

AMERICAN UNIVERSITY OF BEIRUT

AGILITY AND LEANNESS:
HUMANITARIAN SUPPLY CHAIN MANAGEMENT AND
LOGISTICS FOR THE SYRIAN REFUGEE RESPONSE IN
LEBANON

by
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AN ABSTRACT OF THE THESIS OF

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To optimize humanitarian operations, which are 80% logistics and supply chain activities, limitations in capacity must be overcome (Cozzolino, 2012). Two separate yet coinciding characteristics, agility and leanness, have been identified as key factors that help to sustain resilient and beneficial humanitarian operations. This study, with the purposes of exploring HSCM/HL in slow onset, man-made emergencies, focuses on studying UNHCR's Syrian Refugee Response system for distribution of non-food items to beneficiaries within Lebanon.

This study poses three research questions. First, what is the standard supply chain and logistic design for the organizations operating under the non-food item working group? Second, what factors affect the supply chain and logistic system's agility and leanness? Third, to what extent does the design of this system, which operates in response to a slow onset man made emergency, reflect contemporary supply chain and logistic models?

To address these questions, data was collected from interviews with seventeen professionals who work the sub-sector of non-food item distribution (NFIs) in UNHCR's Syrian refugee response system in Lebanon. Findings are divided into three thematic categories: influencers, HSCM/HL design, and HSCM/HL characteristics. Based on these findings, this thesis also proposes a conceptual framework for the design and operations of humanitarian systems that respond to slow onset man-made emergencies.

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CHAPTER I

INTRODUCTION

Of all the major components of a humanitarian operation, humanitarian supply chain management and logistics (HSCM/HL) is perhaps the most important. As Van Wassenhove (2006) states, the majority of the strengths and vulnerabilities of a humanitarian operation lie within supply chain and logistics management activities. As logistics comprises the majority of emergency response activities, result-oriented and accountable operations can only be achieved through smooth, efficient, and effective supply chain management and logistics. Therefore, the functionality and performance of humanitarian response operations depend on an appropriate design, activity, and capability of humanitarian supply chain and logistics systems.

Discussions about supply chain management and logistics research has focused predominantly on the private sector, with a small amount focused on supply chain management for the public sector (Beamon 2004, 6). HSCM/HL, both in practice and in academic study, has been viewed as a “back-office function that was not given proper attention” with an underdeveloped logistics skillset (Van Wassenhove 2006, 475). Research on HSCM/HL began in the early 2000s, and has developed into a sub-section of supply chain and logistics management literature, as well as the disaster management literature (Maspero and Ittmann 2008).

Beginning with Beamon (2004), the literature on HSCM/HL has focused on the difference between private and humanitarian supply chain and logistics management, depicting the unique characteristics of each. For the next decade, the academic literature examined supply chain management and logistics as systems that operate in unpredictable, complex, and uncertain

disaster environments (Balcik et al 2010; Carroll and Neu 2009 Kovacs 2009; Kovacs and Spens 2007). The development of coordination models, similar to private sector counterparts, provided insight into how humanitarian organizations design and implement their supply chain systems through the study of scenarios and case studies.

A majority of the literature, however, focused on sudden onset natural disasters, limiting the applicability of the coordination models to one type of operational environment. For example Kunz and Reiner (2012, 136), in their review of the literature, revealed that ninety-five percent of HSCM/HL literature focused short-term on humanitarian operations during sudden onset natural disasters, while slow onset man-made emergencies were largely ignored. They concluded that attention and research should be directed towards continuous aid operations, as well as slow onset man-made disasters.

Given the focus of the HSCM/HL literature, it is reasonable to assume that theoretical models developed from research on sudden onset natural disasters are not necessarily generalizable to other types of humanitarian environments. Therefore, the HSCM/HL literature should seek to build empirically based knowledge that is related to continuous aid operations design and performance during slow onset man-made emergencies. As a first step, this thesis will investigate the supply chain and logistics for UNHCR's Syrian Refugee response system in Lebanon.

A. Background

Since the beginning of the civil conflict in Syria, humanitarian aid agencies, the United Nations (UN) system, and regional governments have provided an array of services and physical aid to Syrian refugees. In a period of four years, the number of Syrian refugees in Lebanon has

grown continuously. According to *The Daily Star* (2015), at the end of 2011, 5,000 Syrian refugees had sought asylum, mostly with relatives or host families. By January 2013, 150,000 were present in Lebanon. Four months later, this number doubled to 300,000. By April 2014, the refugee population had grown to 1,000,000, as the rate of registration equaled to one new Syrian refugee every minute (Daily Star 2015). As of December 2014, twenty-six percent of all individuals in Lebanon were UNHCR registered refugees, which equated to approximately 1.1 million Syrian asylum seekers (Amnesty International 2013). This flow of Syrian refugees was also punctuated with emergency influxes and a turbulent security situation in the areas that hosted the largest number of Syrian refugees (ECHO 2015). This large population, along with influxes and armed conflicts, required humanitarian organizations to use scarce resources, to deliver aid without delay.

Until December 31, 2014, the Lebanese government had maintained an open-border policy regarding the Syrian individuals and families that sought refuge within Lebanon. However, the Lebanese government's ability and willingness to provide assistance to Syrian refugees upon arrival has fluctuated. As a result, Syrian refugees have sought shelter and basic goods for survival in over 1,000 Lebanese communities, straining the social, economic, and political fabric of Lebanon (IRC, 2013). These survival goods include personal hygiene and cooking items, adequate clothing for winter months, adequate shelter, and access to clean water.

The international community, through the United Nations Higher Commissioner for Refugees' (UNHCR) Working Group system, continues to provide Syrian refugees with services and physical assistance. However, humanitarian organization and agencies face large constraints and challenges in terms of capacity, funding, and time for an adequate assistance. In April 2014, 650,000 of Syrian refugees were receiving services and physical aid. At the time, international

response funding only totaled fourteen percent of the total humanitarian funding needed (Yaxley 2014). In addition, the regional Syrian refugee response system was forced to temporarily suspend the provision of food, as the World Food Programme found itself with a \$1.4 billion dollar shortfall (Valerio 2014).

UNHCR's Crisis Response Plan for 2015-2016 estimates that the number of Syrian refugees in Lebanon will reach 1.5 million by December 2015, with a majority in need of assistance. However, the UN system and international humanitarian aid agencies continue to report shortfalls in funding, which inhibit them from responding adequately (UN News Center 2015). With such pressing need from vulnerable refugees, and exceedingly limited resources and capacities, humanitarian agencies and organizations must be able to respond quickly and accurately while stretching every financial resource to maximize impact. As such, UNHCR and other humanitarian aid partners attempt to plan their responses in terms of funding needed for provision of basic aid for Syrian beneficiaries, along with a preferred level of funding required for a response resilient to influxes in beneficiary population and their needs. In November 2014, the United Nations estimated that regionally, \$3.2 billion is required for basic assistance for refugees, while an additional \$1.26 billion is required for the resilience component of the overall response for the year 2015 (UNOCHA 2015).

International donors and governments provide the majority of resources used for humanitarian responses to emergencies and disasters, with the expectation that humanitarian responses are timely and maximize value per fiscal resource. Humanitarian actors involved in the Syrian refugee crisis must also ensure that their activities are adequate and resilient to future changes in the operational environment, such as sudden influxes of refugees from Syria or a drop in donor funding. According to the 2015 Crisis Response Plan for Lebanon, UNHCR's aim is to

increase resilience of refugee and affected populations, and decrease vulnerability, by increasing resilience of humanitarian agencies and organizations (Government of Lebanon and the United Nations 2015). As seventy-seven national and international organizations and agencies are working in parallel in Lebanon, it is imperative that their operations properly designed and supported (Government of Lebanon and the United Nations 2015).

B. Research Purpose

Considering the lack of investigation into supply chain and logistics systems in slow onset man-made disasters, this thesis will explore the design of HSCM/HL systems during a slow onset man-made emergency. More specifically, this thesis will explore UNHCR's Syrian refugee response system in Lebanon as a case study to identify the design of their HSCM/HL system. This system must be able to overcome the complexities of its operational context, as well as capacity and resource limitations, to increase the speed, accuracy, value per donor funding, and resilience of physical aid distribution. Additionally, evidence for agility, leanness, and any other characteristics within HSCM/HL for Syrian refugee aid in Lebanon will be explored. Regarding the UNHCR's Syrian refugee response activities in Lebanon, this thesis asks three questions:

- What is the standard supply chain and logistic design for the organizations operating under the non-food item working group?
- What factors affect the supply chain and logistic system's agility and leanness?
- To what extent does the design of this system, which operates in response to a slow onset man made emergency, reflect contemporary supply chain and logistic models?

C. Overview

The remainder of this thesis is organized into four chapters. The next chapter presents a conceptual review of humanitarian supply chain and logistics literature. Starting with the definition of a disaster and the disaster classification, the literature review will explore the concepts central to supply chain management and logistics. The differences between commercial and humanitarian supply chain management and logistics will be presented, in addition to three common HSCM/HL coordination models: horizontal, vertical, and mixed coordination. Next, the internal and external influencers that affect the design and performance of HSCM/HL are presented: contextual factors, the complexities of HSCM/HL, and the Sphere of Control. From here, two main characteristics, agility and leanness, are described. The literature review concludes with by discussing the major gaps in the literature as well as the theoretical concepts central to this thesis.

The third chapter presents the methods used for this thesis. The processes of data collection are presented, based on semi-structured interviews with humanitarian aid professionals in Lebanon. Data coding through a tri-tiered thematic coding strategy is described, based on several concepts from the literature. The methods chapter concludes with a discussion of ethical considerations, and the challenges faced through the research process.

The fourth chapter presents the findings. The findings are organized into three sections, which are based on the thematic categories and their relationships. The first section presents two main influencers: the contextual factors of UNHCR's Syrian refugee response system in Lebanon and the complexities of HSCM/HL systems in Lebanon. In the second section, the HSCM/HL design is presented through two models based on the Syrian refugee response in Lebanon. The first is the horizontal coordination model, outlining the types of actors, their role,

and their interactions. The second is vertical coordination model, outlining the internal processes and mechanisms of individual humanitarian organizations for physical aid delivery. Last, thematic categories for agility and leanness, characteristics of HSCM/HL systems, are presented.

The final chapter first answers the three research questions, and presents a conceptual framework for HSCM/HL characteristics in a continuous aid operation during a slow onset man-made emergency. This chapter will conclude by presenting practical and theoretical implications of the findings, as well as several policy and research recommendations.

CHAPTER II

LITERATURE REVIEW

The academic literature on humanitarian supply chain management and humanitarian logistics (HSCM/HL) is limited in scope. This chapter will cover recent developments within the HSCM/HL literature, beginning with the definition of a disaster, as well as a disaster classification. Next, the theoretical and practical aspects of supply chain management and logistics models are introduced in terms of both private and humanitarian sectors. Finally, the HSCM/HL concepts of agility and leanness will be introduced and described, along with a rationale of how agility and leanness can help HSCM/HL become resilient to the challenges and complexities present in the operational environment.

A. Disasters and Disaster Management

Disasters have various causes and timeframes. According to Van Wassenhove (2006), a ‘disaster’ is “a disruption that physically affects a system as a whole and threatens its priorities and goals” (Van Wassenhove 2006, 477). The International Federation of the Red Cross describes disasters as “sudden, calamitous events that seriously disrupt the functioning of a community or society [causing] human, material, and economic or environmental losses that exceed the community’s or society’s ability to cope using it’s own resources” (Natarajarathinam et al 2009, 536). Although the operational environment is unpredictable, disasters can be classified according to some common characteristics. Previous studies have used a two-dimensional approach to the classification of disasters (Cozzolino 2012, Moan, Lindgreen and Vanhamme 2009, Van Wassenhove 2006). This classification is shown in Table 2.1.

Table 2.1: Disaster Classification Matrix

	Natural	Man-Made
Sudden Onset	Earthquake, Hurricane	Terrorist attack, Industrial accident
Slow Onset	Drought, Famine	Refugee Crisis

From Van Wassenhove 2006

Although this classification has been widely used in disaster management and humanitarian aid studies, it is not without its critics. For instance, L’Hermitte, Bowels, and Tatham (2013, 4) argue the current matrix “does not grasp the complexity inherent in some phenomena”. Similarly, attempts to classify disasters as separate events are considered ineffective, since disasters “rarely occur as individual events...rather [they are] the result of interactions between multiple phenomena” (L’Hermitte, Bowels, and Tatham 2013, 4). Furthermore, this classification does not include what has been labeled “complex humanitarian emergencies”. Defined by the Inter-Agency Standing Committee (IASC), a complex emergency is “a humanitarian crisis in a country, region, or society, where there is total or considerable breakdown of authority resulting from internal or external conflict, and which requires an international response that goes beyond the mandate or capacity of any single and/or ongoing UN country program” (IASC 2012a, 1). This type of event is not covered in the two-dimensional matrix, further complicating how to practically and theoretically classify disasters.

Once a disaster is observed, whether slow or sudden onset, actors spring into motion, and respond by providing relief through various phases. A response is can be described as a three

phase linear process, each of which require different strategies and activities. Cozzolino (2012) and Maspero and Ittmann (2008) delineate these three phases: ramp up, sustainment, and ramp down. The ramp up phase, immediately subsequent to the onset of a disaster, is the deployment of human and material capital, and the activation of temporary networks through coordination between actors (Cozzolino, 2012). In the sustainment phase, networks, actors, and assets are fully utilized for continued response activities. Finally, once the effects of the disaster no longer require the full employment of networks, actors, and assets, ramp down occurs as assets are reduced and withdrawn. (Maspero and Ittmann, 2008). These phases have implications for humanitarian action, and in theory, guide the activities of the actors for the management of a disaster or humanitarian crisis.

B. Disaster and Humanitarian Response

After the onset of a disaster, and once the ramp-up phase has begun, various actors scramble to conduct assessments of both needs and available resources. The environment during the response phase is highly complex and unpredictable, with many disparate actors, beneficiaries, and environmental factors. Due to this, humanitarian action necessitates a complex response system of actors and activities. Actors set out to clearly establish their role based on the type of organization and the activities and tasks specific to the organization.

Activities of response actors within the disaster and humanitarian context occur on three levels, identified by Skoglund (2009). The first is the strategic level, where organizations define their activities, review their resources, and plan for action. The second is the tactical level, where organizations operationalize their plans and resources into activities in a specific context. Finally, the logistical level consists of the support activities immediately put at the disposal of

organizations and their beneficiaries on the ground, “with the end goal of optimizing humanitarian action: adequate material resources for the ground, means of communicating, etc.” (Skoglund, 2009 in Chandes and Pache 2010 326). All three levels require different types of tasks and activities, but ultimately, strategic planning and tactical action can only be implemented and sustained if humanitarian actors execute necessary logistical level activities: procurement and movement of necessary personnel, resources, and materials, effectively and efficiently, to serve beneficiaries.

C. Supply Chain Management and Logistics

Logistics and supply chain systems are the lifeline of private corporations, militaries, public sector bodies, and humanitarian organizations. This section will provide generic definitions for supply chain management and logistics, and how the humanitarian sector adapts these definitions for their support and operations. Before logistics is discussed, it is necessary to define the broader concept of supply chain management. According to the Council of Supply Chain Management Professionals (CSCMP), supply chain management:

Encompasses the planning and management of all activities in sourcing and procurement, conversion, and all logistics management activities. Importantly, it also includes coordination and collaboration with channel partners (suppliers, intermediaries, third party service providers, and customs). In essence, SCM integrates supply and demand management within and across organizations. (CSCMP 2009 in Overstreet et al 2011, 116)

SCM is a broad concept, and describes multiple actors working in parallel to channel goods throughout a larger system. SCM, in short, is an overview of a system that includes logistics. The CSCMP defines logistics management as:

[The] part of supply chain management that plans, implements, and controls the efficient effective forward and reverse flow and storage of goods, services, and related information between the point of origin and the point of consumption. (CSCMP, 2009 in Overstreet, 2011, 116)

The goal of SCM and logistics management (LM) is to optimize flows between suppliers, manufacturers, transporters, distributors, retailers, and customers, all with their own unique roles and responsibilities. Van Wassenhove (2006) divides these flows into three parts. The first is material flows, or physical product flows from suppliers, transported, and delivered to customers. The second is information flows, including the transmission of orders, tracking of orders, and the means of coordinating physical flows. The third is financial flows, which includes credit terms, payment schedules, and consignment arrangements (Kleindorfer and Van Wassenhove 2004 in Van Wassenhove 2006). Although these three flows within SCM and LM are generic, these concepts contribute to supply chain and logistics operations in the humanitarian sector.

1. Humanitarian Supply Chain and Logistics Management

Humanitarian supply chain management and humanitarian logistics (HSCM/HL) are similar to those in the private sector. However, there are also some key differences between commercial supply chains and humanitarian supply chains. The Fritz Institute, a non-profit organization specializing in logistics in humanitarian relief, defines humanitarian supply chain management and logistics, as:

The process of planning, implementing, and controlling the efficient, cost-effective flow of storage of goods and materials, as well as related information, from point of origin to the point of consumption for the purpose of alleviating the suffering of vulnerable people. The function encompasses a range of activities, including preparedness, planning,

procurement, transport, warehousing, tracking and tracing, and customs clearance (Thomas and Kopczak, 2005, in Overstreet et al, 2011, 118).

The variances between commercial and humanitarian sectors are due to the synthesis of disaster management with common conceptualizations of supply chain management. Chandes and Pache (2009, 330) illustrate this synthesis by delineating the purpose of humanitarian logistics as directly supporting both the actors involved in assistance in disaster contexts and affected beneficiary populations. Furthermore, Chandes and Pache (2009, 330) describe the overall goal of humanitarian logistics as the “[optimization] of the delivery process of a number of products needed to save lives, and then to rebuild destroyed infrastructure” Unlike the private sector, the goal of HSCM/HL is not to satisfy the paying customer, but rather, to support as many beneficiaries as possible.

Charles, Lauras, and Van Wassenhove (2010) also emphasize the importance of adapting factors from the commercial sector to HSCM/HL. One major difference to note is the definition of a customer. In the commercial sector, the buyer is the end user, while in HSCM/HL the end user (the beneficiaries) are not the same as the buyers (the donors). Table 2.2 provides a comparison of commercial and humanitarian supply chain range, customer definition, shelf life of materials, information flows, human flows, financial flows, suppliers, actors, and demand environments (Charles, Lauras and Van Wassenhove 2010).

Table 2.2: Commercial Versus Humanitarian Supply Chains

	Commercial Supply Chain	Humanitarian Supply Chain
Supply Chain Range	From supplier to customer	From donor and suppliers to beneficiaries
Customer Definition	End user = buyer	End user (beneficiary) ≠ buyer (donor)
Shelf Life	Years, but can be shorter	Some weeks to months, including mounting and dismantling
Information Flow	Generally well structured	High importance on the media; reduced means of communication
Human Flows	N/A	People flows + knowledge transfer
Financial Flows	Bilateral and known	Unilateral (from donor to beneficiary) and uncertain
Supplier(s)	2 or 3 on average	Supplier and/or donor uncertain and multiple
Actors	Known, with aligned incentives	Multiple, scarce in numbers and misaligned incentives
Demand	Usually forecasted/known	Highly uncertain
Environment	Reasonably volatile	Highly volatile and unstable

From Charles et al (2010)

2. Performance and Goals

Underlining the goals and purposes of HSCM/HL is an organization's ability to perform humanitarian operations effectively and efficiently. In this context, performance denotes the ability to strategically reconcile a system's enablers (resources, speed, capabilities) with the requirements of beneficiaries (survivability, speed, safety, sustainability) (Kunz and Reiner 2012, 120). Effectiveness is defined in the HSCM/HL context as the delivery of 'correct' relief items, determined by the needs and requirements of the beneficiary (Kunz and Reiner 2012, 119), with

the assumption “that time is saved, and thus time saved means more lives as saved” (Cozzolino, Rossi, and Conforti 2012, 16). Efficiency is the quantity of relief items delivered within a given budget (Kunz and Reiner 2012, 120), ensuring maximum amount of value is received per fiscal resource, and thus costs saved means more lives are helped (Cozzolino 2012, 11).

