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Analysis of Performance Measurement System in Humanitarian Logistics: the case of Knowledge Management and use in the DELIVER Project at the Norwegian Refugee Council

Gabrielle Martin
Master of Science in International Development Studies

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Gabie.martin@hotmail.ca

Noragric Department of International Environment and Development Studies
The Faculty of Landscape and Society
P.O. Box 5003 N-1432 Ås Norway
Tel.: +47 67 23 00 00
Internet: https://www.nmbu.no/fakultet/landsam/institutt/noragric

Declaration

I, Gabrielle Martin, declare that this thesis is a result of my research investigations and findings. Sources of information other than my own have been acknowledged and a reference list has been appended. This work has not been previously submitted to any other university for award of any type of academic degree.

Signature: 

Date: June 2nd, 2020

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Abstract

As the need for disaster relief continues to grow globally, humanitarian organisations (HO) are under increasing pressure to deliver assistance in a fast and efficient manner. Humanitarian logistics (HL) is at the heart of HO's relief work and underpins their success in delivering basic resource and services to those in special need or difficulty. Although HL plays a central role in achieving cost-effective and efficient humanitarian assistance, HOs have yet to recognize this role and successfully measure their performances. One of the reasons is due to their inability to capture consistent and reliable data from field operations. A well-designed performance measurement systems (PMS) can assist HOs in gathering information to improve efficiency, effectiveness, and that could ultimately guide their decision-making.

This thesis is a case study that aims to examine the implementation of a PMS at the Norwegian Refugee Council (NRC) in Oslo. By focusing on a specific project named DELIVER, that is designed to improve PMS at NRC, this thesis analyse and determine if the information gathered from the project was used in a way that improved efficiency and effectiveness of logistic operations. The qualitative research is based on semi-structured interviews with ten logisticians from different NRC global, regional, and country level offices. Secondary data from peer-reviewed literature on HL, PMS, and NRC documentation was used to compliment the interviews. I use a knowledge management framework in order to analyze and evaluate how successful the PMS was in improving NRC's logistics unit's performance. The findings show that there were improvements in efficiency and effectiveness of NRC's logistics after the implementation of DELIVER. However, NRC is still lagging behind on bringing more recognition to its logistics unit, and DELIVER has not yet completely bridged that gap

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Abbreviations

BSC – Balanced Score Card

CO – Country Office Logistician

HA – Humanitarian Assistance

HL – Humanitarian Logistics

HO – Humanitarian Organisation

IT – Information Technology

KM – Knowledge Management

KPI – Key Performance Indicator

NRC – Norwegian Refugee Council

PM – Performance Measurement

PMS – Performance Measurement System

RO – Regional Office Logistician

SC – Supply Chain

SCM – Supply Chain Management

Chapter I: Introduction

1.1 Background and Problem Statement

In 2019, 33.4 million people were newly internally displaced across 148 countries due to natural disasters and man-made conflicts; the highest figure since 2012 (IDMC, 2020). With millions more still at risk of being affected by natural disasters or conflicts, the need for humanitarian assistance (HA) and relief work is expected to grow globally (OCHA, 2018). This is in part explained by a growing population in developing countries combined with climate change, more intense natural disasters, and an increasing number of conflicts (Majewski et al, 2010).

The number of people in need of HA has increased, yet available financial and material resources have remained inadequate to meet all needs. For instance, only 58% of UN appeals were funded in 2017 (ALNAP, 2018). Linked to the rising number of people needing of aid, the number of Humanitarian Organisations (HO) has also increased yearly. This has created competition for funding. In 2017, most of the available funding went to large international organisations, while small and local NGOs received only 0.4% of all international HA fund (ALNAP, 2018). With funding strained, governments and private donors have been more vigilant and scrutinising about how their funds get used by HOs (Khan et al, 2019; Thomas & Kopczak, 2005).

HOs play a key role in organising and executing humanitarian actions. Humanitarian action is defined as "assistance, protection and advocacy actions undertaken on an impartial basis in response to human needs resulting from complex political emergencies and natural hazards" (Relief Web, 2008, p.31). HA specifically is "aid that seeks, to save lives and alleviate suffering of a crisis-affected population" (Relief Web, 2008, p.31). There are three major categories of organisations providing such assistance; organisations operating under the United Nations, International Organisations, and Non-Governmental Organisations (Balcik et al, 2010). The NRC, on which I will focus for this thesis, belongs to the category of NGOs. Each abide by different rules, but in general operate within the most recognized humanitarian principles of neutrality, impartiality, and humanity (Tomasini & Van Wassenhove, 2009). These three

principles define the space inside which HOs are ensured access to the populations in need and can safely conduct humanitarian work.

The efficiency and effectiveness of humanitarian action is highly dependent on the logistics system within a HO (da Costa et al, 2012). It is estimated that approximately 60 to 80% of HO's funding are related to logistics (Tatham & Pettit, 2010; VanWassenhove, 2006). Humanitarian logistics (HL) is described as " the process of planning, implementing and controlling the efficient, cost-effective flow and storage of goods and materials, as well as related information, from the point of origin to the point of consumption for the purpose of alleviating the suffering of vulnerable people" (Thomas & Kopczak, 2005, p.2). There is growing recognition that the logistic aspects of HA are a key cost driver (Tatham & Pettit, 2010), and that HL can play a role in determining the success or failure of a humanitarian operation (Khan et al, 2019). Kovacs & Tatham (2010) go as far as saying that humanitarian organisations are in essence logistic organisations.

Considering that effective and efficient humanitarian action is dependent on HL, it is critical to measure its performance. HL provides data on all aspects of operation execution; from suppliers' information, transportation providers, timeliness of procurement, to the amount and appropriateness of goods donated (Thomas & Kopczak, 2005). Therefore, it provides a great source of data for analysis and progress tracking within an organisation (Agostinho, 2013). Yet many well-known researchers in the field agree that HL, including performance measurement (PM), has been neglected and is still underdeveloped in the humanitarian sector (Abidi, 2019; Beamon & Balcik, 2008; Blecken, 2010; Khan et al, 2019; Oloruntoba & Gray, 2006; Thomas & Kopczak, 2005; Van Wassenhove, 2006). According to a study by Blecken (2010, p.16), "only 20% of all HOs [included in the study] consistently and thoroughly measure the performance of their supply chain operations" and 55% of the organisations included in the study did not monitor any kind of logistic performance indicators at all. Van Wassenhove (2006) sees the lack of recognition of the importance of HL as a vicious cycle in the sector (Figure 1), which he argues is the main reason why HOs have failed to prioritize HL. The cycle begins when a lack of understanding for logistics functions brings about less inclusion of logistics in planning, making it more difficult to meet funding requirements, which reinforces exclusion of logistics by managers since they see logisticians struggle in their duties. With

increasing pressure on HOs to be transparent and accountable with their operations (Khan et al, 2019), PM needs to be at the forefront of HOs' agendas (Abidi et al, 2014).

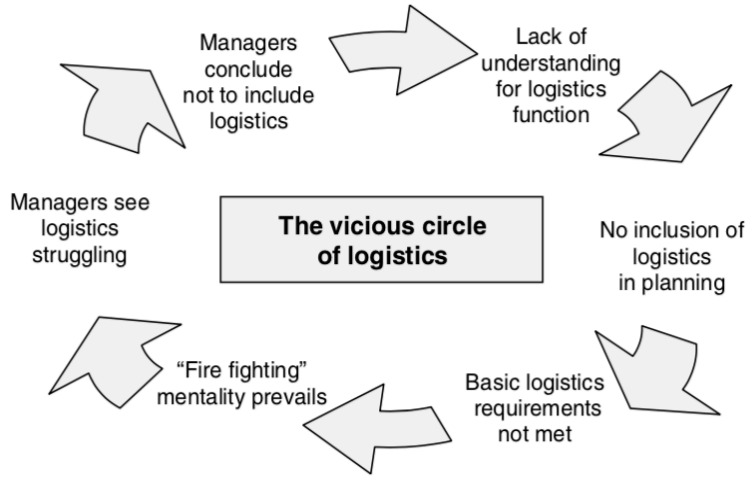

Figure 1 - The Vicious Circle of Logistics. Reprinted from "Humanitarian aid logistics: supply chain management in high gear" by Van Wassenhove, L. N., 2006.

This thesis will focus on PM in HL. A good performance measurement system (PMS) should help guide humanitarian actors in their decision-making, effectiveness and efficiency of their operations, and demonstrate the performance of the supply chain with transparency and accountability (Beamon & Balcik, 2008). Abidi et al (2014) state that a major gap in HL and PM research is that few were empirically tested. In this thesis, I examine DELIVER, a PMS project that was created and implemented at the Norwegian Refugee Council (NRC); a HO based in Norway with field operations in more than 30 countries around the world. This case study presents a good opportunity to gather more empirical data on the usefulness of PM in HL, to identify gaps, and its impact on decision-making in HL. The result of this study contributes to future PMS that can be modeled to improve efficiency and effectiveness of HOs including NRC itself.

1.2 Research Objectives

DELIVER was first piloted for 9 months in 4 country of operations in January 2018 before being officially implemented in September 2018. It had the aim of providing the Norwegian Refugee Council (NRC) with "a clear overview of the ongoing operations in its logistics" and therefore "increasing their performances significantly" (Bjerke & Haleemdeen, 2018, p.4). Since

then, the project has collected monthly data on NRC's logistics' performance in 19 countries (as of January 2020). According to Neely & Bourne (2000, p.5), "the whole process of measuring performance is completely wasted unless action is taken on the performance data that are produced". In this regard, it is not enough to only gather information on logistic operations; this information needs to be analysed into working methodologies or toolkit and made available in a way that is useful and comprehensible to employees at all levels in the organisation.

The main objective of this thesis will be to analyse and determine if the information gathered from DELIVER was used in a way that improved efficiency and effectiveness of NRC's logistic operations. More specifically, the thesis examines how useful knowledge has been created with the collected data from the project to develop a working methodology or toolkit, and how the knowledge was used within NRC for PM purpose. It explores the impacts of the new knowledge on improved control and better decision-making capabilities within logistic operations.

1.3 Research Questions

I. Has the performance measurement system DELIVER created new knowledge that improve efficiency and effectiveness of NRC's logistic operations?

    a. Are logisticians at NRC able to use the knowledge from DELIVER to help identify and eliminate causes of performance breakdown?
    b. Is the knowledge used to do analysis to inform continuous improvement of processes?
    c. Did the increase in data strengthen logistics' voice with suppliers, donors and other NRC departments?

Efficiency and effectiveness are defined according to Neely et al's (1995) definition. Effectiveness is defined as the extent to which customers' (in this case beneficiaries or stakeholders) requirements are met. While efficiency refers to how economically the organizations' resources are used to provide those requirements.

1.4 Relevance of the Thesis

Research in HL is relatively in its infancy compared to its practice. Prior to the 1990s, research on the topic was almost non-existent (Crum et al, 2011). Although possibly used earlier, humanitarian logistics as a concept increased in the scientific and grey literatures after the 2004 Asian Tsunami (Thomas & Kopczak, 2005). The logistical blunder that followed the disaster (organisations struggled to store and distribute goods, locate warehouses, or cooperate with other organisations and local populations), brought to light the importance of HL, but especially its shortcomings (Thomas & Kopczak, 2005). Since then, articles on the topic has doubled; with conferences, research groups, and papers focusing on HL also being established (Crum et al, 2011). According to a study by Behl & Dutta (2019), research in humanitarian supply chain has grown by 200% between 2011 and 2017 (Figure 2).

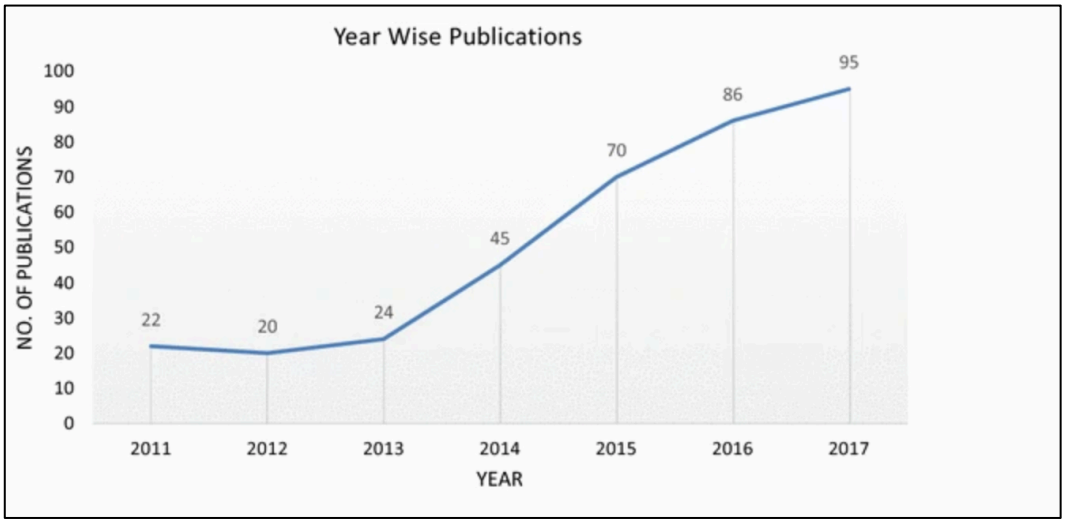

Figure 2 – Number of research publications in the field of humanitarian supply chain. Reprinted from "Humanitarian supply chain management: a thematic literature review and future directions of research" by Behl, A., & Dutta, P., 2019.

As research in HL advances, it has become apparent that for a more effective, efficient, and transparent humanitarian supply chain, efforts need to be focused on managing logistical performance inside organisations (Abidi et al, 2014; Beamon & Balcik, 2008). A majority of researchers agree that an effective PMS would help humanitarian logisticians in their decision-making, improve efficiency of relief operations and increase their transparency (Abidi et al,

2014; Beamon & Balcik, 2008; Bolsche, 2013; Crum et al, 2011; Davidson, 2006; Griekspoor & Sondorp, 2001; Hall, 2008; Khan et al, 2019). However, both Abidi et al (2014) and Crum et al (2011) remark that few empirical studies have been done to demonstrate that. By analysing the case study of NRC's performance measurement system project, DELIVER, this thesis will bring empirical knowledge on the implementation and impacts of performance measurement systems in HL to the existing body of literature. But most importantly, the result of the study could also help NRC in implementing its global 2018-2020 strategy (NRC, 2017). One of its goals is to "become better at applying data to strengthen evidence-based decision-making and programme design" (NRC, 2017, p.14). It is therefore imperative to understand if the project is being used to its maximum potential.

1.5 Thesis Structure

This thesis is comprised of six chapters. The first situated the topic of the thesis with the background, problem statement, the research objectives, questions, and the relevance of the study. The second chapter describes how the current research is related to prior knowledge and establishes the main concepts utilized in the thesis. The literature review has two main purposes; first to get a better understanding of the main concepts related to logistics that is used in this paper, and second to synthetize what is already known in the field of research. The third chapter provides a description of the case study; first looking at the HO NRC in general and the structure of its logistics unit, and how they have designed and implemented the PMS DELIVER. It also presents the theoretical framework and the methodology including the research design and methods. The theoretical framework explores the concept of knowledge management in organizations. The fourth chapter presents the data analysis combining the findings and discussion of the data. In the findings, I examine how DELIVER has impacted the logistics operations at NRC using a knowledge management framework. And lastly, in chapter five I conclude the thesis and suggest recommendations to NRC for improving the DELIVER project.

