effectiveness warehouse management can be shown in different forms, such as availability of required materials, reduction in material handling, increase accuracy levels, improvement in service consistency & availability, increase speed of service, & availability of required stock data are the main decision criteria in warehousing management (Hackman et al., 2001).

1.2 Statement of the Problem

As one of the key partner to UNHCR in Gambella area, Save the Children provides emergency education and comprehensive child protection in the three refugee camps Jewi, Tierkidi and Pugindo. It also works with family tracing and reunification activities in the Pagak border area (WWW. Savethechildern.org). To this end, Save the Children store and distribute goods in line with program needs, and tries to manage stock effectively and efficiently.

But the preliminary observation of this function showed that the warehouse management is affecting the program's ability to operate in a timely and efficient manner thereby preventing it from meeting commitments to both beneficiaries and donors. Some of the problems currently witnessed in the warehouse service are undetected expiry of stocks, obsolesce of some stocks, difficulty of knowing the exact number and kinds of stock available in the warehouse and difficulty of tracing stocks in the warehouse.

SCE introduced newly developed Total Inventory Management software in 2015 to overcome the exiting challenges of inventory management problems. As the system requires strong internet connection to properly run the program, its application is limited in offices like Gambella Emergency Offices where there is frequent interruption of internet connection & weak connection signal. This forced the organization to use both manual and computerized system simultaneously. This mix of systems is not properly synergized to avail the required internal control and information.

1.3 Research Questions

Based on the above research background and problem statement, this study seeks to answer the following research questions:

1. How is the inventory control process carried out in SCEGEO?
2. Does the quality inspection procedure bring the expected result?
3. How is the effectiveness of the material handling and storekeeping in the organization?
4. Does the record keeping practice of the warehouses capture all transactions in timely fashion?
5. Does the introduction of the total inventory management software bring any improvement in the inventory control and record keeping of the office?

1.4 Research Objective

General objectives of this study are to review the contemporary warehouse management literatures, collect data about the general framework of warehouse management system in Save the Children, subsequently, to analyze and evaluate current warehouse practice in Gambella emergency office. Finally devise strategies of for applying the effective warehouse management to improve inventory and warehouse services in the organization.

The specific objectives of the research are:

1. To find out the inventory control system of the organization.
2. To examine the results of quality inspection system.
3. To assess the effectiveness of the materials handling and store keeping practices and challenges of implementation.
4. To evaluate the record keeping practices of the warehouses.
5. To assess the effect of the newly introduced inventory management software.

1.5 Significance of the Study

In general, the importance of any study work is either for acquisition or addition of new knowledge or problem solving.

It is anticipated that outcome of this research may provide information to the organization as to how improve its limitations and overcome its existing problems. The study may provide additional information to the existing literature on humanitarian warehouse management. It will also provide insight into further research needs in this area.

1.6 Scope of the Study

The geographic scope of this study in confined to Gambella Emergency office. Among 39 warehouses under Save the Children Ethiopia, the Gambella Emergency Warehouse will be the focus of this study.

A detailed assessment and discussion of all warehouse management functions can also hardly be achieved in this study. Warehouse management functions include a range of activities starting from setting up of a warehouse up to executing outbound delivery. But this particular study mainly focuses only on the internal warehouse management practices of Gambella Emergency Office.

1.7 Limitation of the Study

The lack of relevant literature in humanitarian supply chain specially done in warehouse management was found to be the limitation of this study.

1.8 Structure of the Thesis

The study is divided into five chapters. Chapter 1 presents the introduction of the study. Chapter 2 describes details of theoretical concept of warehouse management and empirical literature review together with the descriptions of warehouse management in humanitarian aid and disaster relief. Chapter 3 provides details of research methodology which include study design, tools and analysis. Chapter 4 focuses on the results and discussions to show the descriptive & qualitative analysis of the warehousing practices. Finally, Chapter 5 presents conclusion and recommendations that give the summary and decision recommendations from the results of the study.

Chapter Two: Literature Review

2.1 Introduction

The purpose of this chapter is to provide a detailed discussion of warehouse management in humanitarian context. It attempts to highlight the background of SCE, define the various concepts of the subject matter, review both theoretical and empirical studies conducted by other researchers within similar context. Conceptual framework of this study and the research gaps are also given.

2.2 Background of the Organization

Save the Children first arrived in Ethiopia in 1936 and established its first formal office 40 years ago. Throughout the years, Save the Children has been represented by offices of Save the Children Canada, Save the Children Denmark, Save the Children Finland, Save the Children Norway, Save the Children Sweden, Save the Children UK and Save the Children USA.

In 1965, Save the Children Sweden started supporting a leprosy research under the Armauer Hansen
Research Initiative based at the Alert Hospital in Addis Ababa. Four years later in 1969, Save the Children Norway started operating in Ethiopia in support of the same research. During the 1973 famine, Save the Children UK started its humanitarian and emergency relief work in Ethiopia. A decade later, Save the Children USA started operating to provide life-saving food, water and health services for over half a million people affected by the 1984 famine.

In 1996, Save the Children Canada started its operations in order to support the implementation of a National Policy on Disaster Prevention and Management. That same year, Save the Children Denmark starts supporting an education program in North Wollo zone. In 2001, Save the Children Finland started operating in Ethiopia by partnering with Save the Children Denmark on the education program in North Wollo zone.

Over the years, the work of Save the Children has shifted from humanitarian and emergency relief to include highly diversified development initiatives. Save the Children currently operates across eight Regional States and implements programs to support a range of long-term development initiatives including humanitarian response, food security and livelihoods, HIV/AIDS, WASH, nutrition, health, education, child protection, child rights governance and

the Everyone Campaign. Save the Children's 2010-2015 strategy sets out ambitious goals for reach, impact and funding to achieve more for children in Ethiopia.

Save the Children Ethiopia remains committed to ensuring the realization of Save the Children's dual mandate of equally supporting both development and humanitarian works. Save the Children will pursue this through its nine thematic areas in Health, Nutrition, Food Security and Livelihoods (FSL), Water and Sanitation (WASH), HIV and AIDS, Child Protection, Education, Building Child Friendly Systems and Structures and Humanitarian Response.

Save the Children Ethiopia have annual budget of US$100 and more than 2000 staff, a head office in Addis Ababa and 39 offices in all regions of the country. In 2011-2012 Save the Children Ethiopia directly reached 7,370,401 people of whom 5,106,212 were children.

One of Save the Children intervention area is located in Gambella regional state established to support South Sudanese refugees. Save the Children provides emergency education and comprehensive child protection for these refugees. In 2005, the Sudan People's Liberation Movement/Army (SPLM/A) and the Government of Sudan signed the Comprehensive Peace Agreement (CPA), formally ending decades of war. Six years later, on 9 July 2011, Southern Sudan gained independence following a peaceful referendum held on 9 January 2011. Their long-held dream of freedom achieved, the about 8.26 million South Sudanese, who inhabit 644,329 square kilo meters of territory, looked to the future with hope for dividends of peace, including the benefits accruing from abundant natural resources, particularly oil (National Bureau of Statistics 2012). The state had to develop the capacity and institutions to deal with the legacies of the war and emerging challenges. Foreign nations, the UN, international organizations and local organizations have all devoted efforts and resources to help the new country deal with the past and work toward a prosperous future.

During the war, an estimated two million people died, and another four million were uprooted from their homes, the majority of them fleeing north to seek refuge in camps set up on the outskirts of the national capital, Khartoum (US Committee for Refugees 2003). Some of the people uprooted from their homes in Southern Sudan during the war crossed international borders to seek refuge in other countries, especially neighboring ones. The majority of refugees ended up in camps in Uganda, Kenya and Ethiopia. When conditions back home improved,

many of them joined repatriation programs organized by the UNHCR, asylum countries and the country of origin.