At each step in the process, the manner in which humanitarian logistic and supply chains are implemented must balance these underlying goals carefully. Timoleon (2012) views the goal of fair, properly controlled delivery of aid as a prevention of abuse or waste, that is dependent on careful planning and implementation of each step, which includes:

- Assessments must determine the needs, local capacity, and requirements to meet needs;
- Procurement, or how supplies are sourced (local, international suppliers), chosen, and ordered, in accordance to the assessment of needs and financial resources;
- Prior to the arrival and reception of supplies, routing of deliveries to their delivery points must be planned beforehand to prevent any possible atrophy of supplies, and to hasten distribution;
- Strategies for control and monitoring of supplies en route should provide continual verification of progress, as well as identify the next stage in the chain;
- Transport, planned a head of time, needs to be safe, timely, and affordable, with minimal damage to supplies;
- Storage of supplies should include an organized system, identifying the type, amount, and location of existing and reserve supplies within the storage area; and
- Distribution points must be planned as a fair, controlled, equitable, and efficient allocation of supplies to beneficiaries, preventing waste and abuse (Timoleon, 2012).

Once the concepts of disaster management and humanitarian aid synthesize with private sector supply chain management and logistics concepts, new operational definitions, purposes, and goals can be established. This has contributed to the development of HSCM/HL sector

models. The next section will provide a brief overview of some basic HSCM/HL models, and will then outline and describe the complexities and challenges faced in HSCM/HL.

D. Humanitarian Logistics and Supply Chain Management Models

Previous models of humanitarian supply chains are typically conceptualized as a linear process, illustrating different actors, their roles, and different activities along each step of the chain. The goal of these models is to show how different actors coordinate their activities and use resources to deliver physical aid rapidly and responsibly. It is important to note that these models overlap with another, run in parallel, and describe different, yet related, processes.

1. Coordination Models

Jahre and Jensen (2009) introduce two different, yet conjoined, dimensions of coordination for conceptualizing how supply chains work in the humanitarian sector. Vertical coordination takes place on a linear plane, showing different steps of coordination from point-of-origin to point-of-delivery. This can differ depending on the structures planned and implemented, such as the point-of-origin of goods and materials, either local or international, warehousing, and transport. Horizontal coordination, working alongside vertical coordination, describes how different actors work in parallel along different levels of the supply chains. This could mean organizations working together or separately, in the same context, while undertaking multiple activities such as procurement, transportation, or distribution. The following sections provide a review of three of the most important coordination models: horizontal coordination model, vertical coordination model, and the mixed coordination model.

a. Horizontal Coordination Model

One example of a horizontal coordination model, by Oloruntoba and Gray (2006), specifies a typical supply chain, describing a multilateral approach through a collection of organizations. This model shows the actors involved in the coordination and delivery of aid to beneficiaries. At each level, disparate organizations perform similar or different roles, tasks, or activities in a given humanitarian context (Oloruntoba and Gray 2006). Each actor, including government agencies, international agencies, international NGOs, local NGOs, and community-based organizations, interact with each other through different flows. The purpose of these actors and the flows between them is to provide the consumers, or aid recipients, with the goods and services they require. The horizontal coordination model is shown in Figure 2.1

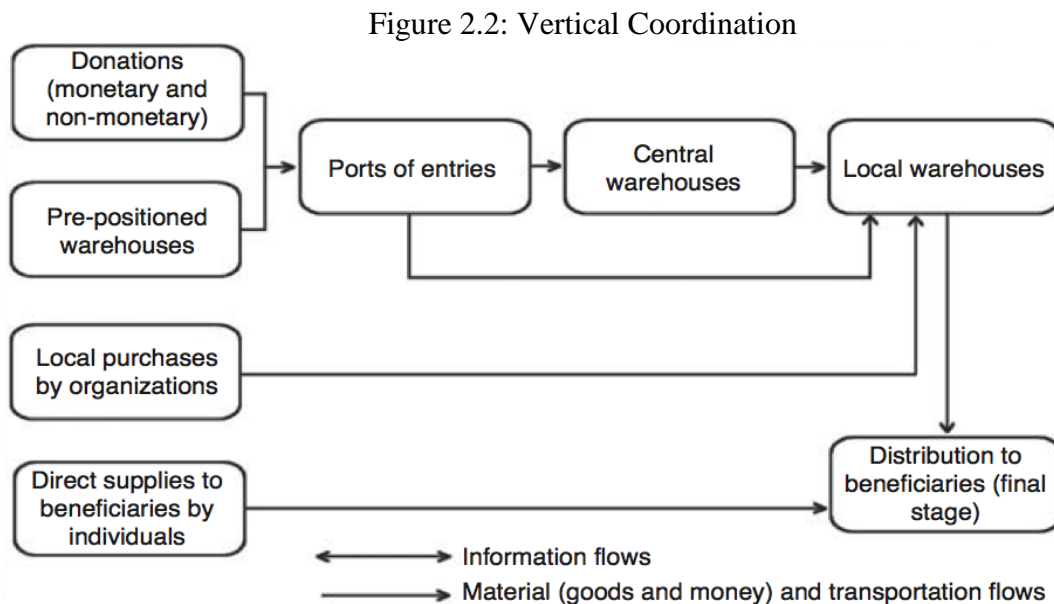
Figure 2.1: Horizontal Coordination Model



From Oloruntoba and Gray (2006)

b. Vertical Coordination Model

Akhtak, Marr, and Garnevska (2012) provide an example of a vertical coordination model, found in Figure 2.2. In their model, material and transportation flows from point to point, depending on the original source: local or international purchases, internationally pre-positioned warehouses, and/or international donations. A crucial element in this model is reliable transportation, as the reception of physical aid by all beneficiaries in need would not take place without the proper movement of goods. Locally sourced materials will find quicker storage in central or local warehouses, while materials coming from abroad must go through customs at the port-of-entry before being warehoused. Once materials are moved from local warehouses, they are distributed to beneficiaries (Akhtar, Marr, and Garnevska 2012, 95). The coordination of each point in this model is contingent not only on transfer of materials, funds, and transport. Information flows between each point plays a vital role as it allows the visibility of the entire system.

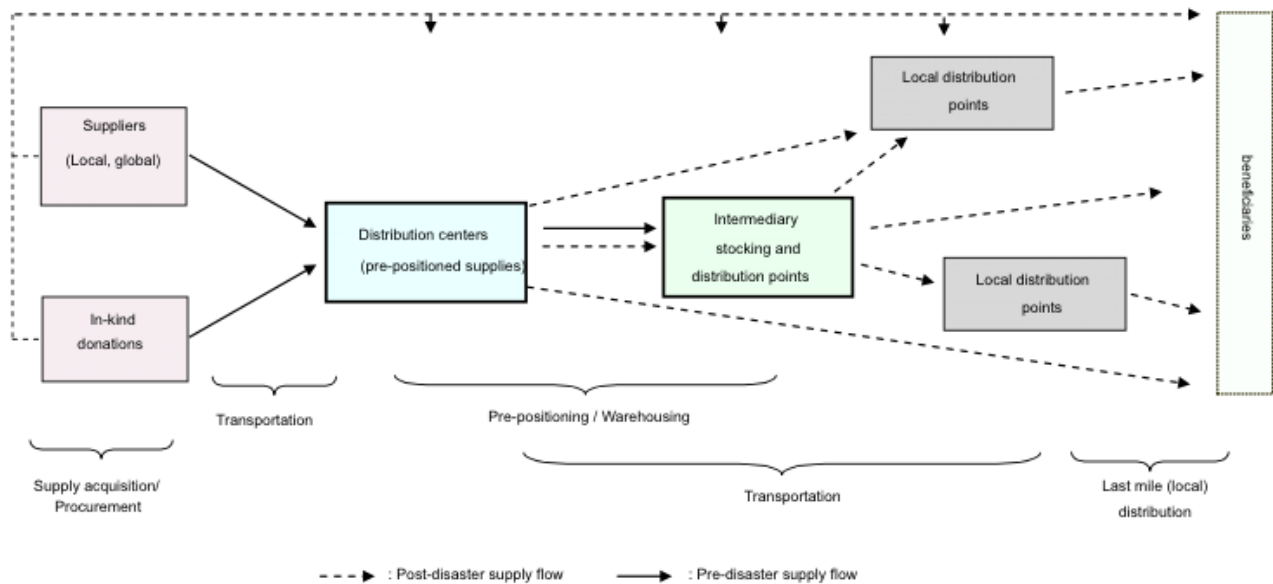


From Akhtak, Marr, and Garnevska (2012)

c. Mixed Coordination Model

Horizontal and vertical coordination models for supply chains are not mutually exclusive. Balcik et al (2010, 24) provide a model, which encompasses both horizontal and vertical coordination, focusing on the typical flow of physical aid by multiple actors within the supply chain. This is called the relief chain structure model, shown in Figure 2.3. The model displays the flow of supplies, referring to source (suppliers, in-kind donations), physical location (distribution and stocking points), and related activity (procurement, transportation, warehousing, and distribution).

Figure 2.3: Mixed Coordination Model



From Balcik et al (2010)

The model also progresses through two different timeframes, separating flows between post-disaster and pre-disaster supply flow (Balcik et al 2010). The model shows the combination of both horizontal and vertical coordination, as different actors play various roles at different points and physical locations along the supply chain. Additionally, several activities within the model are shown, including supply acquisition/procurement, transportation, pre-

positioning/warehousing, and last mile distribution. The last mile distribution is considered to be the most difficult stage through out the mixed coordination model (Balcik et al 2010).

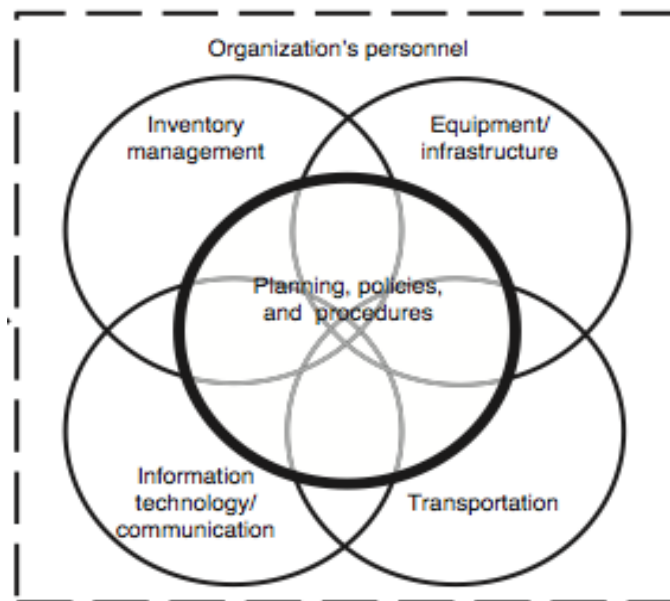
The cluster system of coordination for humanitarian operations has been established and implemented in various emergency situations. This system of coordination exemplifies the mixed coordination model in practice, and is based on planning by UN Office for the Coordination of Humanitarian Affairs (OCHA) and the Inter-Agency Standing Committee (IASC) after identifying future needs for humanitarian response and the shortcomings of humanitarian response actors. There are six core functions of the cluster system, including: 1) supporting service delivery; 2) informing strategic decision-making of the head coordinator for the humanitarian response; 3) planning and strategy development; 4) advocacy; 5) monitoring and reporting and; 6) contingency planning/preparedness/capacity building (IASC 2012b). A given country-specific cluster, lead by Strategic Advisory Group, is split up into eleven technical working groups (health, logistics, nutrition, protection, shelter, water/sanitation and hygiene, camp management, recovery, education, emergency telecommunications, and food security), which are all headed by experienced organizations specific to the technical field (IASC 2012b). The cluster system closely shows how humanitarian response is coordinated both vertically and horizontally, and has been implemented in several different emergency situations worldwide. Interestingly, the cluster system has not included conflict related refugee emergency situations, as clusters have not been established in this context (IASC 2012a).

2. Sphere of Control

Successful humanitarian response system coordination depends on the design and structure of each humanitarian organization, as the capacity and performance depends on how

individual actors operate. Based on a literature review that reviewed twenty-seven HSCM/HL models, Overstreet et al (2011) developed a large-scale organizational framework, pinpointing different internal elements and assets that contribute to the final output of humanitarian relief. The Sphere of Control, shown in Figure 2.4, illustrates assets and capacities in use, or the elements that are necessary when considering how supply chains support humanitarian operations. The internal composition of individual humanitarian organizations consists of the following elements: personnel, equipment, transportation, information technology/communications, and inventory management.

Figure 2.4: Sphere of Control



From Overstreet et al (2011)

A sixth element, planning, policy, and procedures, overlays the entire Sphere of Control, acting as a prescription of how to utilize assets as applied to the Sphere of Control. This framework is useful for identifying the assets, capacities, and capabilities, within an

organization's control in an emergency setting. It is also a good starting point for assessing the management of an organization's logistics and supply chain.

E. Contextual factors and HSCM/HL Complexities

When responding to a complex emergency, both the operational context and the complexities of HSCM/HL influence performance and present challenges not found in the commercial sector. As a result, the success of humanitarian operations relies on how the context and complexities are overcome, specifically in terms of the design and adaptation of HSCM/HL systems. This section provides an overview of how the factors within the operating environment and how the complexities of HSCM/HL affect design considerations and performance of humanitarian response.

1. Contextual Factors

Kunz and Reiner's (2012) study of the humanitarian logistics literature identifies four contextual factors that impact the operations and performance of HSCM/HL. The first is government situational factors, which includes the ability and/or will to assist in the crisis (especially in terms of security), level of corruption, and regulations/attitude towards relief organizations. Second is socio-economic situational factors, which add to the complexity depending on the level of development. For example, lack of socio-economic development may limit the availability of supplies, human capital, and experience. The third is infrastructure situational factors, including transportation, energy, and communications, which can facilitate or disrupt logistical operations. The last is environmental factors, such as meteorology, geography,

and natural resources, also may affect ability and performance of humanitarian operations (Kunz and Reiner 2012).

Table 2.3: Contextual Factors in HSCM/HL

Contextual Factors in HSCM/HL	
Exogenous Factor	Influence
Government Situational Factors: Ability/Will to assist, corruption, regulations	Influences ability to plan and act efficiently, effectively, and fairly
Socio-Economic Factors: Level of development in the disaster context.	Influences the availability of goods, equipment, and human capacities within the disaster arena
Infrastructure Factors: Transportation, energy, communications	Can help or disrupt operations, influences efficiency and effectiveness
Environmental Factors: Meteorology, geography, natural resources	Can contribute to the instability and unpredictability of an already unstable context
Conflict-Related Factors: Safety/security, additional (possibly non-state) actors included.	Influences the accessibility, adds costs and complications to planning and action

From Kunz and Reiner (2012), Tatham et al (2013)

Tatham, L’Hermitte, Spens, and Kovacs (2013, 12) add the conflict environment as a fifth contextual factor, noting the “level of security/insecurity impacts logistics operations, not least because it raises safety issues and may generate additional requirements such as escorted convoys”. In addition to security constraints, local actors such as communal leaders, militias, or political movements “come to play a role of gatekeeper at logistical nodes, such as road checkpoints”, requiring a negotiated agreement to conduct transportation, warehousing, and distribution, and restricting mobility of resources and accessibility to affected populations

(Taham et al 2013, 12). These five contextual factors may facilitate complicate the design, implementation, and management of humanitarian supply chains, and are shown on Table 2.3.

2. HSCM/HL Complexities

Humanitarian operations also must consider sector-specific complexities, which influence the performance of HSCM/HL. Tomasini and Van Wassenhove (2006) and Kovacs and Spens (2009) discuss HSCM/HL complexities in depth, beginning with the objectives of HSCM/HL. First, the humanitarian sector is motivated by the need for speedy lifesaving activities, leading to the possibility of firefighting, or short term attempts to fill needs of beneficiaries retroactively. Without proper planning, firefighting can lead to ambiguous objectives, causing substantially less coordinated, spontaneous, unsolicited, and disparate actions. Second, the landscape of the humanitarian sector includes asymmetric investment of actors, or an unequal quality and quantity of assets actors contribute to a humanitarian operation. This makes resource availability difficult to predict and limited in nature. This includes human resources, capital, infrastructure (Tomasini and Van Wassenhove 2009), supply/inventory, technology, transportation, and capacity (Kovacs and Spens 2009). Third, there is uncertainty in the supply of physical aid, coupled with unanticipated “suddenness” of demand, with little to no ability to forecast timing, location, type, and amount (Kovacs and Spens, 2009). Fourth, humanitarian operations are typically characterized as urgent and intense. The timeliness and correctness of aid distribution can mean life or death for those in need (Kovacs and Spens 2009; Tomasini and Van Wassenhove 2009). Lastly, it can be challenging for humanitarian operations to “maintain and protect the so-called humanitarian space”. Resources for HSCM/HL can be competitive and politicized, causing

issues between actors (Tomasini and Van Wassenhove 2009). The complexities of HSCM/HL are presented in Table 2.4.

Table 2.4: Complexities and Consequences of HSCM/HL

Complexities and their Consequences in HSCM/HL	
Complexity	Consequence
Motivation: Need for speedy and lifesaving response, potentially leading to firefighting	Less coordinated, spontaneous, disparate actions → ambiguous objectives
Asymmetric Investment: Actors have different levels of commitment and abilities.	Unpredictable and limited resources and capital
Unstable Supply/Demand: Unanticipated demand, coupled with uncertain supply	No demand forecasting, inaccurate or inappropriate levels of supply
Acutely Urgent and Intense: Short timeframe, with much to be lost	Life, death, and suffering of those in need depend quick delivery and distribution of goods
Humanitarian Space: Balance of humanity, impartiality, and neutrality	Limited resources can be competitive, politicized, and pressured by forces outside of immediate needs

From Kovacs and Spens (2009), Tomisini and Van Wassenhove (2009)

Chandes and Pache (2009) assert that humanitarians supply chains must have rapid reactions and responses to unanticipated changes in the emergency context. These unanticipated changes in an organization's internal operational environment, as well as the external context in which they operate, demand a certain level of flexibility and speed. This flexibility and speed is vital, especially considering the uncertainty of the demand, potentially volatile or inadequate market supply of goods, and the inability to conduct medium or long term forecasting for either demand or supply (Chandes and Pache 2009).

F. Characteristics of Humanitarian Supply Chains and Logistics

Much of the HSCM/HL literature focuses on agility and leanness as necessary characteristics to respond to humanitarian emergencies. Due to the fact that humanitarian environments are unpredictable, turbulent, and require flexibility, these two characteristics can help humanitarian actors mitigate these contextual factors and complexities. Specifically, agility can support effectiveness and speed, while leanness focuses on efficiency and cost saving (Cozzolino et al 2012). The capacity to react to complex situations and unpredictable circumstances in the supply chain of humanitarian operations is vital, and can be the difference between not only success and failure, but can also mean lives saved versus further suffering or lives lost. Agility and leanness will now be discussed in turn.

1. Agility in Humanitarian Supply Chain and Logistics

Agility, as a paramount characteristic of HSCM/HL, can be defined as the ability to quickly and adequately respond to short-term changes in demand, supply, and/or the operational environment (Chandes and Pache 2010; Charles, Luras and Van Wassenhove 2010). Although there are several conceptualizations of agility in the literature, the “House of Supply Chain Agility” is the most detailed. This framework for HSCM/HL agility, by Charles, Luras, and Van Wassenhove (2010), explores the three specific capabilities necessary for an agile supply chain. Built on three components, the agility is based on the ability to “respond quickly and adequately to short-term changes in demand, supply, and/or the environment” (Charles, Luras, and Van Wassenhove 2010, 727). The base component is flexibility, defined as the ability to change or react with little penalty in time, effort, cost, or performance. The next component, responsiveness, is the ability to respond to change within an appropriate amount of time through

reactivity, velocity, and visibility. The last component, effectiveness, describes the ability of the supply chain to do all that is necessary and appropriate in order to serve beneficiaries (Charles et al 2010). Table 2.5 outlines the components of the agility in HSCM/HL.