Chapter II: Literature Review

In this review, the focus will be on three major concepts; that of humanitarian logistics, of the supply chain in the private and humanitarian sectors, and of performance measurement systems within the humanitarian supply chain.

2.1 Humanitarian Logistics

Research in humanitarian logistics (HL) is relatively new (Khan et al, 2019), and the number of studies is still limited compared to commercial logistics (Holguin et al, 2012). While the practice of HL has a history dating back to WWI, the term humanitarian logistics has only been used commonly in the past couple of decades (Crum et al, 2011). This is due to mounting pressure from donors and the public on HOs to be more result oriented and transparent in their operations (Blecken, 2010). Consequently, humanitarian logistics has become the focus of the scientific community and HOs (Kunz et al, 2017). Additionally, there is now a wide consensus that HL can play a major role in determining the success or failure of humanitarian operations (Agostinho, 2013; Khan et al, 2019; Overstreet et al, 2011). Kunz et al (2017) argues that research in HL has potential to create positive impacts on the lives of those in need of humanitarian aid.

Logistics serves as a bridge between disaster preparedness and response, between distribution and procurement, and between field and headquarters (Khan et al, 2019). HL differs from commercial logistics on several issues. Beamon & Balcik (2008) describe the characteristics of HL as the:

- unpredictability of demand, in terms of timing, location, type, and size;
- suddenness of the occurrence of demand in large amounts but with short lead times for a wide variety of supplies;
- high stakes associated with the timeliness of deliveries; and the
- lack of resources in terms of supply, people, technology, transportation capacity, and money.

Yet, its these same challenges that also makes the HL more agile and flexible when dealing with different types of disasters and contexts compared to its private counterpart (Richey et al, 2009).

There are usually three main phases in humanitarian operations; preparation, response, and recovery (Blecken, 2010). The recovery phase can be further divided in two sub-phases; short-term and long-term recovery (Holguin et al, 2012). Short-term recovery usually takes place in chaotic and challenging conditions, whereas the logistic activities in the long-term recovery take place in a more stable environment (Holguin et al, 2012). Depending on the organisation, logistics can include activities in planning, procurement, warehousing, inventory management, fleet management, transportation, asset and building management, information technology (IT), and exportation/importation (Agostinho, 2013; Howden, 2009).

While the importance of HL is better understood and interest in its management has grown, there has been a major shift towards the concepts of the humanitarian supply chain and its management (Howden, 2009; Thomas & Kopczak, 2005; Tomasini & Van Wassenhove 2009).

2.2 The Supply Chain

The supply chain is at the heart of logistics management. Christopher (2005, p.4) defines the concept of general logistic management as " the process of strategically managing the procurement, movement and storage of materials, parts and finished inventory (and the related information flows) through the organisation and its marketing channels in such a way that current and future profitability are maximized through the cost-effective fulfilment of orders". However, these processes go beyond simple logistics and are now part of modern-day concept of supply chain management (SCM) (Christopher, 2005; Larson & Rogers, 1998). In addition to concepts that constitute general logistics management, SCM includes information systems such as integration and coordination of planning and control activities (Larson & Rogers, 1998). Cooper et al (1997, p.2) describes it as "the integration of business processes across the supply chain".

There has been growing interest in the concept of SC and SCM since the 1990s (Lofti et al, 2013). With increased globalized networks, outsourcing, and number of parties involved in delivering products to the final consumers, SCM has become key for an optimal logistic performance in the private sector (Tomasini & Van Wassenhove, 2009a; Zhou & Benton, 2007). Especially, the globalization of SC has forced organisations to look for more efficient ways of

controlling the flow of materials coming in and out (Mentzer et al, 2001). According to Mentzer et al (2001, p.4), SC is "a set of three or more entities (organizations or individuals) directly involved in the upstream and downstream flows of products, services, finances, and/or information from a source to a customer". Whereas the management of the SC is described as "a set of approaches used to efficiently integrate suppliers, manufacturers, warehouses, and stores so that merchandise is produced and distributed at the right quantities, to the right locations, and at the right time in order to minimize systemwide costs while satisfying service-level requirements" (Simchi-Levi et al, 2004, p.2).

A typical SC normally consists of the procurement of raw material, the production of items at one or multiple factories, transport to warehouses for storage, and finally shipment to retailers or customers. According to Lofti et al (2013, p.299), a typical SC includes "a series of organisations that may be involved in different processes and activities to produce products and services for ultimate customers, both upstream and downstream" (p.299). For an optimal functioning SC, every interaction along the chain must be considered, i.e. a *system approach* to SCM (Simchi-Levi et al, 2004). This includes improving customer satisfaction, increasing competitiveness, lowering costs and resources needed, and improving efficiency and effectiveness (Lofti et al, 2013).

The private SC stays connected by flows of information, material, and finance (Lofti et al, 2013; Tomasini & Van Wassenhove, 2009a). The information flow represents order transmission, the material flow represents the physical flow upstream and downstream, and the financial flow represents credit, payments and consignments (Tomasini & Van Wassenhove, 2009a). Moreover, another two additional flows are important when talking of the humanitarian SC; that of people and knowledge (ibid) (Figure 3). People represents the manpower deployed for each project in order to coordinate the supply chain, and knowledge represents the required skills needed for each task to implement new and versatile supply chains.

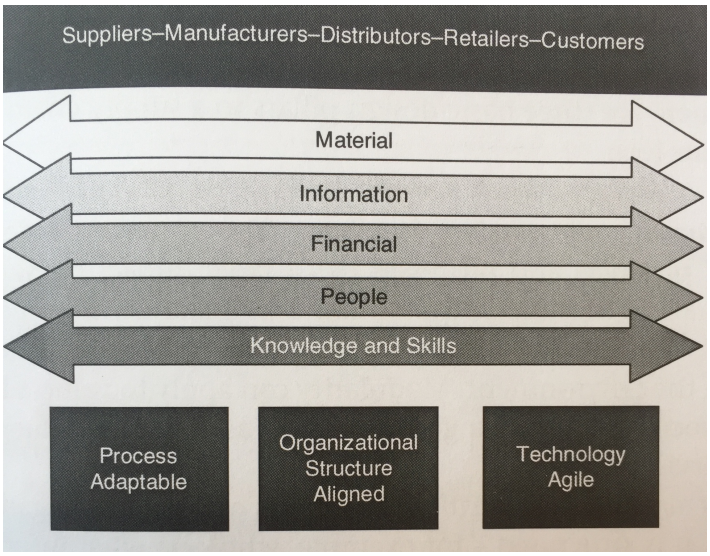

Figure 3 – The Humanitarian Supply Chain Flow. Reprinted from "Humanitarian Logistics" by Tomasini, R. M., & Van Wassenhove, L. N., 2009a.

Each flow is equally important for a properly functioning SC, since each are connected and therefore a disruption in one will impact the others (ibid). However, Lotfi et al (2013) state that many of the issues encountered in the SC is connected to a lack of information and knowledge flow between its members, which requires upstream and downstream coordination and visibility of all functions or processes in the SC (Copper et al 1998). Visibility is best achieved by a strong information system allowing relevant and reliable information to be disseminated through the chain.

2.3 The Humanitarian Supply Chain

The distinction between the concepts of humanitarian logistics and humanitarian supply remains unclear in literature in the field of HOs (Mentzer et al, 2001; Howden, 2009). In fact, the definition for HL is sometimes interchangeably used to describe the humanitarian SC (Overstreet et al, 2011; Pateman et al, 2013; Tatham & Spens, 2011). However, there is a distinction between the two. While logistics is more focused on moving material from a point of origin to a destination, SCM focuses on the relationships between the actors that make the movements possible (Cozzolino, 2012). According to Howden (2009), the Humanitarian SC encompasses all logistics functions, but also units functioning outside of the logistics cluster; such as implementing programs, grants management, activity monitoring, and budget control.

The information flow of the SC is what links these units together, improving the effectiveness of the humanitarian SC (Howden, 2009).

However, there is no single form of the humanitarian SC and therefore no single definition of what it consists of (Oloruntoba & Gray, 2006). This can in part be explained by the *ad hoc* nature of humanitarian aid (Pateman et al, 2013), the complex operating conditions (Van Wassenhove, 2006), and its dependence on foreign leaders, military, or the influence of a wide variety of donors (Oloruntoba & Gray, 2006). While the private/commercial and humanitarian SC seem similar on paper; both deal with preparation, planning, procurement, shipping, storage, tracking, custom clearance, and returns, the main focus of these two SCs is one of the main differences. The private sector focuses on customer services and is influenced by profit and demand. The humanitarian sector will have beneficiaries rather than customers and focuses on providing aid to save lives (da Costa et al, 2012). Due to a general lack of customer pressure or difficulties in measuring success, it is extremely difficult for humanitarian organisations to pinpoint their main goals (Tomasini & Van Wassenhove, 2009a). That is why it is extremely important to have an effective humanitarian SC that is adaptable and agile (Tomasini & Van Wassenhove, 2009a), dynamic (Van Wassenhove, 2006), as well as managing and measuring its practices and performance (Abidi et al, 2014; Pateman et al, 2013). In the case of the humanitarian SC, effectiveness in saving time and costs means more lives saved and more people helped (Cozzolino, 2012).

2.3.1 Main challenges in the Humanitarian Supply Chain

HL is often described as severely lagging behind the private sector (Gustavsson, 2003; Van Wassenhove, 2006), and the humanitarian SC is no different (Blecken, 2010). Managing the SC can be complex (Ergun et al, 2009) and maintaining coherence in the system can be difficult due to the nature of humanitarian work (Tomasini & Van Wassenhove, 2009a). In HL literature, we find six common challenges (in no particular order) that are encountered in humanitarian SCs. These include donor pressure, limited collaboration, managing information and knowledge, lack of skilled staff and high turnover, the unknown variable of humanitarian work, and finally the lack of recognition of the importance of logistic.

I. Donor pressure

Unlike the private sector, there is a multitude of stakeholders involved in the humanitarian supply chain (Cozzolino, 2012; Van Wassenhove, 2006). These stakeholders have a wide range of purposes, interests, or mandates that can influence humanitarian operations (Ergun et al, 2009; Van Wassenhove, 2006). According to a report from ALNAP (2018), only 59% of the funding requests from organisations were met in 2017 compared to 70% in 2008. It seems that in recent year donors have become more demanding in seeing results from organisation, and less tolerant of wasted resources (Thomas & Kopczak, 2005). This can put a lot of pressure on organisations to favor some disasters or conflicts over others to justify their operations (Stephenson & Schnitzer, 2006), or to demonstrate tangible results to the donors to ensure future funding (Griekspoor & Sondorp, 2002; Majewski et al, 2010). While measuring results and costs is considered good practice in HOs, assessments from donors can be a long process and can delay funding (Tomasini & Van Wassenhove, 2009a). Delays in funding can have major consequences for the population in need of assistance and put additional pressure on the humanitarian staff working on the field. In this regard, donors are sometimes even considered to be the true "end customers" of the humanitarian SC (Balcik et al, 2010; Blecken, 2010). According to Balcik et al (2010), the resulting funding structure, amongst other issues, impedes on coordination amongst HOs.

II. Limited collaboration

Mounting pressure from donors and competition for their funding has led to limited collaboration between HOs (Stephenson, 2005). Most HOs tend to keep their strategies and planning to themselves. If collaborations do happen, they usually occur during major disaster operations (Pateman et al, 2013; Thomas & Kopczak, 2005). According to Stephenson (2005), coordination can inquire additional costs, so organisations have to weigh the benefits of such initiatives. The diversity of the HOs and their mandates also makes it difficult for organisations to build relationships (Oloruntoba & Gray, 2006). In addition, coordination between small HOs can be nearly impossible "because there is no information about who they are, what supply they are bringing, their intended destination, or time of arrival" (Holguin et al, 2012, p.500). This limits learning opportunities and coordination that could lead to more effective humanitarian aid (Pateman et al, 2013). Pettit & Beresford (2009) question if collaboration in the humanitarian

can ever exists as it does in the private sector. Building trust between organisations is seen as a way of improving collaboration and sharing of information and resources (idib).

III. Managing information and knowledge

Information and knowledge have a crucial role in the humanitarian supply chain (Howden, 2009). Many of the issues that arises within the supply chain are due to a lack of information sharing between its members (Lofti et al, 2013). Informal relationships that are built with social interactions and collaborations within a SC not only help the process of sharing information, but also creates new knowledge (Pateman et al, 2013). However, it is often difficult for HOs to be able to keep these informal relationships; humanitarian work is demanding mentally and physically and this often results in high staff turnover (Pateman et al, 2013). Creating a solid knowledge base and sharing information becomes even more difficult when new staff need to be introduced to the organisation, position, or work environment several times a year.

Pateman et al (2013, p.88) argues that knowledge is "socially-constructed" and cannot be separated from human activity and "with the knowledge base constantly changing, as is the case in humanitarian aid organisations, it is difficult to strategically plan and manage the disaster response process" (p.88). This is because humanitarian staff are the knowledge owners in HOs (Cozzolino, 2012). Additionally, because humanitarian aid happens in a wide variety of contexts and places, it is difficult to transmit any lesson learnt or new logistical experience to the next field situation (Oloruntoba & Gray, 2006). Structured knowledge systems that would allow experience to be shared and transmitted from one event to the next are often absent in HOs (Cozzolino, 2012). A lack of technology in the humanitarian sector, or its adequate use, further complicates information and knowledge sharing (Gustavsson, 2003; Thomas & Kopczak, 2005). Unlike the private sector that has access to historical data and tracking technology, the humanitarian supply chain management is mostly done manually (Thomas & Kopczak, 2005). HOs are often reticent in spending valuable budget on technology and training towards logistics, this is often reinforced by a lack of understanding of the supporting role that logisticians play in humanitarian operations.

IV. Lack of skilled staff and high turn over

Humanitarian organisations are dependent on human labor and the common values they share in wanting to alleviate suffering in the world. Hence, oftentimes people who come to work in the humanitarian sector are not necessarily there because of their skills, but because of the values and commitment they share in wanting to do good (Thomas & Kopczak, 2005). This is especially true in logistics where staff often have very little formal training in managing supply chains compared to the private sector (Gustavsson, 2003; Majewski et al, 2010; Thomas & Kopczak, 2005). The knowledge scarcity that is created by the lack of formally trained staff greatly affects the functioning of relief efforts, as well as the assessment and planning in logistics (Pettit & Beresford, 2009). In addition to this, logisticians often have every little decision power in humanitarian operations and tend to be excluded from the planning processes (Pettit & Beresford, 2009).

A demanding workload, difficult work conditions on the field, short term contracts, combined with a lack of appropriate resources for logisticians mean that staff turnover remains high. According to Thomas & Fritz (2006), turnover rate could be as high as 80%; leading to big amounts of knowledge being lost in between changes in staffing (Cozzolino, 2012). It also creates challenges of having to re-train staff in between major operations (Pateman et al, 2013).