But the relative peace in South Sudan was not long lasting. Since the start of violence in Juba on 15 December 2013, more than 1.5 million South Sudanese have been displaced. Currently the total number South Sudanese refugees and asylum-seekers in Ethiopia (both in Gambella and Assosa as of 30 November 2016) have reached 328,145 (UNHCR,2016).

The Gambella region is based in the western part of Ethiopia and has international borders with Southern Sudan. Gambella is the host to thousands of refugees fleeing this crisis. Gambella is the historic home of the indigenous Anuak ethnic group, which now make up 22% of the host population. The Nuer ethnic tribe make up 47% and a number of smaller indigenous groups the remaining 31%. With this, Gambella is also home to number of local dialects and languages in addition to the recognized national language of Amharic.

Since the crisis erupted in 2013, the Office of the United Nations High Commissioner for Refugees (UNHCR) and the Administration for Refugee and Returnee Affairs (ARRA), in close coordination with the local Administration of Gambella, has opened seven camps Pugnido, Jewi, Okugo, Leitchore, Tierkidi, Kule and recently opened Nguenyyiel to provide international protection to the refugees as well as provide humanitarian services.

As indicated by Van Wassenhove (2006), the provision of supplies is the most expensive part of a humanitarian effort and is largely dependent on supply chain management functions such as procurement (the acquisition of goods and/or services), Warehousing and transportation. Estimates indicate that logistics activities account for 80 percent of relief operations (Trunick 2005), reinforcing the idea that supply chain management is an important factor in humanitarian operations.

UN agencies, World Food Program (WFP), UNICEF, International Organization of Migration (IOM), United Nations Office for the Coordination of Humanitarian Affairs (OCHA) and Implementing Partners (IPs) such as Save the Children, Goal, Medicines Sans Frontiers work together with ARRA and UNHCR in the provision of various essential services within the camps. The key services provided are Health, Nutrition, Water Sanitation & Hygiene (WASH) Protection & Community Services, Shelter, Logistics and Site Planning, Education, Environment and Food. Save the Children provides emergency education and comprehensive child protection in the three refugee camps Jewi, Tierkidi and Pugindo. Save the Children also

work with family tracing and reunification and carry out activities in the Pagak border area. The following is some of the activities of SC Gambelaa Emergency Office (SC Web site, 2017):

2.3 Theoretical Literature Review

The literature in the area of humanitarian logistics especially about warehouse management were very limited. Most of the available literatures contains handbooks with general procedures developed by Non-Governmental Organizations (NGOs) aimed at standardizing operational activities in humanitarian efforts. Beamon and Kotleba (2006) pointed out that little is available in terms of quantitative analysis of humanitarian operations and supply chain management.

2.3.1 Definitions of Emergency, Humanitarian Logistics and Warehouse Management

As stated in Quarantelli (1974), an emergency is a situation that poses an immediate risk to health, life, property or environment. A disaster is the disruption of the normal functioning of a system or community, which causes a strong impact on people, structures and environment, and goes beyond the local capacity of response. Sometimes, to declare or not an emergency as a disaster is a political decision, because it has consequences for the involvement of third parties in the intervention.

All the process of planning, implementing and controlling the efficient, cost-effective flow and storage of goods and materials as well as related information, from the point of origin to the point of consumption for the purpose of meeting the end beneficiary's requirements and alleviate the suffering of vulnerable people is called humanitarian logistics, as defined in the Humanitarian Logistics Conference, 2004 (Fritz Institute). Based on this definition, humanitarian logistics also appears in contexts different from disaster management; the World Food Program (WFP) and the World Health Organization (WHO),for instance, develop many operations which can be considered humanitarian logistics without being a response to a specific disaster. However, it is in disaster management where the application of humanitarian logistics is more complex and difficult and where more differences with business logistics appear. Therefore, our review is restricted to this context. There are issues that differentiate humanitarian supply chains in the context of disaster management from business supply chains.

Some of these are unpredictable demand in terms of timing, geographic location, type and quantity of commodity. Second it is characterized with short lead time and suddenness of

demand for large amounts of a wide variety of products and services. Third lack of initial resources in terms of supply, human resources, technology, capacity and funding. Fourth is presence of multiple decision makers that can be sometimes difficult to identify (Balcik and Beamon,2000).

A warehouse is a planned space for the storage and handling of goods and material. (Fritz Institute). In general, warehouses are focal points for product and information flow between sources of supply and beneficiaries. According to Fritz Institute Definition warehouse management is the process that relates to the setting up and management of local, country, regional and global warehouse facilities in relation to your supply chain plan.

2.3.2 Role of Warehousing in Humanitarian Logistics

According to Fritz Institute of Logistics the role of warehousing is to ensure that stock is available to meet the needs of the beneficiaries as and when required. Inventory represents a large cost to the humanitarian supply chain. This is made up of the cost of the inventory itself, plus the cost of transporting the goods, cost of managing the goods (labor, fumigation, repackaging, etc) and keeping the goods in warehouses. The inventory manager's job is to make inventory available at the lowest possible cost.

There are 4 main objectives of warehouse. The first is to protect all categories of stock from damage by careful storage and handling, preventing goods deteriorating by providing the correct storage conditions and preventing goods being lost or stolen by adhering to strict security regulation. The second objectives is to keep accurate and updated record of items received, items in stock and items issued, to keep management informed of all movement of stock, and to give account of transactions to users upon request. The third objective of warehouses is to provide service i.e. to issue goods quickly and efficiently to users and distribute goods efficiently to other places. The fourth is to provide a constant source of supply of consumer items in short supply (Warehousing Technique for Imported Goods Geneva,1991).

2.3.3 Materials handling

Saxena,2003 defined material handling as the art & science involving the moving, packaging and storing of substance in any form.

According to Gopalakrishman (1990) in handling of materials there are some principles to be considered. These principles are Orientation principle, Planning principle, Systems principle,

Unit load principle, Space utilization principle, Standardization principle, Ergonomic principle, Energy principle, Ecology principle, Mechanization principle, Flexibility principle, Simplification principle, Gravity principle, Safety principle, Computerization principle, System flow principle, Layout principle, Cost principle, Maintenance principle and Obsolesce principle.

According to Saxena (2003), various types of material are stored in the warehouse. Each material has its own characteristic. Some of the materials are affected by environmental conditions, the method of storage, and the time of storage. For e.g. rubber, material like conveyors, tires and vulcanizing are affected by temperature, refractory material is affected by moister or humidity steel items rust in the presence of moisture and air some material become deformed, if not stored proper and cannot be used any more. Materials handling refers to the process of moving, controlling, protecting as well as storing materials such as goods, items, etc. for manufacture, disposal, and distribution or even for consumption. This process is very crucial because all the materials should be handled well in order to keep it safe, to reach its destination safely and to maintain their quality and condition. In other words, good materials handling is important.

If good materials handling is applied, accidents can be prevented and eliminated as this means proper and careful handling is performed. Through good materials handling, stress and effort can be minimized. If you are handling materials the right away and you are eliminating all the factors that would make material handling a risky and challenging such as a non-functional equipment, ineffective workers, etc., then materials handling would be a stress-free process. If you are applying good materials handling, then you are definitely making storage, manufacture, distribution, or consumption of materials and goods less time-consuming. This is because good materials handling means applying solutions that can help make this process quick and easy.