Table 2.5: Agility and its Elements

Agility	
Flexibility:	The ability to change or react with little penalty in time, cost, or performance
Responsiveness:	The ability to respond to change within an appropriate amount of time through reactivity, velocity, and visibility
Effectiveness:	The ability to do all that is necessary and appropriate in order to serve beneficiaries

From Charles, Lauras, and Van Wassenhove (2010)

It can be argued that the focus on agility within HSCM/HL, especially during the response phase of disaster management, can help response systems to overcome major challenges and obstacles in humanitarian contexts. This ultimately helps achieve the objective of saving time and thus, saving lives (Cozzolino 2012). Quick and effective responses rely on agility of humanitarian supply chains to react in the operational environment. However, the humanitarian context also faces limited financial resources, an even greater concern when emergency responses become prolonged. Although agility is a key characteristic for effective supply chains, the efficient use of limited resources over a long period of time can help ensure that humanitarian operations are not hindered by the unnecessary or wasteful usage of resources.

2. Leanness in Humanitarian Supply Chains and Logistics

Alongside agility is the characteristic of leanness, which enables supply chains to operate with a certain level of efficiency. The literature on leanness in HSCM/HL contexts is underdeveloped. Descriptions of leanness in HSCM/HL is simplified as “focusing on efficiency and cost saving” (Cozzolino 2012, 11), achieving “more with less...[eliminating] waste along the supply chain” (Scholten, Scott, and Fynes 2010, 627), with the underlying assumption that “we are saving costs, and costs saved mean more lives helped” (Cozzolino et al 2012, 21). This may be due to two factors: a majority of the HSCM/HL literature is focused on short-term response in sudden onset emergency situations, and that leanness characteristic has only been applied to the reconstruction phase of disaster management in such short-term, sudden onset emergency contexts. Despite this, Taylor and Pettit (2009, 435) have identified the commercial concept of “value chain added” (VCA), which provides a “useful framework with which to consider some of the key aspects of supply chain management in [humanitarian aid] settings”. VCA includes six key elements, outlining value, demand, lead times, inventory management, identifying waste in the supply chain, and reducing product waste. Through VCA, leanness can be defined as maximization of cost effectiveness of humanitarian operations to ensure a maximum number of beneficiaries are served. The elements of leanness are presented on Table 2.6.

Agility and leanness are not mutually exclusive. Rather, the two HSCM/HL characteristics run in parallel, ensuring that supply chains are resilient to the challenges posed by contextual factors of a humanitarian emergency and the complexities of HSCM/HL. Resilience, or the “ability to adjust to ‘normal’ or anticipated stresses and strains, and to adapt to sudden shocks and extraordinary demands” (de Bruijne, Boin, and van Eeten 2010, 28), is necessary for successful humanitarian aid operations. In the context of a prolonged response to a slow-onset,

man made emergency, agility and leanness can easily be seen as precursor for the supply chain and logistics systems necessary for resilient humanitarian operations.

Table 2.6: Leanness and its Elements

Leanness	
Value:	Defining what is ‘value’ from the recipients’ and donors’ point of view
Demand:	Analyzing both end user demand and demand dynamics within the supply chain with a view to proactively managing demand
Lead Time:	The objective of time compression, affecting speed of physical and information flows, increase forecast accuracy, reduce demand amplification, and reduce overall uncertainty
Inventory Management:	Managing inventory with the aim of having the right amount of inventory in the right place in the chain, in the right form
Supply Chain Waste:	Identifying waste in the chain in terms of non-value adding activities with a view to reducing the cost of supply chain operations
Product Waste:	Reducing product waste and losses through the chain

Adapted from Taylor and Pettit (2009)

H. Preliminary Conceptual Framework

There are several gaps in the HSCM/HL literature. First, disaster management cycles do not consider long-term emergencies, meaning there is a lack of focus on long-term response sustainability. Second, a vast majority of the concepts behind HSCM/HL, and the models based on these concepts, have been developed through an examination of sudden onset, natural disasters. Third, the internal mechanisms of HSCM/HL systems lack development, solely

presented through the Sphere of Control. Last, agility and leanness are characteristics that have been developed based only on sudden onset disasters. Agility and leanness have also been developed as separate concepts. These characteristics of supply chain design and implementation may appear differently in continuous aid operation during a slow onset man-made emergency.

To address the gaps in the literature, this thesis will investigate continuous aid operations within slow onset man-made emergencies. As a case study, this thesis will examine the Syrian refugee response system in Lebanon, focusing on the distribution of physical aid to Syrian beneficiaries. A conceptual framework will be presented based on several disparate concepts found in the literature. These concepts have been developed through previous studies of contexts outside of slow onset man-made emergencies, and have not been proposed as a single coherent framework. The concepts taken into consideration are: Influencers (contextual factors, complexities of HSCM/HL), Design (vertical coordination, horizontal coordination, Sphere of Control), and Characteristic (agility and leanness). The elements of this conceptual framework are summarized in Table 2.7.

The influencing factors represent different antecedents in the operational environment, which affects the design and performance of HSCM/HL systems. This grouping is comprised of two components. The first is contextual factors, as described by Kunz & Reiner (2012) and Taham et al (2013) (Table 2.3). The contextual factors, comprised of government situational factors, socio-economic factors, infrastructure factors, environment factors, and conflict related factors, provide an understanding of the unique operating environment in which humanitarian efforts are being made. The second is complexities of HSCM/HL, described by Kovacs and

Spens (2009), Tomisini and Van Wassenhove (2009) (Table 2.4). These complexities will help understand the inherent nature of HSCM/HL, and how complexities affect the system as a whole.

Table 2.7: Relevant Concepts within HSCM/HL literature

INFLUENCING FACTORS	
Contextual Factors:	Five factors highlighting the operational environment and their influence on HSCM/HL
Complexities:	Five complexities experienced within HSCM/HL systems
HSCM/HL DESIGN	
Horizontal Coordination:	The relationships between different actors, and flows between each actor
Vertical Coordination:	Point-to-point movement of physical aid within each humanitarian organization
Sphere of Control:	Six assets and mechanisms of each humanitarian organization utilized within their supply chain
SYSTEM CHARACTERISTICS	
Agility:	The ability to respond quickly and adequately to short-term changes in demand, supply, and/or the environment
Leanness:	The ability to maximize cost effectiveness and value with a supply chain system, ensuring lives saved

Adapted from Akhtak et al 2012, Charles et al 2010, Jahre and Jensen 2009, Kovacs and Spens 2009, Kunz and Reiner 2012, Oloruntoba and Grey 2006, Tatham et al 2013, Taylor and Petit 2009, Tomisini and Van Wassenhove 2009

The second grouping, HSCM/HL design, focuses on the actual layout and implementation of HSCM/HL systems. This grouping is comprised of three components. First, the horizontal coordination model, presented in Figure 2.1, will identify the various actors

within the humanitarian response, as well as their relationship through different flows (e.g., financial, information). Second, the vertical coordination model, presented in Figure 2.2, identifies mechanisms and movements of physical aid within a single organization's supply chain. Third, the Sphere of Control (Figure 2.4) will be applied to pinpoint specific tools and mechanisms used throughout the design of the supply chain. HSCM/HL design is paramount for identifying how the entire humanitarian response behaves.

Various traits and characteristics are present throughout a HSCM/HL system, and are either beneficial or harmful to its performance. The third grouping is comprised of two characteristics: agility and leanness. Evidence for agility, outlined in Table 2.5, will provide description of how the HSCM/HL responds to short-term changes in demand, supply and/or the environment. Evidence for leanness (Table 2.6), outline traits HSCM/HL either supporting or hindering the ability to maximize cost effectiveness and value of the system, ensuring lives saved. These characteristics are the focal point of this thesis, and help describe the overall performance of a HSCM/HL system in a slow onset man-made emergency.

With the identification of these concepts from the literature, it will be possible to examine what influences HSCM/HL, how the systems are designed, and how characteristics are shown and affected, all in the context of a slow onset man made emergency. The next chapter will pose the research questions, as well as the methods used to gather evidence of influence, design, and characteristic. Ultimately, this thesis will propose a coherent conceptual framework for HSCM/HL characteristics in continuous aid operations during slow onset man-made emergencies, based on the Syrian refugee response in Lebanon.

CHAPTER III

METHODS

This thesis investigates humanitarian supply chains and logistics systems with respect to the distribution of physical aid. Specifically, this thesis focuses on how these systems are designed and implemented, the influencing factors, and the successes and/or challenges of the humanitarian systems. To do this, UNHCR's Syrian refugee response system in Lebanon was investigated as a case study. This section will provide an overview of the methodological perspective, and methods used to gather qualitative data from the Syrian refugee response in Lebanon. As such, this thesis will address three research questions:

- What is the standard supply chain and logistic design of the UNHCR system that is distributing physical aid to Syrian beneficiaries in Lebanon?
- What factors affect agility and leanness in the UNHCR system?
- To what extent does the design of this system, which operates in response to a slow onset man made emergency, reflect contemporary supply chain and logistic models?

A. Qualitative Research

The qualitative research perspective can help describe phenomena within humanitarian supply chains. Descriptive research is defined as the intention to investigate little understood phenomena, and to identify/discover important variables, as well as to document the phenomena of interest (Yang and Miller 2008, 152). This thesis explores HSCM/HL in a slow onset, man-made emergency, and will provide qualitative evidence of characteristics within the operating context for aid to Syrian beneficiaries in Lebanon. Additionally, a conceptual framework will attempt to illustrate how the design, implementation, and characteristics affect the performance

of humanitarian operations. To do this, the unit of observation included professionals in the humanitarian sector working in Lebanon. By collecting data from these humanitarian professionals, this thesis is able to investigate the unit of analysis, UNHCR's Syrian refugee response system in Lebanon.

B. Population and Sampling

This thesis collected data from a sample of humanitarian professionals involved in the HSCM/HL for distribution of physical aid in the form of non-food items to Syrian beneficiaries in Lebanon. The study focused on the entire HSCM/HL process, as described by participants. Considering the need for specialized knowledge of HSCM/HL in Lebanon, this thesis used a purposeful sampling technique to select participants. The goal of purposeful sampling, as described by Bryman (2012, 418), is “to sample participants in a strategic way, so that those sampled are relevant to the research questions that are being posed”. More specifically, criterion sampling, or “sampling units that meet a particular criterion” (Bryman 2012, 423), focused on expertise of HSCM/HL. The population consisted of humanitarian professionals that had at least one year of experience in humanitarian supply chain for Syrian refugee response in Lebanon. Examples of professionals who have participated in this study include logistics personnel, supply chain personnel, operations personnel, and warehouse personnel, with levels ranging from assistants, officers, coordinators, managers, and directors.

According to Seidman (2006), the range of sufficient number of interviewed participants for qualitative research may vary, but depends on two objectives: sufficiency, or the proper reflection of the range of participants and sites that make up the population, and saturation of information, or the point at which the interviewer continues to hear the same information

reported. The population size consisted of seventeen individuals from various humanitarian organizations operating in different areas in Lebanon: Beirut, Akkar Region, Bekaa Valley, Mt. Lebanon, Sour, Chouf, and Tripoli. For this thesis, the practical exigencies of time and access to individuals played a role in the number of participants. However, the number of participants not only surpasses previously published qualitative studies on HSCM/HL, but also satisfies both sufficiency as well as saturation of information.

C. Data Collection

To describe the operationalization of humanitarian supply chains for Syrian refugee aid distribution in Lebanon, this thesis relies on the collection of primary data derived from experienced practitioners (humanitarian aid workers in Lebanon) through semi-structured interviews. Semi-structured interviews refer “to a context in which the interviewer has a series of questions that are in the general form of an interview schedule, but is able to vary the sequence of questions...[allowing] latitude to ask further questions in response to what are seen as significant replies” (Bryman 2012, 472). To conduct semi-structured interviews, an interview guide, based on the literature review, was developed and used for data collection. The interview guide (Appendix I) focused on topics under general categories about supply chain and logistics design, and specific categories such as planning, policy, and procedure, inventory, transportation, personnel, equipment, information technology and communication. Follow-up questions and clarifications by the investigator increased the breadth of responses given by participants. The duration of these interviews varied from thirty-five to ninety-five minutes, as all interviews were audio recorded and transcribed.

D. Data Coding

As stated above, data collected through interviews was digitally recorded and transcribed. To further ensure privacy and confidentiality, identifying markers, such as names or organizational affiliations, were omitted from the transcripts. Additionally, all files, including audio files and transcripts, were secured digitally, password protected in an external hard drive accessible only to the primary investigator and student investigator. After the conclusion of data collection, transcripts were loaded on to MAXQDA, a qualitative data analysis software application, allowing for more in-depth coding strategies and analyses for qualitative data.

From this point, each transcript was coded based on thematic coding, which describes and organizes observations, interpreting aspects of a particular phenomenon (Saldaña 2013), providing the researcher with the basis for theoretical understanding of data. Thematic coding is based on the idea of themes, “an abstract entity that brings meaning and identity to a recurrent (patterned) experience, and it’s variant manifestations...capturing and uniting the nature or basis an experience into a meaningful whole” (Saldaña 2013, 176). Overall, the “analytic goals are to winnow down the number of themes to explore in a report, and to develop an overarching theme from the data corpus, or an integrative theme that weaves various themes together in a coherent narrative” (Saldaña 2013, 175).

E. Data Analysis

Specific for this thesis’ strategy for thematic coding, transcripts went through three tiers of coding to clean data and accurately identify themes. First, transcript data was coded based on two analytical lenses: descriptions, identifying what UNHCR’s HSCM/HL system in Lebanon is, and experiences/insights, illustrating how UNHCR’s HSCM/HL system in Lebanon works.

These sections were furthermore broken down into sub-codes, identifying individual components of the HSCM/HL based on the Sphere of control, and identifying the how experiences and insights relate to characteristics. Second, codes based on descriptions and experience/insights were aggregated and cleaned to clarify the specific component (based on description) and the characteristic (based on experience) each piece of data fits. Additionally, codes were then organized into new categories based on similarity of themes within component and characteristic, allowing for a new set of categories to emerge. Lastly, relationships between these new categories, divided by component and characteristic, were sought after by conducting a coding query, finding intersections of specific codes within the data. Overall, several major emerging thematic categories and their relationships were found, falling under the location of components of UNHCR's HSCM/HL system, and the characteristics (beneficial, neutral, and detrimental), of UNHCR's HSCM/HL system.

F. Ethical Considerations

Recruitment of participants was based on publically available information, found on various website and web portals, such as UNHCR's Syrian Response Portal for Lebanon. This publically available contact information typically consisted of names, titles, organization, email address, and phone number. Recruitment occurred via two methods: email and telephone. A copy of the email recruitment script can be found in Appendix III, and a copy of the telephone recruitment script can be found in Appendix IV. The scheduling of interviews was conducted after confirmation of interest in participation and eligibility.

The methods of this research did not present any risk to the participants beyond those risks encountered in every day life, nor were the participants apart of an at-risk population. The

semi structured interview questions did not cause any physical or emotional harm. Participation was voluntary, and participants were told of their right to pause or to discontinue participation at any time. All data collected by this study remains confidential, and neither the names of the interviewees nor any identifying marker (such as their organizational affiliation) will be included in this written thesis or any other research output.

The participants were notified of their rights as participants both during recruitment and immediately prior to the interviews. Informed consent forms (Appendix II), including contact information of the primary investigator, the student investigator, and the American University of Beirut Institutional Review Board (IRB), were given to each participant. The informed consent forms outlined the entire study, the risks and benefits associated with participation, and the rights of the participants. To ensure confidentiality and privacy, only verbal consent was required from each participant, minimalizing the linkage between identifying information and the participants' responses. Through verbal consent, all seventeen participants confirmed their voluntary willingness to participate in the interview, consent to be digital audio recorded, and permission for direct (yet anonymous) quotations used in any research output drafted based on the interviews.

G. Limitations

There were several limitations included in the design of this thesis. First, participant bias, or self-reporting, may limit validity of each participant's response, as actual practices may not be accurately reflected in the interview. Additionally, responses may have been exaggerated or understated, leading to a misrepresentation of the participants' attitudes and perceptions. Second, data coding and analysis may have an affect on the findings, as the student investigator was the

only researcher to undertake either, due to a lack of additional individuals for cross coding. Third, cross-cultural communication differences may have been an issue, due to varying levels of spoken English. English was a second language to many participants, and may have contributed to a misunderstanding of questions and/or responses. Last, some participants showed a hesitancy to divulge information with concerns that their participation may not have been compliant with their respective organization's policies. This also included some slight suspicions in procedures included to ensure privacy and transparency. Both sources of hesitancy and suspicion may have lead to refusal to divulge information deemed sensitive.

Ultimately, the emerging thematic categories will lead to a description of what influences HSCM/HL design in Lebanon, the characteristics of agility and leanness, and a possible conceptual framework suitable for continuous aid operations in slow onset man-made emergencies. These thematic categories and relationships between them are based on qualitative data, collected through semi-structured interviews with humanitarian professionals with supply chain and logistics knowledge and experience in Lebanon. While there are limitations to the methods used for this thesis, the qualitative approach, semi-structured interviews of HSCM/HL professionals, and thematic coding was found to be the most appropriate form of investigation.

CHAPTER IV

FINDINGS

This thesis seeks to investigate HSCM/HL systems in slow onset man-made emergencies, as well as the characteristics of agility and leanness. As such, this chapter presents the findings of the thesis, which were established from the thematic categories that emerged from the coding of transcripts, leading to relationships between the categories. Each section of this chapter presents findings as thematic categories, prescribed by the preliminary conceptual framework (Table 2.7): influencers, HSCM/HL design, and characteristics.

The first section discusses the two categories of influencers, the six contextual factors present within Lebanon, and the complexities of HSCM/HL found within the UNHCR's Syrian refugee response system. The second section discusses the design and structure of humanitarian organizations' supply chain and logistics. HSCM/HL designs found in Lebanon are expressed in the form of horizontal and vertical coordination models, both of which include components from Overstreet et al's (2011) Sphere of Control. The horizontal coordination model is presented as a multi-tiered landscape, and includes the variety of actors simultaneously participating in the Syrian refugee response in Lebanon. The vertical coordination model, including HSCM/HL tools and mechanisms utilized by humanitarian organizations, illustrates a composite rendering of flows and activities for the utilization of components within the Sphere of Control. The third section presents HSCM/HL characteristics within the UNHCR's Syrian refugee response system in Lebanon, and includes findings of themes either enabling or hindering agility and/or leanness. These findings will allow for a new conceptual framework.

A. Influencers

Two environmental influencers affect how a humanitarian response system performs after a slow onset man-made emergency. These influencers affect the performance of HSCM/HL, as supply chain and logistics systems attempt to either overcome the challenges posed, suffer a loss in performance, or adapt to the influences out of the control of humanitarian organizations. The two main influencers found in the system under analysis are the Lebanon specific contextual factors, and the Lebanon specific complexities of HSCM/HL. Ultimately, the design of humanitarian supply chain and logistics systems may be altered depending on how these influencers affect humanitarian operations.

1. Lebanese Contextual Factors

From a broader perspective, the participants interviews provided evidence that closely follow the six contextual factors presented in the literature review: government situational factors, socio-economic factors, infrastructure factors, environmental factors, and conflict-related factors. These factors stem from the operating environment and have their own affects, both positive and negative from the perspective of the participants, on their organization's humanitarian supply chain management and activities.

a. Government Situational Factors

In the timeframe the interviews were conducted, three major unprecedented phenomena were taking place in Lebanon. These phenomena have affected humanitarian operations. First, the Lebanese government's policy for the establishment of Syrian refugee sheltering was not supportive of establishing formal camps or settlements, and had strict, although opaque, criteria

for acceptable shelters. Clear shelter needs for Syrian beneficiaries were described by several of the participants as supply chains were set up to provide sustainable solutions for sheltering. Suppliers were sourced, and these temporary shelters (T-shelters) were procured and provided. However, the Lebanese government halted the distribution of these settlements (Participant 9 2014). This specific type of inventory was placed in limbo, as humanitarian organizations had to manage stock of unused shelters.