V. The unknown variable

A less concreate but still real challenge in humanitarian logistics is that of the high unpredictability of work conditions and *ad hoc* nature of humanitarian work (Overstreet et al, 2011). Van Wassenhove (2006, p.480) states that "unlike logisticians the private sector, humanitarians are *always* faced with the unknown". Some of the major unknowns in humanitarian work are time, place, and severity of disasters that humanitarians will be faced with (Balcik et al, 2010; Overstreet et al, 2011). Demands for supplies and the amounts are also highly unpredictable (Murray, 2005; Pateman et al, 2013). Even if an organisation can procure accurate data for an operation, conditions can change fast during or after a disaster putting the supply chain at risk (Van Wassenhove, 2006). Disasters are unique even if occurring in the same area, meaning that historical data is not always useful for predicting demand (Ergun et al, 2009). Often working in hard to reach location, politically and economically unstable regions, and

through social turmoil adds to the danger and stress of humanitarian work (Pateman et al, 2013; Pettit & Beresford, 2009). This also means that there is further uncertainty regarding the availability of infrastructure, local resources, transportation, or communication network (Balcik et al, 2010); or these infrastructures might not even have been available beforehand (Pettit & Beresford, 2009). This, again, further challenges the establishment of an efficient and effective SC.

VI. Lack of recognition of the importance of logistics

Perhaps one of the most discussed issue in humanitarian logistics and its SC, is the lack of recognition of its importance inside HOs and for humanitarian aid in general. Logistics in humanitarian operations often plays a supporting role helping the programs activities come to realisation on the field. It is therefore often considered to be a "back room" activity; often receiving little attention or recognition by donors or the HOs themselves (Thomas & Kopczak, 2005, p.5). This lack of recognition also means that it has suffered a lack of inclusion in planning and decision making (Thomas & Kopczak, 2005; Van Wassenhove, 2006). According to Van Wassenhove (2006), the vicious cycle means that logisticians needs are often not met, resulting in a lack of resources which further impedes their work. Because of underperformance in logistics departments due to lack of funding or resources, donors and HOs are reticent in devoting too much of their budget to it (Majewski et al, 2010; Thomas & Kopczak, 2005). Donors often earmark their donations to be spent directly on victims rather than allowing HOs to spend on behind the scene operations like logistics (Murray, 2005; Oloruntoba & Gray, 2006). This often means that preparation and training between disasters is lacking or non-existent (Murray, 2005; Oloruntoba & Gray, 2006).

2.4 Performance Measurement Systems

Performance of a HOs, during and after a disaster, is key for the humanitarian goal of "saving lives". It is especially crucial in HL which supports the response to humanitarian crises (Larrea, 2013). In 2005 the Fritz Institute published a paper declaring that logistics in the humanitarian sector lacked recognition and that PMS, amongst other solutions, could help bridge the gap (Thomas & Kopczak, 2005). Since then, research concerning PMS in HL has gained momentum in the humanitarian community (Bolsche, 2013). Humanitarian performance as defined by

Ramalingam et al (2009, p.2) is “the collective effects of the independent humanitarian system of international, national, and local agencies, working to save lives, alleviate suffering and maintain human dignity during and in the aftermath of conflicts and disasters”. PM is “the process of quantifying the efficiency and effectiveness of action”, and performance measurement systems is “the set of metrics used to quantify both the efficiency and effectiveness of actions” (Neely et al, 1995, p.80-81; figure 4).

Abidi (2019, p.2) defines PMS as “the processes for setting targets, designing indicators and collecting and analyzing supply chain performance data”. A discerning difference between the two definition is that Neely et al (1995) limits PMS to “a set of metrics”, whereas Abidi (2019) defines it as a whole “process”. This is an indication of how far the science of HL and PM has come since 1995. PMS are no longer seen as just quantitative indicators; they are now understood to be a process from identifying goals to managing changes in organisations’ systems. However, there is still no widely agreed upon definition of PM, and it is still not common practice in HL and its SC (Abidi, 2019; Ramalingam et al, 2009).

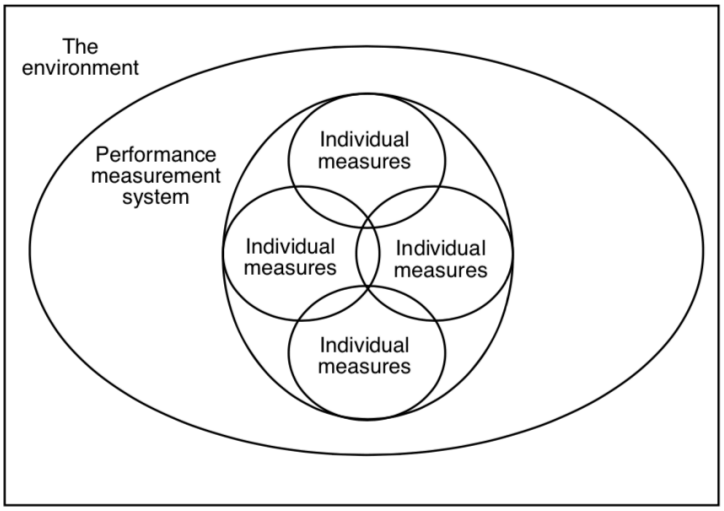

Figure 4 - Framework for Performance Measurement System Design. Reprinted from “Performance measurement system design: a literature review and research agenda” by Neely, A., et al, 1995.

According to Bolsche (2013), PM could be key for HOs to enhance their preparedness and lower consequences for beneficiaries. Not only that, PM is also critical for HOs accountability

(Beamon & Balcik, 2008), and visibility into their operations (Khan et al, 2019). PM could help HOs identify and eliminate logistics performance problems, analyse the data to create continuous improvement and strengthen positions with donors, and ultimately enhance their reputation (Bolsche, 2013). Researchers at the Fritz Institute identified the following potential benefits for agencies using PM metrics (Thomas & Kopczak 2005):

- Use actual performance as input into future operational plans
- Identify and eliminate causes of performance breakdowns
- Use analysis of current performance to inform continuous improvement of processes
- Use actual data to strengthen voice with donors, suppliers and logistics service providers
- Report performance to donors and the media to enhance the reputation and image of logistics and of the aid agency

PM establishes relationships between decision variables and performance output leading to the creation of PMS (Blecken, 2010). Pettit & Beresford (2009) identifies three requirements to implementing PMS in HOs as; recognizing what is important to fulfill the organization's core strategy (if a metric is not critical to the core strategy then it should not be recorded), there need to be consistent and accurate data, and finally implementing change management and committing to assessing performance. However, Beamon & Balcik (2008) states that there can be no specific metrics applicable to all HOs, each system has different goals, objective and operating environment.

A commonly used PMS in both the private and public sector is that of the Balance Score Card (BSC) (Abidi, 2019; Anjomshoae et al, 2017; Gunasekaran & Kobu, 2007). The BSC was developed by Kaplan & Norton (1992) to remedy the measurement gaps in the financial focus reports used at the time to measure performance in organisations. The new BSC model integrated three more perspectives to the financial one; that of the customer, internal processes, and learning and growth (Kaplan, 2001) (Figure 5). Each perspective includes leading and lagging indicators; the lagging indicators are outcome measures demonstrating the results of strategies, and the leading indicators are driver measures indicating the changes that will affect the outcome measures (Anjomshoae et al, 2017). The BSC therefore measures an organisation's

performance in a more integrated manner, providing a measure between financial and non-financial results (Krauth et al, 2005).

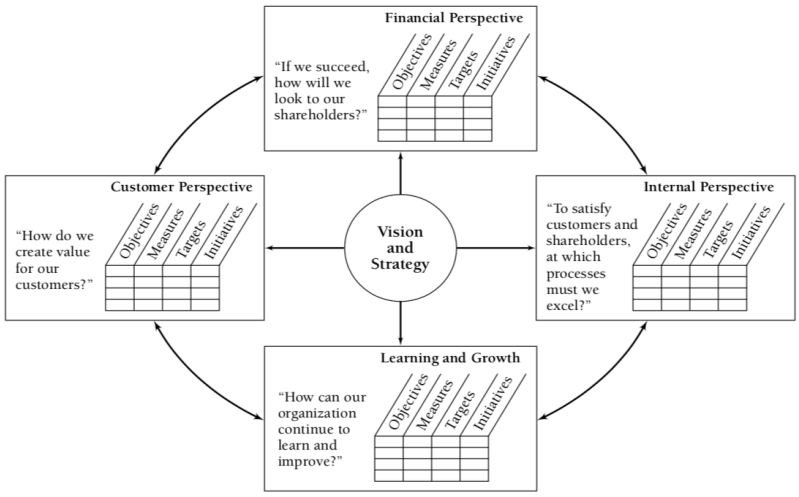

Figure 5 – The Four Perspective of the Balance Score Card. Reprinted from "Strategic performance measurement and management in nonprofit organizations" by Kaplan, R. S., 2001.

For DELIVER, the case study referenced by this research paper, Anjomshoae et al's (2017) dynamic based score card (DBSC) was used as the basis for the PMS. The DBSC model integrates dynamic attributes that helps bring a more holistic picture of BSC and helps bridge deficiencies found in implementing the BSC model in the humanitarian field (ibid). The DBSC model, compared to the BSC, can engage a wide range of stakeholders and their diverging policies in the design process (ibid). This model, in short, helps better capture the complexity of humanitarian operations, the multitude of stakeholder involved, while allowing the organisations to see the effects of their policies on their operations.

2.4.1 Challenges in measuring performance in the Humanitarian Sector

While much of the research on performance measurement agrees that it is vital for HOs to remain accountable, efficient, and effective, the implementation of PMS remains challenging in the humanitarian sector. Specifically, the unique characteristics of humanitarian work makes supply chain performance measurement difficult, i.e. their performance criteria are often ambiguous, the outcomes of projects are difficult to measure, and there is a variety of goals and interests between the stakeholders (Beamon & Balcik 2008). All these challenges impact what

Gunasekaran & Kobu (2007) call the bigger challenge; that of identifying what to measure for value-adding areas of the organisation and the factors that will ultimately affect the processes that create more wealth for end "customers". Abidi (2019) lists more challenges that makes PM difficult. These includes chaotic environments and lack of resources, lack of recognition of the role of logistics activities, the inability of field workers under time pressure to capture accurate data, and the lack of motivation for measurement in the non-profit sector. Some of these challenges mirror previously mentioned challenges in the functioning of the humanitarian SC. One recommended areas of improvement to address these challenges is that HOs need to focus on change in organizational culture (e.g. adopt measurement performance practice in the commercial sector) so that processes can be measured accurately and periodically (Larrea 2013). It is not uncommon to encounter resistance from staff to the new processes involved in measurement frameworks (Larrea, 2013). However, managing change culture is critical because people from various departments will be involved in the process (Davidson, 2006).

Chapter III: Methodology

3.1 Case Study Description

The research questions of this thesis focus on analysing the impact of DELIVER on logistics operations within the humanitarian organisation NRC. This section will offer a brief overview of NRC and the implementation of DELIVER.

3.1.1 Norwegian Refugee Council

The NRC is Norway's largest international humanitarian organisation working "to protect the rights of displaced and vulnerable people during crises" (NRC, 2019, p.3). In 2018, NRC worked in protracted crises across 31 countries, delivering humanitarian aid to approximately 8.5 million people in need through programme activities on the field (NRC, 2019). NRC works within the humanitarian principles in six areas of expertise: 1) shelter and settlements, 2) livelihood and food security, 3) information, counselling and legal assistance, 4) education, 5) camp management, and 6) water, sanitation and hygiene (NRC, 2019). Moreover, NRC advocates at the local, regional, national, and global levels to decision-makers in order to ensure the rights of displaced and vulnerable populations. In 2018, half of NRC's funding came from 3 main donors, the Norwegian Ministry of Foreign Affairs (NMFA), the European Union's

European Community Humanitarian Office (ECHO), and the United Nation High Commissioner for Refugees (UNHCR) (NRC, 2019).

NRC's head office is situated in Oslo where the organisation engages in fundraising, advocacy, and on issues concerning refugees and displaced population. They also have representation and regional offices in various global location. NRC's is organised in five main departments; organizational development, partnership and policies, external relations, field operations, and NORCAP. The logistics unit is part of the organizational development department that also includes finance, human resources, ICT, risk management, and strategic planning and development.

3.1.2 NRC Logistics

All logistics activities at NRC are guided by the Logistics Handbook V2.4.6. This handbook, which was developed by the logistics department at the Oslo head office, includes referential material needed for logistics functions on the field. The handbook "outlines the common principles, policies, standards and guidelines for logistics across all of NRC's operations globally" (NRC, 2019a, p.12).

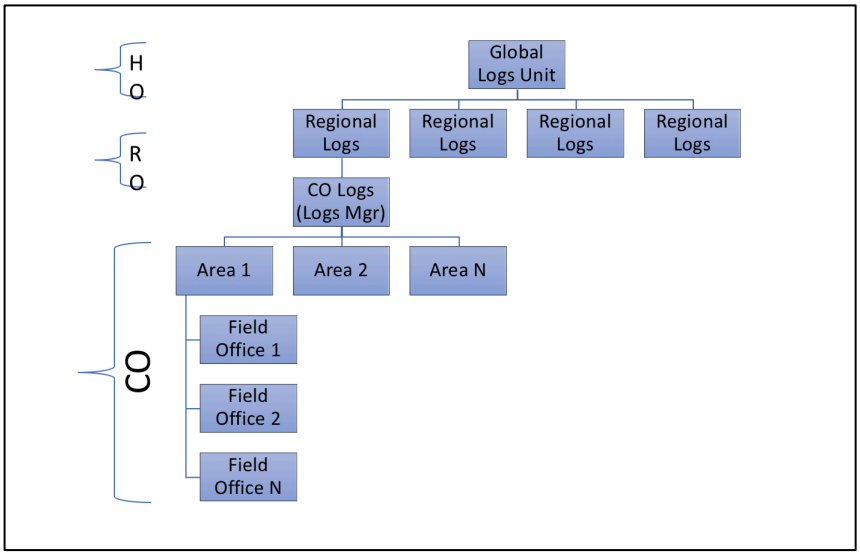

Figure 6 – Simplified Logistics Unit at NRC, Source: NRC.

Concentrating all logistics related information in one place allows NRC to ensure consistency across all its operation and to provide transparency to its logistics activities (NRC, 2019a). The

handbook also includes annexes used for the purpose of documenting and tracking procurement, fleet management, asset management, and warehousing. These annexes are used to collect consistent and streamlined data for the PMS DELIVER.

The logistic unit at NRC is comprised of multiple levels of leadership (Figure 6). At the top level, we have the global logistics office in Oslo (HO in figure 6) working mostly on the development of logistics strategy, planning, and policies. The regional logistics offices (RO in figure 6) take care of compliance and oversee the country level logistics offices (CO in figure 6) for each of the countries included in their regions. NRC's regions are divided into four; East Africa and Yemen (EAY), Central and Western Africa (CWA), Asia-Europe and Latin America (AELA), and the Middle East (MERO). The country office logisticians are involved in logistics operations and collect reports and monthly data from the area offices. Each country office can have multiple area offices; where the logistics coordinators are overseeing logistics activities in the smaller field offices. The data for DELIVER can be collected either by field logisticians at the field offices, or by logisticians at the area offices working on specific logistic components; i.e. procurement manager, fleet manager, asset manager, or warehousing officers. The country office logisticians will collect the various logistics reports from the area and field offices and compile the key performance indicators (KPIs). Finally, the KPIs will be reviewed at the regional level and the final version sent to the head office.

3.1.3 DELIVER

DELIVER was created to measure the performance of logistic operations inside NRC. This project is unique in PMS in that it was piloted and implemented without having a designated budget from NRC or from external donors[1]. It did, however, benefit from the time and work of multiple master students who studied PMS at NRC as part of their masters' theses and with some students who interned with NRC in logistics.