If there is good material handling, there is no need for you to utilize redundant workers that will only take time and cost extra expenses. When you apply good materials handling, you are also saving money since you are not jeopardizing the quality and condition of the products as well as you are no longer spending a lot to pay extra workers just to ensure that the materials or product are handled well.

There are two essential things needed to apply good materials handling. These are expert material handlers & efficient material handling storage system. If you are manually handling

materials and products for distribution, storage, etc. this refers to utilizing workers who will serve as material handlers. They are the ones who are going to store, distribute, etc. all the goods to their proper destinations. To ensure good material handling, you need effective material handlers who are really trained and excellent when it comes to the task they are to perform. This will ensure you that they are going to perform materials handling well for the safety of other workers and the products. If you also want to apply materials handling, efficient storage systems are also necessary. This refers to storage systems that are really functional and automated and can really handle materials well so your time, money and effort would be saved.

This is especially true if the materials you are moving or storing are larger materials. This process can be the cause of many warehouse accidents and have earned most companies a lot of workers' compensation lawsuits already. For this reason, if you want to save yourself from these lawsuits and prevent tragedies inside the warehouse, make sure that you are applying good materials handling process by hiring expert workers and buying efficient storage systems.

2.3.4 Inventory Control and Record Keeping

Stock control comprises mainly the clerical and administrative functions of store works. It involves ensuring that the right type, quantity and quality of required materials available in store. .In order to achieve this, the inventory manager must ensure a balance between supply and demand by establishing minimum holding stocks to cover lead-times. To do so, the inventory manager must constantly liaise with the programs to keep abreast of changing needs and priorities. The warehouse must always have sufficient stocks to cover the lead-time for replacement stocks to avoid stock-outs.

Fritz Institute of Logistics identified two methods of inventory control that are applicable to emergency situations. These are economic order quantity & reorder cycle policy.

Both are applicable to humanitarian situations and have associated pros and cons. Note that economic order quantity (EOQ) in practice only works in a fairly stable environment where demand variability and replenishment lead-time are reasonably stable and predictable. This is not the case in an emergency. Economic order quantity is applicable in more stable environments such as refugee camps and perhaps later in a relief/recovery phase.

Inventory management in an emergency is more 'project based', matching supply with demand in a rapidly changing environment. This requires building a supply chain that has a high level of flexibility and adaptability, with rapid identification of need and rapid fulfilment of that

need through the supply chain. In managing this sort of system, inventory should be considered in relatively small quantities (inventory packages of associated relief items) that are attached (pegged) to an identified need then moved (and tracked) through from source to the identified need (the user).

Optimization comes from having logistics systems that can configure, procure and consolidate these packages quickly and a distribution chain that is flexible and can adapt to changing requirements quickly and at least cost. Information systems that facilitate transparency of the supply chain inventory levels, location, and demand provide the necessary visibility to facilitate good planning and effective decisions that maximize services and reduce costs. The warehouse/inventory manager is responsible for monitoring the movement of goods as they are transported from the supplier and for the control of stock movement in the warehouse facility.

2.3.5 Functions of Warehousing

Mohan,2014 have identified the following functions of warehousing:

a) Receiving-This includes the physical unloading of incoming transport, checking, recording of receipts, and deciding where the received goods are to be put away in the warehouse. It can also include such activities as unpacking and repackaging, quality control checks and temporary quarantine storage for goods awaiting clearance by quality control

b) Inspection- Quality and quantity check of the incoming goods for their required characteristics

c) Repackaging- Incoming lot may be having non-standard packaging which may not be stored as it is in the respective location. In those cases, these materials have to be pre packed in unit loads/pallet loads suitable for storage.

d) Put away – Binning and storing the goods in their respective locations including the temp locations from the receiving docking area.

e) Storage – Binning the approved material in their respective locations.

f) Order-Order picking / selection –Goods are selected from order picking stock in the required quantities and at the required time to meet customer orders. Picking often involves break bulk operations, when goods are received from suppliers in, say, whole

pallet quantities, but ordered by customers in less than pallet quantity. order picking is important for achieving high levels of customer service; it traditionally also takes a high proportion of the total warehouse staff complement and is expensive. The good design and management of picking systems and operations are consequently vital to effective warehouse performance

g) Sortation – This enable goods coming into a warehouse to be sorted into specific customer orders immediately on arrival. The goods then go directly to order collation.

h) Packing and shipping – Picked goods as per the customer order are consolidated and packed according to customer order requirement. It is shipped according to customer orders and respective destinations.

i) Cross-docking –Move products directly from receiving to the shipping dock – these products are not at all stored in the specific locations.

j) Replenishing – This is the movement of goods in larger order quantities, for example a whole pallet at a time, from reserve storage to order picking, to ensure that order picking locations do not become empty. Maintaining stock availability for order picking is important for achieving high levels of order fill.

2.3.6 Warehouse Performance Measurement

There are two related but distinct approaches to performance measurement: economic (i.e. revenue related to cost) and technical (i.e. output related to input). Economic performance measurement is somewhat difficult because warehouses typically do not generate revenues; rather, their function is to support. Moreover, since
the firm's warehouses can be sited in urban, rural, or international locations, the differences in the settings will have a major impact on the costs. (Tomkins & etal,2003)

Technical performance measurement in the warehouse industry traditionally employs a set of single factor productivity measures that compares one output to one input. This is sometimes called ratio method. (Tomkins & etal,2003). To handle quantitative research, John M. Hill (2007: 20-23) warehouse performance indicators are usually applied. The three types of indicators are: order fulfilment, inventory management and warehouse performance measurement.

2.3.7 Warehouse Management System

A warehouse management system, or WMS, is a key part of the supply chain and primarily aims to control the movement and storage of materials within a warehouse and process the associated transactions, including shipping, receiving, put away and picking. The systems also direct and optimize stock put away based on real time information about the status of bin utilization (Saxena,2003).

Warehouse management systems often utilize Auto ID Data Capture (AIDC) technology, such as barcode scanners, mobile computers, wireless LANs and potentially Radio-frequency identification (RFID) to efficiently monitor the flow of products. Once data has been collected, there is either batch synchronization with, or a real-time wireless transmission to a central database. The database can then provide useful reports about the status of goods in the warehouse (Saxena,2003).

The objective of a warehouse management system is to provide a set of computerized procedures to handle the receipt of stock and returns into a warehouse facility, model and manage the logical representation of the physical storage facilities (e.g. racking etc.), manage the stock within the facility and enable a seamless link to order processing and logistics management in order to pick, pack and ship product out of the facility. Warehouse management systems can be stand-alone systems or modules of an ERP system or supply chain execution suite (Saxena,2003).

The primary purpose of a WMS is to control the movement and storage of materials within a warehouse – you might even describe it as the legs at the end-of-the line which automates the store, traffic and shipping management (Saxena,2003).

2.4 Empirical Literature Review

A research done by Dagnachew Tadesse (2015) at the Addis Ababa University under the heading "The Role of Warehouse Personnel Practice on warehouse Performance- A Case Ethiopian Electric Utility" reveals that poor practice of warehouse personnel negatively affected the overall operation of the corporation. The study showed that the utilization of unqualified personnel in the organization is contributing to the organization's lower performance. The study concludes by showing that the corporation didn't recognize the importance of qualified personnel in the warehouse.

The other research done by Beyen Gashu (2016) at the Addis Ababa University entitled "Improving Inventory Management at SUR Construction Company" indicate that major

inventory management techniques such as minimum-maximum level, safety level, lead-time analysis, and inventory cost decision and economic order quantity are not applied in the company. Hence, researcher concludes that the main contributing factor for inventory management in effectiveness to the construction company, which results in high stocks outs and non-moving obsolescence items, rush ordering, unplanned and urgent purchasing items, is the staff development and capacity incompetence.