Second, the Lebanese central government, as well as various municipalities, began to establish policies for humanitarian organizations requiring equitable assistance to Lebanese host communities where services and goods were being provided to Syrian beneficiaries. Participants viewed this policy favorably, with one organization operating according to the policy prior to the Lebanese government's decision (Participant 3 2014). This required humanitarian organizations to base their distribution of physical aid on the needs of Syrian beneficiaries and Lebanese host communities as well.

Third, and most prominent in the participants' responses, was the Lebanese government's inability to fill the Presidency vacancy. This political issue in Lebanon has directly affected humanitarian supply chains through the lack of official registration and the lack of governmental recognition. Registration of international organizations requires the approval and signature of the Lebanese President. Without official recognition and proper registration with the Lebanese government, unilateral importation of inventory for many organizations is impossible, as customs clearance and/or exemptions from taxes through Lebanon's ports is not allowed. For many humanitarian organizations, the only possible way to import inventory was either to hire expensive clearing agents and companies, or to "pass through a certificate agency...they have the

full capacity to act with the public government” (Participant 1 2014) to source, procure, and make payment to international suppliers.

b. Socio-Economic Factors

Unlike many other humanitarian emergency contexts, a majority of the participants noted the availability and accessibility of capital and resources in Lebanon, due to its socio-economic “status as a middle-income country” (Participant 5, 2014). Specifically, participants’ responses were akin to the idea that most necessities to operate are available within Lebanon. Sourcing for to be distributed inventory and its potential suppliers, equipment and information technology solutions, and finding qualified individuals from within Lebanon was not challenging, but also a perceived strong suit for the humanitarian operating context. This does not, however, translate into having all the needs met within the country, as the supplier inventory, equipment, and information technology solutions are priced higher than in the international market.

Additionally, educated and qualified individuals are abundant in Lebanon. However many of the participants noted the difficulty of finding candidates with a “humanitarian, NGO mindset”, as many local hires were seen as temporary, “either to quickly jump to other higher paying humanitarian organizations, or to leave the sector entirely” (Participant 8, 2014). It has been pointed out that the lack of humanitarian mindset has also led to unethical practices and sourcing of suppliers stricken with collusion and conflict of interest (Participant 9 2014).

c. Infrastructure Factors

Infrastructure factors, specifically transportation, communications, and energy, minimally affects humanitarian operations in Lebanon. The transportation infrastructure was viewed as

ample, as many of the participants came from less developed humanitarian contexts and viewed Lebanon's physical infrastructure positively. The only grievances concerned the condition of roads during rain or snowstorms or the congestion at major ports, which both cause delays in the delivery of inventory. Communications infrastructure was viewed in a similar fashion, as organizations are reliant upon on mobile and 3G communications. Some participants noted that, in certain areas, service and reception was an issue, but most retorted that it was not a major concern in terms of successfully operating. Lebanon's energy infrastructure, despite its struggle with the generation of electricity, was also not seen to be a major issue, as most organizations found solutions (e.g., generators) readily available. Experienced participants were dismissive of the additional cost of generators, which were noted as much more costly and difficult to work with in other humanitarian contexts.

d. Environmental Factors

Environmental factors were mentioned less than any other factors. Environmental factors, such as meteorological or geographical, were limited to only two separate common themes. First, winterization planning alters sourcing procurement of appropriate inventory required for cold and moist winters. This is seemingly altered by program and logistics teams well in ahead of winter months, with relative ease. The second is Lebanon's geography. Movement of individuals and inventory, especially when compared to other contexts, is perceived as easy and quick, allowing for fast changes in operations.

e. Conflict Related Factors

Conflict related factors are a major concern for humanitarian operations. Many areas along the Lebanese-Syrian border, especially along the Bekaa Valley and Northern Lebanon, experience periodic violence and armed conflict. Unfortunately, large groups of refugees are also present in these locations. For the sake of logistics, this requires well thought-out security planning, fleet management and scheduling, and contingency plans for the protection of both warehouses of inventory, and more importantly, humanitarian personnel. However, none of the participants indicated that these security issues had significantly hampered operations, nor had there been any major losses of stock or personnel.

The second conflict related factor stems from the strong position and authority of non-state actors throughout Lebanon. These non-state actors, including paramilitaries, political parties, clan or tribe based militias, communal leaders, or other actors, add yet another layer of authorizations and permissions for humanitarian organizations to operate in their “jurisdictions”. This includes additional security screening of humanitarian personnel in the field, added negotiations on the location of distribution sites, the number of beneficiaries allowed to attend distributions at a single time, and the type of equipment allowed into the field. Several participants stated that these non-state actors limited or even banned electronic equipment, such as smartphones, tablets, and GPS altogether (Participant 1 2014). These added authorizations and requirements make it difficult to operate freely, with the best tools available, despite having permission from the Lebanese government.

2. Complexities Within HSCM/HL in Lebanon

Complexities of HSCM/HL, described by Kovacs and Spens (2009) and Tomisini and Van Wassenhove (2009) are easy to identify throughout UNCHR’s Syrian refugee response

system. First, the humanitarian operations system as a whole, lead by UNHCR, attempts to coordinate activities through two means: data sharing and coordination. These means were reported as unequal and imperfect, in terms of utilization of data, accurate data analysis, consistent reporting to partners through information sharing portals, and frequent participation in coordination meetings (Participant 7 2014; Participant 9 2014; Participant 15 2014). As a consequence, the management of supply chains and logistics are subject to the adequacy and level of data sharing and coordination, leading to possible waste and duplication through spontaneous and disparate actions by individual organizations within the system.

Next, the duration and availability of funding for response in Lebanon also confirms the issue of asymmetric investment. Shifts in programming and funding levels, and reporting and auditing requirements of donors affect the ability of supply chain and logistics systems in terms of future planning. Ultimately, shifting of donor goals and funding cause resources for humanitarian programs to become unpredictable and limited (Participant 12 2014).

Unstable supply and demand is also a major challenge for HSCM/HL, from both the perspective of Syrian beneficiaries, humanitarian organizations, and donors. Current and potential future needs based on beneficiaries are seemingly the easiest to forecast, as various actors, especially UNHCR, are able identify needs of current beneficiaries, as well as provide an estimate of future newcomers. Supply chain and logistics systems, however, suffer from instabilities in terms of suppliers and donors. Accessibility of inventory from suppliers is reported to be inconsistent at times, especially when different organizations are competing to respond to an influx or emerging need. Goal-based demand of donors, similar to level of commitment of funding, is rendered unpredictable due to their year-to-year contractual basis with humanitarian organizations, causing issues within HSCM/HL in terms of fund availability,

personnel retention, warehousing location and size, and a rent-based fleet vehicles (Participant 9 2014; Participant 12 2014). Ultimately, the supply chains system is driven primarily by donor requirements and decisions, and secondarily by the immediate and long-term needs of Syrian beneficiaries.

HSCM/HL in the Syria refugee response context, as opposed to other acute humanitarian responses, does not necessarily rely as heavily on timeliness and correctness of delivery and distribution of aid inventory. These abilities are desirable, but the fact that many of these distributions take place weeks after planning, sourcing, and procurement leads to the assumption that the current level of timeliness is slower than that of other emergencies. Additionally, issues with inventory can be rectified quickly due to supplier acknowledgement of error, and short transportation time/distance (Participant 11 2014; Participant 15 2014). However, should these processes, deliveries, and distributions stretch longer, the suffering of Syrian beneficiaries will prolong. It is the responsibility of accurate needs assessments and reporting to dictate the appropriate timeframe for between sourcing and distribution.

Finally, the balance of humanity, impartiality, and neutrality, while ideal, is close to impossible considering the realities of the context and capacities of humanitarian supply chains and logistics. First, sourcing and procurement has been shown to be either competitive or collaborative between humanitarian organizations: either supplier lists are secretive or shared between organizations, calling the level of politicization into question. Second, procurement has been identified as a source of vulnerability and risk, leading conflicts of interest and possibly corruption. Third, the possibility of counterintuitive goals and priorities between humanitarian actors and private sector actors (suppliers, warehouse owners, transporters) can cause issues. Some humanitarian organizations have policies of “no negotiation” with these private sector

actors, asking for “[their] lowest price at the beginning, because if they don’t, they won’t win the bid” (Participant 9 2014). Last, contextual factors such as government situation and conflict related factors might tempt logisticians into seeking operational advantages in certain geographic areas by adhering to local political actors’ demands.

These complexities found within HSCM/HL and their consequences are applicable to the Syrian refugee response. These consequences affect the approach, design, and performance of the humanitarian supply chain by either hindering abilities to operate or requiring special considerations to avoid the consequences of the complexities. The impact of these complexities to the design of HSCM/HL systems will now be considered.

B. HSCM/HL System Design

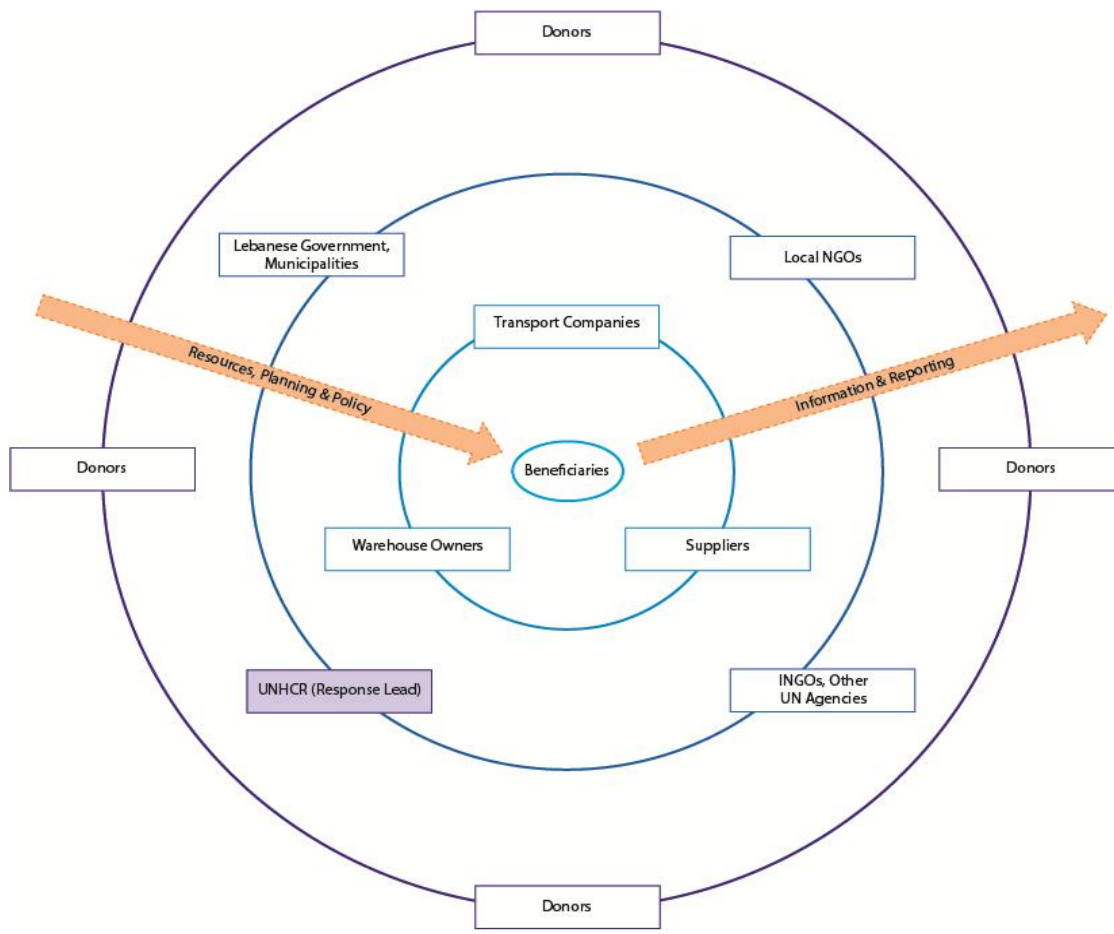
Given specific contextual factors and complexities, humanitarian supply chains are designed with consideration to the emergency environment in which it is operating. In UNHCR’s Syrian refugee response system in Lebanon, many humanitarian organizations and agencies are operating simultaneously, with a specific emphasis on coordination. Internally, each actor has its own set of designs, mechanisms, tools, and assets, for the purposes of supporting specifically targeted beneficiaries in the larger UNHCR Working Group coordination system. This section will describe the broader response system as horizontal coordination, and the internal workings of each actor, through vertical coordination.

1. Horizontal Coordination of Actors in Lebanon’s Refugee Response System

Many humanitarian organizations and agencies coordinate to respond to the needs of an ever-growing Syrian refugee population. Horizontal coordination focuses on the interactions

between different actors working at different levels. The distance of each tier illustrates the distance of actors' activities from Syrian beneficiaries. This section presents the horizontal coordination model, and includes a brief overview of these actors, their roles, and the different flows pervading through the entire system. The actors are presented in a tri-tiered diagram, with each level dependent on the role and activity of each actor. The horizontal coordination model is presented in Figure 4.1.

Figure 4.1: Horizontal Coordination of Humanitarian Supply Chain in Lebanon



The different tiers of actors affect and influence each other through two directional flows. From the donors' position, the inward flows of funding, planning, and operational policy affect how UNHCR and implementing partners' plan the items needed for distribution, the procedures

for sourcing and procuring goods, and services from private providers. The outward flow, stemming from the utilization of planning and funding to support beneficiaries, provides data and information through reporting. This updates implementing partners, UNHCR, and donors on the performance of their programs, and guides the level of funding and implementation into the future. These flows, and the effects of horizontal coordination influence, will be more evident focusing on the vertical coordination mechanisms in humanitarian supply chains.

a. Donors

The outermost ring of horizontal coordination, and the furthest from Syrian refugees, are actors providing the most important enablers for response. Donors have been identified as the actors in the humanitarian system as the source of three essential flows: fiscal, planning, and policy. Although donors provide indispensable resources and planning, they are typically furthest the Syrian beneficiaries. These donors, typically government entities (such as the U.S. Bureau for Population, Migration and Refugees, the Kuwaiti Government or the European Commission), provide fiscal resources either to organizations operating in Lebanon directly or through United Nations channels. Donor funding is typically per program, lasting approximately six to eighteen months (Participant 1 2014; Participant 3 2014; Participant 6 2014; Participant 11 2014; Participant 14 2014; Participant 16 2014).

Fiscal flows and resources provided by these donors come with specific caveats and conditions. Funding provided by donors is largely public revenue, and must be accounted for through several different means, both proactively and reactively. Proactively, donors can ensure the funding provided is being spent on specific sectors (e.g., NFI distribution, food security, education), by not only targeting organizations with sector-specific focuses, but collaborating

in—and sometimes dictating, as one participant described—the types of sector programs and geographic target areas their funding will be used for (Participant 12 2014). In addition to donors’ influence over programmatic planning and direction, many donors set qualifying standards in terms of operating procedures for recipient humanitarian organizations.

Retroactively, humanitarian organizations are entirely responsible for allowing donor audits, which can happen “at any time. Any auditor can come and check anything and everything... every single action that is taken, if its distributing items, sending emails, or any kind of documents, is archived...because NGOs are liable to their funders” (Participant 10 2014). These audits are in addition to close reporting on programmatic and supporting activities to donors as well.

Donors affect the management of humanitarian supply chains in several ways. Due to the fact that donor funds are made available to humanitarian organizations upon agreement, planning for activities such as aid distribution depends on donor goals. One participant clarified this as “the type, quality, and quantity of aid to be procured, depending on the requirements of the donors” (Participant 1, 2014). Processes and procedures, at the heart of humanitarian logistics, must be in line with the parameters of their donor’s requirements. Funding must be spent in an efficient, accountable, transparent, and ethical manner. Any losses in inventory, unused funding, or deviation of contractually agreed protocol between donors and organizations must be reported and justified to the donor. This can affect future appropriation of funds.

b. United Nations Higher Commissioner for Refugees

The United Nations Higher Commissioner for Refugees (UNHCR) holds a unique position in the Syrian refugee response in Lebanon. UNHCR, atypical of previous roles, leads

the humanitarian response, and has several different responsibilities. Their first role is as donor, as a large portion of United Nations appropriated funding is provided to other organizations through UNHCR. UNHCR also performs audits on the behalf of the donors. UNHCR's second role is as the leading coordination agency for the Syrian refugee response throughout the entire region. UNHCR developed a system of "working groups", resembling UNOCHA's and IASC's cluster system. The working groups are organized by sector (NFI, food security, education, protection, etc.), and region (Beirut, Mt. Lebanon, Bekaa, South Lebanon, Tripoli, Akkar). Other UN organizations, international organizations, and local NGOs rely on UNHCR for overall planning and goal setting. For example, the UNHCR-led humanitarian response underwent specific phases for NFI and food item distribution. In early phases of the response, tangible aid was provided to both beneficiaries that had already arrived in Lebanon, as well as newly arrived, newly registered refugees. In the final phases, qualification standards were tightened, as only refugees meeting the "Newcomer" status were provided with NFIs, no more than a month after their arrival. The third role, and more typical of UNHCR in humanitarian crises, is to establish and maintain registration of Syrian refugees once they have entered into Lebanon. Duplication avoidance, a main principle of the entire Syrian refugee response, is contingent on UNHCR's ability to accurately register Syrian refugee individuals and their families, communication this information and coordinating with other humanitarian actors accordingly.

Perspectives of the role of UNHCR from participants are mixed. Participants described UNHCR as more of a hegemon than a coordination leader (Participant 1 2014; Participant 12 2014; Participant 17 2014). One participant even went as far to state that their organization must do everything UNHCR dictates, as they are the actor whom "makes all of the decisions...in the end, it's all up to UNHCR" (Participant 12, 2014). Taking action as a donor, or at the very least

as a liaison for other donors, UNHCR also has the ability to, as one participant described, “impede on supply chain procedures and budget decisions, affecting programming, individual personnel positions, to number of warehouses” (Participant 15, 2014). Lastly, there is evidence that UNHCR has influence over how organizations operate in the field, as UNHCR “gives us specific instruction to not use electronic equipment in the field” (Participant 1 2014). However, UNHCR has also helped organizations, as they can more easily liaise with Lebanese governmental bodies and assist in import customs clearance for non-registered international NGOs (Participant 1 2014). Considering their various roles and activities, it is clear that UNHCR has great influence over horizontal coordination throughout the entire humanitarian supply chain.

c. Implementing Partners: Lebanese Bodies, UN, INGOs, and Local NGOs

Included on the tier with UNHCR are four separate but similar actors. These actors include Lebanese governmental bodies, UN agencies (other than UNHCR), International Humanitarian NGOs, and local Lebanese NGOs. As partners with UNHCR, these actors implement services and goods provision to refugees, coordinate in terms of sector and geography, and help with the development of rich data sets by reporting from the ground level.

Lebanese government actors are prevalent at the central government and municipal levels. For humanitarian supply chain management, the central Lebanese Government coordinates with UNHCR in terms of planning. Despite this coordination, many NGOs have been unable to obtain or renew their registration with the Lebanese Government. Municipalities, on the other hand, were perceived much more favorably by the participants, reported as

cooperative with implementing organizations by providing local human capacity and distribution sites such as schools and community centers.