Bjerke & Haleemdeen (2018) first designed DELIVER in January 2018 with NRC as part of their thesis project submitted to BI University. The first step of their project, identifying the

[1] Personal interview with global logistics at NRC (February 20, 2020)

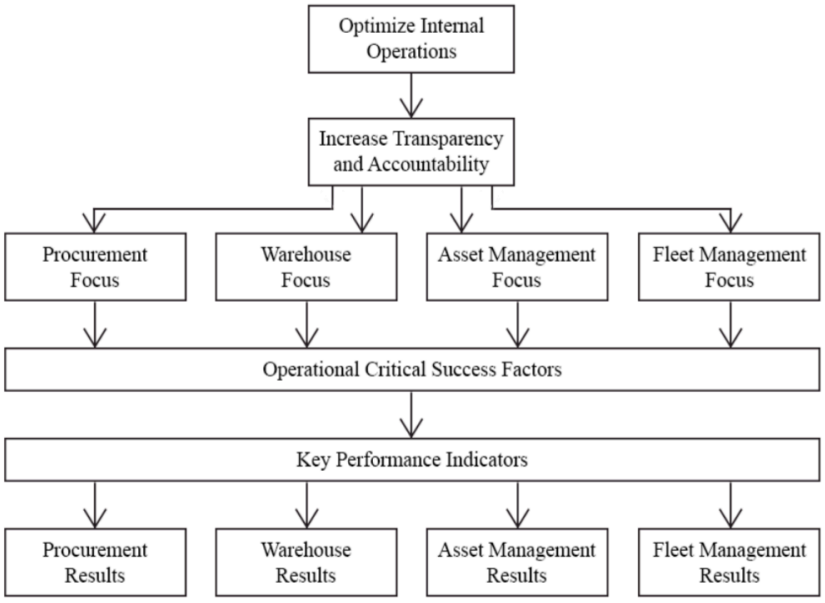

Figure 7 - Strategic Design and Focus Area for DELIVER. Reprinted from "Measuring performances for procurement, warehousing, vehicle fleet management and asset management in humanitarian organisations - A case study of Norwegian Refugee Council" by Bjerke, P. & Haleemdeen, S., 2018.

goals of NRC and developing the appropriate KPIs, was adapted from Parmenter's (2015) framework on designing KPIs (Bjerke & Haleemdeen, 2018) (Figure 7). They developed this model based on the objectives of the organization to optimize internal operations and to increase transparency, accountability, and donor contributions to the organization (ibid). It measures performance by generating KPIs with data collected monthly on the four focus areas in logistics; warehouse management, fleet management, procurement, and asset management. The second step of their research project, designing the implementing process of the project, is also adapted from Parmenter (2015) (Figure 8). Bjerke & Haleemdeen's (2018) design is based on six foundation stones; organization-wide understanding of KPIs definition, collaboration with staff, transfer of power to the front line, measure only the absolute necessary KPIs, abandon processes that do not yield results, and appointment of a home-grown chief measurement officer. According to Parmenter's (2015) framework, these need to be laid down before a successful PMS can be implemented. Bjerke & Haleemdeen (2018) chose this design to "incorporate the performance measurement system to the management […] for the successful execution of the KPIs" (p.22).

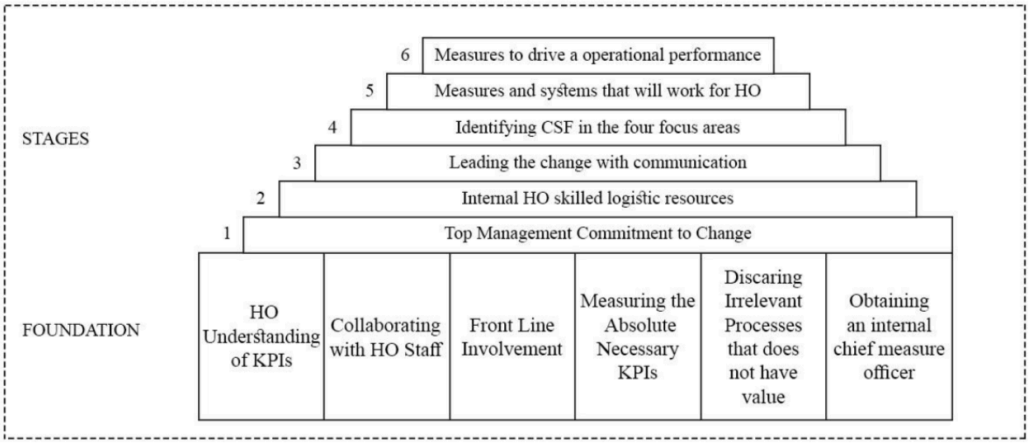

Figure 8 – DELIVER's Performance Measurement Process Design. Reprinted from "Measuring performances for procurement, warehousing, vehicle fleet management and asset management in humanitarian organisations - A case study of Norwegian Refugee Council" by Bjerke, P. & Haleemdeen, S., 2018.

For the third step, Anjomshoae et al's (2017) dynamic-based balance scored card (DBSC) model was used to identify the KPIs that are now being collected with DELIVER (Bjerke & Haleemdeen, 2018) (Appendix 1).

Bjerke & Haleemdeen's (2018, p.3) overall research objectives were to give NRC "a clear overview of the ongoing operations in NRC logistics" and to also provide the organisation with "a broader understanding of the importance of measuring their internal performances and its impact on the overall organisation". The global logistics unit at the Oslo office has identified the following key objectives for DELIVER;

- Empower decision-makers with relevant evidence for making optimal decisions
- Driving costs and processes' efficiencies
- Enhancing accountability and transparency

These objectives were presented at a discussion organized to highlight the progress of DELIVER with the Norwegian association for purchasing and logistics (NIMA) in 2020. My thesis will build on this initial research and go a step further in order to analyse if the information collected was used purposefully to bring changes in efficiency and effectiveness at NRC.

The project was first piloted in four countries. As of January 2020, it has been implemented in 19 countries. Data is collected monthly and entered into standardized NRC reports. These reports are then reviewed by the COs and ROs before being submitted to the Oslo head office (Appendix 2). All monthly reports are then added to a master data file before being generated into visual graphics on the business analytic program PowerBI. A summary of the raw data and the visual graphics are updated each month by the head office on the NRC logistic office 365 website. The information gathered from the data collected has been used for the first time to create the NRC logistic compliance report in May 2019.

3.2 Theoretical Framework

This study utilizes Choo's (1996) theory of "the knowing organisation", and Guribie & Tengan's (2019) knowledge management implementation framework to analyze and organize the findings of this case study. But first, I start by providing the definition of knowledge management.

3.2.1 Knowledge Management

Knowledge management (KM) has been widely accepted as a concept for more than 30 years in academic research (Girard & Girard, 2015). It is also widely known and practiced in large organisations and companies. According to Prusak (2001, p.1002) KM came from the need of newly globalized organisations to ask themselves "What do we know, who knows it, what do we not know that we should know?". KM systems "make visible and measurable what is otherwise latent and presumably inefficient" (Demarest, 1997, p.382). While there exist a wide variety of definitions of KM across disciplines (Girard & Girard, 2015; Shin et al, 2001), this thesis will be utilising O'Dell & Grayson's (1998) well known definition of organizational KM. They describe KM as a "strategy of getting the right knowledge to the right people at the right time and helping people share and put information into action in ways that strive to improve organizational performance". There is usually a distinction made between knowledge, information, and data in literature (Figure 9). Data is usually understood as facts or figures without any interpretation (Choo, 1996; O'Dell & Grayson, 1998). It is information collected for a particular purpose (Tatham & Spens, 2011). Good information does not necessarily mean effective coordination on the field; data needs to be turned into information, information needs

to be shared through good communication, then it can evolve into knowledge when interpreted based on previous experiences (Tomasini & Van Wassenhove 2009a). Whereas information is created by interpreting, verbalizing, or analyzing raw data to reveal patterns or context (Tatham & Spens, 2011). Knowledge then, is information that has practical value or information put in action (O'Dell & Grayson, 1998). However, Alavi & Leidner (2001) disagree with this idea, and instead insist that there is no "raw data" per say. They add that all data has already been influenced by the processes that led to its identification and collection. Knowledge can further be divided in two categories; tacit (personal knowledge) and explicit (formal knowledge).

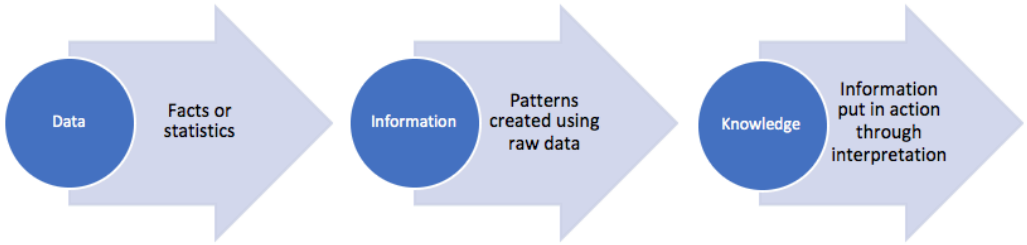

Figure 9 – Process from data collection to knowledge creation

One can't have too much knowledge, but it is possible to have too much information in an organisation (O'Dell & Grayson, 1998). However, simply knowing that knowledge exists is not enough. An organisation must ensure that knowledge is properly shared, understood, and that actors are able to adapt and apply the knowledge to new situations to finally create new knowledge (O'Dell & Grayson, 1998). This is called the knowledge transfer process (Figure 10).

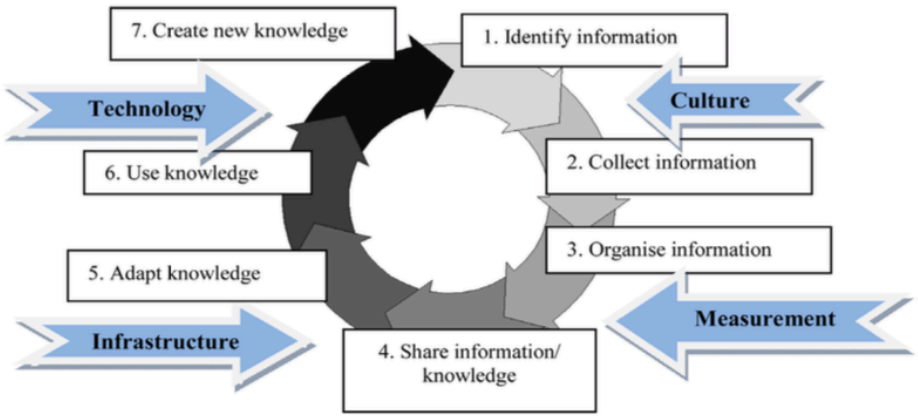

Figure 10 – Knowledge Transfer Process. Reprinted from "If only we knew what we know: Identification and transfer of internal best practices" by O'Dell, C., & Grayson, C. J., 1998.

Alavi & Leidner (2001) identifies fours modes of knowledge creation; socialization, externalization, internalization, and combination. Socialization refers to creating knowledge through social interactions and shared experiences. Combination refers to the creation of new explicit knowledge by reorganizing or synthetizing existing explicit knowledge (i.e. literature reports). Externalization refers to converting tacit knowledge to new explicit knowledge (i.e. lesson learned), while internalization is the creation of new tacit knowledge from explicit knowledge (i.e. learning from discussions).

It is also important that not only the right knowledge is created, but that it is evenly distributed to all organizational levels (Demarest, 1997). Knowledge need to travel vertically and horizontally, and in the case of HOs, through the three main operational levels; field, SC, and theater levels (Tomasini & Van Wassenhove, 2009a). The field level is often the main source of information and knowledge due to the proximity to the events and beneficiaries (ibid). In the case of DELIVER, the field level is where all the data is gathered and collected. The field level is also where logisticians encounter a high number of the HL challenges described above. The SC level is where knowledge can be created and transferred between organizations (ibid). This intra-organizational knowledge transfer can help improve the performance of the SC. Finally, the theater level is what Tomasini & Van Wassenhove (2009a) call "the big picture level". This is the knowledge about the cultural context surrounding an operation; it can include the market,

country's economies, or even political dynamics. For the purpose of this thesis, will be focusing on the KM inside the organization.

KM is especially important for HOs, since these organisations must collect, analyze, store, and communicate facts in short periods of time (Zhang et al, 2002). Information in humanitarian action is an essential resource that translate into effective and flexible SCs and accuracy in logistic operations that can save lives (ibid). Applied to performance measurement projects like DELIVER, KM could help actors make sense of overwhelming amounts of data and information correctly, and most importantly to make good use of it. In order to understand how DELIVER's has impacted knowledge transfer within logistics at NRC, Guribie & Tengan's (2019) KM framework was used to analyze the findings.

3.2.2 Knowledge Management Implementation Framework

Guribie & Tengan's (2019) knowledge management implementation framework was developed for the Ghanaian construction industry. Its design is based on perceived gaps in existing KM frameworks, and to alleviate KM implementation challenges. The framework begins by asserting the need for firms to include KM as a strategic objective into their overall business strategies (ibid). Figure 11 shows the five keys steps in the KM processes; identifying knowledge, capturing & storing knowledge, knowledge transfer & sharing, knowledge acquisition & application, and knowledge creation. For each step, methods and tools have also been identified to help with the processes. This particular framework emphasizes the importance of having KM culture, technology, infrastructure, and periodic assessment of the KM processes in the organization.

Guribie & Tengan (2019) argue that the implementation of their KM framework will facilitate stakeholder involvement in organizational structures. It will also ensure that best practices are known from top to bottom in organizations. Moreover, it helps to understand whether knowledge is leading the success of real-time decision making and performance improvement. While this particular framework was tailored for the construction industry, it has the potential to be applied to other industries.

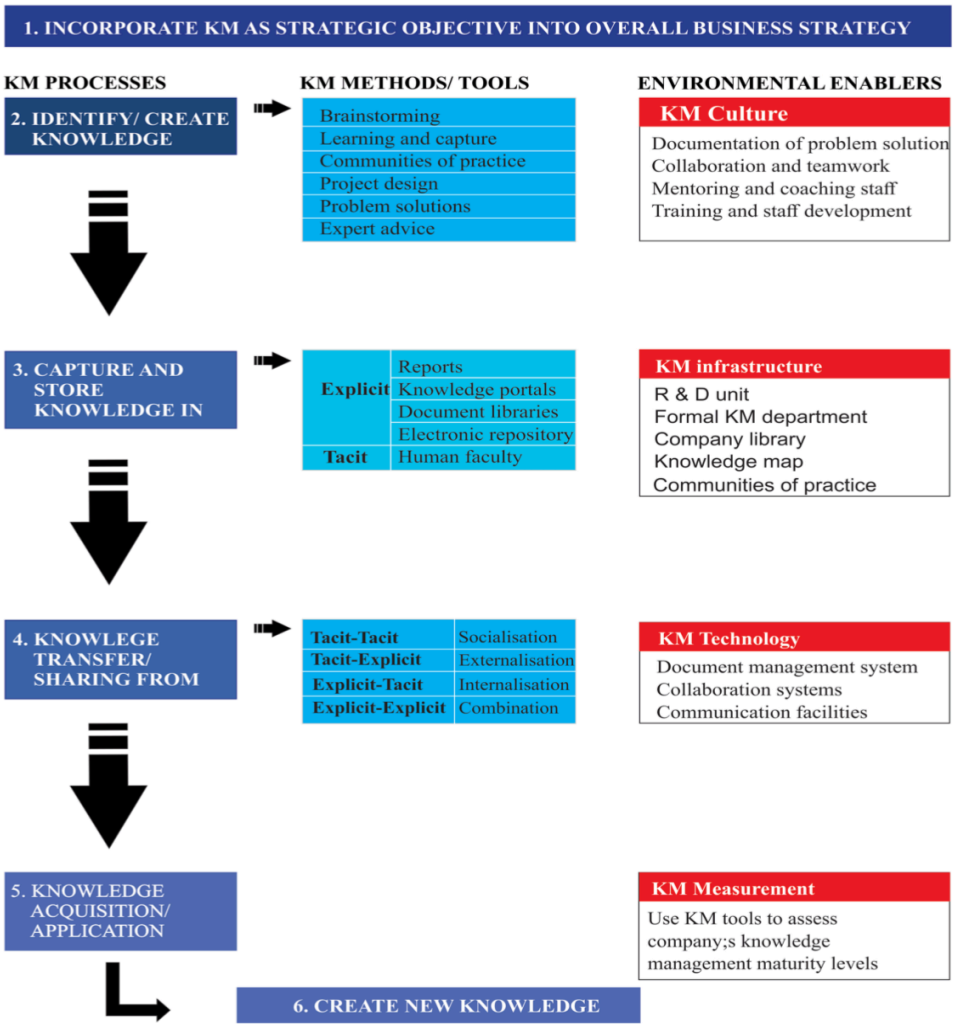

Figure 11 – Knowledge management implementation framework. Reprinted from "A Proposed Knowledge Management Implementation Framework for the Ghanaian Construction Industry" by Guribie, F. L., & Tengan, C., 2019.