None of the above studied organization were humanitarian organizations which directly match to theme of this study. From a humanitarian supply chain perspective, all the existing literature are done abroad outside Ethiopia in different context. This shows the clear research gap in the area.

Those literatures obtained from abroad can be classified into three main categories: inventory management, facility location, and transportation applications. The inventory management literature in the context of humanitarian relief operations is focused on developing inventory management policies for humanitarian warehouses (i.e., determining the size and frequency of orders, as well as the levels of safety stocks). Representative of the literature in this specific area are the papers by Beamon and Kotleba (2006a; 2006b). In their research, the authors discussed a project where an inventory management system for World Vision International warehouses was developed. They presented a humanitarian relief inventory model to determine optimal order quantities and re-order points for relief warehouses, and used simulation to compare the performance of the proposed mathematical model to both a heuristic and a naive inventory model. The authors showed how the mathematical model was able to minimize relevant inventory costs, achieve improved flexibility, and reduced response time.

Facility location research in the context of humanitarian relief is focused on determining the location of warehouses and distribution centers. Akkihal (2006), for example, developed a mixed-integer linear program to determine facility configurations where the objective is to minimize the average global distance from the nearest warehouse to the victims. Ultimately, the model is designed to determine the optimal locations for warehouses of non-consumable inventories required for the deployment of aid efforts.

The literature related to the transportation and delivery of goods in humanitarian relief chains also presents a number of relevant applications. In this line of research, Haghani and Oh (1996) were the first to formulate the transportation of multiple commodities on a network as a multi-commodity, multimodal network with the objective of minimizing the loss of lives.

Barbarosoglu et al. (2002) developed a mixed integer mathematical programming model for helicopter mission planning during a disaster relief operation. In this framework, tactical decisions are made at the top level, while operational decisions are made at the base level. Consistency between the two models is achieved with an iterative coordination procedure.

2.5 Conceptual Framework

Jabareen,2009 defines conceptual framework as a network or a plane of interlinked concepts that together provide a comprehensive understanding of a phenomenon or phenomena. Accordingly, the researcher of this study composed the below conceptual framework adopting Hacken & etal measure of warehouse effectiveness and Saxena's common criticism of warehouses.

The effectiveness warehouse management can be shown in different forms, such as availability of required materials, reduction in material handling, increase accuracy levels, improvement in service consistency & availability, increase speed of service, & availability of required stock data are the main decision criteria in warehousing management (Hackman et al., 2001).

Warehouse is often criticized for various reasons, some of which are genuine problems faced by users and could be overcome by proper planning and organization. Some of the issues are difficult to resolve due to limited resources at command of the stores. The main criticisms are poor inventory control, improper store keeping, delay in inspection and poor record keeping.

Poor Inventory Control is about the absence of system of determination the maximum and minimum levels of stocks. There are a number of obsolete and expired items in the stores. There is no control of slow moving and non-moving items. Materials are not stored properly which result in spoilage. Important and costly materials are stored in in open yards. Some items are stored in more than one store which are not liked. Delay in inspection of items received in the stores. Timely information is not given to users for the inspection of the items. Mistakes in counting the quantity of the materials and sometimes incorrect identification of items. Records are not up-to-date. Retrieval of information takes too much time. Store records are not reliable. It takes a long time to establish the correct status of the stock (Saxena,2003)

Chapter Three: Research Methodology

This section aims to present the method to be applied to achieve the objectives of the research in this study. Firstly, the choice of research strategy is explained. Secondly, considerations regarding the selection of research area and sampling procedures are presented. Finally, reflections on the empirical data collection methods are presented together with the analytical considerations.

3.1 Research Area and Organization Selection

The empirical literature review conducted for this study have shown that there is no study that have been comprehensively been done on the assessment of effectiveness of humanitarian warehouse management in Ethiopian NGO and hence the study intended to fill those gaps. Secondly the area of the study selected in consideration of the importance of proper warehousing and stock management to emergency relief programs. Poor management of warehouse and stock in such areas may expose the lives of refugees to danger.

According to UNHCR,2017 report currently there are 42 humanitarian organization currently working Gambella Regional State supporting South Sudanese refugees. Save the Children was chosen for the case study by the researcher on the basis of willingness of the agency to give me a permission to collect relevant data and observe the operations of their warehouses.

3.2 Research Approach and Design

As a research approach, the use of case study was chosen for the study because of the explanatory power of case study research (Yin, 2003) that led to the context generalization. The researcher has used descriptive and explanatory researches design to describe the existing situations. Both qualitative and quantitative research methods have been used in this study.

3.3 Population Size

Since all staff members of the Gambella Emergency Office are directly or indirectly receive warehouse services, the population size of this study is the total number of staffs working in Gambella Emergency Office. The total number of employees in the office is 77 as of to date. The researcher takes census in this study as the population size is small.

3.4 Data Sources and Data Collection Instrument

This study uses both primary and secondary data sources to get the required data. The following 4 methods of data collection are utilized in the study:

a) **Document review:** secondary data have been collected from document review like reports, public relation publications, Save the Children internal procedures, website and other organizational records.

b) **Structured survey questionnaires:** Two kinds of questionnaires are used to collect primary data. The first questionnaire is designed to collect data from the warehouse staff members. The second type is also designed for those staff members who are recipient warehouse services in Gambella Emergency Office.

c) **Semi structured interviews:** Data was also collected through semi structured interviews with concerned staff members

d) **Physical observation:** Visits to those warehouses and taking of photographs also used to get valuable primary data to check various activities like warehouse layout and handling.

The questionnaires are designed in such a way that helps to get both quantitative and qualitative data from sample respondents. These questionnaires have both closed and open ended questions. With regard to the closed ended questions, a five point Likert scale is used i.e. 5=strongly agree,4= agree,3= neutral/no opinion,2=disagree and 1= strongly disagree.

The first research methodology used in collecting primary data is using questionnaire by addressing the management, senior user and technical personnel of SCGEO. In questionnaire data collection instruments, Structured and well-defined questions are developed carefully and delivered to the respondents by mail and physically contact directly and by researcher representative at specific location.

Accordingly, 77 questionnaires were distributed to staff that were available at their office and volunteer to give data. From these questionnaires, 74 is responded which is 96% response rate while the rest 3 person did not respond due to unknown reason. Interviewing consisting of semi-structured questions was undertaken by the researcher using physically contact. In

addition, secondary data was collected by assessing the company's report and electronic data sources including internet.

3.5 Method of Data Analysis

Descriptive statistics in the form of frequencies and percentages were used for analysis in the study. SPSS 21 is used to present data in tables in order to display the summary of questionnaires, interview and secondary data. The data obtained from questionnaire were coded and summarized.

Qualitative data were analyzed using Content Analysis techniques that thematic contents was formulated and master list of themes were developed based on the research questions and conceptual framework. The background information of the respondents such as education, age, working unit and others are included to portray their ability of respondents to give genuine and quality data for reliability and validity purpose.

Editing was done to ensure that the data are accurate consistent uniformly entered and are arranged to facilitate coding and tabulation. This involves transcribing the data from the questionnaire to a coding sheet.

3.6 Ethical Clearance

To check the ethical clearance of the study, respondents are informed about the purpose of study, not to mention their name in responding questions and to get the response result or the report of study. Therefore, confidentiality of personal data was kept accordingly. In this research maximum effort has been made to avoid researcher's bias. In addition, the researcher tried to contact closely the respondents for any unclear issues using personal discussion, telephone and electronic mail.