Also working under the UNHCR Working Group system is a handful of other United Nations affiliated agencies. These agencies, such as the United Nations Children's Fund (UNICEF) and the World Food Programme (WFP), are typically specialized in their mandates, either within a specific sector, such as WFP providing food aid, or with a specific target population, such as UNICEF targeting infants, children, and single mothers. These actors do not typically operate on direct donor funding, as much of their budget is allocated from the United Nations General Fund (Participant 5 2014). Although their role is as implementing partners, UN agencies also act in supporting roles for other implementing partners, working alongside international NGOs and Lebanese NGOs by supplying to-be distributed aid to these other implementing partners. These specialized agencies also play a coordination role for their specific sector, and provide a high level of expertise.

Some of the most visible actors, outside of UNHCR, are international and local Lebanese humanitarian organizations. As recipients of funding from donors and in coordination with UNHCR, these actors are at the core of the entire humanitarian supply chain and logistics system. International humanitarian NGOs bring international experience, expertise, and procedure from lessons learned in other humanitarian contexts for aid provision. Many of these international implementing partners, such as the Norwegian Refugee Council, the Danish Refugee Council, Save the Children, CARE International, PU-AMI, Oxfam, and INTERSOS attempt to be highly coordinated amongst each other to avoid duplication. Local Lebanese NGOs provide service and goods provision with an invaluable amount of contextual knowledge and consideration. These organizations, typically much smaller than their international

counterparts, operate with a stronger contextual understanding. Local NGOs receive funding, inventory, and training from their international humanitarian partners to conduct smaller, more localized implementation.

d. Suppliers, Transportation Providers, Warehouse Owners

Aware of their importance in the system, Lebanese suppliers provide tangible goods, both in terms of distributed aid and equipment. These importers, factories, and vendors need to be viewed through a private sector lens. Suppliers are private sector businesses, which do not operate for the benefit of Syrian beneficiaries. Transportation providers, either private individuals or established companies, and warehouse owners, fall under the same category, as their relationship with the humanitarian community in Lebanon is to provide their services at a cost that enables them to sustain. This split between the humanitarian and private sector is a key pivot point for humanitarian supply chains, as almost the entire system is dependent on the services provided by private sector actors.

Perceptions about suppliers, transporters, and warehouse owners were mixed. Many participants noted their satisfaction with the suppliers they work with, but there were exceptions. Some participants described how suppliers take advantage of the humanitarian community and their needs, especially in emergency situations (Participant 1 2014; Participant 2 2014; Participant 15 2014). However, some of the participants were satisfied with the reliability and affordability of their hired transportation providers (Participant 10 2014; Participant 11 2014). There were instances of problems with transportation providers, either in terms of lateness, damaged goods during transport, and unexpected volatility in pricing. Regardless, as one participant stated, “these actors operate within their own interests”, meaning “they can either

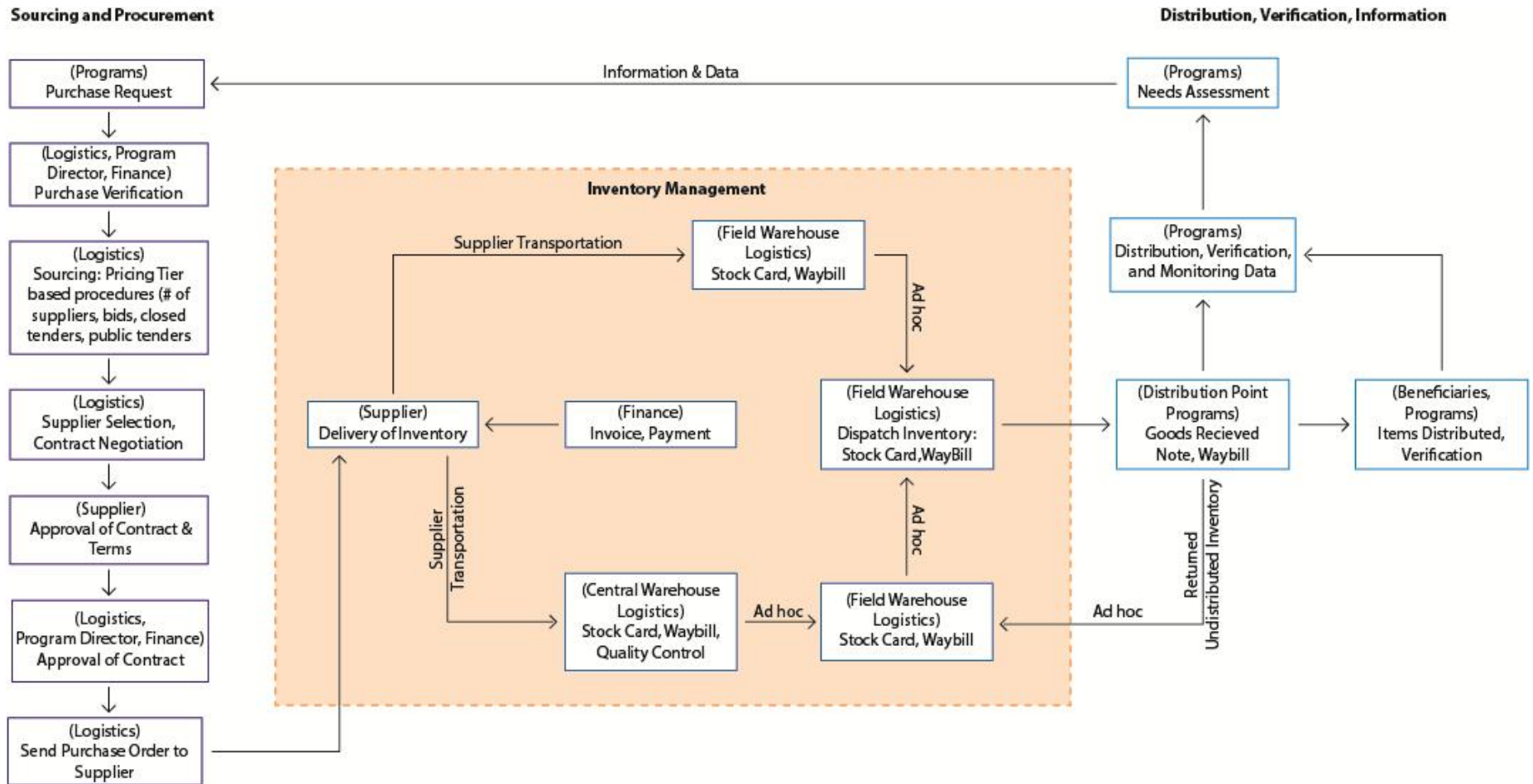
gain in the short run by cheating the humanitarian system, or providing reliable and affordable services to ensure repeated service contracts” (Participant 9, 2014) with humanitarian organizations in the future.

2. Vertical Coordination: Tools and Mechanisms for HSCM/HL in Lebanon

The Sphere of Control identifies the elements within a humanitarian organization’s operations, and is determined by the design and structure of a given organization, providing a level of control in an otherwise unpredictable and complex environment. The majority of participants described internal supply chain operations across organizations as uniform, comprised of logistics guidebooks, standardized inventory, out of house transportation, and Lebanese and expatriate personnel and minimal equipment and information technology. The guidebooks are at the heart of operations, having permeating influence over the entire supply chain. One participant described them as “our Bible, our Torah, and our Koran. We have to know it and have to abide by it” (Participant 17, 2014).

Guidebooks are a prescribed set of policies, procedures, templates, and protocols for supply chain activities, unique to each organization. The guidebooks provide insight to how humanitarian supply chains are vertically coordinated. The vertical coordination model outlines three components: sourcing and procurement, inventory management, and distribution, verification, and information. This section will present the operational principles and standards, and the vertical coordination model for HSCM/HL systems in Lebanon (Figure 4.2).

Figure 4.2- Vertical Coordination of Humanitarian Supply Chain in Lebanon



a. Principles and Standards

The participants described four basic principles when it comes to planning, policies, and procedures: accountability, transparency, value for money, and duplication avoidance. A possible fifth principle, although not reported by all participants, may be decentralization, both physical and authoritative. These principles permeate throughout the entire supply chain of the organization. Planning for operations and supply chain requirements comes in three forms: coordination, needs assessments, and market analyses. In other words, planning aims for coherence in what the goals should be, what is needed to achieve these goals, and what resources will be needed. In terms of coordination, every participant stated their organization's participation in coordination meetings under the UNHCR working group system as a platform to share program information and attempt to delineate and harmonize services and geographic locations. This was also identified as the main component to combat program and geographic duplication.

b. Identifying Needs, Sourcing, and Procurement

A major narrative described by most participants is the cyclical nature of the entire supply chain process. Each participant identified the "needs assessment reports" as the starting point for supply chain and distribution management procedures. The needs assessment reports "provide identification of the gap we will be targeting" (Participant 7 2014), or a baseline of what the organization will do, where they will do it, and for which target population. Program teams activate supply chains by monitoring, assessing, and evaluating, developing needs assessment reports, and, under the direction of programming needs, submitting purchase requests to supply chain and logistics departments.

Purchase requests (PRs) are issued to logistics departments with specific type of item to be procured, and quantity of needed item. From this point, logistic teams initiate sourcing and procurement processes, strictly following procedural guidelines from their organization's guidebook. One participant described guidebooks as "guidelines with lots of annexes, forms, and templates-- it's a very comprehensive system" (Participant 9, 2014). Upon reception of the PRs, the logistics teams explore the market to find the most suitable suppliers of to-be distributed inventory. This process, called sourcing, also includes market surveys, which explores the availability, pricing, and quantity of inventory. Participants noted that market surveys were typically needed for high priced level of procurements, and necessary to determine actual market fluctuations in the price of goods between price gouging from individual suppliers.

If completed, the market surveys allow logistics teams to determine the market value of items that need to be procured. Although the thresholds vary by organization, the value of the items to be procured is the determining factor how sourcing and procurement will take place. Ascending pricing thresholds, typically tri-tiered, determine the how suppliers will be found, the number of suppliers to be included, and how the suppliers will be selected. This tiered pricing threshold table is at the core of humanitarian organizations' procedures: "everybody has a table of procurement separated between goods, services, and contracts with different financial thresholds" (Participant 6, 2014), as well as "systems... whether it's electronic, paper, or a combination of two, of requesting and authorization orders, quotation and tender systems. It's basic public procurement" (Participant 8, 2014). The ideal notion behind these pricing tables is to ensure transparency, accountability, while receiving the best value for money.

The first threshold is for the lowest procurement values, where goods are bought directly from a supplier. The second procurement threshold includes closed tenders, requiring the

logistics teams to identify a specified number of suppliers (typically three), and request bids. These supplier bids are sealed to prevent any tampering and ensure privacy. Bid analyses are also conducted, as quotations are compared to determine which supplier provides the best quality and value for money. Above this, the highest threshold for procurement includes public tenders and sealed, anonymous bids. Public tenders are advertised in a number of newspapers, and supplier selection cannot begin until a specified number of sealed bids are received. Once the minimum amount of sealed bids are received, opening committees are formed, consisting of various personnel. These bids are opened, aggregated, and then analyzed based on program criteria, quality specifications, and value for money. Subsequently, a selection committee invites suppliers to present their bids, provide examples of materials, and discuss services to be provided (e.g., kitting, delivery). Several participants stressed that through this process, the lowest price is not the most important criteria, even expressing skepticism and hesitancy towards lower priced bids, saying “in procurement you got to be careful about the lowest price, because there’s a risk buying low quality items” (Participant 9 2014). From this point, the selection committee elects a supplier, and the sourcing and selection process concludes.

From this point, payment plans, kitting, transportation, and delivery schedules are discussed, as contracts are agreed upon with the chosen supplier. Here, the organization and supplier can agree on two types of contracts: single procurement contract, or long-term framework agreement. The single procurement contract, most common for physical aid procurement, is for single instance purchases, while framework agreements, typically for six to eighteen months, establish the price per unit of a specified inventory for the duration of the contract. Framework agreements allow organizations to make multiple procurements through the duration of the contract without having to go through the full sourcing procedures and

streamlining the procurement process. Upon agreement of the contract, the program team, either at the headquarters in Beirut, or in the field, is able to send purchase order to the supplier to begin inventory management.

Most, if not all, international humanitarian response NGOs are spread their operations throughout Lebanon operating from hubs in key areas, depending on the target beneficiaries and size of their distribution activities. Larger organizations operate in the field either through field offices, warehouses, or both, with direction from central offices in Beirut. The main hubs, and their field offices/warehouses, include Tripoli (North Lebanon), Qoubayat (Akkar Region), Zahle and Baalbek (Bekaa Valley Region), Beirut and Aley (Mt. Lebanon Region), Saida (Shouf Region), and Sour/Tyr (South Lebanon). This list is not exhaustive, as organizations may differ, but illustrates how humanitarian operations are geographically planned and organized. Furthermore, some organizations will keep warehouses in even more specifically targeted areas, such as Marjayoun (South-East Lebanon), Aarsal (Bekaa), and Chekka (North Lebanon).

Physical decentralization serves as a fundamental principle for some operations by “procuring and doing work as close a possible to the refugees we’re trying to support” (Participant 8, 2014).. Physical decentralization is not adopted by all organizations, as smaller and local NGOs will operate entirely out of headquarter offices, with possibly a single field warehouse. This does not inhibit close interaction, as these smaller humanitarian NGOs will be serve specific target areas, with a small target beneficiary population.

c. Inventory Management

Inventory management is the process in which inventory is received from the supplier, warehoused, and transported. Inventory in the humanitarian context includes goods and items to

be either distributed or installed to serve the need of beneficiaries. This does not include items an organization may need to operate. Inventory for Syrian beneficiaries has been standardized, especially concerning WASH and shelter Working Group sectors and newcomer aid.

Shelter inventory aims to rehabilitate and renovate preexisting living spaces, depending on predetermined standards. Inventory is provided and installed based on basic dwelling standards, including septic and sewage systems, sand, gravel, cement, timber, and nylon sheets. Shelter programs prioritize two separate goals: to waterproof shelters, and to provide ample and safe removal of swage. In very specific instances, temporary shelters (known as T-shelter) have been provided to the most vulnerable beneficiaries. However, participants who included T-shelters with their shelter inventory also noted that the provision of these basic dwellings had concluded (Participant 9 2014).

Non-shelter inventory is standardized by the UNHCR Working Group for Non-Food Items. This includes the types of inventory, and inventory standards, which are decided upon at the UNHCR coordination level. Much of the inventory reported did not deviate from sets, or kits, of goods, with quantity calculated per individual or family. The newcomer kit, either procured by each distributing organization or provided by a partner agency, includes: mattresses and blankets, hygiene kits (personal soap, shampoo, toothpaste, toothbrush, detergent, female hygiene products, cleaning cloths), kitchen sets (cooking stove, gas, pots, pans, cooking utensils), and infant kits (diapers, bottles, and sanitary wipes). In addition to this standardized inventory, humanitarian organizations shift to a phase called winterization, distributing items intended to reduce vulnerability to harsh winter weather. Winterization includes thermal blankets, winter coats, gloves, shoes/footwear, diesel heating stoves and carpets.

Kitting describes the process of decoupling of separate items into one unit to be distributed. Kitting is strongly preferred by humanitarian organizations to be done by the supplier before delivery (Participant 3 2014; Participant 9 2014; Participant 13 2014). Kitting can be a labor and time intensive process, and most participants noted their inability to kit a large amount of inventory. This may drive the suppliers' price up, but is acceptable for supply chain managers. These kits and inventory are also prioritized and tailored to the most vulnerable Syrian populations in Lebanon, such as infants, children, women, and elderly individuals.

As noted previously, inventory is agreed upon in coordination with various actors. The vast majority of participants, with a small number of exceptions, reported that most inventory is sourced and procured in Lebanon, with a preference of finding suppliers as close to intended beneficiaries as possible (Participant 9 2014). Many participants also included the necessity legally registered suppliers, with a decent reputation amongst the humanitarian community (e.g., not "blacklisted", as Participant 6 (2014) revealed. Positive perceptions of suppliers were also evident, as several participants stated suppliers understand the humanitarian context and mindset, but also provided fair pricing, good quality, and quick delivery. Negative perceptions were also evident as well, as suppliers were described as dishonest, poorly intended, unprofessional. Many suppliers were described as artificially driving up prices of inventory, aware of the urgent humanitarian situation and the small Lebanese market. One participant identified the precarious position of humanitarian organizations, as suppliers "rip us off, charging us prices higher than the market, and under deliver" (Participant 1, 2014). However, payment for inventory helps mitigate this, as remittance of payment occurs only after inventory has been received and approved by the humanitarian organization.

Depending on the organization, inventory can be delivered to the field for distribution, to a centralized warehouse, or to a field warehouse. In most cases, humanitarian organizations are not responsible for transporting inventory from the supplier's location, as there was a strong preference and common practice of including transportation in the terms of contract with the supplier. Upon reception of inventory, waybills are utilized to keeping track of movements of inventory once it has been received by documenting the transfer of goods from the supplier to the humanitarian organization. Additionally, downloading of inventory of trucks is monitored to ensure the inventory is accurate, both in terms of quality and quantity. Quality is monitored by inspecting the inventory to ensure there is no damage, items missing, and that the supplier has followed the agreed specifications for inventory: e.g., thickness of mattresses and blankets, type of soaps and detergents, completeness of kits. If there is an error in any of the received stock, delivery is refused until the supplier corrects it, postponing reception of stock and payment to the supplier. In the absence of any errors, goods received notes are filed to notify headquarters and program teams. Lastly, suppliers will provide an invoice for the goods, and payment is made.

Quality control monitors, storekeepers, and program staff keep count of all stock being received and leaving the warehouse by updating stock cards. Only a small number of organizations represented during interviews have automated electronic inventory management systems (Participant 14 2014), so tracking and tracing inventory relies on accuracy and disciplined practices to update stock cards and compile stock reports. Accurate and dependable stock reports are crucial to respond and distribute quickly and accurately, especially in emergency situations. In some cases, stock is reported to headquarter management on a daily basis, or more seldom, taking place every week or month. One participant described disbelief over how sporadic stock reports were compiled in their warehouse, and described the "constant

struggle” (Participant 15, 2014) to improve the nature of stock reports. Several participants also described an automated system of stock replenishment, in which stock is procured and transferred to predetermined warehouses automatically, based on a minimum threshold of inventory (Participant 5 2014; Participant 14 2014). Planned contingency stocks, along with any system of automatic stock replenishment, are strongly dependent on reliable and frequent stock reporting.

After inventory changes hands, proper warehousing for inventory is taken into consideration. Unlike other humanitarian contexts, privately owned warehouses are available for rent in Lebanon. Therefore, humanitarian organizations do not need to construct warehouses. However, rented warehouses must be up to standards, which includes fire and safety protocol, inventory loss avoidance (such as segregation of materials, insurance), and size and location of the warehouse. Several participants did note that the inventory is typically not in the warehousing phase for a long period of time, and storing easily with out the risk of spoilage (Participant 9 2014; Participant 10 2014; Participant 11 2014). Proper organization of warehousing is key, however, for accurate stock reports, mobilization of inventory, segregating unstable materials, and maximum utilization of limited space. Without proper warehousing, there is a risk of danger to employees, inventory damage or loss, mismanagement of inventory, and/or unnecessary movement of inventory to other warehouses.

There are three prevailing inventory warehouse designs currently set up in the Lebanese humanitarian response system. These designs have different implications for warehousing, transportation, and prepositioning of inventory. The first is centralized, where items are procured and stored in large warehouses at the organization’s headquarters and then sent either directly to the field for distribution or warehousing. The second is decentralized, where inventory is both

procured from the central office, or the field office, and delivered directly from the supplier to a field warehouse. This system cuts out the physical flow of goods from central warehouses to field warehouses. In the third system, inventory is received from a partner humanitarian organization, and stored in field warehouses to be prepared for distribution. Once program teams have established time and location of their distribution, a stock request note is sent to the appropriate warehouses, and the requested inventory is prepared. Logistics managers must then determine proper transportation for the inventory to its next destination.