3.2.3 The Knowing Organisation

Choo's (1996) theory of "the knowing organisation" interconnects three KM models to create a framework for a perceptive, wise, and decisive organisation. The three layers consists of *sensemaking, knowledge creation,* and *decision-making* which finally leads to organisational action (Figure 12). According to Choo (1996), the holistic view that emerges from a combined KM model supplies the missing pieces necessary for an optimally functional KM system.

This KM model has three different layers (Choo, 1996). The first layer of the model, sensemaking, deals with information about the organisation that is sensed to construct a meaning. This is where actors choose what information is most important and form possible explanation based on past experiences. This first step provides context for all organisational activities and will guide the next step of knowledge creation (ibid). Knowledge creation is where the main information selected in the previous step is converted into knowledge. The conversion can be helped by actors' sharing their knowledge, or by more formal channels (ibid). If there is sufficient understanding and knowledge, the organisation is then ready for action (ibid).

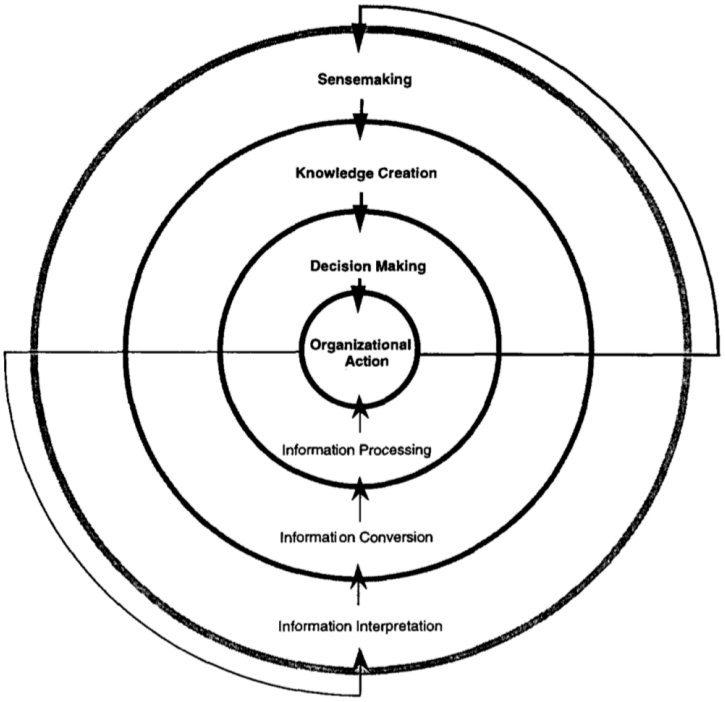

Figure 12 – The Knowing Organisation. Reprinted from "The knowing organization: How organizations use information to construct meaning, create knowledge and make decisions" by Choo, C. W., 1996.

In the final step of decision making, information is processed in order to pinpoint available alternatives to then decide on the best course of action. This can be done by adopting criteria to follow when collecting information, and when designing and evaluating alternatives (Choo, 1996). The resulting organisational action will then produce new information which then can be interpreted, beginning a new cycle (ibid).

My thesis uses Choo's (1996) model in order to understand the movement of information and knowledge creation within NRC, and DELIVER is used as a case study of such KM within the broader organisation.

3.3 Methodology

In this section, the chosen research design, method, the data collection process, and finally the data analysis used will be explained as well as limitations. The chosen methodology is largely based on Majewski et al's (2010) framework for its simplicity and applicability to the study (Appendix 3).

3.3.1 Research Design – Case Study Approach

This research design provides a structure that guides the research method and the subsequent data collection and analysis (Bryman, 2012). A case study design was used for this thesis; it allowed for a detailed and intense analysis of a single case (ibid). Bryman (2012) suggests that a case study should be used for instances where the "case" itself is the focus of interest of the study. It is also used when there is a need to explore a phenomenon in its natural context (Crowe et al, 2011). According to Crowe et al (2011), the case study approach lends itself well to looking into the *how, what, and why* of more explanatory questions. Stake (2008) identifies three types of case studies; the intrinsic, the instrumental, and the collective case study. The intrinsic case study is chosen when a case is of particular interest. It does not necessarily represent other similar cases or has a unique problem to solve (ibid). Whereas the instrumental case study facilitates understanding the particular issue or to draw generalizations (ibid); the case study itself is used to support to researcher's external interests. And the collective case study is an instrumental case study extended to several cases (ibid).

For this thesis I used the intrinsic case study design. The case study design suited my thesis as the focus is exclusively on the DELIVER project at NRC and its particular context. This design helped with elucidating the unique features of the case and to examine the interactions within its contexts (Yin, 2013). My methodology follows Crowe et al (2011)'s approach. Crowe et al (2011) identifies four major steps in conducting case studies; defining the case, selecting the case, collecting the data, and analysing/interpreting the case study. The case is defining by a

well formulated research question informed by existing literature and prior knowledge of the theoretical settings (ibid). The case also has a well-defined boundary (in this case NRC and their project) defining the relevant social groups, organisations, and type of evidence collected. In the case of an intrinsic case study, the selection is based on the uniqueness and merits of the case itself (ibid). For the collection of data, Crowe et al (2001) recommends using multiple sources of data, this in order to help with increasing internal validity of the study. Lastly, data was organized and coded to identify key issues both from literature and the data to be easily retrieved later on (ibid).

3.3.2 Research Methods

This study is qualitative in nature, allowing me to take human interests into account in the study (Bryman, 2012). I used this method to collect qualitative data using individual interviews, combined with secondary data in the form of a literature review and documents analysis. Thus, primary data from interviews, secondary data, peer-reviewed literature, and document analysis were used. I conducted 8 online and 2 in person interviews between November 2019 and March 2020 with logisticians employed at NRC. In total 10 interviews were done with interviewees stationed in 8 different countries.

3.3.2.1 Interviews

I used semi-structured interviews. I prepared questions and topics with varying sequence of the questions for flexibility (Bryman, 2012). The questions were general compared to a structured interview, which allowed me more leeway to ask follow-up questions or change directions if pertinent information came to light (Bryman, 2012). Since most of the questions asked were referring to the personal experiences or opinions of the interviewees, this form of interviewing suited my research. The interviews helped to uncover and portrayed the multiple aspects of the case. A semi-structured format allowed me to focus on the point of view of the interviewees, rather than directing the interviewee in the direction of the research. A research-question-based set of questions were developed to ensure that the questions and issues pertinent to this study were answered (Stake, 1995) (Appendix 4). Some of the interview questions were modified, changed, or removed in order to reflect the informants' work positions.

According to Stake (1995), the researcher should already understand who the best persons are to interview to understand the case whether atypical or not. In this case, the participants selected were logisticians working at NRC, more specifically logisticians working with DELIVER. Since the aim of this research is to understand the impact of DELIVER on the logistic department's functioning, it is natural to interview logisticians at NRC who have worked with the project. The first informants were the regional logistics advisors (RO) from all four regions at NRC; they have been involved in the project since its implementation and have a lot of knowledge of its impacts on logistics operations.

In order to gain more knowledge of how DELIVER has impacted logistic operations, country logistics managers (CO) and logistics coordinators working in various NRC country offices were also interviewed. They were chosen through a snowball sampling design. This sampling design is a technique which allows the researcher to find relevant informants proposed by the initial sampled group (Bryman, 2012). The ROs recommended logisticians from countries within their specific regions, and then helped me get in contact with them through email. Interviews were done with two logisticians from AELA, two from CWA, and one from EAY. No country level logistician in the MERO region replied to my inquires for interviews. The global logistic advisor at the NRC head office who oversees DELIVER was also interviewed. This helped getting an understanding of why the project was first created, its beginnings, and where the project is headed in the near future at the organisation.

Eight of the individual interviews were done online with the program Skype. The logisticians who were interviewed work and travel in several countries around the world, which made online interviews the only feasible option. The recommended informants were first contacted by email with an explanation of the objectives of the thesis, and to ask for their permissions. A sample of the interview guide was sent to the interested parties, and appointments were scheduled for online interviews.

3.3.2.2 Secondary Data

Documents can often serve as substitute for activities/events that the researcher could not observe firsthand (Stake, 1995). Analysing secondary data helped me to fill the gap from the small amount of primary data that was collected by interviews.

The main source of secondary data came from the literature review on logistics, humanitarian logistics, performance measurement systems, and knowledge management. These fields of research bring different perspectives into the research that helped me to conduct further analysis. The design and implementation of DELIVER was part of a thesis research by Bjerke & Haleemdeen (2018), which provided crucial information on the design of the project and its piloting for implementation. Finally, NRC documents were also consulted. The main documents used were logistics compliance reports (also called t-reports) from 2017 and 2019, and success stories recorded by logistics.

3.3.3 Limitations

The small sample size of this thesis poses several limitations. Several of the identified interviewees did not reply to my requests. This means that not all regions where NRC operates are represented equally in my thesis. The scope of my findings is also affected by the limited data.

The ability to generalize within, and outside the case is also a concern. The interviewees work in different countries, environments, and contexts; this creates difficulties to generalize the findings to other country offices at NRC. Yin (2013) suggests that linking these abstract findings to relevant literature by identify overlaps and gaps helps with the process of generalizing. The findings of this thesis are also difficult to generalize to other NGOs and HOs. The case study represented in this thesis is very specific to NRC, and some of the results from the interviews are subjective to the informant's personal experience.

I have previously worked with NRC during a 6 months internship from January 2019 to July 2019. My main tasks during the internship mostly revolved around overseeing the good functioning of DELIVER. Therefore, in this research I am aware that my involvement in the

project and my work experience in NRC might have influenced my framing of the HL experiences. Thus, I may not have detached myself from a socially constructed knowledge in HL research. However, I tested the validity of my conclusions, through feedback from my supervisor and key people in NRC when generalizing from the data. I made sure that all references to my personal experiences came forth clearly as opposed to the empirical findings of the research. Thus, impartiality of the research was ensured to give insights to strengthen policies and practices for effective and efficient HL operation in NRC and other HOs.

3.3.4 Data Analysis

All interviews were audio-recorded and verbatim was used for transcription. I used a thematic approach to analyse the data. Guribie & Tengan's (2019) KM implementation framework was used for identifying themes relevant to my research question and objective (Figure 11). The framework was used to analyse the data and determine if DELIVER was successful in managing and creating new knowledge to improve efficiency and effectiveness of NRC's logistics operations. It focusses on five variables; KM strategies, processes, methods/tools, knowledge conversion, and environmental enablers.

Data from the interviews and NRC documentation were divided in themes based on the six steps in Guribie & Tengan's (2019) KM framework; identifying knowledge, capturing & storing knowledge, knowledge transfer & sharing, knowledge acquisition & application, and knowledge creation. In the case of DELIVER, identifying knowledge was part of the process of first identifying the KPIs during the project design. Capturing & storing knowledge is done by collecting data in the field and storing it in excel files and annexes for the monthly reports, the recording of logistics' success stories, and the t-reports. Knowledge transfer & sharing happens through communication and collaboration between the different levels of the logistics unit, between logistics and other NRC departments, and between logistics and upper management. Knowledge acquisition & application happens during meetings, decision-making, and with the help of logistics data analysis. Lastly, if those five processes are well managed, new knowledge is created.

In order to identify and isolate pertinent information from the interviews, a color-coding system was used. The focus of the coding was on identifying the major issues and improvements

regarding DELIVER; especially those related to knowledge transfer and information sharing. Issues in general logistics, outside of DELIVER, were also coded. Each category of data was given a color and coded in each interview transcript. To limit analysis to the data that was helpful for the thesis, Vaughn & Turner's (2016) set exclusion criteria was applied to some questions. This was applied to questions that were either miss-interpreted by the interviewee or did not help answering the RQs. This covers the four NRC regions; AELA, CWA, EAY, and MERO.

T-reports

Logistics t-reports (or compliance monitoring reports) are published three times a year. These reports are a tool to help the head office monitor how well each country is performing, and how closely they follow logistics processes dictated in the logistics handbook. The report analysed from 2017 is based on a set of questions sent to each country, the responses are then given a score. The 2017 report has no facts or data explaining the numbers given by the country offices. In contrast, the 2019 reports are based on a list of positive remarks versus challenges with proposed action provided by the regional and country level logisticians. These lists are accompanied by numbers and statistics from DELIVER. There was no logistics t-reports while DELIVER was being piloted and implemented in 2018.

Success Stories

The "success stories" are case studies of achievements made by logistics at NRC. They are recorded three times a year as per the t-reports by the regional or country offices and sent to the head office. These achievements do not have to be related to the implementation of DELIVER. These case studies are posted on the internal NRC logistics webpage and presented during t-reports or departmental meetings. This initiative was developed and implemented in March 2019 following the DELIVER project in order to;

- Highlight the value that Logistics brings to NRC's operations
- Use as an advocacy tools for Logistics with regards to CO/RO/Global managements as well as with other key stakeholders
- Share best practices, ideas and lessons learnt with fellow Logisticians across NRC

Four success stories from the CWA, EAY, and MERO regions were analyzed. The reports provide short descriptions of achievements, how the issues in questions existed, how they were resolved, and the monetary or non-monetary impacts on logistics.

Chapter IV: Findings & Discussion

The findings & discussion chapter is organized based on Guribie & Tengan's (2019) KM framework (Figure 11). Thus, the findings follow the following steps in KM: identifying information, capturing & storing knowledge, sharing & transferring knowledge, using knowledge, and creating new knowledge.

4.1 Identifying Information

In terms of information access, logisticians interviewed related the KPIs to increased transparency and accountability in procurement and management of warehouses, assets and fleet. These are the same KPIs that were first identified when DELIVER was implemented in 2018. These KPIs are the only tools currently available to gage and monitor logistics performance both at regional and country level. Previous to DELIVER, there was no basis on what data or numbers needed to be identified for reports or compliance. With DELIVER reports, logisticians are now aware of what data is missing and are able to identify gaps that still affect the operations.