3.7 Validity and Reliability

The questionnaires' used in this study is adopted from research conducted by Saxena (2006) about common problems in warehouse management. As these questionnaires were pretested and used in prior study, validity and reliability tests were not done here in this study.

CHAPTER FOUR: DATA PRESENTATION AND ANALYSIS

4.1 Introduction

This chapter presents the findings of the study in reference of objectives mentioned in chapter one. The findings are presented and analyzed using frequency tables and finally the relationship between the variable is established with the aid of computer program called SPSS. These findings are presented in line with relevant variables objectives of the study and research questions. These specific objectives from which the research question are drawn include:

- To find out the inventory control system of the organization.
- To examine the quality inspection system.
- To assess the effectiveness of the materials handling and store keeping practices and challenges of implementation.
- To evaluate the record keeping practices of the warehouses.
- To assess the effect of the newly introduced inventory management software.

4.2 Respondents' Demographic Information

The data in this section contains gender, age group, level of education, department and length of years worked in SC. From the below table 50 % of the respondents were below 30 years, 45.9 % of the respondents fell between the ages 31-40 years and only 4.1 % of the respondents were between 41-50 years. Based on the results obtained, the researcher found that the majority of the respondents are below 30 years implying that the SCGEO is interested in employing young employees who are highly productive and efficient.

As depicted on the below table 78.4 % of the respondents were male and 21.6 % were female. This implies that SCGEO human resource department has a job to do in creating a gender balanced workforce.

Respondents were also asked to indicate their education levels and found that 66.2 % of the respondents were 1^{ST} degree & above holders, 6.8 % of the respondents were Diploma holders, 17.6 % of the respondents were high school graduates and 9.5 % of the respondents were below grade 10. Based on the results presented below, majority of the respondents 66.2

% were degree holders. This implies that the respondents were knowledgeable and hence would understand and interpret the questions properly.

Table 4.1 Summary of Demographic Factors

No	Variables	Choice		Frequency	Percent	Valid Percent	Cumulative Percent
1	Age		20-30	37	50.0	50.0	50.0
			31-40	34	45.9	45.9	95.9
			41-50	3	4.1	4.1	100.0
			Total	74	100.0	100.0	
2	Gender		F	16	21.6	21.6	21.6
			M	58	78.4	78.4	100.0
			Total	74	100.0	100.0	
3	Educational Background		Below 10	7	9.5	9.5	9.5
			High Sch	13	17.6	17.6	27.0
			Diploma	5	6.8	6.8	33.8
			Degree &	49	66.2	66.2	100.0
			Total	74	100.0	100.0	
4	Department		CP	31	41.9	41.9	41.9
			Educ.	18	24.3	24.3	66.2
			HC	2	2.7	2.7	68.9
			Support	23	31.1	31.1	100.0
			Total	74	100.0	100.0	
5	Years of Service		0-3y	55	74.3	74.3	74.3
			3-6 y	15	20.3	20.3	94.6
			7-10 y	4	5.4	5.4	100.0
			Total	74	100.0	100.0	

Source: Survey Result, 2017

As SC mainly focuses on the Child Protection interventions, 41.9 % of the respondents were from this department. From the above table 74.3 % of the respondents have been in the SC for less than 3 years, 20.3 % of the respondents have been in SC between 3-6 years and 5.4 % of the respondents had worked less than 10 years in SC. Based on the results obtained 74.3 % of the respondents had worked in SC for less than 3 years. This implies that SC took part actively in recruiting new work force in the last 3 years. This study focus on investigation of on five factors as stated in the problem statement. The first factor to be reviewed here is the practice of inventory control.

4.3 Inventory Control

The respondents were asked to give response towards the inventory control activities used in SCGEO. Four indictors mentioned in the below table were used to measure the effectiveness of inventory control in SCGEO.

The table below shows that 43.2 % of the respondents strongly disagree, 36.5% of the respondents disagree, 4.1 % of the respondent neutral, 13.5 % of the respondents agree and 2.7% are strongly agree. This implies that SCGEO currently doesn't have a proper maximum and minimum inventory control system in place. This in turn causes occurrence of stock out conditions and over stocking slow moving items. As refugees solely depend on SC for the supply of food and non-food items in the respective area operations, being out of stock for supply of materials will have a direct bearing in the life of the refugees and the successful completion of the program.

Table 4.2 Summary of responses about inventory control

4.3 Inventory Control		**SA**	**A**	**N**	**D**	**SD**	**Mean**	**SD**
4.3.1	Maximum and minimum inventory levels are properly maintained	2.7%	13.5%	4.1%	36.5%	43.2%	1.96	1.128
4.3.2	No expired or obsolete materials are kept in store	2.5%	4.3%	8.1%	39.2%	45.9%	1.78	.955
4.3.3	There is a system of identification for fast and slow moving items	1.4%	12.2%	36.5%	20.3%	29.7%	2.35	1.078
4.3.4	There is a system of alerting users the inventory status required materials	2.7%	10.8%	36.5%	35.1%	14.9%	2.51	.969

Source: Survey Result, 2017

The table above shows that 45.9% of the respondents strongly disagree, 39.2% of the respondents disagree, 8.1% of the respondent neutral, 4.3% of the respondents agree and 2.5% are strongly agree. This is the least score observed from the four inventory control performance indicators. More than 85 % of the respondents indicate that the expiry or obsolesces of material while kept in warehouse is a common phenomenon in SCGEO. The occurrence of such pitfalls will cause the waste of critically needed financial resources and harm the repetition and relationships of SC with its donor agencies.

From the table above 36.5 % of the respondents are not sure of existence of system of identification for fast and slow moving items. The remaining 1.4 % were strongly agree, 12.2 were agree, 20.3 % disagree and 29.7% strongly disagree with the existence of such a system. This result indicates that substantial portion of the respondents is not aware of how the warehouse system is functioning.

The table above depicted that 14.9% of the respondents strongly disagree, 35.1% of the respondents disagree, 36.5% of the respondent neutral, 10.8 % of the respondents agree and 2.7 % are strongly agree. The application of alert system helps program units to know the status of their stock and make decisions accordingly. Materials purchased and stored for some program activities is expected to be put in to use before the end the award period. Since SCGEO didn't put this system in to use, program units lose the utility of dispatching materials to beneficiaries with in the award period. This in turn causes a question of compliance from donor agencies.

The mean values of inventory control indicators were found between 2.51 and 1.96 with almost comparable standard deviations that range between 1.128 and .955. The lowest mean value is registered in the case of expiry and obsolesces of materials and relatively higher mean is recorded in user alert system. It clearly noticeable that mean scores of the inventory control measurement items are skewed to disagree and strongly disagree spectrum. The respondents in the SCGEO believe that lower efforts have been made by their employer to enhance warehouse performance in the case of inventory control.

Concerning standard deviation of values of each of the measurement items of inventory control indicator, it indicates that the perception of the respondents on the issue are in the unlike poles on all of the case. However, this is acceptable as the study utilized all population and it is believed that the standard error is relatively very low under such census.

4.4 Materials Handling & Store Keeping

The second major factor raised in this study is assessment of the material handling and store keeping of SCGEO. The following four materials handling and store keeping performance indicators were used to assess the effectiveness of materials handling in SCGEO.