Transportation was identified by participants as being ad hoc in nature, as many organizations contact local individuals and agree on pricing for a one-time transport of inventory. These private individuals are sourced locally, not affiliated with any company, have previously worked with the organization, and are paid per transport. Participants noted that transport fees vary, and pricing can be somewhat volatile depending on the operational area, distance, and potential security risks (Participant 15 2014). The Akkar region and areas surrounding Aarsal in the Bekaa Valley have been found to be the most expensive, likely due to poor transportation infrastructure and security risks in both areas. The Tripoli area was the least expensive, as there is a large supply of these private truck owners willing to transport for humanitarian organizations.

Perceptions of these individual truck drivers are mixed. Some participants found pricing to be unfair, in limited supply, with small capacity per truck, and hesitancy and refusal to provide transport to certain areas. Additionally, inventory loss was reported during transport, as one participant noted “[they] counted the material after delivery, and sometimes two or three blankets disappear, two or three mattresses disappear” (Participant 1 2014), while some perceived them positively, as reliable, affordable, and flexible (Participant 11 2014). A small number of

organizations represented in the interviews did, however, provide an alternative to ad hoc transportation in the form of long-term framework agreements with private transportation and logistics companies. Private transport companies are viewed as more professional, more accountable, more stable in pricing and services rendered, and eliminate the need to source transportation each instance inventory needs to be moved (Participant 11 2014). Overall, the humanitarian system in Lebanon is dependent on outsourcing transportation, as no organization has the capacity or resources to provide transportation of inventory.

d. Distribution, Information, and Reporting

As inventory is prepared, and distribution time and location determined, program teams then set the final aid mechanisms in motion. The inventory is loaded on to transport trucks, and sets out to the distribution site. Stock cards are updated to reflect the removal of inventory, and waybills are issued to confirm the transport and reception of inventory. Distributions can happen in two fashions, as described by participants. One option is to distribute “house to house”, where inventory is delivered directly to predetermined addresses of selected beneficiaries. The other option is to send the inventory to a predetermined location, set up and manage a distribution point, and invite selected beneficiaries to pick up the tangible aid. These distribution methods are not mutually exclusive per organization, as many participants described previous distribution methods as mixed (Participant 16 2014).

Several forms of verification take place during distribution. The first is verification of beneficiaries, ensuring each individual or family is a part of the previously selected population through identification and UNHCR registration. The next form of verification ensures that the inventory being transferred from organization to beneficiary is complete, both in terms of quality

and quantity. The third verification ensures that the reception of aid by the beneficiary is registered and logged, reported back to the organization as well as the entire humanitarian coordination system. The last verification reconciles the amount of inventory that was distributed with the remaining undistributed inventory, as well as the number of selected beneficiaries that did not attend or receive their allotment of aid. If any inventory remains undistributed, the process of reverse logistics is necessary (Participant 3 2014; Participant 8 2014; Participant 11 2014). This requires proper transport back to warehouses for possible future distribution, as transportation providers are dispatched back to the distribution site to once again load inventory, and return it to the warehouse.

In terms of equipment needed, as in non-inventory items, for distribution, most participants noted that the distribution sites are typically not dependent on a large amount or sophistication. Distribution sites are strategically planned to ease the flow of a large number of beneficiaries. Tables, chairs, shading tarps, and proper signage are the most commonly reported necessary equipment. Along with these items, laptop computers are also common amongst distribution point for various verification processes. Unlike other humanitarian contexts, these distribution points do not have a need for any heavy machinery, such as generators or forklifts. With the proper equipment, personnel, transportation, and inventory, a single distribution for beneficiaries can be completed within several hours.

Subsequent to the distribution and verification processes, large amounts of data are collected, organized, and processed, providing program indicators and reports. These reports, along with other documents from the logistics system, are collated and finalized. Along with monitoring and evaluation processes, reporting can help determine future gaps by allowing program teams to identify future gaps. Additionally, future distribution programs can be altered

in order to both provide better services for beneficiaries, and help increase the value of the financial resources spent previously. These reports are also provided to necessary actors, such as donors, the UNHCR Working Group system, and partner humanitarian organizations, to help assess the overall system, and plan for the future. Thus, once organizations have collaborated to determine future actions, program teams within disparate organizations can administer future needs assessments, and begin the entire vertical supply chain cycle once again.

C. Characteristics of HSCM/HL Systems in Lebanon

This section will identify and describe findings of the characteristics of agility and leanness, roughly based on concepts provided in the literature review. Findings of leanness and agility are presented through prominent groupings of evidence found within Lebanon specific influences and HSCM/HL design. Four major themes concerning the affect of influencers and HSCM/HL design on characteristics specific to Lebanon emerged: contextual enablers and detriments, light logistics, inventory and transportation, and coordination through partnerships.

1. Contextual Enablers and Detriments

One of the most significant themes pervading participants' responses was the unique operating environment of Lebanon, especially compared to other "traditional" humanitarian contexts. Overall, the Lebanese operating environment has been found to be quite beneficial for agility. However, the context has been described as "inexplicably expensive, especially considering the vast amount of private sector actors and [relative] ease of local procurement" (Participant 6, 2014). Thus, the Lebanese context may undermine leanness.

Contextually, Lebanon is geographically small. This is a major benefit for humanitarian organizations to move inventory, personnel, and equipment quickly throughout the operating environment. Humanitarian supply chain and distribution designs can be swiftly adapted to issues faced and alter planning, as time lost is kept to a minimal. Additionally, transportation time is not seen as much of an issue, since inventory and personnel can easily be diverted with minimal loss in time. The context has been described as providing extremely short lead times, and therefore reliance on prepositioned inventory and personnel is marginal. Finally, the Lebanese context enables agility by what has been described as a sufficient private sector, compared to other contexts (Participant 2 2014). Suppliers of inventory, and vendors of equipment for operations are easily sourced within Lebanon, therefore supply chain managers and personnel are not obligated to source and procure from outside the country. This shortens the lead time between contract agreement amongst humanitarian organizations and suppliers, and delivery.

The Lebanese context, however, has also been described as a detriment to leanness. This is based on a commonly described formula, leading to higher prices and diminished quality of inventory. As described from before, local suppliers are aware of the dependence of humanitarian organizations on local procurement. As most humanitarian organization do not have the capacity or permission to procure internationally, local suppliers do not have much competition other than other actors in the local market. Considering the inability to procure internationally, humanitarian organizations are forced into a highly competitive market environment, with many humanitarian organizations seeking supplies of a limited number of local suppliers. Additionally, the need for urgent response, and therefore urgent sourcing and procurement, places humanitarian NGOs in a vulnerable situation compared to suppliers.

Participants noted that suppliers provided inventory at either a higher price, poor or incorrect quality and quantity, or both (Participant 8 2014; Participant 9 2014). Poor and/or incorrect quality and/or quantity of inventory increases inventory handling, causing strains on humanitarian supply chains, while higher prices decrease the value for money of funds used for inventory. However, the geographically small size of Lebanon may help leanness, as small distances between suppliers, warehouses, and distribution points help minimize inventory losses, waste, or damages during transport.

2. Light Logistics

Many participants described their organization's supply chain and logistical systems as "light", keeping actors, inventory corridors, and warehousing to a minimum, with an aim for low risk and investment. "Light logistics" impacts agility and leanness in several ways. Initially, light logistics was typically described as a benefit for agile response as quick shifts help adapt to changes in the environment. However, light logistics is more of a detriment to agility when it comes to vertical coordination. A commonly reported effect that light logistics has on agility is in the form of warehouse bottlenecks (Participant 8 2014). As humanitarian organizations operating with light logistics attempt to keep warehousing to a minimum, in terms of geographic locations around Lebanon and warehouse capacity, surges in beneficiaries—and thus inventory—can cause inventory to surpass warehouse capacity. This has been described to cause problems with allocating inventory to appropriate warehouses, issues with proper warehousing, and dispatching large volumes of inventory for distribution (Participant 3 2014; Participant 9 2014; Participant 15 2014). Additionally, since light logistics is based on the minimally necessary amount of components, a loss or disruption in an existing supply chain component may cause substantial

delays in the process. These sensitive components include reliance on only local suppliers, ad hoc transportation, and paper-based inventory and stock management systems. These exemplary components may help keep costly commitments to a minimum, but can be vulnerable, affecting the entire supply chain system.

Light supply chain and logistics requires a minimal number of personnel, and a centralized signatory authority. This causes two types of procedural bottlenecks: supply chain and logistics personnel are often overwhelmed with procedural responsibilities, while signatory authorization responsibilities held by a small number of managers and directors. “Light logistics” does not translate into light procedural work, and current processes, notwithstanding their importance, can cause stagnancy, delays, and rigidity. Several participants described two possible ways to ease these procedural bottlenecks. A small number of represented humanitarian organizations, have, or are in the process of, decentralizing authority to the field level. This gives area managers more signatory authority and responsibility for sourcing and procurement value thresholds, while the Beirut headquarters directs planning and policy. Another method to ease procedural delay, especially in the context of urgent or emergency situations, is to issue derogations from procurement processes. Derogations allow for supply chain departments to skip certain procedures during procurement, and purchase crucial inventory for distribution. Derogations, described with mixed perceptions, are viewed as a capacity to react quickly and accurately. However, derogations were also described with heavy skepticism, with one participant stating, “if I write a derogation...we absolutely lose all transparency in that procurement process” (Participant 8, 2014).

The preference for light logistics within humanitarian organizations has been described as mostly beneficial for the purposes of lean supply chains, based on the aforementioned

minimization of costly or vulnerable components. Light logistics provides leanness to the supply chain by seeking to eliminate time- and cost-intensive importation processes, organization-owned trucks and warehouses, and equipment, thus decreasing processes and costs. Light logistics, ultimately, has been described as allocating an already limited funding pool towards services and goods provided directly to beneficiaries, and attempting to limit the amount of capital spent on organizations. Tiered sourcing and procurement processes, and higher-level signatory authorization has been described as the major foundation of transparency and accountability for decisions regarding expenditures within donor-provided budgets (Participant 8 2014). Ideally, each step is recorded, justified, and provided for donor audits, and major decisions affecting the humanitarian supply chains are more easily tracked back to individuals authorizing them. Overall, accountability and transparency validate many of the causes of procedural bottlenecks. Unwise or unethical use of public funding may affect these resources in the future, or more importantly, affect the ability to fulfill the needs of beneficiaries

3. Inventory and Transportation

Much of the evidence signaling agility and leanness falls under themes specific to inventory and transportation. Unlike the previous themes, these findings show a more direct, rather than inverse, relationship between agility and leanness. Although not entirely, this evidence of inventory and transportation posits that when one characteristic is positively—or negatively—affected, the other characteristic follows suit.

First, supplier inventory is a key determinant for both agility and leanness, as it is difficult for most humanitarian organizations to sacrifice either affordability or reliability of procured inventory. Quality control measures for inventory are pivotal for humanitarian

logisticians and affect agility and leanness by ensuring inventory quality, quantity, and specifications.. This also increases leanness, by not having to further increase inventory handling, such as increasing quality control measures, and engage in reverse logistics by transferring inventory back to suppliers. If issues arise, agility and leanness are hurt, as velocity of inventory from supplier to beneficiary is decreased, and more human and capital resources must be utilized to correct mistakes.

Second, the reliability of ad hoc or contracted transportation is shown to have similar affects on both agility and leanness. In terms of agility, reliability of transportation ensures, or impedes, the punctuality of inventory to warehouses and distribution points. Reliability affects the execution of planning and scheduling accordingly. For leanness, the reliability of transportation can determine the efficiency inventory planning and scheduling. If transporters are late, or inventory is missing and/or damaged, the value of meticulously planned resources is decreased, as supply chain managers and logistics teams must rectify these losses. This results in increased inventory handling and additional purchase requests to replace lost inventory. As more time and resources are spent on correcting issues with transport of inventory, less are utilized for the assistance of beneficiaries.

Third, there are two inventory traits that determine agility and leanness. The first occurs when inventory is homogenously procured in bulk, increasing agility by providing increased volume of inventory, and leanness by decreasing inventory costs. The second characteristic occurs when supply chain inventory is aggregated into kits for distribution. Inventory kitting for hygiene, kitchen, and infant inventory is strongly preferred to be the responsibility of the supplier. With the availability of suppliers willing to compile kits, labor and time intensive processes included in kitting are removed from the supply chain. The velocity of inventory is

increased through the supply chain, helping build agility, and unnecessary inventory handling is eliminated, contributing to a leaner supply chain.

The themes identified within inventory and transportation does not entirely contribute to a direct relationship between leanness and agility. The existence and level of contingency stocks seem to have an inverse affect on humanitarian supply chains in terms of agility and leanness. Many participants described contingency stocks of to-be distributed inventory as ideal for the purposes of large influxes of Syrians seeking refuge along the Lebanese borders, since “contingency stocks eliminate most of the bulk paperwork, and provide an opportunity to act quickly” (Participant 7, 2014). While most organizations do have a small amount of contingency stock, it is more or less unplanned, typically leftover from previous distributions. With contingency stock planned and warehoused, humanitarian supply chains are able to respond rapidly, enhancing agility. However, contingency stocks are not perceived to be cost effective nor lean. To maintain an adequate level of contingency stock, warehousing and stock management costs increase dramatically, and the risk of deterioration, damage, and loss of inventory increases as well. Due to the costs and risks, as one participant expressed, donors are hesitant to provide funding for planned contingency stocks (Participant 10 2014).

The administration of long-term framework agreements with suppliers and/or transportation companies eliminates the need for a full procurement process, positively affecting supply chain agility. Once framework agreements are agreed upon and signed, many sourcing procedures are no longer needed. Purchase orders can then be sent directly from logistics teams to suppliers. In terms of leanness, framework agreements are seen as risky commitments, as market prices may fluctuate in and out of favor of humanitarian organizations. Suppliers have also been described as in a position to take advantage of these contracts in terms of diminishing

quality of services and goods provided. This is not uniform, as some participants described their satisfaction with framework agreements with certain suppliers and transportation companies, despite possible increased pricing (Participant 11 2014; Participant 14 2014). However, framework agreements are seen as a possible sacrifice of value for funding spent to rapidly acquire inventory and means of transportation.

4. Coordination and Partnerships: Through the Lens of Horizontal Coordination

Affects of coordination and partnerships have shown a direct relationship between agility and leanness in the HSCM/HL system in Lebanon. The most significant aspect of coordination described amongst participants is the dissemination of information throughout the entire system. The main goal of information sharing, as described before, is duplication avoidance in terms of geographic location and sectorial activity, and target population. UNHCR, through its working group system, facilitates the sharing of important indicators, benchmarks, and program activities implemented by other humanitarian organizations. Regularly scheduled meetings between humanitarian organizations and UNHCR take place to share this information, and online platforms have further been established to help ease the burden and increase participation.

Some participants noted that participation amongst these online platforms and UNHCR working group meetings is imperfect, leading to inadequate and incomplete information concerning the activities of all actors (Participant 2 2014; Participant 5 2014; Participant 7 2014). These gaps in participation in information sharing have left many participants wary of the horizontal coordination's ability to simultaneously cover needs of Syrian beneficiaries and avoid duplication. The occurrence of duplication translates into poor and inadequate use of limited funding: as value of funds spent is decreased, so does leanness.

The other theme categorized under coordination and partnerships concerns bi-lateral partnerships between organizations. These partnerships are established between international humanitarian NGOs and Lebanon-based NGOs in specific areas in Lebanon. Partnerships rely on the transfer of capacity and resources between these international and local partners.. The flow of resources between partnered humanitarian organizations, however, does have a major impact on agility and leanness. One participant described how their local NGO has “developed models for quick and localized needs assessments, and has the capacity to distribute inventory within hours of [reception]”, yet their larger partner NGO’s procurement procedures are “slow” and “burdensome” (Participant 3, 2014). This causes issues with both agility and leanness for the local NGO, as partners delay their delivery time of expected inventory, and resources (human and fiscal) are left idle. For the larger response system, however, partnerships with local NGOs are seen as beneficial for agility, as local partners are seen to have a better understanding and ability to operate in their localities with less procedural authorization (Participant 3 2014; Participant 13 2014).

Many components affect the characteristics of UNHCR’s response system in Lebanon. The design of the HSCM/HL systems, influenced by contextual factors and HSCM/HL complexities, includes various systems of coordination. Depending on how these systems and designed and implemented, the characteristics of the entire HSCM/HL system can be affected, both benefiting and hindering humanitarian operation performance. Due to this, agility and leanness are affected in several ways, depending on the influencers and design of the HSCM/HL system in place.

D. Summary of Findings

The findings of this thesis provide a rich description of several key concepts influencing the performance of HSCM/HL systems within the Syrian refugee response in Lebanon. Participants' responses highlighted the importance of several components to be incorporated into a conceptual framework for HSCM/HL in continuous aid operations during slow onset man-made emergencies. First, participants stressed the importance of two main influencers: the contextual factors present in Lebanon, as well as the specific complexities of HSCM/HL found in Lebanon. Second, the design of the response system, well as the inner workings of individual humanitarian operations, provides models for horizontal and vertical coordination, showing how humanitarian supply chains are operationalized. Last, the presence of agility and leanness is described, as well as the relationship between these characteristics, the influencers and the design of the overall system. The next chapter will present the conceptual framework, discuss the implications, and conclude the thesis.

CHAPTER V

CONCLUSION

This chapter provides a concluding analysis of the findings, as well as future recommendations for policy and research. First, the three research questions will be answered based on the findings of this thesis. Second, a conceptual framework will be proposed, based on influencers, HSCM/HL design, HSCM/HL assets, and system characteristics. Third, practical implications are discussed, along with three policy recommendations. Fourth, theoretical implications will be presented, comparing and contrasting the findings with the previous literature, followed by research recommendations. This chapter will conclude with a brief overview of the entire thesis.

A. Research Questions and Conclusions

The overall goal of this this thesis was to explore HSCM/HL designs, describe components through thematic categories, and explain how agility and leanness are expressed in HSCM/HL of humanitarian actors in the aforementioned context. Therefore, the three research questions can be subsequently answered:

RQ 1: *What is the standard supply chain and logistic design for the organizations operating under the non-food item working group?*

The HSCM/HL system in Lebanon follows two dimensions: horizontal and vertical coordination. Horizontal coordination illustrates how different layers of actors interact through two flows: resources and planning, and information through reporting. Vertical coordination

presents the cyclical nature of internal mechanisms for providing physical aid to beneficiaries. Vertical coordination starts with needs assessments, with a series of activities in three phases: sourcing and procurement, inventory management, and distribution, information, and reporting. These two coordination models, and the overall HSCM/HL design, emphasize the need for a contextually specific set of planning, policies, and procedure and a high level of information sharing, to ensure a high level of HSCM/HL performance in terms of speed, accuracy, and value.

RQ 2: What factors affect the supply chain and logistic system's agility and leanness?

The main thematic categories agility and leanness are expressed through are contextual enablers and detriments, light logistics, suppliers, transportation, and inventory, and coordination and partnerships. Additionally, this study has found a high level of interaction between agility and leanness, with both inverse and direct relationships. The high level of interaction leads to the conclusion that these characteristics are not mutually exclusive, and therefore should not be examined as such in future research. These thematic categories demonstrate the importance of influencers, HSCM/HL design, and HSCM/HL assets, as these three components determine how agility and leanness are expressed in a continuous aid operation during a slow onset man-made emergency. With out consideration of the contextual factors, HSCM/HL complexities, horizontal and vertical coordination, and HSCM/HL assets, resilience and performance of humanitarian operations will suffer, as supply chain and logistics systems provide support incompatible to its operating environment.

RQ 3: *To what extent does the design of this system, which operates in response to a slow onset man made emergency, reflect contemporary supply chain and logistic models?*

The findings of this thesis show that contemporary HSCM/HL models are incomplete. With respect to the case under analysis, the contemporary models only partially explain the contexts, structures and activities present in the HSCM/HL systems used to respond to slow onset man-made emergencies. The horizontal coordination model presented in the literature review does not take into consideration all actors involved, such as private sector actors, and does not consider how coordination systems, such as UNHCR's Syrian refugee response system, are designed and implemented. The vertical coordination model lacks detail, omitting sourcing and procurement procedures, distribution procedures, and information and reporting procedures. The mixed model also lacks detail, providing a simplistic and incomplete picture of actors included, their relationships, and the internal processes of a response system.