The consensus is that asset management is one of the focus areas that has been impacted the most since implementing DELIVER. Now that the number, value, location, and statuses (i.e. damaged, in use, lost) country offices are able to better track assets, logistics managers are able to see where improvements are needed in asset management, and the monthly reports have allowed logisticians to conduct proper follow ups on asset usage and statuses. One interviewee added that "[…] after implementation it forced us to review all items and categories of items. We arranged our asset lists, we improved it, and gained more information on the assets we are using" [2]. However, there is still some confusion when it comes to reporting the asset KPIs. There is no data being collected on asset usage; meaning that assets are not identified and

[2] Personal interview with a logistics manager (March 16, 2020)

tracked while being used by field staff. The number and types of assets that are being reported were not defined, which created ambiguities in the data.

The interviewee result shows that the KPIs for procurement did not fulfilling logisticians data needs (see Table 1). This is because the current KPIs were not specific enough and additional KPIs at COs and ROs were needed especially for lead time (sum of all processing time), numbers and value of procurement orders and requests. Because of the lack of KPIs to measure lead time and, the number and value of procurement orders, logisticians interviewed failed to generate information that helps to improve performance. For instance, measuring lead time helps to determine processing time from transit, to inventory, and finally distribution. For logisticians at CO level, this would have helped them to better monitor stocks and reduce the risk of dead stocks (i.e. stocks that can no longer be used because of donor restrictions or other reasons). Furthermore, they see the benefit of KPIs in determining the number and value of procurement orders and requests, which would give a better view of how the logistics budget is used. In addition, they see the potential of monthly number of procurement orders as a good pointer in determining how many staff needs to be sorely focused on procurement duties. Without these KPIs, all respondents felt that the procurement data is not useful and difficult to use for analysis in its current format.

Issues with asset and procurement KPIs could be in part explained by the fact that some logistics units are using two systems to collect the data. In addition to the more manual system DELIVER, the online system Agresso is also being used; DELIVER requires field logisticians to fill out excel annexes with the collected data, logistics managers and regional logisticians then have to review and copy/paste the data to other excel files. Agresso is a cloud based online system that updates automatically when logisticians enter data on assets. The consolidation of data from DELIVER and Agresso for the reports is confusing and numbers from both systems often don't match. One interviewee thought the asset data to be only around 65 to 75% accurate[3].

[3] Personal interview with a regional logistics advisor (December 04, 2019)

Several interviewees expressed that their experiential learning was not used to develop and utilize appropriate KPIs. They see that discussions for defining missing KPIs is key to implement necessary changes in the organization's operation globally. According to Guribie & Tengan (2019)'s framework, documentation of problems or solutions is a major enabler in instilling a KM culture. The interviews revealed that there were lack of proper feedback mechanism that can gather information on what is lacking in DELIVER or what needs to be further defined and understood. The fact that their opinions were not heard in the process of DELIVER implementation and they wield little power as a staff was identified at the main problem for missing KPIs at NRC by regional and country level logisticians.

Despite the proposal to add more KPIs, some interviewees have concerns that it might not be the solution. They argue that understanding of how useful additional KPIs are and how NRC uses them must be determined first. In their view, more information does not necessarily mean more useful knowledge (see O'dell & Grayson, 1998). Moreover, they are worried that no one would read if the reports become too long[4]. They relate this concern with earlier view from other logisticians that "their voices were not heard" by the management, because short reports with more important contents can be preferred by decision makers in organization. On identification and use of KPIs, the interview result shows disagreement between logisticians working at regional and country levels. While the ROs had a much more critical view on the current KPIs, the COs were mostly satisfied. In general, because of the missing KPIs and lack of feedback mechanism, KPIs were not being used to their maximum potential. A proposed solution to address this, as most logisticians see it, was to have a new collective evaluation of the project to address what KPIs are useful or not, and what needs to be added in future reports.

4.2 Capturing & Storing information

At the time of implementing DELIVER, there was a lack of logistics staff at the global and field level. Tools were also not optimized for easy data collection and analysis. Specifically, the online tools used to collect data were lacking in some form and were not suitable for automation. This made the collection process slower and time consuming. As a result,

[4] Skype interviews with regional logistics advisors (November 28, 2019) (December 04, 2019)

implementation of DELIVER significantly increased workload for logisticians at both regional and local levels. However, time spent looking for data decreased.

Interviews identified many issues with the processes, files, and forms used to collect and organize DELIVER data. During the implementation of DELIVER, multiple forms were required to be filled out; dates of when the staff are being trained for DELIVER, when the implementing processes begin, or if processes are being delayed. Interviewees found these forms to be too bureaucratic and unnecessary. They also found the excel files and annexes used to collect and store data to be too easily corruptible. The process of uploading data on the DELIVER files required staff to copy and paste numbers from one document to the other. They often made mistakes during this manual process, which affected the accuracy of the numbers. This in turn increased the workload for the ROs who had to review and correct wrongly entered data. Logisticians see for themselves that digitalization of the DELIVER tools not only helps data storage, but also data collection at the area and field levels. Furthermore, they see digitalizing at the area level as an important step to standardize data collection and ensure quality.

One interviewee suggested that NRC logistics has a lot to learn from commercial logistics to upgrade its tools and processes. This reflects the opinion of many scholars who think humanitarian organisations have antiquated systems and should look towards how the private sector operates (Agostinho, 2013; Gustavsson, 2013; Pettie & Beresford, 2009; Thomas & Kopczak, 2005). Agostinho (2013) argues that investments in IT systems should precede the implementation of PMS; otherwise these good practices could be lost in the long run. NRC's (2017, p.15) own global strategy 2018-2020 states that in order achieve the goal of "applying data to strengthen evidence-based decision-making [NRC's work processes] must be digitized and data management systems developed or improved". Avali & Leidner (2001) also state that improving IT not only improves individuals' abilities to create and store knowledge, but also improve linkage between individuals and between groups, a view that was contemplated by interviewed logisticians.

Despite challenges highlighted above about DELIVER's tools and processes, all interviewees confirmed that data collection has improved compared to the period before DELIVER implementation. Currently all levels of logistics units have access to the DELIVER reports, which was not the case before. Accountability and transparency have improved because COs have to explain any deviations or changes in numbers reported monthly as there is more focus on the accuracy and traceability of the numbers reported. Through DELIVER, one country office was able to centralize all its data on assets for all area offices. Pre-DELIVER, purchases of assets were being made in multiple area offices; this was difficult for the country office to keep track of. Post-DELIVER, all purchases of expensive assets such as computers are made in the country office. Currently assets are registered and tagged before they are sent to field offices in the countries. This has given NRC a globalized overview of their logistics operations.

4.3 Sharing & transferring knowledge

Logistic staff were asked to describe the process for sharing and transferring knowledge created from the processed information. According to them, information dissemination within logistics has generally improved after implementing DELIVER. Logisticians at the global, regional, and country levels were able to communicate better due to the requirement for active participation during data collection and reviewing processes. The process required field staff to gather data, pass it to logistics coordinators at area offices, which was sent and stored by logistics managers in country offices before it was reviewed by regional logistics, and finally published by the head office in Oslo. This information transfer loop allowed sharing of information and interaction between a of people. Before DELIVER started, requests for reports were made by the regional offices. Country offices were often resistant to share reports either because they did not have data or because its quality and reliability was low[5]. Now that reporting is mandatory and reaches the head office, country offices are more compliant. There is a new awareness that the data being collected is being read at the regional and sometimes global level; this has impacted how much effort is put into collection. One respondent admitting that "[…] now that [collecting data] is mandatory, before I enter [data] into the system, I make sure that everything is there and

[5] Personal interview with a regional logistics advisor (December 10, 2019)

correct. Because it will impact my operations" [6]. Another respondent added that "people know that the information is now shared, and so everyone is checking and asking questions" [7].

ROs now have reliable data allowing them to conduct visits for better spot checks, compliance checks, or reviews of logistics operations. This reflects Howden's (2009) statement that information transfer and feedback play a significant role in ensuring that HOs are engaged and responsive towards their beneficiaries. With the monthly reports, one country office was able to have meetings concerning deadstock numbers for 2019. During the meeting, they were able to decide on steps to reduce deadstock in order to stop accumulation in 2020. Some ROs were also able to use the KPIs to create presentation for upper management to inform them about the progresses, bottlenecks, and plans for future action.

While communication and information transfer has improved within NRC logistics, most interviewees still encounter many barriers when it comes to sharing with other departments within NRC. For example, COs were not always consulted on planning of operations. This affects procurement; creating delivery delays and lack of storage. Additionally, renting spaces are not always factored in and there are cases when transport for staff has been left out of budget planning[8]. One interviewee explained that often they are not invited to meetings they should be attending. Others see this as lack of interest in the overall operation of the organization other than their own tasks. Many of the interviewees added that there was little interest towards the project outside of logistics in NRC. One interviewee stated that the management in their country office was not well informed or aware of the information coming from DELIVER reports. Logisticians at CO level argue that collective planning must be institutionalized and made NRC's culture. Van Wassenhove's (2006) view lack of feedback mechanism for improving performance as "the vicious cycle of logistics" in which exclusion of key personnel in the supply chain planning meetings, logistics falls short, management continue to exclude them because they see them struggling. Similarly, a study by Ruggles (1998) found that cultural

[6] Personal interview with a logistics manager (March 04, 2020)
[7] Personal interview with a regional logistics advisor (December 10, 2019)
[8] Personal interviews with a logistics managers (March 5, 2020) (March 4, 2020)

issues or changing people's behavior are often the main barriers to knowledge management in firms.

For ROs and COs, involvement of other and interest in their views for logistics planning from senior management makes a considerable difference in logistics performance. Involving logistics managers in meetings gives them more power to express and explain the situation in logistics, which in turn helps the whole team in the long run. A similar conclusion was made in a case study by Leidner et al (2006) where involvement of staff and interest in their opinions from senior management was found to be catalyst to the success of groups undertaking KM initiatives in a company.

At NRC, it is not only the transfer of information to higher management that was lacking, but also from management down to the field level. Field logisticians conduct most of the monthly data collection, yet very few have access to final reports. They rarely get to see the results of their work or receive feedback back from the country offices. One interviewee expressed that "field logisticians deserve to see final reports and be included in the feedback loop" [9]. This relates to issues of ownership. The more field logisticians are left out, the higher the chance they might put less effort or lose interest in quality data collection.

4.4 Using knowledge

The interview result shows multiple instances where the interviewee mentioned use of knowledge from DELIVER and improved logistics operations. For instance, one country office was able to get rid of the vehicles that were not used efficiently based on data collected and analysis regarding the average distance (km) driven per vehicle. And according to the first quarter t-report of 2019, the CO saved on costs by reducing vehicles from 27 to 22. Moreover, logisticians were able to take steps in reducing lost or damaged assets based on new data on asset status.

The most benefit from using KPIs of DELIVER project, however, was for NRC's stock management. The increased access to data and visibility of stocks helped many country offices

[9] Personal interview with a regional logistics advisor (November 28, 2019)

to take account of the amounts of undistributed stocks in their warehouses. This has pushed logistics to change how stock can be managed, distributed, and how unwanted stocks can be discarded. For example, the second quarter t-report of 2019 indicates that one country in the MERO region was able to reduce deadstock from 74% to 47%. Another country office was able to put pressure on the program department to do distribution of stocks and meet NRC's compliance to donors. DELIVER data was also used to involve other organisation to outsource delivery and distribution by other partners to reduce stock in warehouses to zero. A greater control on stock management allowed other country offices to update stock insurance reducing costs and risks[10]. A country office in the EAY region had a resounding success reducing their deadstock by using new knowledge from DELIVER. This case was mentioned both in interviews and recorded as a success story. At the time of implementing DELIVER, the country office in question had around 300 000 dollars in deadstock in its warehouses. The increase in awareness and a change in policy to distribute all stocks after purchase reduced deadstock to 11 000 dollars a year later[11].

Many respondents said that the increase in accessible information has improved the quality of input logisticians have in meetings with other departments. It has also helped with working towards eliminating repetitive processes, reduce operating costs, and improve efficiency within country offices. KPIs are used by logisticians to reinforce their point of view and to give credibility to their opinions of what actions should be taken.

Although the use of KPIs has improved managerial performances of logisticians, some respondents emphasized that it is not the same case with decision-making for operations with other departments. In most cases logisticians are not the ones making the decisions. Decision-making for NRC projects happens mostly with committees and management. This affects how much impact logisticians can have on operations by using KPIs from DELIVER to inform action. The fact that management is not always aware of KPIs adds to the challenge. Yet, it is still a vast improvement that logistics is now able to share information and propose action based on solid numbers.

[10] Personal interviews with a regional logistics advisor (December 20, 2019) and logistics manager (March 5, 2020)
[11] Personal interviews with a regional logistics advisor (February 26, 2020) and logistics manager (March 5, 2020)

Around half the interviewees felt that the DELIVER KPIs were easy to analyze, while the other half found that the DELIVER tools made it very difficult to do so. Many of the issues faced when trying to analyze data stems from the tools being used in DELIVER that was not equally understood by staff with varied capacities. The guidelines, processes, or bureaucracy are not fully automated or digitalized in DELIVER or at NRC. Logisticians do not have access to baselines or references from other NGOs for comparison purposes. Time pressure also puts a constraint on how much analysis can be done on the field. Additionally, some countries mainly operate in other languages than English. Many of the staff in these countries can't or won't use the DELIVER tools if they are not translated[12]. However, one interviewee thinks logistics needs to go beyond just analysis, rather, the regional offices need to be asking more questions on what is being done to resolve bottlenecks identified in the KPIs.

4.5 Creating new knowledge

Knowledge is created at different levels in an organization; data for DELIVER reports comes exclusively from the field operation level. Field level humanitarians have the closest contact to the needs and therefore are often the most knowledgeable (Tomasini & Van Wassenhove, 2009a). The DELIVER reports have created a data base with basic logistics information that is easily accessible and shared with all country office logisticians. A common theme in the interviews was that logisticians agreed that this data base has had a positive impact on management at the country level: "When [we] look at the 4 areas (procurement, warehousing, fleet, assets), [we] are able to see things quickly and on a local and regional level. In terms of management, it's easier to see loses or make decisions of what is needed" [13]. With the increase in communication between the field, country, and regional offices, there is also an increase in transfer of existing tacit knowledge from one member to another; here knowledge is created through discussion of ideas (Avali & Leidner, 2001).

However, improving performance in an organisation is not only dependent on the knowledge that exists in the organisation, but the ability to effectively apply this knowledge to create new

[12] Personal interview with a logistics coordinator (March 4, 2020)
[13] Personal interview with a regional logistics manager (February 26, 2020)

knowledge and to take action (Avali & Leidner, 2001). Similarly, Tomasini & Van Wassenhove (2009a, p.125) argue that "knowledge needs to produce immediate action", yet most logisticians at NRC have expressed difficulty in being included in operation planning. This gap in the ability of sharing knowledge within the organisation means that often times "country offices have to reinvent the wheel every time they solve an issue" [14]. Leidner et al (2006) come to the same conclusion in their study where the studied organisation, despite having great amount of information, ended "reinventing the wheel a thousand times" due to slow and bureaucratic processes (p.10). However, Avali & Leidner (2001) add that as the level of information exposer increases, the internalization mode of knowledge creation could also increase as individuals make more observations and interpretations of the information.