The table below shows that 43.2 % of the respondents strongly disagree, 23% of the respondents disagree, 14.9 % of the respondent neutral, 17.6 % of the respondents agree and 1.4 % are strongly agree. More than half of the respondents indicate that the materials kept in

store are not properly kept in a way that avoids the risk of spoilage and damage. This in turn prohibits the beneficiaries from getting the required quality supplies and may sometimes expose the beneficiaries to potential health risks.

The table below depicts a high level rejection for statement made about open yard warehousing that 43.2 % of the respondents strongly disagree, 21.6% of the respondents disagree, 2.7 % of the respondent neutral, 29.7 % of the respondents agree and 2.7 % are strongly agree. Open yard warehousing is not new for emergency programs like Gambella which is characterized by unpredicted influx of high number of refugees. Even during such times, appropriate care will be made to protect materials from spoilage and damage. More than 64% respondents indicate that the proper care is not made for materials which are kept the open yard.

Table 4.3 Summary responses about materials handling

4.3 Materials Handling & Store Keeping		**SA**	**A**	**N**	**D**	**SD**	**Mean**	**SD**
4.4.1	Materials are properly sorted in the way that avoid risk of spoilage or damage	1.4%	17.6%	14.9%	23%	43.2%	2.11	1.189
4.4.2	Important and costly materials are not stored in the open yard	2.7%	29.7%	2.7%	21.6%	43.2%	2.27	1.358
4.4.3	Similar items are kept in one store (not more than one place which are not systematically linked	1.4%	10.8%	24.3%	33.8%	29.7%	2.2	1.033
4.4..4	Materials are properly placed in designated places for latter tracing	6.8%	2.7%	37.8%	23%	23%	2.38	1.131

Source: Survey Result, 2017

Storage of similar items together helps to avail required warehouse equipment at one designed place, and improves the record keeping of the warehouse and stock management. The table above shows that 29.7% of the respondents strongly disagree, 33.8 % of the respondents disagree, 24.3% of the respondent neutral, 10.8 % of the respondents agree and 1.4 % are strongly agree. More than 63% respondents indicate that similar materials which were expected to be kept in one warehouse are put in different warehouses which cause loss of the above mentioned operational excellence.

Proper placement of materials in a warehouse in identified area helps to shorten the time required to pick and pack materials and improved warehouse services. The table above shows that 23% of the respondents strongly disagree, 23 % of the respondents disagree, 37.8 % of the respondent neutral, 2.7 % of the respondents agree and 6.8 % are strongly agree. Substantial portion of the respondents about 38% have shown neutral stand concerning this matter. Still the majority of the respondents exhibited the difficulty of tracking materials in the warehouse for immediate withdrawal.

The mean values of materials handling and store keeping indicators were found between 2.11 and 2.38 with a narrow range standard deviations that lay between 1.033 and 1.358. The lowest mean value is registered in the case of proper storage of materials and relatively higher mean is recorded in placing of materials. Like the inventory control measurement items, the means of material handling and warehousing indicators are skewed to disagree and strongly dis-agree spectrum.

4.5 Quality Inspection

It is the procedure of SC to conduct quality inspection by user department before delivery of materials to warehouses. As a result of this exceptional results were found in the study contrary to the factors reviewed before. Below three factors of evaluation of the warehouse used to assess the quality inspection process. The table below shows that 32.4% of the respondents strongly agree, 31.1 % of the respondents agree, 23 % of the respondent neutral, 8.1 % of the respondents dis agree and 5.4 % are strongly disagree. Unlike the factors reviewed before in inventory control and materials handling, SCGEO have scored a better rating in the quality inspection process.

Table 4.4 Summary responses about quality inspection and warehouse services

4.4 Quality Inspection		**SA**	**A**	**N**	**D**	**SD**	**Mean**	**SD**
4.5.1	Users always check the quality of materials before store receives the materials formally	32.4%	31.1%	23%	8.1%	5.4%	3.77	1.153
4.5.2	Users get timely request from warehouse personnel to inspect quality of the materials	45.9%	21.6%	20.3%	10.8%	1.4%	4.00	1.110
4.5.3	Users are responsive to request of quality inspections	43%	16.2%	28.4%	10%	2.2%	3.89	1.130

Source: Survey Result, 2017

Up on delivery of materials to warehouse, the warehouse personnel were expected to formally call the user department to conduct the quality inspection in timely fashion. The table above shows that 45.9 % of the respondents strongly agree, 21.6% of the respondents agree, 20.3 % of the respondent neutral, 10.8 % of the respondents dis agree and 1.4 % are strongly disagree. Unlike the factors reviewed before in inventory control and materials handling, SCGEO have scored a better rating in making timely call for inspection.

The table above depicts that 43 % of the respondents strongly agree, 16.2 % of the respondents agree, 28.4% of the respondent neutral, 10 % of the respondents dis agree and 2.2 % are strongly disagree. All the three measuring indicators used to assess the quality inspection process have shown relatively similar positive rating as one is much related with the other.

The mean values of quality inspection indicators were 3.77, 3.89 & 4.00 with relatively similar standard deviation of 1.1. Unlike the means of inventory control and material handling indicators, means of quality inspection is moderately inclined to the spectrum of agree in the likert scale.

4.6 Record Keeping

The fourth major factor of performance assessment used in the study is evaluation of the record keeping activities of the warehouses. The points raised under here try to evaluate the accuracy, timeliness and reliability of records in the warehouse. From the findings summarized below 4.1 % of the respondents strongly agree, 28.4 % agree, 20.3% not sure, 17.6 % disagree and 29.7 % of the respondents disagreed on timely updating of warehouse records. This implies that SCGEO do not timely update records in the warehouse. This in-turn create a problem identifying the exact kind and level of stock in the warehouse.

Table 4.4 Summary of responses about record keeping

4.5 Record Keeping		**SA**	**A**	**N**	**D**	**SD**	**Mean**	**SD**
4.6.1	Records in the store are up to date	4.1%	28.4%	20.3%	17.6%	29.7%	2.59	1.292
4.6.2	Retrieval of information in store takes not much time	2.0%	11.5%	33.8%	21.6%	31.1%	2.32	1.112
4.6.3	The store records are reliable	2.7%	13.5%	33.8%	20.3%	29.7%	2.39	1.133

Source: Survey Result, 2017

The table above depicts that 2 % of the respondents strongly agree, 11.5 % agree, 33.8 % not sure, 21.6 % disagree and 31.1 % of the respondents strongly disagreed on easy retrieval of warehouse records. This implies that SCGEO do not have the functional system that could deliver accurate and timely report for internal and external users like donors and other government agencies.

From the findings summarized above 2.7 % of the respondents strongly agree, 13.5 % agree, 33.8 not sure, 20.3% disagree and 29.7 % of the respondents disagreed on the reliability of warehouse records. Substantial numbers of respondents have shown clear neutrality in rating the record keeping status of the warehouses. Half of the respondents have indicated that SCGEO warehouse records are not reliable. This is resulted from the failure of the office to put in to use the manual and computer supported warehouse record keeping procedures installed by SC.

The mean values of record keeping indicators are 2.59, 2.32 and 2.39 respectively with almost comparable standard deviations that range between 1.112 and 1.292. The lowest mean value is registered in the case of warehouse record retrieval and relatively higher mean is recorded in timely updating of warehouse records. It is noticeable that mean scores of the record keeping parameters are moderately inclined to the spectrum disagree in the Likert scale.

4.7 Effect of Total Inventory Management Software and Overall Warehouse Service

Since 2015 SCGEO have applied the use of inventory management software to improve the service provision and strengthen the internal control. Respondents were requested to rate about the effect of this software and their level of satisfaction about general warehouse services.