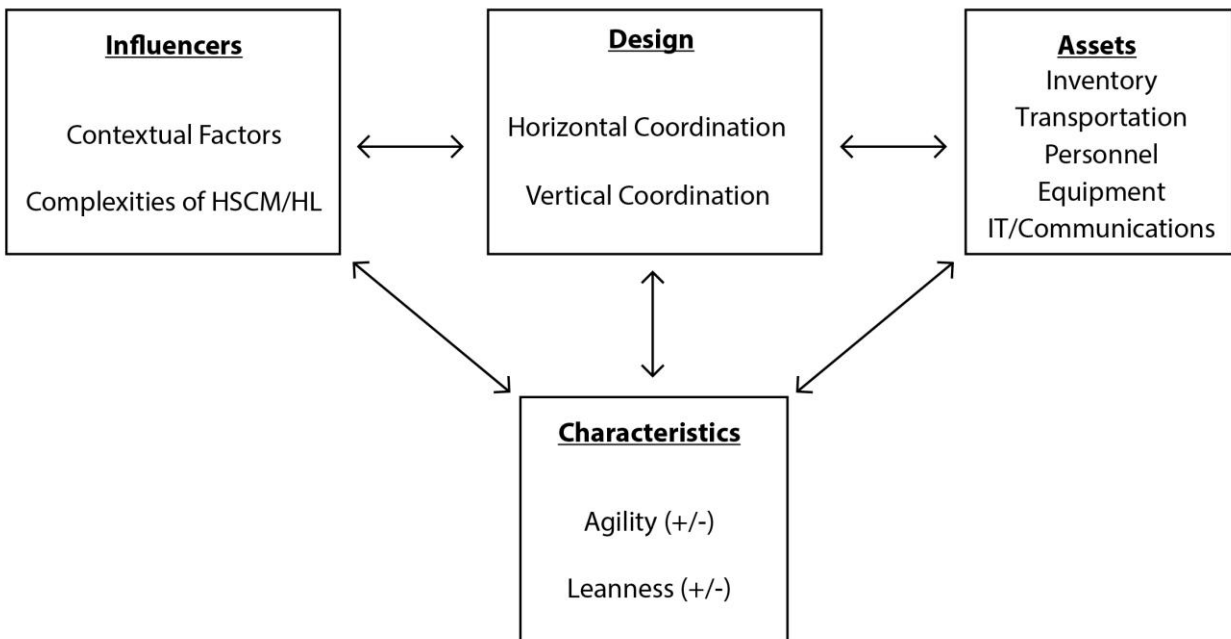
Based on these three research questions, this thesis proposes a conceptual framework. Considering the lack of adequate models found in the literature and the findings previously presented, the following section will reveal a conceptual framework for slow onset man-made emergencies. This conceptual framework includes three main components, each affecting how the entire system exhibits the characteristics of agility and leanness.

B. Conceptual Framework

With consideration of the relevant concepts presented in Table 2.7, the findings of this thesis provide the basis for a conceptual framework for HSCM/HL in continuous aid operations during slow onset man-made emergencies. This conceptual framework shows the relationships between several components, and the relationship between these components and the

characteristics. The components include influencers, HSCM/HL design, and HSCM/HL assets. Influencers, including contextual factors and HSCM/HL complexities, serve as the external and internal elements, specific to a humanitarian context. The design of HSCM/HL, through vertical and horizontal coordination models, demonstrates how humanitarian organizations plan and implement their supply chain systems, and how multiple actors within a humanitarian environment interact. The HSCM/HL assets include inventory, personnel, transportation, equipment, and information technology, and outlines the potential tools used by humanitarian organizations and agencies. Depending on how the HSCM/HL assets are used, and how HSCM/HL system is designed with consideration of influencers, the characteristics of leanness and agility are altered.

Figure 5.1: Conceptual Framework for the Precursors to HSCM/HL



1. Influencers

The first component, influencers, includes two elements: contextual factors and the complexities of HSCM/HL. In the context of a slow onset man-made emergency, these elements represent the realities humanitarian operations face in the response environment. These contextual factors, including government situation factors, socio-economic factors, infrastructure factors, environmental factors, and conflict related factors, help describe the uniqueness of separate response operation theaters. This focuses on the fact that different countries and regions may pose different contextual benefits and challenges for humanitarian supply chains during humanitarian operations. The complexities of HSCM/HL, including motivation, asymmetric investment, unstable supply and demand, acutely urgent and intense need, and humanitarian space, represent internalities of specific humanitarian operations. These complexities, coupled with contextual factors, influence the design of HSCM/HL.

2. HSCM/HL Design

The design of HSCM/HL for continuous aid operations in slow onset man-made emergencies, with influence from contextual factors and complexities, can be described through horizontal and vertical coordination. Horizontal coordination, includes different tiers of actors and the flows between them, and demonstrates how resources and planning are transferred from donors, humanitarian actors and their partners, private sector service providers and ultimately to beneficiaries. Vertical coordination merges with horizontal coordination, as resources and planning are operationalized through policies and procedures, making use of inward flows from donors to provide physical aid to beneficiaries. These policies and procedures are split up into three parts: sourcing and procurement, inventory management, and distribution, information, and

reporting. The last part, information and reporting, not only drive future needs assessments and procurements, but also flow outwards through horizontally coordinated actors, informing future planning and resources needed. In addition, vertical and horizontal coordination also informs how assets are to be used within humanitarian supply chains. Ultimately, the combination of resources, planning, policy, and procedures is a key pivot point, playing an indispensable role in the design of the humanitarian supply chain, utilization of assets, the level of performance, and the traits of agility and leanness.

3. Assets

Borrowed from the Sphere of Control (Overstreet et al 2011), assets represent five of the elements, separated from planning, policy, and procedure. These assets include inventory, transportation, personnel, equipment, and information technology and communications. Based on the findings, planning, policy, and procedure are removed from the Sphere of Control, since much of these activities rely on a coordinated group of donors and humanitarian actors. The type, value, and amount of these assets are highly dependent on influencers and the design, and inward flows from donors and coordinating NGOs. Additionally, these assets are also the last precursor to the HSCM/HL characteristics, as different types and amount of assets in a supply chain affect the traits of agility and leanness.

4. Characteristics

Agility and leanness in a continuous aid operation during slow onset man-made emergencies depend on the influencers of the operational environment, the HSCM/HL design, and the assets used within the HSCM/HL design. The findings provide a basis of how these two

characteristics of HSCM/HL are expressed within a system, as well as the inverse and direct relationship between the two. Specific for this case study, the expression of agility and leanness is based on contextual enablers and detractors, the “weight” of logistics (light logistics, in the Syrian refugee response in Lebanon case), inventory and transportation, and coordination and partnership. These characteristics are a signal of response performance, in terms of speed, accuracy, and value. Ultimately, agility and leanness are expressed depending on how resources, planning, policy, and procedure enable assets to provide equitable physical aid to beneficiaries, given context-specific factors and complexities found within humanitarian HSCM/HL.

C. Practical Implications

The findings of this thesis, and the subsequent conceptual framework, lead a number of practical implications. These practical implications are both specific to the Syrian refugee response, and for slow onset man-made disasters in general. This includes a discussion on the relationship between design and context, the intersections between horizontal and vertical coordination, and agility and leanness in practice. These implications will lead to policy recommendations, presented later in this section.

1. Traditional Design in a Non-Traditional Context

Traditional humanitarian supply chain and logistics designs are heavily based on previous experiences in humanitarian response: short-term sustainment founded on centralized humanitarian authority, ability to procure internationally, and prepositioning and access to contingency stocks. These traditional designs have been implemented in Lebanon, where the response has now exceeded four years with multiple influxes and emergencies, Lebanese government-based limitations, strict donor regulations, and short program cycles. Despite the

availability of advantageous contextual factors, the traditional planning and execution of HSCM/HL has caused extraordinary operational expenses and shortsighted programs for physical aid distribution to Syrian beneficiaries. These issues could be mitigated with more of a contextually tailored response, and planning of physical goods distribution can become much more adaptive to the constraints and opportunities humanitarian organizations face in Lebanon. However, leaders of humanitarian organizations are hesitant to commit to risky programmatic changes, causing supply chain and logistics systems to operate in a state of stagnation.

Contrary to the traditional humanitarian system found in the response for Syrian refugees in Lebanon is the unconventional position of UNHCR. Mandated as the agency for organization and implementation of registration activities, UNHCR's responsibilities in the Syrian refugee response are three-fold: donor, implementer, and coordinator. Although most of UNHCR's implementation activities have ceased, its role as a donor and coordinator has put it in a position of power within horizontal coordination of actors. Several participants noted their discontent with the position of UNHCR, seemingly dissatisfied with perceived additional bureaucratic procedures, unequal participation amongst all actors, and the hegemonic role of UNHCR (Participant 12 2014, Participant 17, 2014). Unfortunately for this thesis, no professionals from UNHCR were willing and/or authorized to participate in this study, despite their central role and initial interest amongst several individuals.

2. Intersection of Horizontal and Vertical Coordination

At the onset of HSCM/HL activities, horizontal and vertical coordination cross at many different points. Absent of any donor-approved alternative, the needs assessment-driven vertical coordination model causes retroactive responses for Syrian beneficiaries. Not to belittle the

importance of needs assessments, the extensive cycle within vertical coordination shows a possible disconnect between urgent needs and provision of aid. However, parallel humanitarian actors, led by UNHCR, are able to mitigate this possible disconnect through geographic and sectorial planning.

The current model of vertical coordination, constrained by limited resources and higher-level horizontal actors, retroactively responds to needs by requiring activation from the step furthest from actual distribution of physical aid to beneficiaries. As sourcing and procurement are done on contract-by-contract basis, with little allowance for long-term framework agreements, many of these humanitarian organizations are not able to plan and implement appropriate levels of contingency stocks in prepositioned warehouses. In fact, many donors do not allow for funds to be spent on contingency stocks, requiring one-time sourcing and procurement for every distribution. Furthermore, donors commonly pressure humanitarian organizations to alter and/or minimize warehousing schemes, limiting prepositioning of accessible inventory, and potentially causing bottlenecks. These discrepancies between horizontal and vertical coordination can potentially lead to ‘firefighting’, a shortsighted response strategy relying on disparate activities without adhering to medium or long-term sustainment.

Horizontal and vertical coordination also intersect with the reliance of local suppliers, transport, and warehouse owners. All three actors are indispensable for the distribution of physical aid, yet all three are only tangentially affiliated with the humanitarian response. As private actors, their approach varies: either they feel an obligation to adapt to humanitarian needs, or profit given the opportunity presented by the crisis. Often, these private actors are willing to work with procurement and logistics officials to fulfill their specific needs (e.g.,

kitting, transportation, special orders). This intersection places humanitarian organizations, and their supply chain and logistics teams, in between donors and the private sector.

3. Agility and Leanness in Practice

The HSCM/HL system's ability to react to needs with agility is limited, considering the lack of electronically based inventory management systems, compiled data into shared information, and significant amounts of internationally procured contingency stocks. Due to this, the system is not as reliant on agility as systems that operate in other emergency contexts. With the exception of emergency influxes of new Syrian refugees into Lebanon, HSCM/HL systems attempt to distribute through careful, medium term planning: agility, in terms of velocity, flexibility and accuracy, is more of an amenity than a necessity. Lags in velocity are common, but typically translate into short lengths of time with little penalty. Vertical coordination has been shown to be both static and flexible: static in terms of procedure and process, and flexible in terms of inventory management (especially with regards to kitting and transportation). Accuracy, while imperfect, relies on precise needs assessments, information sharing, and coordination. Overall, the goal of agility is to react to changes in the operating environment with limited penalty; the HSCM/HL system in Lebanon seems to attempt to preempt these uncertainties, rather than having to react. However, evidence shows a retroactive trend of firefighting, undermining attempts to preempt uncertainties and urgent needs. Therefore, agility may be more important than the evidence shows.

Unlike agility, leanness is a much more substantial HSCM/HL characteristic, saturating the entire Syrian refugee response in Lebanon. This is due to strict demands from donors. However, donor demands are not extraneous, as use of public funding requires responsible and

efficient allocation and usage. Leanness finds its grounding in standardized procedures and policies, mandated by each humanitarian organization's international headquarters, as well as donors. Through market surveys, tendered and bid based sourcing, and strict hierarchical signatory limits, leanness is sought after through value for money, based on accountability and transparency. Considering the limited amount of inventory handling, kitted and standardized inventory, little use for substantial warehouse capacity and/or time, and access to private sector transport, leanness also a significant factor within inventory management as well.

Leanness is also a prominent characteristic due to the implications of horizontal coordination. As the refugee crisis extends into the future, financial and physical capital will become increasingly scarce, with many actors competing for limited resources. Furthermore, the inability to internationally procure in bulk also requires careful local procurement, mindful of opportunistic local private sector actors, competing humanitarian organizations, and fluctuating availability of supplies. It is reasonable to infer that much of the leanness found is through "light logistics", the preferred modus operandi of HSCM/HL. Although intended to contribute to both agility and leanness, light logistics is a primary precursor for leanness, with a majority of intended resources spent on inventory, and the basics in terms of personnel, transportation, equipment, and information technology/communications.

The findings reveal several important aspects for slow onset man-made emergencies. The first is the absolute importance of resilient planning, policy, and procedure of HSCM/HL, at every level. The humanitarian response system cannot distribute physical aid adequately or coherently without each humanitarian organization under its umbrella operating in unison, while ensuring proper usage of funding. Second, the donors' role envelops not only horizontal coordination through financial flows, but also directs actions and activities within vertical

coordination through procedural planning requirements. Donors, seen as furthest from beneficiaries, influence many phases and components of humanitarian operations; their role in HSCM/HL is not to be underestimated, nor ignored. Third, the role of UNHCR is peculiar, and its perception amongst participants of being more of a controlling patron may lead to imperfect participation, coordination, and information sharing. Last, the current response system is reliant on intersections of horizontal and vertical coordination, and balances more in favor of leanness than agility as a desirable characteristic. While leanness and agility can overlap and affect each other, both directly and inversely, leanness takes precedent over agility. As donor funding become more unpredictable and possibly scarcer into the indefinite future of the Syrian refugee crisis, obtaining more value for each financial resource spent will become more important.

4. Policy Recommendations

The findings of this study reveal several policy recommendations for consideration. These three recommendations are centered on the notion that continuous aid operations in slow onset man-made emergencies require non-traditional HSCM/HL design and implementation. First, decentralization of HSCM/HL authority, based on geographic location, should be included in the HSCM/HL design for continuous aid operations during slow onset man-made emergencies. Decentralization can help the performance of supply chain and logistic systems in several ways. Field office sourcing and procurement, as well as higher signatory limits for field managers, can help eliminate bottlenecks found within inventory management and signatory authorizations. Additionally, focusing on localized procurement can strengthen warehouse capacities, as well as limit transportation costs. Lastly decentralized supply chain places operations closer to beneficiaries, strengthening the identification of needs, and providing quicker, more accurate distribution of physical aid.

Second, data management and information sharing needs to be optimized to the highest level through increased funding for information technology systems, and encouraging more participation in automated coordination platforms within the Working Group structure. Although many humanitarian actors already engage in this, it was clear that many participants in this study were skeptical, indifferent, or pessimistic about the level coordination between actors, and accuracy of information shared. A potential opportunity is for donors focus more planning on information sharing, and less involved in programmatic planning by making resources contingent on cohesive participation.

Last, an increase in training, resources, and responsibility should be given to local partner NGOs, as these organizations have a better ability to operate in localized contexts. Local partner NGOs should hold a stronger, more visible place within humanitarian responses, as these are the organizations that are intimately familiar with their operational contexts, are typically lighter in procedures and processes. Increasing these organizations' capacities and involvement with physical aid distribution can allow for more lean and agile responses. This can also increase local personnel capacities, to both serve their localities into the future with increased trust, and provide further expertise in other humanitarian operations.

E. Theoretical implications for HSCM/HL Research

This section will focus on how the findings fit within the theoretical context presented in the literature review. Similar to the previous discussion of practical implications, the academic discussion will first focus on the development, design, and theoretical components of HSCM/HL. Next, the theoretical concepts of agility and leanness are discussed, in relation to the findings presented in this study. This section will conclude with future research recommendations.

1. Disaster Classification

This thesis has found a major disconnect between the traditional disaster management classification matrix (Figure 2.1), and the realities of the Syrian refugee crisis. This matrix may be able to classify the Syrian refugee crisis as a slow onset, man made emergency, but it is superficial, and could cause an observer to overlook the contextual specification and complexities. Furthermore, contextual factors—government situational factors, socio-economic factors, infrastructure factors, meteorological factors, and conflict related factors—heavily weigh in on how humanitarian operations are designed and how they perform in Lebanon. These contextual factors, although not ignored, are disconnected from emergency classification, leading to the ill fit of HSCM/HL in UNHCR’s system in Lebanon.

In addition, the classification matrix also comes short of accurately describing the four-year trajectory of the Syrian refugee crisis. It is clear that the humanitarian system has and will continue to be in a state of long term response, punctuated with man-made influxes from Syria and natural emergencies such as harsh winters. Complicating the long-term response is the inconsistent and seemingly unsustainable flows of planning and funding in horizontal coordination, from donors to refugees. Changes in planning, donors, and funding level alters the ability, depth, and breadth of continuous aid operations in Lebanon. Punctuations within the operating environment, and changes to planning and funding, point to simplicity in literature of disaster classification matrix and it’s lack of consideration for continuous aid operations.

2. Vertical and Horizontal Control

Various models depicting vertical coordination of humanitarian supply chains are congruent with the design and themes found in Lebanon. This is unsurprising, but leads to main

contentions related to vertical coordination in Lebanon. First, previous studies conceptualizing vertical coordination are largely based on prior humanitarian events, mostly sudden onset natural disasters. Second, and due to the reliance of vertical coordination designs in terms of both previous humanitarian supply chain studies and traditional humanitarian responses in practice, the commonalities between what has been presented in this study and in other literature leads to the argument that HSCM/HL designs in Lebanon are traditionally set up in an untraditional context. Therefore, prototypical vertical coordination designs not only have their grounding in lessons learned from humanitarian organizations, but also with academic literature.

The horizontal coordination model presented in this thesis does differ quite a bit from models found in previous literature. As presented in the literature review, horizontal coordination models are typically presented in a linear fashion, much like vertical coordination models. However, the findings of this thesis show that horizontal coordination is constantly evolving, with active flows of resources, planning, and information, amongst several distinct layers of actors. Although the horizontal coordination model presented here does illustrate a loose process, these flows are disparate and not as synchronized. Therefore, the horizontal coordination models presented in the literature rely on linear processes, while in the Syrian refugee crisis in Lebanon shows that this process is much more complex in terms of actors, actions, flows, and time.

3. Sphere of (Limited) Control

The Sphere of Control may not demonstrate actual control, based on the observation that the element of planning, policies, and procedures, which ties HSCM/HL components together, is subject to influence outside of organizational control. The Sphere of control is not with out

influence and manipulation from actors outside of this sphere. This draws attention to the possibility that the system may be evolved into a more unitary body rather than actors in coordination. This influence is exemplified by donor and UNHCR influence, seen as pervasive throughout the entire humanitarian system, including elements within the Sphere of Control.