The interviews have also highlighted that the lack of logistics skills in hired staff is creating major issues in logistics units. One respondent argued that "there's this perception sometimes that anyone can do logistics" and therefore the people being employed do not always have the required skillset for the job[15]. This issue relates back to the challenges often encountered in HL where Thomas & Kopczak (2005) explained that people who come to work in the humanitarian sector are not necessarily there because of their skills but because of the values they share (see section 2.3.1). Humanitarian staff, especially those working at the field level, hold most of the knowledge that can truly make a difference in planning new operations (Cozzolino, 2012). One interviewee expressed that "even with an increase in reliable data, issues won't be solved without better access to human resources" [16], another respondent adding that without proper staffing, logistics cannot deliver value for money [17]. ROs mentioned that often field logisticians do not even have access to some of the DELIVER tools like Power BI (an online business analytics tool that provides interactive visualizations and graphics of the DELIVER data). Even when they do have access, not everyone has been trained or has the knowledge of how to use the program.

[14] Personal interview with a logistics manager (March 16, 2020)
[15] Personal interview with a regional logistics advisor (February 26, 2020)
[16] Personal interview with a regional logistics advisor (November 28, 2019)
[17] Personal interview with a regional logistics advisor (February 26, 2020)

4.6 Overall performance of DELIVER

The performance measurement system DELIVER was initially implemented to give NRC visibility and overview of their logistics operations. Global logistics also identified three additional key objectives after implementation; empower decision-makers with relevant evidence for making optimal decisions, driving costs and processes' efficiencies, enhancing accountability and transparency. The results from the interviews shows that KPIs from DELIVER has had considerable positive impacts on managerial performance (Appendix 5). Respondents expressed that they have more power in meetings with other departments and have identified gaps or bottlenecks in logistics processes. However, like one respondent pointed out, "it [would] be overrating to say that this project is revolutionizing NRC's logistics. For me it's giving what we should have. Basic logistic reports, transparency, more visibility" [18]. The increase in visibility into logistics operations did also help driving costs and process' efficiencies. The success stories and t-reports have demonstrated multiple example of management changes that have cut on operational costs. The evolution of the logistics t-reports from 2017 to 2019 is also confirmation that accountability and transparency has improved inside NRC. The pre-DELIVER reports are vague on their comments and recommendations. For example, comments for a country in the MERO region in the 2017 t-report reads as;

"*No change. Dead Stock. Country highlight staffing problems, and reorganization is on the way*" (extract from the second quarter t-report, 2017).

Whereas after implementing DELIVER, the first 2019 t-report for the same country reads as;

"*major issue from 2016 to 2018 that reflected negatively (warehouse space/donor risks). The Logistics management initiative started in 2018 - in cooperation with programs – has produced a significant reduction through distributions with active cooperation of local communities & partners.*"
"Deadstock has been reduced, for the [first quarter] reporting period from $247K to USD $152K. Approx. a 40% reduction, resulting in more [warehouse] space which also reduces

[18] Personal interview with a regional logistics advisor (November 28, 2019)

costs (by not having to spend funds on space for dead stocks)" (extract from the third quarter t-report, 2019).

There are considerable differences in the level of details that the 2019 t-report is able to provide compared to the 2017 t-report. The 2017 t-report does not provide any data or numbers for clarification on the comments. The language used, for example "reorganization is on the way", is very vague and does not extrapolates on what kind of actions are needed or will be taken. The post-DELIVER t-reports have also been used as a key source of information by managers to communicate with their head of supports. One respondent also pointed out that with the increase in information, there has been a lot of positive feedback from upper management in regard to how logistics operations are managed. They add that this has been constructive to the logistics teams at the country office and in the field. Another positive impact from DELIVER that was reoccurring in the interviews is the improvement of role clarity (Appendix 5). Many respondents argued that with DELIVER, not only do logistics units understands each other's roles better, but they are also able to explain their role to other NRC departments in a clearer manner. This relates to Hall's (2008) study exploring the relation between PMS and managerial performance. He similarly finds "that comprehensive PMS influences managers' cognition and motivation, which, in turn, influence managerial performance" (ibid, p.2). PMS influences managerial performance by clarifying managers' role expectations, and by providing feedback to enhance task motivation (ibid). Role clarity is defined as individuals' beliefs of the expectations and behaviors associated with their roles (ibid).

There are, however, drawbacks to how effectively logisticians are able to use the KPIs from DELIVER. The results from the interviews showed that there is still a general sense that logistics is lacking recognition within NRC. Statements like "NRC is not an organisation where logistics is or considered to be very important" show this limitation[19]. It also reflects how difficult it is for logistician to perform in their duties, and to improve on effectiveness and efficiency. Interviewees linked the problem of recognition to issues with the system in place; bureaucracy, lack of resources, and digitalization. Agostinho (2013) argues that in the sequence of changes towards a better performing humanitarian logistics, recognition of the importance of

[19] Personal interview with a logistics manager (February 25, 2020)

logistics needs the precede investments in information systems or procedures. In this light, NRC is still lagging behind on bringing more recognition to its logistics unit, and DELIVER has not yet completely bridged that gap. The role of the supply chain in planning and budgeting is also deficient. Proper procurement planning is another major issue with many country offices, and budget for the supply chain and logistics teams are often not sufficient. Focusing on filling these gaps could increase the chances of long-term success for DELIVER.

4.7 Discussion

I have analysed the case study of the performance measurement system DELIVER at NRC and looked at how knowledge management is integrated into the system. This thesis answers the research question:

Has the performance measurement system DELIVER created new knowledge that improve efficiency and effectiveness of NRC's logistic operations?

The summary of the findings in Table 1 demonstrate the achievements and shortcomings of the PMS DELIVER. I have come to the conclusion that while there are still some improvements to be made, efficiency and effectiveness of the logistics unit has improved after the implementation of DELIVER. Logistics managers' visibility into the country offices' logistics operations has greatly increased. The rise in information available combined with easier access to data has also reinforced the management of logistics resources. Logistics managers in country offices have been able to cut costs, better manage staff, and improve resource distribution with knowledge from DELIVER. The KPIs from DELIVER are now considered to be an important tool in departmental meetings; giving power to logisticians opinions and clarifying logistics processes when needed.

Table 1 – Identified improvements and gaps in the PMS DELIVER with proposed solutions by interviewees

KNOWLEDGE TRANSFER PROCESS IN DELIVER	IMPROVEMENTS	GAPS	PROPOSED ACTIONS

IDENTIFY INFORMATION	+ Have been able to identify where the gaps are in data access and collection	- Procurement and asset KPIs are inadequate for logisticians' needs - No global instrument to discuss what needs to be implemented on a global level - Issues with consolidating	= Need additional discussions to define which new KPIs should be implement globally = Create a set of country level KPIs that are adapted to local needs
CAPTURING & STORING INFORMATION	+ Easy access to DELIVER data online in designated files + Streamlined and mandatory DELIVER reporting has increased data reviewing – there is more importance put into collecting quality data + With standardized reporting across the country, COs have been able to centralize their data base	- Data collection is time consuming and has increased workload - Tools used for storing DELIVER data are not suitable to automation - DELIVER Excel files are easily falsifiable - There are consolidation issues between data storing systems being used at NRC	= Need to further digitalize data collection and storage systems; should look to the private sector
SHARING KNOWLEDGE	+ With DELIVER countries produce consistent reports that reach the regional and global offices + Increase in communication between the global, regional, and country offices + The sharing of data has helped increase compliance towards NRC's own guidelines, donors, and benefactors + Stakeholders have more visibility into NRC's operations	- Logisticians collecting the data on the field have little access to final reports and are given little feedback - Little interests in the project from outside logistics - Logistics managers provide information to management when asked/needed, but there is no further attempt for involvement	= Increase involvement and feedback to field staff
USE & ADAPT KNOWLEDGE	+ DELIVER data has informed decision-making – helped reduce repetitive processes, operation costs, and improve efficiency + The data from DELIVER has given more power to logisticians during meetings, planning, and + Major gaps with stock management were highlighted – pushed logistics team to develop tools to better manage and plan	- Logistics is not always able to contribute during the planning process – this causes logistical issues further down - Data analysis is limited by available tools, techniques, and time constraints	= Senior management needs to have invested interest in logistics and involve logistics in grants meetings

CREATE KNOWLEDGE	+ New knowledge being created at the country level has helped with management of logistics resources	- Staff do not always have the skills required for logistics work or trained to use the online DELIVER tools (excel, Power BI)	= Need to increase analysis of data to get maximum potential from the project and create new knowledge

DELIVER has helped logisticians identify what data was previously missing, what data has been the most useful in their duties, and what new KPIs needs to be included. In the collection and organization processes have greatly improved compared to pre-DELIVER. Processes have been standardized and organized across all country offices. The sharing of knowledge has also improved between logisticians at different levels, but also between logistics units and other NRC departments. The KPIs have not only allowed for monthly reporting but have given logistics the ability to consistently create compliance monitoring reports (t-reports). Finally, there has been knowledge creation with the recordings of success stories, t-reports, and through the increased communication between logisticians at the regional and country levels.

However, the findings have also highlighted gaps in how information and knowledge is managed within DELIVER. The KPIs first identified for the assets and procurement focus areas were not all useful to the logisticians working on the field. Assets especially can represent a large part of the donors' funding and miss-managing assets can represent a high risk for country offices. While DELIVER did help identified gaps in asset management, it did not provide any solution to solve them. Additionally, the collection and storing of data are still time consuming and needs to be further digitalized. The sharing of knowledge is not evenly successful at all levels of the organization; there still exist a disconnect between upper management and logistics as well as with the field level. The use of knowledge is sometimes impeded by a lack of recognition of logistics at NRC, making it difficult for logistics to be included in meetings and decision-making.

It is important to take into account that some of the short comings of the DELIVER project might be attributed to more general challenges in HL (see section 2.3.1) and not only to the project itself. A lack of resources in HL is often mentioned as a major barrier to performance in HOs (Majewski et al, 2010; Murray, 2005). It was also identified in the interviews as a major issue for logisticians at NRC. One respondent illustrated this issue by stating that "80% of all transactions are done in logistics, but [logistics is] the most understaffed department. We are the first thing [NRC] cuts" [20]. The lack of resources and funds in logistics impedes logisticians from being more efficient, compliant, and indirectly from using DELIVER data to its full potential.

Pressure from donors on HOs to demonstrate tangible results further impacts budgets for "back room" activities provided by logistics. Donors often put restrictions on the type of activities donated funds get be used on (Stephenson & Schnitzer, 2006). One respondent confirmed this by saying that "most of the donors are very sensitive about what they give, especially for operational costs. Some only give 5 or 10 %. This percentage needs to be distributed between staff, transportation, etc. It's a big limitation for [logistics]" [21]. The interviewee added that this issue is however not limited to NRC, it is a persisting issue throughout the humanitarian sector.

Many of the issues concerning lack of staff or skilled logistics staff mentioned in the interviews are also challenges that affect much of the humanitarian sector. Khan et al (2019) also notes that because HL generally has lower priority in HOs, they often don't keep sufficient numbers of logisticians or do proper training when hiring new staff. One interviewee shares the same view and adds that they "are so understaffed" that they are not always able to pay attention to the quality of reports. These staffing issues can also create additional challenges in keeping the staff motivated, especially when it comes to detailed oriented work like data collection. Understaffing and lack of skill can also lead to issues of management commitment and an inability to measure quality data under time pressure (Abidi, 2019). Abidi (2019) argues that the best solution for these challenges is to ensure that proper organizational culture is in place to support the humanitarian actors working in the SC.

[20] Personal interview with logistics manager (February 25, 2020)
[21] Personal interview with a logistics manager (March 05, 2020)

Chapter V: Conclusion and Recommendations

5.1 Conclusion

HL faces many challenges in the humanitarian sector, and PMS can have significant impacts on the effectiveness and efficiency of operations. Yet, successful design and implementation does not guarantee a successful system. The management and transfer of information and knowledge play an important role in how effective a PMS can be for HOs.

In this thesis, I have looked at how knowledge is managed within DELIVER and how it has impacted the logistics unit at NRC. I have found that DELIVER did increase the effectiveness and efficiency of NRC's logistics operations. The monthly reports have given NRC's visibility into logistics operations at the global, regional, and country levels. This increase in visibility has in turn pushed logisticians at the country and field levels to improved transparency and compliance of their operations. The monthly data collection and reviewing processes has increased communication between the global, regional, and country levels on perceived issues in logistics operations. The data collected from DELIVER has also allowed NRC logistics to produce evidence-based compliance reports (t-reports). With the DELIVER KPIs, logisticians now have recorded fact-based knowledge on which they can rely for future decision-making.

However, there are still many areas that require improvements. The DELIVER data collection processes are time consuming and incompatible with other digital systems. The excel files and annexes used to store the data are easily corrupted and chances of falsifying data are high. Logisticians expressed that KPIs related to procurement and assets don't fulfill their data needs; these need to be reviewed and changed accordingly. There is also currently little analysis done with the data being collected at any of the organizational levels. And while communication have generally improved amongst logisticians, the field staff are not often included in the feedback loops. Good PMS should guide humanitarian action in decision-making. DELIVER has not yet succeeded in this. Finally, there is still a long way to go for NRC to promote the importance of logistics and put efforts towards better resources for their supply chain.

These gaps in DELIVER does not mean that the system has failed its intended purposes of helping NRC's logistics operations. This project is an evolving process that will need updating

and reviewing if NRC wants to keep DELIVER relevant and useful for the long term. The next steps in the project will need to focus on digitalizing DELIVER's processes, reviewing the current KPIs to ensure their usefulness, add local KPIs in country offices that need them, increase the analysis of the data, ensure that field logisticians receive feedback and final reports form country offices. Most importantly, NRC needs to increase awareness of the importance of the work logisticians do every day in ensuring the right people get the humanitarian assistance they need.

5.2 Recommendations for NRC

The following section gives recommendations for NRC to further improve DELIVER processes and gives logisticians the ability to use the KPIs to its full potential.

1. Create an "updating process" for DELIVER

   PMS like DELIVER should include a mechanism to review and revise targets and standards routinely. It is important to ensure that the system is still measuring the things that matter, and that can change overtime. It also applies to reviewing all the KPIs being measured in accord to any environmental and organizational changes or changes in strategic direction (Bourne et al, 2000). This would include collecting feedback from logisticians on the usefulness of the current KPIs, gaps in measurement, or how the KPIs are being used. The updating process could be done on a yearly basis or after major changes in strategies, goals, or mandates at NRC.

2. Add locally defined KPIs in country offices (if needed)

   One country office at NRC had implemented a country level PMS pre-DELIVER. This has allowed them to add KPIs that are adapted to the local needs of the logisticians and thought to be important to their mission. Adding country level KPIs that are adapted to local needs could help country offices bridge some of the gaps in the global DELIVER system. This would reduce the number of changes and updates needed on the global level to keep the DELIVER system relevant. Because DELIVER has already created the processes and systems needed for monthly KPI collection, it facilitates the country offices' process of adding new KPIs.

3. Digitalize DELIVER's process and tools

DELIVER's tools (excel sheets and annexes) and processes need to be further digitalized and automated. This will simplify the collection and storing processes, as well as reduce the pressure it puts on logisticians' monthly workload. Multiple logisticians work on the same excel files, and they are too easily manipulated and modified. By implementing a global digital system, the risks of data corruption will be reduced, and increase accuracy. A new IT system would also be able to consolidate data from DELIVER and from other systems already used by NRC like Agresso (used for assets management). Training staff on how to use these systems will also be very important. Even if an effective IT system is in place, there will be delays in results if staff are not qualified to use them (Agostinho, 2013).