The table below indicates that 5.4 % of the respondents strongly agree, 12.5 % agree, 5.4 % not sure, 32.4 % disagree and 44.6 % of the respondents strongly disagreed on the positive effect of the applied software. Among the total respondents, 77% of them haven’t noticed any improvement in inventory control after the application of the software. This implies that the application of the software didn’t bring any value addition in the inventory control process.

Table 4.5 Summary of responses about the effect of inventory management software

4.7 Effect of Total Inventory Management & Warehouse Services		**SA**	**A**	**N**	**D**	**SD**	**Mean**	**SD**
4.7.1	The introduction of the Total	5.4%	12.5%	5.4%	32.4%	44.6%	2.01	1.222
	Inventory Management System has improved the inventory control process.							
4.7.2	The introduction of the Total Inventory Management software has improved the record keeping of the Warehouse	4.1%	12.2%	40.5%	14.9%	28.4%	2.49	1.150
4.7.3	The overall warehouse service is satisfactory	-	13.5%	4.1%	36.5%	45.9%	1.85	1.016

Source: Survey Result, 2017

From the findings summarized above 4.1% of the respondents strongly agree, 12.2% agree, 40.5 not sure, 14.9 % disagree and 28.4% of the respondents strongly disagreed on the positive effect of this software in the warehouse record keeping process. Substantial numbers of respondents have shown clear neutrality in rating the effect of the software on record keeping process. Only 16.3 % of the respondents have confirmed that the positive effect the software on the warehouse record keeping process.

Respondents were requested to rate their overall level of satisfaction about the warehouse services of SCGEO. The result shown above indicates that 13.5 % agree, 4.1% neutral, 36.5 % disagree and 45.9 % of the respondents strongly disagreed on the satisfactory performance warehouse services. Generally more than 80% of the respondents indicated that the services of the SCGEO warehouse are not satisfactory. This is attributed to the cumulative effect of gaps observed in inventory control, material handling and record keeping.

4.8 Summary of Responses for Open Ended Survey Questions

Most of the open ended questions included in the questionnaire were not answered by Respondents. One of the question raised under this section ask respondents to indicate the root cause of the problems' currently observed in SCGEO warehouse. Summary of the findings were presented on the table shown below.

Table 4.7 Summary of Response Open Ended Survey Questions

No	Responses	Frequency	Percentage
1	Lack of manpower	2	3.85
2	Lack of skill of the warehouse personnel	6	11.54
3	Lack warehouse personnel motivation	6	11.54
4	The pitfalls of the system	6	11.54
5	Lack of management support and leadership	13	25.00
6	Lack of accountability	9	17.31
7	User department negligence in ordering, planning, specifications etc	10	19.23

Source: Survey Result, 2017

A quarter of the respondents indicated that lack of management support and leadership as the major cause of the problems noticed in the warehouse services. Around one fifth of the respondents indicate that user department negligence in ordering, procurement planning and provision of specification is one cause of the warehouse service inefficiencies. Lack of accountability for inefficiencies in the warehouse service was mentioned as the third possible cause of poor warehouse services.

CHAPTER 5: SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Introduction

This chapter include summary of the findings, conclusion, recommendation and area of further study.

5.2 Summary of Findings

The purpose of this study was to explore gaps observed in SCGEO in inventory control, materials handling, quality inspection, warehouse record keeping and use of inventory management software. To address these gaps the following five research questions were developed based preliminary assessment of the warehouses:

- How is the inventory control process carried out in SCGEO?
- What kind of system were used ensure quality delivery?
- How is the effectiveness of the material handling and storekeeping in the organization?
- Does the record keeping practice of the warehouses capture all transactions in timely fashion?
- Does the introduction of the total inventory management software bring any improvement in the inventory control and record keeping of the office?

To address the research questions rose above, questionnaire, interviews discussion with warehouse personnel, and relevant documents were used to collect the required data. The questionnaire included close-ended and few open-ended questions. Most of the respondents are aged between 20 and 30. First degree holders and above are the major portions who took part in the study. Relevant literature reviews were conducted and data collection instruments developed. The data obtained were analyzed and interpreted by using percentage and frequency. Based on this, the major findings of study are summarized below.

To evaluate the inventory control status of SCEGEO four factors of evaluation were used as adopted from Saxena (2006). The findings of this study indicate that a combined mean value of 2.15 which is a low rating of performance for inventory control. Three factors of evaluation were used assess the status quality inspection activities of the warehouses. Unlike the inventory control rating, the findings of quality inspection assessment showed that a combined mean value of 3.89. This indicates that a

moderately high performance rating is scored in the quality inspection sphere. Warehouse record keeping performance indicators scored a combined mean value 2.44 which is still lower than the required level of performance. Respondents also have clearly shown that the introduction the inventory management software didn't bring any noticeable change in the inventory control and warehouse record keeping. Finally, respondents were requested to rate their overall level of satisfaction concerning the warehouse services and the finding shows a mean value of 1.85 which is at the lower level of excellence in the Likert scale.

A quarter of the respondents indicated that lack of management support and leadership as the major cause of the problems noticed in the warehouse services. Around one fifth of the respondents indicate that user department negligence in ordering, procurement planning and provision of specification is one cause of the warehouse service inefficiencies. Lack of accountability for inefficiencies in the warehouse service was mentioned as the third possible cause of poor warehouse services.

5.3 Conclusion

The findings of this study revealed that high number of respondents have rated the SCGEO warehouse services low with the exception of its quality inspection procedures. Based on the findings of this study, the Researcher put the following concluding remarks.

- The study showed that the organization devised a system of inventory control but the office which is under this study hasn't shown much effort to put it in to practice. Materials which are required to be availed in continuous bases were not identified and maximum and minimum level of stock was not determined. It is observed that some food items purchased for the use of refugees were found expired in the warehouse.

- The information exchange process between warehouse personnel and user departments found to be weak that active operation time of some awards elapsed without distributing those materials purchased and stored in the warehouse from same award.

- Since the warehouses are not properly equipped with pallets and shelves, most materials in the warehouse are not properly kept. It is also an observable fact that some food materials are kept with other non-food items in one warehouse.

- Some sensitive materials and supplies like refrigerators and powder detergents were kept on verandas of office building because of lack of space in the warehouse.

- Similar materials were kept in different warehouse without systematic link that could show actual total stock balance.

- Review warehouse documents indicted that a perpetual updating of inventory level were not made in timely fashion. Most balances seen on the warehouse document are recorded during the time of annual inventory.

- As a result of the above factors, the reliability of warehouse records is compromised and retrieval of prior warehouse transaction data has become time consuming.

- The use of online inventory management software is highly compromised because of lower internet signal strength and frequent interruption of service. This forced the office to use both manual and

  online inventory management system. This in turn caused havoc in the inventory control and record keeping activities of the warehouse.

- A quarter of the respondents indicated that lack of management support and leadership as the major cause of the problems noticed in the warehouse services. Around one fifth of the respondents indicate that user department negligence in ordering, procurement planning and provision of specification is one cause of the warehouse service inefficiencies.

5.4 Recommendations

Based the major findings and conclusion shown above, the researcher recommends the following actions to overcome the problems:

- Supply chain Division of SC and the management of GEO should enforce the implementation of warehouse procedures and create a system follow up to measure the progress made in this regard.

- With the support IT department, warehouse section needs to create information exchange plat form to avail required information about inventory status of materials in stock. Read only access will be granted to users so that they will know the kind and exact quantity of material kept in store and could better plan timely distribution and purchase materials.

- It is observed that the warehouses have limited number warehouse equipment like pallets and shelves. SCGEO needs to assess the situation and supply the required warehouse equipment to protect the materials from spoilage and damage.