Planning, policies, and procedures are have been found to be mandated by each individual humanitarian organizations' headquarters, using organizational-specific guidebooks. From the perspectives of internationally based humanitarian organizations, this is technically still in control of each actor. However, outside of sporadic derogations, these procedural guidebooks are designed based on fundamentally different emergency contexts, infrequently reviewed and revised, and do not necessarily prescribe the best policies and procedures for the Syrian refugee response in Lebanon. Additionally, the dichotomy between donor and recipient may also require donor planning and procedural requirements for funding and inclusion into coordination bodies (e.g., UNHCR). Organizations, such as local humanitarian NGOs, are also subject to the planning, policy, and procedure of their partners, specifically in terms of audit requirements and speed of inventory delivery to warehouses. This shows that the inevitable existence of horizontal coordination remove policy and procedures out of the strict control of each humanitarian actor. However, this is not necessarily a detriment, since there are benefits in coordination, transparency and accountability mechanisms, and closely related processes and procedures.

Planning through UNHCR's working groups has also taken complete jurisdiction of inventory out of each organization's control. Much of the distributed physical goods are standardized into very specific types and standards, directed by donor and UNHCR specification. This leads disparate humanitarian actors to rely on the system as a whole prescribing what is best for the beneficiary, while supply chain and logistics teams focus more on sourcing and procuring

these specific items. Other elements of inventory are also at the will of the donor to allow planning and funding for tracking and tracking systems, and warehousing.

Assets are also outside complete control of a humanitarian organization. Transportation is also subject to influence from donors, as well as contextual factors including supply and pricing of private sector transporters. Personnel are also subject to contextual factors, such as the local labor market, and outside actors, as donors influence the quantity of positions within an organization. Control over equipment and IT/communications is just vulnerable to the will of donors as well, as many humanitarian organizations must receive approval and justify new equipment, IT systems, and communications infrastructures are needed

Overall, the premise behind the Sphere of Control may not be suitable for slow onset man-made emergencies, as the realities of HSCM/HL show no actual complete control over mechanisms within humanitarian organizations. However, it is also unrealistic to assume complete control. Additionally, elements within the Sphere of Control should not be given the same consideration, as some elements (Planning, policy, and procedure, inventory, transportation, personnel) are given more weight in terms of basic provision of physical aid, compared to others (equipment, IT/communication). The Sphere of Control is a good baseline for humanitarian supply chain and logistics design. The presentation of the model, with each element overlapping one another, showing the prominence of planning, policy, and procedure is accurate. Findings do show how HSCM/HL begin with, are implemented in consideration of, and are reflected through, planning, policy, and procedures.

4. Agility and Leanness: In Theory

As many previous studies focus on one characteristic over another, it is clear that investigations of HSCM/HL characteristics should consider both in parallel. A comparison of disparate models for both agility and leanness in the current body of literature shows a lot of overlap between fundamental concepts. However, there is little investigation into the existence of both agility and leanness incorporated into a single study, and even less focusing on how the two characteristics interact. The findings presented in this study suggest a relationship and overlap between agility and leanness as both practical and theoretical concepts. Inverse relationships between agility and leanness (e.g., through sourcing and procurement procedures, derogations) typically suggest a level of sacrifice of one characteristic for another. Direct relationships (e.g., through supplier kitting) indicate not only that these conceptual characteristics overlap, but also help reinforce one another. From this thesis, evidence of one characteristic rarely exists with affecting the other, either beneficial or detrimental.

Focusing on the conceptualization of each characteristic is necessary as well. In the literature, agility, described as an overall ability to respond quickly to changes demand, supply, and/or the environment, mainly references agile movement and response for eventual physical aid distribution. The core conceptual elements help describe certain characteristics of physical flows in order for agility to be obtained. The evidence and themes of this study do confirm that the overall goal of agility is focused on physical flows. However, much of the agile traits of HSCM/HL in Lebanon do not necessarily stem from inventory management processes. Rather, agility in the Syrian refugee response is predicated more on the identification and optimization of contextual factors, coordination and partnership, strong planning and preparedness, and careful selection of private sector actors.

Previous conceptualizations of Leanness as a HSCM/HL characteristic focus on two key goals: value for resources spent, and minimization of waste. While these are both found in themes evident of leanness, the characteristic can go much further. Enveloping many of the lean actions and themes found, accountability and transparency are two concepts absent within previous literature on leanness. Accountability and transparency mechanisms built in to HSCM/HL in Lebanon ensure leanness in two timeframes: preventing low value for funding spent and waste at a given current point, and identifying irresponsible spending, unnecessary processes, and waste into the future. Accountability and transparency are not solely ideals required for the use of donor provided public funds, but are also key determinants of a lean humanitarian supply chain.

Accountability and transparency is determined by solidifying resilient planning, policies, and procedures, both from within individual humanitarian actors, and their partnerships and agreements with other actors. It is clear that lean humanitarian supply chains are most significant for humanitarian organizations: scarce donor resources may become further limited or unavailable not only through irresponsibility or exploitation, but also if beneficial impact for each resource spent is not maximized for the aid of beneficiaries. By further conceptualizing leanness, and how it is cultivated and sustained in long-term emergencies, scarce funding will become more impactful and beneficial for vulnerable populations in need. As a characteristic for continuous aid operations in slow onset man-made emergencies, leanness is paramount.

As proposed in the literature, agility and leanness can benefit HSCM/HL by navigating internal and external challenges for humanitarian operations. These concepts are indispensable for HSCM/HL, and require further examination in a variety of emergency contexts. These characteristics are not stand-alone, and can be interwoven in vertical and horizontal coordination

based on two key elements: planning, policies, and procedure, and context. Controlling contextual factors is difficult, if not impossible, but careful planning can help produce better HSCM/HL outcomes. Planning, policies, and procedures, determined by humanitarian organizations with influence within horizontal coordination, can greatly impact HSCM/HL's ability to mitigate contextual factors, complexities, challenges, and uncertainties.

5. Research Recommendations

As identified through the literature review, the academic field of HSCM/HL is limited by its infancy. As a field of study with approximately ten years of focus, the current body of literature shows many gaps, but also may opportunities. These opportunities can target better understanding and development of research into the future.

First, the conceptual framework presented in this thesis should be applied to similar case studies in the future for continuous aid operations during slow onset man-made emergencies. There is a clear lack of research in HSCM/HL literature concerning this onset and type of emergency, and applying the proposed conceptual framework from this thesis can help its generalizability, as well as build a better understanding of these types of emergencies. This is a major gap in HSCM/HL literature, and as crises such as this will occur into the future. A lack of theoretical understanding may lead to the continuation of inappropriately designed humanitarian operations.

Second, broader and deeper research should focus on agility and leanness found as overlapping characteristics in other emergency settings. The conceptual framework proposed in this thesis provides an understanding of how environmentally specific components within a humanitarian operation affects agility and leanness, contributing to the understanding of these characteristics in a context other than sudden onset natural emergencies. Additionally, it was

clear that agility and leanness not only overlap, but also have a dynamic relationship. Therefore, it is insufficient to focus on one characteristic over then other, as agility and leanness are not mutually exclusive.

Last, future research should investigate the possibility of HSCM/HL characteristics outside of agility and leanness. Although there was limited evidence, three characteristics—access, humanitarian mindset, and stamina—can be used as focal points in future research concerning HSCM/HL. Despite the limited evidence found, these three characteristics demonstrate how humanitarian responses can operate at a high performance level. Future research may also go outside these three characteristics as well.

F. Concluding Statement

The performance of humanitarian operations hinges on the ability to develop and implement contextually suitable support systems, beginning with HSCM/HL. As a significant component of humanitarian response, HSCM/HL must be customized and optimized to fit the type of response required. This thesis explored the Syrian refugee response in Lebanon, a slow onset man-made, long-term emergency, to investigate how humanitarian supply chains and logistics are designed to provide assistance during continuous aid operations. Findings showed that humanitarian supply chains and logistics are initially influenced by contextual factors and HSCM/HL complexities, and designed based on two main models: horizontal and vertical coordination. Through these coordination models, HSCM/HL assets are utilized, with the end goal of distributing physical aid to beneficiaries. As proposed in the conceptual framework, these three components—influencers, HSCM/HL design, and HSCM/HL assets—determine the traits of two characteristics: agility and leanness.

APPENDIX I

SEMI-STRUCTURED INTERVIEW GUIDE

Interview Questions and Topics

Background:

1. Organization (number of years)
2. Humanitarian experience (number of years)
3. Previous experience within supply chain management and/or logistics (number of years)
4. Current position, along with general responsibilities/duties

At this point, the digital audio recorder will be turned on following verbal consent

Planning/Policies/Procedures:

1. Can you describe the operations, logistics, supply chains used by affiliated organization for shelter and/or WASH activities?
2. What are the underlying principles of your organization's P/P/P?
 - What are the key points/benchmarks?
3. How often are logistical policies and procedures reviewed and revised?
4. How are they implemented, maintained, and accounted for?
5. How often do problems/issues arise from P/P/P accountability? (examples...)
 - Within organizations and while coordinating with other organizations.
6. How are the needs of the supply chain, including beneficiaries, assessed, managed, and prioritized?
7. Can you describe some successes and issues in terms of planning, policy and procedures, within your organization as well while coordinating with other organizations?
8. Description of logistics/supply chain used by affiliated organization

Inventory:

9. Can you describe the flow of inventory from entrance into the country to distribution to beneficiaries?
 - Can you describe how inventory is tracked/traced from entrance into the country to distribution?
 - Can you describe processes and procedures related to warehousing of inventory?
10. Can you describe some unique characteristics of shelter/WASH inventory?
 - Do you typically receive the correct type and quantity of inventory for the needs of your organization, and your organizations beneficiaries (local NGOs, aid recipients)?
11. Can you describe some successes and issues in terms of shelter/WASH inventory?

Transportation

12. What are the means of transportation utilized for supply chain management?
 - Contracted? Ad hoc? Owned by the organization?

- Affordability?
 - Reliability?
13. Can you describe some successes and issues in terms of transport of inventory and personnel, both within your organization as well as while coordinating with other organizations?

Personnel

14. Can you describe the personnel included in your organization's supply chain management?
- Is the quantity of personnel satisfactory? Too many/too little?
 - Is the quality of personnel satisfactory? Undertrained/under qualified or over trained/over qualified?
 - Are the rates of turnover acceptable?
15. Can you describe some successes and issues in terms of personnel?

Equipment

16. What type of equipment is necessary for the transportation and distribution/utilization of inventory to aid recipients and local NGOs?
- Sufficient? Appropriate?
17. Typically, how easy/difficult is procurement of necessary equipment for humanitarian organizations?
18. Can you describe some successes and issues in terms of necessary equipment, within your organization as well while coordinating with other organizations?

IT/Communications

19. What types, if any, of information management software and hardware does your organization use for supply chain management?
20. How is information dispersed within your organization and with other organizations?
21. Is the IT/Communications infrastructure in Lebanon adequate for properly operating and managing a supply chain for humanitarian organizations? (IT/COMM within Lebanon and outside of Lebanon)
22. Can you describe some successes and issues in terms of IT/Communication, within your organization as well while coordinating with other organizations?

APPENDIX II
INFORMED CONSENT FORM

Informed Consent

American University of Beirut
Department of Political Studies and Public Administration
Principle Investigator: Dr. Thomas Haase
Student Investigator: Eric J. Economy

Consent to Participate in Research Study Entitled: “Supply Chain Management and Logistics: Organizational Agility During Slow Onset Humanitarian Events”

[NOTE: For this study, interviews will take place at predetermined locations, selected at the convenience of the participant. In the event suitability of the selected locations changes, the participant and the researchers will agree upon an alternative location.]

Hello. My name is Eric Economy. I am a graduate student in the Department of Political Studies and Public Administration at the American University of Beirut. I would like to invite you to participate in a research study examining supply chain and logistics management of humanitarian organizations in Lebanon providing aid to Syrian beneficiaries. The purpose of this research study is to investigate the agility of humanitarian supply chains and logistics, specifically concerning organizations within the sectors of shelter and/or WASH.

Before we begin, I would like to take a few minutes to explain why I am inviting you to participate and what will be done with the information you provide. You will be asked to participate in one semi-structured interview. Questions and topics related to your perceptions of logistics and supply chain management of your organization will be discussed. Please stop me at any time if you have questions about the study.

I am doing this study as part of my studies at AUB. I will be interviewing humanitarian aid workers, from various organizations, specifically designated with supply chain and/or logistics management, coordination, or assistance responsibilities. Responses will be used as the basis for my graduate thesis. I may also use this information in articles that might be published, as well as in academic presentations. Your individual privacy and confidentiality of the information you provide will be maintained in all published and written data analysis resulting from the study. Individual identifiers (such as name, job title, organizational affiliation, nationality) will not be included in the interview, transcripts, or any final product such as the thesis, articles, or presentations. With verbal consent, there will be no linkage between your identity and the responses you provide.

Your participation should take approximately 60-90 minutes. Please understand your participation is entirely on a voluntary basis and you have the right to withdraw your consent or discontinue participation. The possible risks involved with participation are minimal and does not involve any physical or emotional risk beyond the risks of daily life. Although there are no direct benefits or compensation, participating in this study will help better understand humanitarian supply chain management and logistics in different types of contexts. Refusal to participate will not result in any penalty, loss of benefits to which the participant is entitled, and will not affect the relationship with the American University of Beirut.

If at any time and for any reason, you would prefer not to answer any questions, please feel free to state you would like to skip the question. If at any time you would like to stop participating, withdraw, or discontinue at any time for any reason, please tell me. We can take a break, stop and continue at a later date, or stop altogether. You will not be penalized for deciding to stop or withdraw from participation at any time.

I would like to electronically audio record this interview so as to make sure that I remember accurately all the information you provide. I will keep these electronic files in a secure external hard drive without any identifying labels, and the Principle investigator and student investigator will only have access to them. Audio recordings and transcripts will be stored anonymously. Once research has concluded, the electronic recordings will be permanently deleted.

If you have any questions, you are free to ask them now. You will be provided with a copy of this consent form to review and keep for your own usage before the interview begins. If you have any questions or concerns about the research in the future, please feel free to contact either the student or principle investigator. I, the student investigator, may be reached by telephone at 70-069 518, or by email at eric.economy@gmail.com. This research is under the supervision of the Principle Investigator (PI) professor Dr. Thomas Haase. He can be reached at th30@aub.edu.lb, or by telephone at 01-350-000, ext. 4344. His office is located on the American University of Beirut campus, in Jessup-204D.

If you have any questions, concerns, or complaints about participant rights in this research, you can contact the following office at AUB:

Social and Behavioral Sciences Institutional Review Board
PO BOX: 11-0236 F15
Riad El Solh, Beirut 1107 2020
Email: irb@aub.edu.lb
Telephone: 01-374 374 ext: 5445

Consent to Participate in the Study

Are you interested in participating in this study?

Consent to Record Interview- posed before interview begins

May I audio record this interview?

Consent to Quote from Interview

I may wish to quote from this interview either in the presentations or articles resulting from this work, without any identifying information.

Do you allow me to quote from this interview?

INTERVIEWER SIGNATURE: _____

DATE: _____

TIME: _____

APPENDIX III

EMAIL RECRUITMENT TEMPLATE

American University of Beirut
Department of Political Studies and Public Administration
Principle Investigator: Dr. Thomas Haase
Student Investigator: Eric J. Economy

Invitation to Participate in Research Study Entitled: “Supply Chain Management and Logistics: Organizational Agility During Slow Onset Humanitarian Events”

Dear _____,

My name is Eric Economy. I am a graduate student in the Political Studies and Public Administration department at the American University of Beirut.

I am writing on behalf of Dr. Thomas Haase to invite you to participate in a research study examining supply chain and logistics management of humanitarian organizations in Lebanon. This research is under the supervision of the Principle Investigator (PI) Dr. Haase. He can be reached at th30@aub.edu.lb, or by telephone at 01-350 000, ext. 4344. His office is located on the American University of Beirut campus, in Jessup-204D.

You have been chosen for this research study because you work within a humanitarian organization in Lebanon under the United Nations Working Group for shelter and/or water, sanitation, and hygiene (WASH). Furthermore, your job title includes logistics officer/coordinator/manager, supply chain officer/coordinator/manager, or operations officer/coordinator/manager. You will be asked to participate in one semi-structured interview. Questions and topics related to your perceptions of logistics and supply chain management of your organization will be discussed.

I am doing this study as part of my studies at AUB. I will be interviewing humanitarian aid workers, from various organizations, specifically designated with supply chain and/or logistics management, coordination, or assistance responsibilities. Responses will be used as the basis for my graduate thesis. I may also use this information in articles that might be published, as well as in academic presentations. Your individual privacy and confidentiality of the information you provide will be maintained in all published and written data analysis resulting from the study. Individual identifiers (such as name, job title, organizational affiliation, nationality) will not be included in the interview, transcripts, or any final product such as the thesis, articles, or presentations. With verbal consent, there will be no linkage between your identity and the responses you provide.

Your participation should take approximately 60-90 minutes. Please understand your participation is entirely on a voluntary basis and you have the right to withdraw your consent or

discontinue participation at any time without penalty. The possible risks involved with participation are minimal and does not involve any physical or emotional risk beyond the risks of daily life. Although there are no direct benefits or compensation, participating in this study will help better understand humanitarian supply chain management and logistics in different types of contexts.

If at any time and for any reason, you would prefer not to answer any questions during the interview, please feel free to state you would like to skip the question. If at any time you would like to stop participating, withdraw, or discontinue at any time for any reason, please tell me. We can take a break, stop and continue at a later date, or stop altogether. You will not be penalized for deciding to stop or withdraw from participation at any time.

I would like to electronically audio record this interview so as to make sure that I remember accurately all the information you provide. I will keep these electronic files in a secure external hard drive without any identifying labels, and the Principle investigator and student investigator will only have access to them. Audio recordings and transcripts will be stored anonymously. Once research has concluded, the electronic recordings will be permanently deleted.

If you have any questions, you are free to ask. You will be provided with a copy of a consent form to review and keep for your own usage before the interview begins. If you have any questions or concerns about the research in the future, please feel free to contact either the student or principle investigator. I, the student investigator, may be reached by telephone at 70-069-518, or by email at eric.economy@gmail.com. As stated before, this research is under the supervision of the Principle Investigator (PI) professor Dr. Thomas Haase. He can be reached at th30@aub.edu.lb, or by telephone at 01-350-000, ext. 4344. His office is located on the American University of Beirut campus, in Jessup-204D.

If you have any questions, concerns, or complaints about participant rights in this research, you can contact the following office at AUB:

Social and Behavioral Sciences Institutional Review Board
PO BOX: 11-0236 F15
Riad El Solh, Beirut 1107 2020
Email: irb@aub.edu.lb
Telephone: 01-374 374 ext: 5445

Thank you for your consideration

APPENDIX IV

PHONE RECRUITMENT SCRIPT

Hello Mr./Ms. _____,

My name is Eric Economy. I am a graduate student in the Political Studies and Public Administration Department at the American University of Beirut. If you have a minute, I would like to invite you to participate in my research project on humanitarian supply chain and logistics management. This research project is under the supervision of the Principle Investigator, Dr. Thomas Haase, a professor in the PSPA department at AUB.

You were chosen to participate in this study because of your position of [position] at [organization], which operates under the United Nations Working Group for shelter and water, sanitation, and hygiene (WASH) in Lebanon.

The purpose of my research study is to investigate agility as a characteristic within supply chains and logistics for organizations assisting Syrian refugees in Lebanon, specifically within the sectors of shelter and WASH. For this, I am conducting interviews with individuals involved in humanitarian supply chain and logistics in Lebanon.

I would like to set up an interview with you, approximately 60 minutes in length, at a location suitable for you. I will be audio recording the interview, which will be kept anonymous and confidential. Participation is entirely voluntary, and withdrawal from participation is completely acceptable with no penalty.

Feel free to ask any questions you may have. If you would like to contact me in the future for any reason, my telephone number is 70-069-518, and my e-mail address is eric.economy@gmail.com. If you would like to contact the principle investigator of this research study, his telephone number is 01-350000 ext. 4344, and his e-mail address is th30@aub.edu.lb.

Thank you for your time.

Eric Economy
Telephone: 70-069 518
Email: eric.economy@gmail.com

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