4. Increase analysis of data for knowledge creation

There needs to be more focus on creating new knowledge with the data being collected from DELIVER. Even when the process of designing and implementing are successful, often times there is a lack of management of the measurement data (Neely & Bourne, 2000). While global logistics does consolidate the data from all country offices to create and update their Power BI dashboard, there is little analysis being done. A more in-depth data analysis could help NRC decide on what can be done differently as an organisation so that monthly performance can improve. While there is some analysis being done at the country level, further analysis at the global level could be useful to inform the overall logistics strategy of NRC.

5. Improve feedback with field offices

Improving the feedback mechanism would impact how effectively knowledge is transferred and used within NRC. While there is currently good communication between regional and country offices, field offices are mostly left out of after the data collection process. Logisticians at the field level should be aware of the impacts their data collection have on logistics operations and have access to final reports. Doing a task without seeing the results impacts the level of efforts put into collecting quality data. Some country offices already sense a lack of intention to implement best practices when it comes to gathering data.

Involving field logisticians in the feedback will help them understand how their work impacts the organization.

6. Increase awareness of DELIVER and the important of logistics

Perhaps the single most impactful action that can be taken to improve the performance of DELIVER and of logistics in general, is to spread awareness of its importance in the organization. There have been efforts in promoting DELIVER by publishing success stories and information on NRC online platforms; yet it is questionable if these methods increase interest into the project[22]. Presenting results from the project at organization wide meetings, could help increase exposure. While it can be difficult to further involve management into the project due to high workloads and time constraints, it is important that they remain aware of the DELIVER reports and the potential impact it could have on NRC's operations.

[22] Personal interview with a regional logistics advisor (December 04, 2019)

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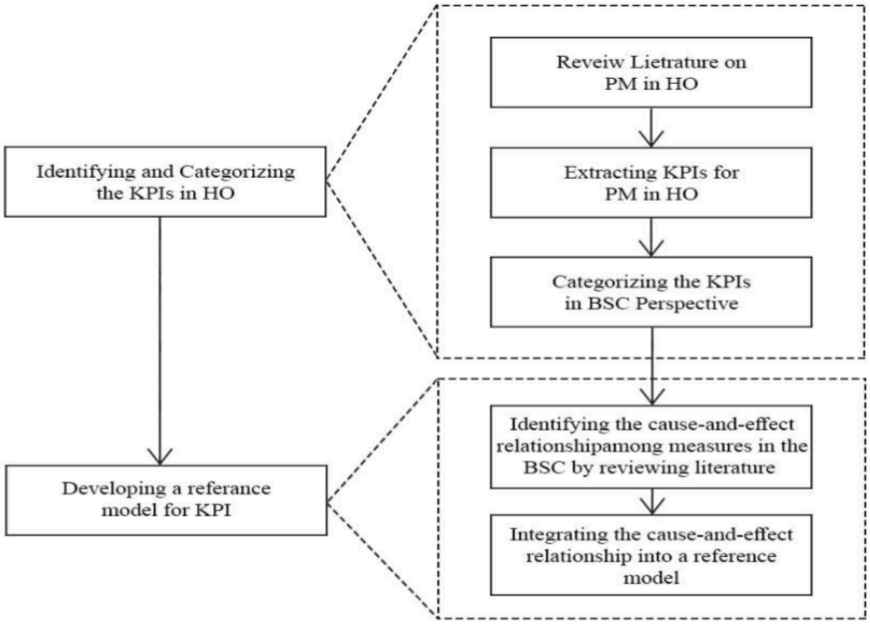
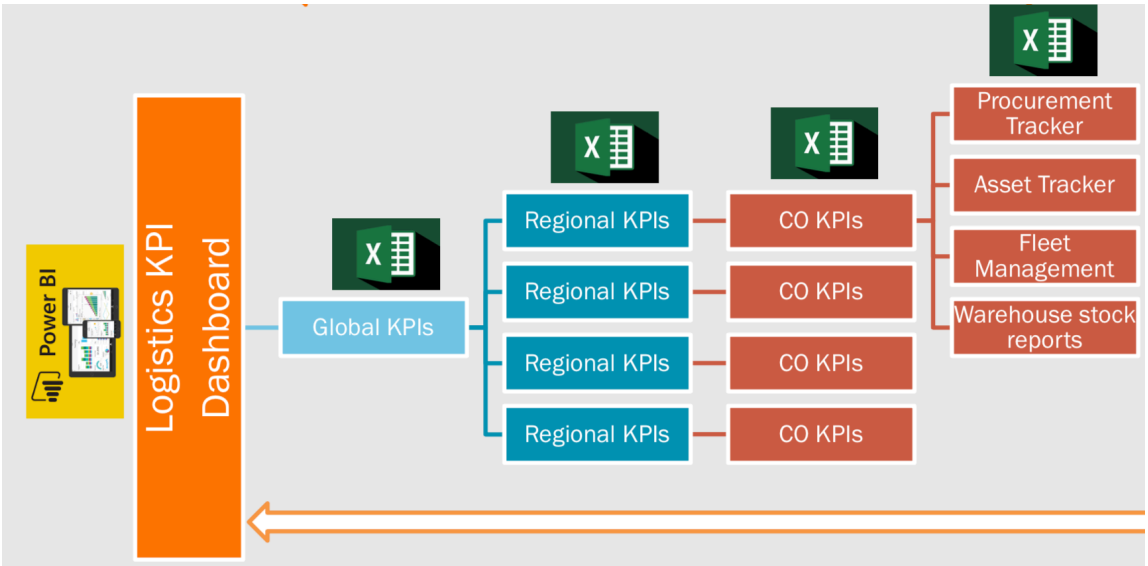
Appendices

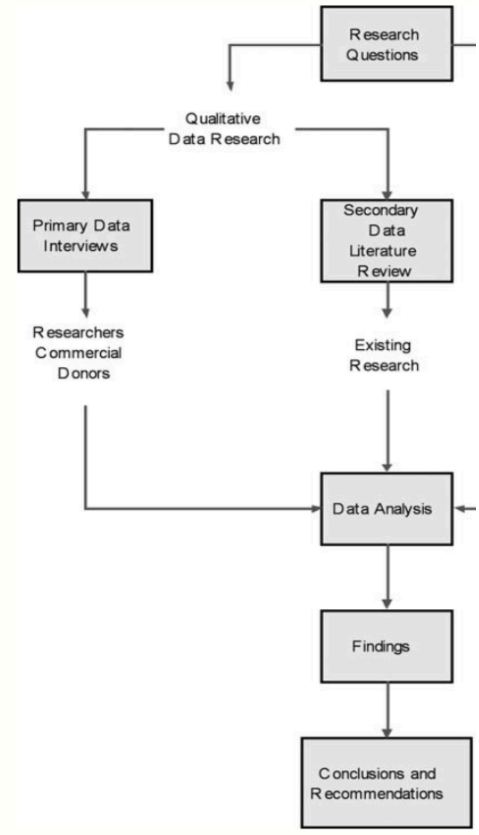
Appendix 1 – DBSC Model for DELIVER (Bjerke & Haleemdeen, 2018) from Anjomshoae et al (2017)



Appendix 2 – Data Collection System for DELIVER at NRC **(**NRC, 2019b)



Appendix 3 – Methodological Framework (adapted from Majewski et al, 2010).



Appendix 4 – Interview Guide

- **Introduction of researcher and inform the interviewee that the session will be recorded.**
- **Purpose of the research:** The main objective of my research paper is to analyze and determine if the Deliver project was (is being) used in a way that improved efficiency and effectiveness of NRC's logistic operation. More specifically, if useful knowledge was created with the collected data, and if the right information was made available to the right people within NRC. It will also look at its impacts on improved control and better decision-making capabilities within logistic operations.

- **Any questions from the interviewee before we start?**

1. Introduction

1.1 Date

1.2 Interviewee name

1.3 Position at NRC + country of work

1.4 Email

Interview Questions

1.1 What is your position at NRC?

1.2 What are your main duties within this position?

1.3 In what way are you involved with the Deliver project?

1.4 **(for ROs)** How many of the countries in your region are involved in the project at the moment? How many do you have in total?

Research Questions to be Answered		Interview Questions
I. Has the implementation of the DELIVER project improved efficiency and effectiveness of NRC's logistic operations?	a. Was the appropriate data collected to construct useful information that served the basis of knowledge for improved efficiency and effectiveness in logistic operation? b. Was the knowledge generated made available and used by logisticians working at different levels?	1. How long have you worked with the DELIVER project as part of your logistics duties?
		2. Has collecting/reviewing monthly KPIs impacted your workload? If so how?
		3. How often do you view the data and graphics on the DELIVER project webpage? (Why?)
		4. Do you find the data/information from DELIVER easily accessible? 4.5 Is it accessible to the right people?
		5. Is the data/graphics easy to analyse or use as part of your logistic duties? (Which/ Why?) 5.5 What would help getting a better analysis of the Deliver data?
		6. Do you think the head office is presenting the data from DELIVER in a way that is useful for logisticians on the field? Why?
		7. Do you think it would be useful if you could get more detailed analysis from the head office? If someone there was able to create more detailed analysis.
		8. Do you think the right data is being gathered by the DELIVER project? Why? 8.5 What missing KPIs do you think should be included?

		9. Has the data gathered given you a better perspective of the past and ongoing logistic operations in your region? How? Do you have an example?
		10. Has the implementation of the DELIVER project impacted efficiency and effectiveness of NRC's logistic operations?
		11. Are the tools being used to collect data practical?
		12. Do you think the data collected is important for NRC logistics? How? Why?
II. Did it impact decision-making within NRC's logistic operations?	a. Has there been changes in the organisation's practices since the implementation of the DELIVER project?	13. Which data/information from DELIVER do you consult most often? Why?
		14. How do you use the available data/information from the DELIVER project?
		15. Has data/information from DELIVER been useful to resolve logistical issues/challenges? 15.5 Can you give an example?
		16. Which KPIs collected through the DELIVER project has been most useful to you in fulfilling your work duties? Less useful?
		17. Which area in NRC's logistics has been more impacted by data collection according to your experience? (Warehousing/Procurement/Fleet/Assets) 17.5 How so?
		18. Has any aspect of logistics changed since the implementation of Deliver? 18.5 Which one has changed the most? In what way?
		19. Do you take the information from DELIVER into account when planning

		or making decisions for logistic operations? Which/How?
		20. Do you think the ones who are making decisions, project managers, head of support, or in higher positions, should be more involved in the project? Or have more access to the data and information?
		21. Has communication between different logistics levels improved since the implementation of Deliver? If yes, how so?
		22. Do you think logistics lacks recognition within NRC? 22.5 And does it affect how efficient you can be, or how you can use Deliver in your logistic duties? (quality of data)
		23. What are some of the major challenges you face within logistics at NRC?

Appendix 5 – Improvements from the implementation of DELIVER at NRC mentioned in interviews

MAJOR THEMES	EXAMPLE OF QUOTES
INFORMATION SHARING	"Before the deliver project [...] [countries] could be resistant on sharing reports, sometimes there were no reports at all to share. Now those reports are here, are reaching the regional office. We have the numbers and info to conduct visits for proper spot checks, compliance check, reviews of logs operations."[23]

[23] Personal interview with regional logistics advisor (December 10, 2019)

ASSET MANAGEMENT	"[…] after implementation it forced us to review all items and categories of items. We arranged our asset lists, we improved it, and gained more information on the assets we are using."[24] "[…] we didn't have good data on assets, today we have. I also try to reduce loss and damage on the assets, and now it gives us more highlights on these issues."[25]
STOCK MANAGEMENT	"Sharing back the information from CO to RO to HO, everyone became aware of how bad the stock management had been before. [...] Our insurance papers are updated with correct numbers. And people know that the information is now shared, and so everyone is checking and asking questions."[26] "We've used warehousing data to put pressure on countries to make sure they reduce their deadstock."[27]
COMPLIANCE	[…] Also, it helps in the donor reporting and presenting to stakeholders." [28] "It helped us see items we had in stock but were undistributed. Then we were able to push program to do the distribution, and in the end improve compliance."[29]
DATA ACCESS AND RELIABILITY	"Since Deliver has started, it's been easy for us to keep data. And when there is a requirement, we don't need to look for the data it's ready for you" [30]
STANDARDIZATION OF PROCESSES	"[…] now that [collecting data] is mandatory, before I enter them into the system, I make sure that everything is there and correct. Because it will impact my operations. It has streamlined the reporting and the quality of data hugely." [31] "[Since DELIVER] we've been able to standardize all work tools and processes at the CO and in the field offices. And with every new tool, the manager will give training to staff. There's been a lot of positive changes." [32]

[24] Personal interview with logistics manager (March 16, 2020)
[25] Personal interview with regional logistics advisor (November 28, 2019)
[26] Personal interview with regional logistics advisor (December 10, 2019)
[27] Personal interview with regional logistics advisor (February 26, 2020)
[28] Personal interview with logistics manager (March 04, 2020)
[29] Personal interview with logistics manager (March 16, 2020)
[30] Personal interview with logistics manager (March 04, 2020)
[31] Personal interview with logistics manager (March 04, 2020)
[32] Personal interview with logistics coordinator (March 04, 2020)

VISIBILITY	"[DELIVER reports] not only helped us, but also allowed our stakeholders to have more visibilities in our operations." [33] "[…] countries were not reporting their numbers before […], but today it's visible and you cannot hide them. It becomes more transparent. The countries knew these things, but now you have to own it." [34]
DECISION MAKING	"Now I can just open up my KPIs and […] you are able to give facts in those decision-making meetings and getting your point across." [35] "[...] we use [DELIVER} KPIs to reinforce our arguments if we need more resources. It's always the tool we are using. We don't have any other to overview the operations in a country." [36] "When I look at the 4 areas (procurement, stocks, fleet, assets), you are able to see things quickly and on a local/regional level. In terms of management, it's easier to see loses or make decisions of what is needed." [37] "If we didn't have access to that monthly summary, we wouldn't have made any decision concerning deadstock. We were able to put some pressure on the staff" [38]
COMMUNICATION	"Before [DELIVER] logistics used to get a lot of negative critiques. Now, we get a lot more positive feedback, which is much better." [39] "I do think that deliver has contributed a lot on raising the profile of logistics at NRC. The key logistics issues have now been discussed at global logistics meetings; this is an achievement." [40]
ROLE CLARITY	"I think it helped to give better visibility for all the functions. With Deliver, now each unit understands more clearly what the others are doing." [41] "[...] because of the KPIs we understood that we needed somebody to be specifically tasked of following assets and correcting all the issues in the system and doing work with the field. So, we have created that position now and its due to the KPIs." [42]

[33] Personal interview with logistics coordinator (March 04, 2020)
[34] Personal interview with regional logistics advisor (November 28, 2019)
[35] Personal interview with logistics manager (February 25, 2020)
[36] Personal interview with regional logistics advisor (December 10, 2019)
[37] Personal interview with regional logistics advisor (February 26, 2020)
[38] Personal interview with logistics manager (March 05, 2020)
[39] Personal interview with logistics coordinator (March 04, 2020)
[40] Personal interview with regional logistics advisor (December 12, 2019)
[41] Personal interview with logistics manager (March 16, 2020)
[42] Personal interview with logistics manager (February 25, 2020)

Norges miljø- og biovitenskapelige universitet
Noregs miljø- og biovitskapelege universitet
Norwegian University of Life Sciences

Postboks 5003
NO-1432 Ås
Norway