- Warehouses needs to be categorized based on the characteristics of the product. Food items are advisable to be kept in a separate warehouse with appropriate care and ventilation.
- The warehouse management system should be offline independent kind so that warehouse activities will not compromised because of internet connectivity. This helps to bring the manual and online system to one offline independent system.
- The managements SCGEO and SC Ethiopia at large should give better attention to warehouses operation. Budget needs to be allocated to avail required equipment and to provide warehousing trainings to warehouse personnel and other key staffs who transact with warehouse frequently. The management needs also to follow up the operations of the warehouse and hold accountable those staff members who are not implementing pre-stated organizational procedures.

5.5 Area for Further Study

The major limitation of the study is its failure to incorporate other pre-delivery and post-dispatch warehouse management functions like warehouse selection and distribution tracking. Therefore, further research could be carried out on the same or other organization to bring out the full picture of the case. It is also possible to further research on the impact of warehouse management on humanitarian program implementation.

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Appendixes

Addis Ababa University
School of Commerce
MA Logistics and Supply Chain Management Questionnaire for Staff Members

Dear respondent: I am Anteneh Berhanu, pursuing a Master of Arts Degree in Logistics and Supply Chain Management at Addis Ababa University. I am conducting a research entitled **"Effectiveness of Warehouse Management in Save the Children Ethiopia-A Case of Gambella Emergency Office"** for the partial fulfillment of academic requirement. This questionnaire is designed to collect primary data for the above mentioned study.

You are kindly requested to spend a few minutes of your valuable time to answer the questions as per the instruction below:

- There is no need of writing your name
- In all cases where answer options are available please put "x" in the appropriate space.
- For questions that demand your opinion, please try to honestly describe as per the questions on the space provided.
- If you need further explanation, you can contact me through my Mobile phone 0911-661215 or email: Antenehb1978@gmail.com.

Please note that the information will be treated with utmost confidentiality & used only for academic purpose.

Thank you in advance for your support & participation!

Section A: General Information

Please tick the box that corresponds with your answer

1. Age
   Below 20 □ Between 31 – 40 □
   Between 20-30 □ Between 41 – 50 □
   Above 50 □

2. Gender
   Male □ Female □

3. Educational Qualification
   Below 10th grade □ Diploma □
   High School graduate □ First Degree & above □

4. Department
   Child Protection □ Host Community Project □
   Support □ Education □

5. Years of service in
   Below 3 □ Between 7 – 10 □
   Between 3-6 □ Above 10 □

Section B: Inventory Control

Please circle your choice where appropriate on the five scale table shown below.

Keys: Strongly Agree (SA)=5, Agree (A)=4, Neutral(N) =3, Disagree(D)=2 & Strongly Disagree (SD)= 1

Focus Area and Statement		**SA**	**A**	**N**	**D**	**SD**
1. Inventory Control						
1.1	Maximum and minimum inventory levels are properly maintained					
1.2	No expired or obsolete materials are kept in store					
1.3	There is a system of identification for fast and slow moving items					
1.4	There is a system of alerting users the inventory status required materials					

Please circle your choice where appropriate on the five scale table shown below.

Keys: Strongly Agree (SA)=5, Agree (A)=4, Neutral(N) =3, Disagree(D)=2 & Strongly Disagree (SD)= 1

Focus Area and Statement		SA	A	N	D	SD
2. Materials Handling & Store keeping						
2.1	Materials are properly sorted in the way that avoid risk of spoilage or damage					
2.2	Important and costly materials are not stored in the open yard without proper care					
2.3	Similar items are kept in one store (not more than one place which are not systematically linked					
2.4	Materials are properly placed in designated places for latter tracing					

Focus Area and Statement		SA	A	N	D	SD
3. Quality Inspection & Warehouse Services						
3.1	Users always check the quality of materials before store receives the materials formally					
3.2	Users get timely request from warehouse personnel to inspect quality of the materials					
3.3	Users are responsive to request of quality inspections					
3.4	The overall warehouse service is satisfactory					

Focus Area and Statement		SA	A	N	D	SD
4. Record Keeping						
4.1	Records in the store are up to date					
4.2	Retrieval of information in store takes not much time					
4.3	The store records are reliable					

Focus Area and Statement		SA	A	N	D	SD
5. Total Inventory Management						
5.1	The introduction of the Total Inventory Management System has improved the					
	inventory control process.					

5.2	The introduction of the Total Inventory Management software has improved the record keeping of the Warehouse					
5.3	The overall warehouse service is satisfactory					

Section C:

1. Do you think the warehouse services have got major problems which needs improvement?
   Yes □ No □
2. If your answer is yes, please state the areas which need improvement in the future.
   _____
   _____
   _
   _____
   _
   _____
   _ _____ .
3. What do you think the root cause or causes of these problems mentioned above?
   □ Lack of manpower
   □ Lack of skill of the warehouse personnel
   □ Lack warehouse personnel motivation
   □ The pitfalls of the system
   □ Lack of management support and leadership
   □ Lack of accountability
   □ User department negligence in ordering, planning, specifications etc □Others (please specify):
   _____
   _____
   _____
4. Do you think the warehouse services have got exceptional strengths which you want to see continued?
   Yes □ No □
5. If your answer is yes, please state those strengths which you want to see replicated.
   _____
   _
   _____
   _
   _____
6. How does the introduction of Total Inventory Management software affect the warehouse services of the unit & service recipient users?

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Addis Ababa University School of Commerce

MA Logistics and Supply Chain Management

Interview Questions for Warehouse Personnel

These interview questions are prepared to collect primary data from Warehouse Personnel's about the activities of the warehouse and the system of handling it. This data is collected to conduct a research entitled **"Effectiveness of Warehouse Management in Save the Children Ethiopia-A Case of Gambella Emergency Office"** for the partial fulfillment of academic requirement.

1) Inventory Control System

1.1 Do you have inventory control system?

1.2 What kind of inventory control system do you use currently?

1.3 Does the system deliver minimum and maximum level of stock?

1.4 Do you have expired materials in store now?

1.5 Does the system have alert system that remind the expiry date of materials in stock?

1.6 Is there a system of identifying fast moving items from slow moving & obsolete items?

1.7 Does the organization have inventory control policy?

1.8 Does the warehouse act in compliance with this policy?

1.9 What problems do you see in the inventory control process?

1.10 What do you think the root causes of these problems?

1.11 Does the introduction of the inventory management software improve the inventory control of the store?

1.12 What challenges have you noticed in the use of the new inventory management software?

2) Materials Handling and Store Keeping

2.1 How do you put materials in the warehouse?

2.2 Do you have the warehouse equipment's like shelves, pallets, weight balance etc.?

2.3 Do you keep materials in the open yard?

2.4 What kind of materials are kept in the open yard?

2.5 Have you observed any loss or damage of materials kept in the open yard?

2.6 Do you keep similar item in a separate store? If so, why?

2.7 What problems do you observe in materials handling and storekeeping?

2.8 What do you think the root cause of these problems?

3) Quality Inspection

3.1 Does the organization have quality inspection requirement before receipt?

3.2 What is the role user departments in quality inspection?

3.3 Do user departments responsive for quality inspection requests?

3.4 Have you faced any challenge concerning this matter before?

4) Record Keeping

4.1 Do you have system of updating store records?

4.2 How much frequent store records are updated?

4.3 How do retrieve information past transactions?

4.4 How long it takes to know the correct status of a stock in the store?

4.5 Does the introduction of the inventory management software improve the record keeping process of the store?